



Contaminant Information Sheets (CISs) for the Final Fourth Contaminant Candidate List (CCL 4)

Office of Water (4607M)
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Abbreviations and Acronyms

| | |
|---------|--|
| µg/L | Micrograms per Liter |
| AChE | Plasma Acetylcholinesterase |
| ADI | Acceptable Daily Intake |
| ATSDR | Agency for Toxic Substances and Disease Registry |
| AWWARF | America Water Works Association Research Foundation |
| BW | Body Weight |
| CAL DHS | California Department of Health Services |
| CAR | Carcinogenicity |
| CASRN | Chemical Abstract Services Registry Number |
| CCL | Contaminant Candidate List |
| CCL 1 | EPA's First Contaminant Candidate List |
| CCL 2 | EPA's Second Contaminant Candidate List |
| CCL 3 | EPA's Third Contaminant Candidate List |
| CCL 4 | EPA's Fourth Contaminant Candidate List |
| CDC | Centers for Disease Control |
| CIS | Contaminant Information Sheet |
| DBP ICR | Disinfection By-Product Information Collection Rule |
| DOE | Department of Energy |
| DSSTox | Distributed Structure-Searchable Toxicity Database (EPA) |
| DWEL | Drinking Water Equivalent Level |
| E2 | 17-beta Estradiol |
| EEC | Estimated Environmental Concentration |
| EPA | United States Environmental Protection Agency |
| ESA | Ethanesulfonic Acid |
| FAO | Food and Agriculture Organization of the United Nations |
| FR | Federal Register |
| GI | Gastrointestinal |
| GW | Ground Water |
| GWC EEC | Ground Water Chronic Estimate Environmental |
| HA | Health Advisory |
| HABs | Harmful Algal Blooms |
| HRL | Health Reference Level |
| HSDB | Hazardous Substances Data Bank |
| IARC | International Agency for Research on Cancer |
| INCHEM | International Program on Chemical Safety |
| IOM | Institute of Medicine |
| IPCS | International Programme on Chemical Safety |
| IRIS | Integrated Risk Information System |
| JECFA | Joint Expert Committee on Food Additives (FAO/WHO) |
| Kd | Soil/Water Distribution Coefficient |
| KH | Henry's Law Coefficient |

| | |
|------------------|--|
| Koc | Organic Carbon Partitioning Coefficient |
| L | List |
| L? | List? |
| LD ₅₀ | Median Lethal Dose |
| lbs | Pounds |
| lbs/year | Pounds per Year |
| LOAEL | Lowest Observed Adverse Effect Level |
| log Kow | Log Octanol/Water Partitioning Coefficient |
| mg/kg-d | Milligrams per Kilograms per Day |
| MCL | Maximum Contaminant Level |
| MCLG | Maximum Contaminant Level Goal |
| MMWR | <u>Morbidity and Mortality Weekly Report</u> |
| MRDD | Maximum Recommended Daily Dose |
| MRL | Minimal Risk Level |
| NAWQA | National Ambient Water Quality Assessment |
| NCAR | Non-Carcinogenic |
| NDEA | N-Nitrosodiethylamine |
| NDMA | N-Nitrosodimethylamine |
| NDPA | N-Nitroso-di-n-propylamine |
| NIRS | National Inorganics and Radionuclides Survey |
| NL | Not List |
| NL? | Not List? |
| NOAEL | No Observed Adverse Effect Level |
| NPDWR | National Primary Drinking Water Regulations |
| NPYR | N-Nitrosopyrrolidine |
| NREC NA | National Reconnaissance of Environmental Contaminants National Aggregate |
| NTP | National Toxicology Program |
| OA | Oxanilic Acid |
| OEHHA | Office of Environmental Health Hazard Assessment (California) |
| OPP | Office of Pesticide Programs |
| PCCL | Preliminary-CCL |
| PCCL 3 | EPA's Third Preliminary-CCL |
| PCCL 4 | EPA's Fourth Preliminary-CCL |
| PFOA | Perfluorooctanoic acid |
| PFOS | Perfluorooctane sulfonic acid |
| PHG | Public Health Goal (Cal EPA) |
| PWS | Public Water System |
| RAISHE | Risk Assessment Information System– US DOE |
| RD | Regulatory Determination |
| RD 3 | Regulatory Determinations for CCL 3 |
| RBC | Red Blood Cell |
| RfD | Reference Dose |

| | |
|---------|--|
| RSC | Relative Source Contribution |
| RTECS | Registry for Toxic Effects |
| SAB | Science Advisory Board |
| SF | Slope Factor |
| SRS | Substance Registry System/Substance Registry Services |
| SDWA | Safe Drinking Water Act |
| STORET | STorage and RETrieval (EPA) |
| SW | Surface Water |
| SWC EEC | Surface Water Chronic Estimate Environmental Concentration |
| TDI | Tolerable Daily Intake |
| TPTH | Triphenyltin hydroxide |
| TRI | Toxics Release Inventory |
| TSH | Thyroid Stimulating Hormone |
| TT | Treatment Technique |
| UCMR | Unregulated Contaminant Monitoring Rule |
| UCM R1 | Unregulated Contaminant Monitoring, Round 1 (EPA) |
| UCM R2 | Unregulated Contaminant Monitoring, Round 2 (EPA) |
| UF | Uncertainty Factor |
| UL | Upper Intake Level |
| USGS | United States Geological Survey |
| WBDO | Waterborne Disease Outbreak |
| WHO | World Health Organization |

1.0 Introduction

Section 1412(b)(1) of the Safe Drinking Water Act (SDWA), as amended in 1996, requires EPA to publish the Contaminant Candidate List (CCL) every five years. The SDWA specifies that the list include contaminants that are not subject to any proposed or promulgated National Primary Drinking Water Regulations (NPDWRs), are known or anticipated to occur in public water systems (PWSs), and may require regulation under the SDWA. EPA uses this list of unregulated contaminants to help identify priority contaminants for regulatory decision making and to prioritize research and data collection efforts. SDWA also requires the agency to consult with the scientific community, including the Science Advisory Board (SAB), and provide notice and opportunity for public comment prior to the publication of the Final CCL. In addition, SDWA directs the agency to consider the health effects and occurrence information for unregulated contaminants to identify those contaminants that present the greatest public health concern related to exposure from drinking water.

EPA published the third CCL (CCL 3), which listed 116 contaminants on October 8, 2009 (74 FR 51850 (USEPA, 2009a)). In developing the CCL 3, EPA implemented a multi-step process to select contaminants for the final CCL 3, which included the following key steps:

- 1) The identification of a broad universe of potential drinking water contaminants (CCL 3 Universe);
- 2) Screening the CCL 3 Universe to a Preliminary CCL (PCCL) using screening criteria based on the potential to occur in PWSs and the potential for public health concern;
- 3) Evaluation of the PCCL contaminants based on a more detailed review of the occurrence and health effects data using a scoring and classification system to identify a final list of 116 CCL 3 contaminants; and
- 4) Incorporating public input and expert review in the CCL 3 process.

Steps 1, 2 and 3 in the process are described in detail in the CCL 3 support documents:

- “Final Contaminant Candidate List 3 Chemicals: Identifying the Universe” (USEPA, 2009b);
- “Final Contaminant Candidate List 3 Chemicals: Screening to a PCCL” (USEPA, 2009c);
- “Final Contaminant Candidate List 3 Chemicals: Classification of the PCCL to the CCL” (USEPA, 2009d);
- “Final Contaminant Candidate List 3 Microbes: Identifying the Universe” (USEPA, 2009e);
- “Final Contaminant Candidate List 3 Microbes: Screening to the PCCL” (USEPA, 2009f); and
- “Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process” (USEPA, 2009g).

These documents can be found on the EPA web site at: <http://www2.epa.gov/ccl/contaminant-candidate-list-3-ccl-3> or at <http://www.regulations.gov> (docket ID: EPA-HQ-OW-2007-1189).

After a Final CCL is published, SDWA section 1412(b)(1)(B)(ii) as amended in 1996, requires EPA at five year intervals to make determinations of whether to regulate or not to regulate no fewer than five contaminants from the CCL in a process called regulatory determinations (RD). This is a separate process from the listing of contaminants on the CCL. The 1996 SDWA Amendments specify three criteria to determine whether a contaminant may require regulation:

- the contaminant may have an adverse effect on the health of persons;
- the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in PWSs with a frequency and at levels of public health concern; and
- in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by PWSs.

If EPA determines that these three statutory criteria are met and makes a final determination to regulate a contaminant, the agency has 24 months to publish a proposed Maximum Contaminant Level Goal¹ (MCLG) and NPDWR². After the proposal, the agency has 18 months to publish and promulgate a final MCLG and NPDWR (SDWA section 1412(b)(1)(E))³.

On February 11, 2011, as a separate action, the agency issued a positive regulatory determination for perchlorate, a chemical listed in CCL 1, CCL 2 and CCL 3 (76 FR 7762 (USEPA, 2011)). In January 2016 (81 FR 13 (USEPA, 2016a)) the agency made final determinations not to regulate four contaminants: dimethoate; 1,3-dinitrobenzene; terbufos; and terbufos sulfone and delayed the final determination of strontium pending analysis of additional data. These six contaminants were not listed on the Draft CCL 4, pending their final determinations, and are also not included on the Final CCL 4.

In May 2012, EPA sought public input by requesting nominations of contaminants to be considered for inclusion on the CCL 4 (77 FR 27057 (USEPA, 2012)). EPA reviewed the nominations and supporting information provided by nominators to determine if any new data were provided that had not been previously evaluated for CCL 3. The agency also collected additional data for the nominated contaminants, when it was available, from both CCL 3 data sources that had been updated, and from new data sources that were not available at the time of CCL 3. A complete list of references provided by nominators can be found in the support document "Summary of Nominations for the Fourth Contaminant Candidate List (CCL 4)" (USEPA, 2016b). A more detailed description of the CCL data sources collected by EPA may be found in the support document "Data Sources for the Fourth Contaminant Candidate List (CCL 4)" (USEPA, 2016c). EPA evaluated the nominated contaminants utilizing the best available

¹ The MCLG is the "maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals." (40 C.F.R. 141.2; 42 U.S.C. 300g-1).

² An NPDWR is a legally enforceable standard that applies to public water systems. An NPDWR sets a legal limit (called a maximum contaminant level or MCL) or specifies a certain treatment technique (TT) for public water systems for a specific contaminant or group of contaminants. The MCL is the highest level of a contaminant that is allowed in drinking water and is set as close to the MCLG as feasible using the best available treatment technology and analytical methods and taking cost into consideration.

³ The statute authorizes a nine-month extension of this promulgation date.

health effects and occurrence data and the same process for screening and scoring contaminants that was used for CCL 3.

A summary of the process and data used to screen the contaminants nominated for CCL 4 from the CCL 4 Universe to the PCCL 4 is included in the “Screening Document for the Fourth Preliminary Contaminant Candidate List (PCCL 4)” (USEPA, 2016d). This document summarizes the process used to select contaminants from the PCCL for the CCL and presents the Contaminant Information Sheets (CISs) for the contaminants on the Final CCL 4. The purpose of the CISs is to summarize the data used to evaluate and select contaminants for the Final CCL 4.

The Draft CCL 4 was published on February 4, 2015 (80 FR 6076 (USEPA, 2015)), and includes 100 chemicals or chemical groups and 12 microbes. EPA conducted an abbreviated evaluation and selection process for the CCL 4. This abbreviated CCL 4 process includes a three pronged approach: (1) carrying forward CCL 3 contaminants (minus those with regulatory determinations), (2) seeking and evaluating nominations from the public for additional contaminants to consider and (3) evaluating any new data for those contaminants with previous negative regulatory determinations from CCL 1 or CCL 2 for potential inclusion on the CCL 4.

EPA requested comment on the Draft CCL 4 and on how to further improve upon the selection process developed for CCL 3 as a tool for future CCLs. The agency received 27 public comment letters on the Draft CCL 4. EPA considered all public comments and evaluated the data and information provided by commenters in determining the Final CCL 4. EPA used the same process used in the CCL 3 to screen and score any contaminants with new data or information provided by commenters. Based on these analyses, EPA is not listing three cancelled pesticides (disulfoton, fenamiphos, and molinate) on the Final CCL 4 that were included on the Draft CCL 4 because these chemicals are not known or anticipated to occur in PWSs and are not anticipated to require regulation. With the exception of these three pesticides, all of the contaminants listed on the Draft CCL 4 are listed on the Final CCL 4. EPA has responded to all public comments in the “Comment Response Document for the Fourth Drinking Water Contaminant Candidate List (Categorized Public Comments)” document that is available in the docket (USEPA, 2016e).

The Final CCL 4 includes 97 chemicals or chemical groups (i.e., cyanotoxins) and 12 microbes.

For CCL 3, EPA published CISs for the 561 chemicals (USEPA, 2009h) and the 29 microbial contaminants (USEPA, 2009g) on the PCCL 3 (these documents include the CISs for the 116 contaminants on the Final CCL 3 as well). In addition, Appendix E of the “Protocol for the Regulatory Determinations 3 Including Appendices A-F” (USEPA, 2014) includes a summary of updated health and occurrence data used to evaluate 35 CCL 3 contaminants in the regulatory determination process.

This document presents CISs for 100 chemicals (including 4 cyanotoxins) and 12 microbes listed on the CCL 4. There are a total of 100 chemical CISs because four cyanotoxins (anatoxin-a, cylindrospermopsin, microcystin-LR, and saxitoxin), had enough data to generate a unique CIS. The CISs include data from public nominations and data from public comments. The CISs for contaminants that were carried forward from CCL 3 that were not nominated, and for which EPA

did not receive new data during the public comment period for CCL 4, remain unchanged from their CCL 3 status.

2.0 Summary of the Chemicals Classification Process from the PCCL to CCL

This section briefly summarizes the process developed under CCL 3 to evaluate contaminants from the PCCL to assess if they should move forward to the CCL. EPA also used this same process to evaluate the nominated contaminants for the Draft CCL 4 and to evaluate the information and data provided by commenters on the Draft CCL 4 in determining the Final CCL 4. EPA did not make modifications to the scoring and classification process and models between the CCL 3 and the CCL 4. A detailed explanation of this step in the process is provided in the “Final Contaminant Candidate List 3 Chemicals: Classification of the PCCL to CCL” (USEPA, 2009d) and its appendices.

To identify chemicals from the PCCL to include on the CCL, EPA used classification models and a scoring system as tools. The classification models were used to process complex data in a consistent and reproducible manner. An overarching premise in using classification models to prioritize contaminants, is that different contaminants can be compared on the basis of similar attributes. The attributes are properties used to categorize contaminants for their potential to occur in drinking water and for their potential to cause adverse health effects. Four attributes were selected including two attributes describing health effects (Potency and Severity) and two attributes describing occurrence (Prevalence and Magnitude); these are discussed in more detail in Section 3.0 of this document. Scoring protocols were developed for each of the four attributes and these scores were used as input for the classification models. The scores for each attribute increase with increasing potential to cause adverse health effects or potential to occur in drinking water (e.g., a score of 10 indicates greater concern for adverse health effects or greater potential to occur in drinking water, whereas a score of 1 indicates lesser concern). If a chemical had more than one data element available for scoring, EPA used a hierarchy to establish which data element should be used in scoring the potency attribute, the prevalence attribute and the magnitude attribute. For the potency and severity attributes, if data were available for both the cancer and non-cancer endpoints, the higher of the cancer or non-cancer potency scores was selected to score the potency and the critical effect associated with the data used to score the potency was used to score the severity. The attribute scoring protocols and data hierarchies are discussed in more detail in the “Final Contaminant Candidate List 3 Chemicals: Classification of the PCCL to CCL” (USEPA, 2009d) (see Appendix A for the Attribute Scoring Protocols). Appendix 4 of this document presents a condensed version of the scoring protocol, including the data hierarchies.

The classification models were calibrated using a training data set so they mimicked an expert panel’s decisions to list or not list a contaminant on the CCL. The training data set consisted of 202 sets of attribute scores for contaminants and the consensus category (list/not list decisions) developed by a team of EPA subject matter experts based on evaluating the data and the attribute scores for those contaminants. The three classification models each generated an overall score that when combined corresponded to particular list or not list categories (output) based upon the

training data set. The list and not list decisions were placed into four primary categories: List (L), List? (L?), Not List? (NL?) or Not List (NL). The “L?” and “NL?” categories were developed because the expert panel recognized that clear decisions on listing contaminants could be made easily for some contaminants, but there was some uncertainty associated with the decision for other contaminants. The “L?” category signifies that the decision is leaning towards listing with some uncertainty, and “NL?” signifies that the decision is leaning towards not listing, but with some uncertainty. EPA used three classification models and each model produced a prediction for each PCCL contaminant. EPA used an additive process to combine the results of all three models. If all three models were in 100% agreement on the categorical prediction, one of the four primary categorical predictions (L, L?, NL? or NL) was assigned to that contaminant. If all three models did not agree, then the contaminant was assigned to a category in between the four primary categorical predictions. None of the models categorized a contaminant more than one category higher or lower than the other models (i.e., no contaminants were categorized by an “L” by one model and by an “NL?” by another model). There are three “in between” categories including: “L?-L”, “NL?-L?” or “NL-NL?”. An example of a contaminant that would be placed in an “in between” category is if one model placed the contaminant into the “L” category and the other two models placed it into the “L?” category, then it would be placed in the “L?-L” category. Appendix 5 of this document discusses the data sensitivity analysis performed as part of CCL 3.

As part of the last stage in the CCL 3 classification process, the model output was reviewed by internal EPA experts and based upon issues identified by the reviewers, several post-model refinements were added by EPA to the CCL 3 process. One important refinement added to the process was for contaminants with water data, EPA calculated the ratio between the health reference level (HRL) and the 90th percentile concentration level in water. If a 90th percentile (of detections) concentration level was not available, the agency used the maximum or next highest percentile reported value. This HRL to concentration ratio was calculated for all contaminants with water data and serves as a benchmark that suggests a greater concern if the ratio is low (concentration close to the HRL), and a lesser concern when the ratio is high (concentration well below the HRL). If the ratio was less than 10, the contaminant was typically selected for listing on the CCL 3. If the ratio was greater than 10, the contaminant was typically not listed on the CCL and remained on the PCCL. For contaminants that had limited finished water data, but more robust ambient water monitoring data, the ambient water concentration was used to develop the ratio. If no measured water data were available EPA used modeled water data for pesticides (Estimated Environmental Concentrations (EECs) developed by EPA’s Office of Pesticide Programs (OPP)), when available, to calculate the HRL to concentration ratios. If an HRL ratio was available it was used as the basis for listing, regardless of the model decision outcome.

For contaminants with no water data (either measured or modeled) HRL to concentration ratios could not be calculated. For these contaminants (e.g., contaminants that only had release data for occurrence), if the three-model categorical prediction was L, L?-L or L?, the contaminant was typically listed on the CCL. Appendix 5 discusses the data sensitivity analysis in more detail.

Another important post-model refinement included in the CCL 3 process considered the nature of the best available data. Some chemicals on the PCCL were represented by only an LD₅₀ value for health effects data and/or only production volume data for occurrence. These data are not sufficient for a contaminant to be included on the CCL. In such cases, the chemical was not included on the CCL and remained on the PCCL.

3.0 CCL 4 Chemical CISs Explanation

This section presents a walk-through of the CISs with a brief explanatory discussion of the data elements on the CIS and how they are used in the CCL process. The CIS for each contaminant is a concise, two-page profile with the first page including the attribute scores, three model categorical predictions, HRL/concentration ratios, use information, status of the contaminant in the CCL process and health effects data. The second page includes occurrence data. (The derivation and use of these data are explained in detail in “Final Contaminant Candidate List 3 Chemicals: Classification of the PCCL to CCL” (USEPA, 2009d).) For the CISs for the chemical contaminants that made the Final CCL 4, please see Appendix 1. Appendix 1 also includes a graphic illustration, a “CIS key” to assist in interpreting the data on the CIS. For the CISs for the microbial contaminants listed on the Final CCL 4, please see Appendix 2.

General Information

The top section of the first page of each chemical CIS contains seven sets of information including contaminant identifiers, use and how the chemical was scored and ranked in the CCL process. From left to right, the upper rows include:

- 1) **Contaminant Identification** – the contaminant name, a unique CCL-specific identification number referred to as a Substance Key (many of which were obtained from EPA’s Substance Registry System, now known as Substance Registry Services (SRS); others were assigned during the CCL process if a contaminant was not listed in SRS), and the contaminant’s Chemical Abstract Services Registry Number (CASRN).
- 2) **Attribute Scores** – assigned scores for each of the four CCL attributes (which are derived from the health effects and occurrence data presented on the CISs), which are defined as follows:
 - a. **Potency** reflects the lowest dose of a chemical that causes an adverse health effect. Potency for chemicals is reflected in several standard toxicological parameters, including the Reference Dose (RfD) or its equivalent; cancer potency, expressed as the concentration in water equivalent to a 10⁻⁴ cancer risk; No

Observed Adverse Effect Level (NOAEL); or Lowest Observed Adverse Effect Level (LOAEL).

- b. **Severity** is the adverse health effect associated with the dose that is used as the measure of Potency and is calibrated based on the health-related significance of the adverse effect (e.g., dermatitis versus cancer).
 - c. **Prevalence** is a measure of how widespread the contaminant's occurrence is in the environment (specifically in the United States). The data used to score the prevalence attribute may include the percent of PWSs or monitoring sites with detections of the contaminants, the number of States where pesticides are applied or where releases to the environment are reported or chemical production data in pounds per year (lbs/year).
 - d. **Magnitude** relates to the quantity of a contaminant that may be found in the environment. This was measured through the use of the median value concentration of detections (if available) in drinking water or ambient water or the total pounds of a chemical released to the environment. In cases where Magnitude data are not available, persistence and mobility data (i.e., chemical property/environmental fate parameters) were used as surrogates for water occurrence or release data (see USEPA, 2009d for discussion). If a median was not available, the maximum was typically used.
- 3) **Health Reference Level (HRL)** – Separate HRLs are calculated for non-cancer and carcinogenic effects. The HRLs are expressed as a concentration of a contaminant in drinking water (expressed in micrograms per liter, $\mu\text{g/L}$). The agency also considered adverse health effects that may pose a greater risk to life stages and other sensitive groups which represent a meaningful portion of the population. Adverse health effects associated with infants, children, pregnant women, the elderly, and individuals with a history of serious illness were evaluated as part of the CCL process.

If potency is scored on cancer data, that data is used to calculate the cancer HRL. If the potency attribute is scored on non-cancer data, the highest ranking cancer data element is used to calculate the cancer HRL. For cancer, an HRL can be derived either from a slope factor or from a 10^{-4} cancer risk level in drinking water. For carcinogens, the HRL is the one-in-a-million (10^{-6}) cancer risk expressed as a drinking water concentration (in $\mu\text{g/L}$). EPA typically evaluates cancer risk at the 10^{-4} , 10^{-5} and/or 10^{-6} cancer risk levels (in order of successively more protective levels). If a slope factor is used, it is first converted to a 10^{-4} cancer risk level in drinking water which is then divided by 100 to obtain the HRL, which is equivalent to the 10^{-6} cancer risk level.

If potency is scored on non-cancer data, that data is used to calculate the non-cancer HRL. If the potency attribute is scored on cancer data, then the non-cancer HRL is calculated using the highest ranking non-cancer data element. For non-cancer effects the HRL can be derived from an RfD (or its equivalent), a LOAEL, or a NOAEL. For non-carcinogens, the HRL is obtained by multiplying the RfD times 70 kg (default body weight), dividing by a water intake of 2 L/day and multiplying by a 20% relative source contribution. If a NOAEL or a LOAEL was used for the HRL calculation the equation is the same as with an RfD, but default uncertainty factors are applied to the NOAEL or LOAEL to develop an RfD-like value (1,000 for a NOAEL and 3,000 for a LOAEL).

- 4) **HRL/Concentration Ratios** are presented using the 90th percentile concentration occurrence value, if available, or the next highest percentile value or the maximum concentration of detections. Both the non-cancer HRL/concentration ratio and the cancer HRL/concentration ratio were calculated (if applicable). The data used to develop the ratio is noted on the CIS.

Moving down the CIS to the next set of three data elements; from left to right are presented:

- 5) **Use** information for the contaminant.
- 6) **Three-Model Categorical Prediction** – As noted in Section 2.0 above, three calibrated classification models were used to generate Categorical Predictions based on the contaminant's attribute scores. There are four primary Categorical Predictions: "L", "L?", "NL?" and "NL". One of these four primary Categorical Predictions was assigned to a contaminant if all three models were in agreement on the categorical prediction. If the three models were not in agreement, the contaminant was assigned to a category in between the four primary categories. There are three "in-between" categories including: "L?-L", "NL?-L?" or "NL-NL?".
- 7) **Status** – Presents the status of the contaminant with respect to having been listed on CCL 3 and its status within the CCL 4 process (i.e., was it included in the CCL 4 Universe, PCCL 4 or Final CCL 4).

Health Effects Data

The remainder of the first page of the CISs presents the available health effects data for each contaminant. Non-cancer data elements are presented first followed by cancer data elements. Both the non-cancer and cancer data elements are generally presented in order according to the data hierarchy developed for scoring the potency attribute (with the highest ranking data elements used for scoring generally being presented closer to the top of the page and the lower ranking elements closer to the bottom of the page). The non-cancer data are presented before the cancer data. The column headings summarize the data element, the data source acronym, the numerical value (or qualitative, for cancer classification), units and the year associated with the data element. Typically, the year is the date of publication of the data, although given the variability of the formatting of the data sources, it may represent a toxicological study date or the date when the data source website was last updated. If available, the critical effect is noted and a notes field is filled in if toxicological study data or other pertinent information for a particular data element is available.

For non-cancer data elements, the highest data element in the hierarchy for scoring Potency is the RfD, NOAEL or LOAEL from various sources, with EPA's OPP and Integrated Risk Information System (IRIS) values taking precedence over values from other agencies or the best available NOAEL or LOAEL from a published study.

Below the non-cancer values are the cancer values, if applicable. As with the non-cancer values, they are presented in hierarchical fashion. For cancer the 10⁻⁴ cancer risk, typically from EPA's Health Advisory Tables (HAs) or IRIS, is the highest-ranking cancer data element followed by the slope factor. The 10⁻⁴ cancer risk or the slope factor is used for Potency scoring, where

applicable. In addition, qualitative cancer data, including cancer classifications from EPA, the International Agency for Research on Cancer (IARC), the U.S. National Toxicology Program (NTP) and/or California's Office of Environmental Health Hazard Assessment (OEHHA) are presented, although not quantitative, such values were incorporated into the PCCL screening process.

The row for the data element used for scoring the Potency and Severity attributes is shaded grey on the CIS.

At the bottom right of the health effects data section of the CIS are other supporting qualitative and quantitative data. These data represent the listing of contaminants as carcinogens and/or reproductive toxins or values that are protective of public health via the ingestion of drinking water (e.g., EPA Drinking Water Exposure Levels (DWELs), EPA HAs, World Health Organization (WHO) Guideline Values, and Health Canada Guideline Values).

Occurrence Data

The second page of the CISs is focused on occurrence data. The occurrence data are generally presented in order of the hierarchy established for scoring Prevalence and Magnitude with the highest ranking data elements used for scoring generally being presented closer to the top of the page and the lower ranking elements closer to the bottom of the page (i.e., finished water data are at the top of the page, followed by ambient water data, supplemental water data (often studies from individual States or the primary literature), and application/release data, with production data and environmental fate parameters at the bottom of the page). Finished water occurrence data is the highest ranking data element in the hierarchy used to score the prevalence and magnitude attributes since it represents the best estimation of the potential for human exposure.

The row for the occurrence data element used for scoring Prevalence and Magnitude is shaded grey on the CIS.

The column headers for the water occurrence data include the data source; the number of total PWSs/sites/samples; the number of positive results (referred to as "detects"), an indication as to whether the preceding values correspond to the number of PWSs, sampling sites or samples; the percent of detects, and where available; the minimum, maximum, median, 90th percentile, 99th percentile of detects; units; sampling year(s) and a notes field.

Following the water data as the highest ranking source are other data used to estimate potential occurrence in water in the absence of water data. These include application rate data for pesticides in lbs/year, environmental release data to surface water and total environmental releases in lbs/year. Following the application/release data are production data ranges for the most recent year for which data were available at the time of CCL 4 data collection.

The final section of the CISs includes available environmental fate parameters with persistence metrics of half-life and a degradation code either based on structural modeling or the half-life. The remaining properties relate to environmental mobility.

3.1 Reasons for Inclusion on CCL 4

Contaminants were selected for the CCL 4 based on either an HRL/concentration ratio, or if water data were not available, the model list decision.

Based on recommendations from the SAB on the Draft CCL 4, EPA has added the following summary tables in addition to the CISs as an additional way of showing how a contaminant was listed on the CCL and the data used to list a contaminant. This information can be found in the CISs in the Appendix as well. The CISs include additional data not included in these summary tables (such as supplemental data) that was collected and evaluated during the CCL process.

Exhibit 1 summarizes the 97 chemicals and four cyanotoxins (included within the group of cyanotoxins) that are listed on the Final CCL 4 along with an indication of whether the contaminant was nominated for CCL 4 and/or was carried forward from CCL 3. The four cyanotoxins are listed separately in this table; however, cyanotoxins are listed as a group on CCL 4. The basis for being listed on the Final CCL 4 is also included. There were three primary reasons for listing a chemical: 1) for chemicals with water data the HRL/concentration ratio was equal to or less than 10; 2) for chemicals without water occurrence data to calculate an HRL/concentration ratio, the Three-Model List Decision was L?, L?-L, or L (these chemicals had release data from the Toxics Release Inventory (TRI) as their occurrence data source) (formaldehyde is the one exception and was listed based on its Three-Model List Decision of "L?"); or, 3) in the case of several acetanilide pesticides and degradates, these chemicals were listed to retain the acetanilides and degradates as a group for evaluation by EPA.

The eight acetanilide pesticides were being evaluated by the agency as a group and were retained as a group for CCL 3 and carried forward to CCL 4. Three sets of parent and/or acetanilide degradates were considered for CCL 3 and CCL 4. Each set consists of a parent and an ethanesulfonic acid (ESA) degradate and an oxanilic acid (OA) degradate with the exception of alachlor (because EPA has established a MCL of 2 µg/L for alachlor, alachlor was not considered in the CCL process, only its ESA and OA degradates were considered). Thus, there are eight acetanilides considered for CCL 3 and CCL 4. Seven of eight acetanilide pesticides and/or degradates had 3-model list decisions of either "NL" or "NL?" and non-cancer HRL/concentration ratios >10. Only alachlor OA had a 3-model list decision of "L?" and a non-cancer HRL/concentration ratio <10. Since the acetanilides were being evaluated by EPA as a group and since all nine acetanilides discussed above were included in EPA's second Unregulated Contaminant Monitoring Rule (UCMR 2), all eight of the acetanilides that were considered for CCL 3 were listed on the Final CCL 3. These contaminants were carried forward from CCL 3 to CCL 4.

Exhibit 1: Basis for Listing Contaminant on CCL 4

| CASRN | Substance Name | CCL 4 Nomination | Carried Forward from CCL 3 | Listing Basis |
|-------------|--------------------------------------|------------------|----------------------------|---|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | X | HRL/Concentration Ratio ≤ 10 |
| 75-34-3 | 1,1-Dichloroethane | | X | HRL/Concentration Ratio ≤ 10 |
| 96-18-4 | 1,2,3-Trichloropropane | | X | HRL/Concentration Ratio ≤ 10 |
| 106-99-0 | 1,3-Butadiene | | X | Model List decision (TRI) |
| 123-91-1 | 1,4-Dioxane | | X | HRL/Concentration Ratio ≤ 10 |
| 57-91-0 | 17 alpha-Estradiol | | X | HRL/Concentration Ratio ≤ 10 |
| 71-36-3 | 1-Butanol | | X | Model List decision (TRI) |
| 109-86-4 | 2-Methoxyethanol | | X | Model List decision (TRI) |
| 107-18-6 | 2-Propen-1-ol | | X | Model List decision (TRI) |
| 16655-82-6 | 3-Hydroxycarbofuran | | X | HRL/Concentration Ratio ≤ 10 |
| 101-77-9 | 4,4'-Methylenedianiline | | X | Model List decision (TRI) |
| 30560-19-1 | Acephate | | X | HRL/Concentration Ratio ≤ 10 |
| 75-07-0 | Acetaldehyde | | X | HRL/Concentration Ratio ≤ 10 |
| 60-35-5 | Acetamide | | X | Model List decision (TRI) |
| 34256-82-1 | Acetochlor | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |
| 187022-11-3 | Acetochlor ethanesulfonic acid (ESA) | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |
| 194992-44-4 | Acetochlor oxanilic acid (OA) | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |
| 107-02-8 | Acrolein | | X | HRL/Concentration Ratio ≤ 10 |
| 142363-53-9 | Alachlor ethanesulfonic acid (ESA) | | X | Acetanilide risk evaluation based on |

| CASRN | Substance Name | CCL 4 Nomination | Carried Forward from CCL 3 | Listing Basis |
|-------------|-------------------------------------|------------------|----------------------------|--|
| | | | | professional judgement; occurrence data for parent used for degradates |
| 171262-17-2 | Alachlor oxanilic acid (OA) | | X | HRL/Concentration Ratio ≤ 10 |
| 319-84-6 | alpha-Hexachlorocyclohexane | X | X | HRL/Concentration Ratio ≤ 10 |
| 64285-06-9 | Anatoxin-a ¹ | | X | HRL/Concentration Ratio ≤ 10 |
| 62-53-3 | Aniline | | X | Model List decision (TRI) |
| 741-58-2 | Bensulide | | X | HRL/Concentration Ratio ≤ 10 |
| 100-44-7 | Benzyl chloride | | X | Model List decision (TRI) |
| 25013-16-5 | Butylated hydroxyanisole | | X | HRL/Concentration Ratio ≤ 10 |
| 133-06-2 | Captan | | X | HRL/Concentration Ratio ≤ 10 |
| 14866-68-3 | Chlorate | | X | HRL/Concentration Ratio ≤ 10 |
| 74-87-3 | Chloromethane (Methyl chloride) | | X | HRL/Concentration Ratio ≤ 10 |
| 110429-62-4 | Clethodim | | X | HRL/Concentration Ratio ≤ 10 |
| 7440-48-4 | Cobalt | | X | HRL/Concentration Ratio ≤ 10 |
| 80-15-9 | Cumene hydroperoxide | | X | Model List decision (TRI) |
| 143545-90-8 | Cylindrospermopsin ¹ | | X | HRL/Concentration Ratio ≤ 10 |
| 141-66-2 | Dicrotophos | | X | HRL/Concentration Ratio ≤ 10 |
| 55290-64-7 | Dimethipin | | X | HRL/Concentration Ratio ≤ 10 |
| 330-54-1 | Diuron | | X | HRL/Concentration Ratio ≤ 10 |
| 517-09-9 | Equilenin | | X | HRL/Concentration Ratio ≤ 10 |
| 474-86-2 | Equilin | | X | HRL/Concentration Ratio ≤ 10 |
| 114-07-8 | Erythromycin | | X | HRL/Concentration Ratio ≤ 10 |
| 50-28-2 | Estradiol (17-beta estradiol) | | X | HRL/Concentration Ratio ≤ 10 |
| 50-27-1 | Estriol | | X | HRL/Concentration Ratio ≤ 10 |
| 53-16-7 | Estrone | | X | HRL/Concentration Ratio ≤ 10 |
| 57-63-6 | Ethinyl Estradiol (17-alpha ethynyl | | X | HRL/Concentration |

| CASRN | Substance Name | CCL 4 Nomination | Carried Forward from CCL 3 | Listing Basis |
|-------------|---------------------------------------|------------------|----------------------------|---|
| | estradiol) | | | Ratio ≤ 10 |
| 13194-48-4 | Ethoprop | | X | HRL/Concentration Ratio ≤ 10 |
| 107-21-1 | Ethylene glycol | | X | Model List decision (TRI) |
| 75-21-8 | Ethylene Oxide | | X | Model List decision (TRI) |
| 96-45-7 | Ethylene thiourea | | X | HRL/Concentration Ratio ≤ 10 |
| 50-00-0 | Formaldehyde | | X | Model List decision (DBP ICR) |
| 7440-56-4 | Germanium | | X | HRL/Concentration Ratio ≤ 10 |
| 74-97-5 | Halon 1011 (bromochloromethane) | | X | HRL/Concentration Ratio ≤ 10 |
| 75-45-6 | HCFC-22 | | X | Model List decision (TRI) |
| 110-54-3 | Hexane | | X | Model List decision (TRI) |
| 302-01-2 | Hydrazine | | X | Model List decision (TRI) |
| 7439-96-5 | Manganese | X | | HRL/Concentration Ratio ≤ 10 |
| 72-33-3 | Mestranol | | X | HRL/Concentration Ratio ≤ 10 |
| 10265-92-6 | Methamidophos | | X | HRL/Concentration Ratio ≤ 10 |
| 67-56-1 | Methanol | | X | Model List decision (TRI) |
| 74-83-9 | Methyl bromide (Bromomethane) | | X | HRL/Concentration Ratio ≤ 10 |
| 1634-04-4 | Methyl tert-butyl ether | X | X | HRL/Concentration Ratio ≤ 10 |
| 51218-45-2 | Metolachlor | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |
| 171118-09-5 | Metolachlor ethanesulfonic acid (ESA) | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |
| 152019-73-3 | Metolachlor oxanilic acid (OA) | | X | Acetanilide risk evaluation based on professional judgement; occurrence data for parent used for degradates |

| CASRN | Substance Name | CCL 4 Nomination | Carried Forward from CCL 3 | Listing Basis |
|-------------------------|--------------------------------------|------------------|----------------------------|--|
| 101043-37-2 | Microcystin-LR ¹ | X | X | HRL/Concentration Ratio ≤ 10 |
| 7439-98-7 | Molybdenum | | X | HRL/Concentration Ratio ≤ 10 |
| 98-95-3 | Nitrobenzene | | X | HRL/Concentration Ratio ≤ 10 |
| 55-63-0 | Nitroglycerin | | X | Model List decision (TRI) |
| 872-50-4 | N-Methyl-2-pyrrolidone | | X | Model List decision (TRI) |
| 55-18-5 | N-Nitrosodiethylamine (NDEA) | | X | HRL/Concentration Ratio ≤ 10 |
| 62-75-9 | N-Nitrosodimethylamine (NDMA) | | X | HRL/Concentration Ratio ≤ 10 |
| 621-64-7 | N-Nitroso-di-n-propylamine (NDPA) | | X | HRL/Concentration Ratio ≤ 10 |
| 86-30-6 | N-Nitrosodiphenylamine | | X | HRL/Concentration Ratio ≤ 10 |
| 930-55-2 | N-Nitrosopyrrolidine (NPYR) | | X | HRL/Concentration Ratio ≤ 10 |
| 25154-52-3 ² | Nonylphenol | X | | HRL/Concentration Ratio ≤ 10 |
| 68-22-4 | Norethindrone (19-Norethisterone) | | X | HRL/Concentration Ratio ≤ 10 |
| 103-65-1 | n-Propylbenzene | | X | HRL/Concentration Ratio ≤ 10 |
| 95-53-4 | o-Toluidine | | X | Model List decision (TRI) |
| 75-56-9 | Oxirane, methyl- | | X | Model List decision (TRI) |
| 301-12-2 | Oxydemeton-methyl | | X | HRL/Concentration Ratio ≤ 10 |
| 42874-03-3 | Oxyfluorfen | | X | HRL/Concentration Ratio ≤ 10 |
| 1763-23-1 | Perfluorooctane sulfonic acid (PFOS) | | X | HRL/Concentration Ratio ≤ 10 |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | X | X | HRL/Concentration Ratio ≤ 10 |
| 52645-53-1 | Permethrin | X | X | HRL/Concentration Ratio ≤ 10 |
| 41198-08-7 | Profenofos | | X | HRL/Concentration Ratio ≤ 10 |
| 91-22-5 | Quinoline | | X | Model List decision (TRI) |
| 121-82-4 | RDX | | X | HRL/Concentration Ratio ≤ 10 |
| 35523-89-8 | Saxitoxin ¹ | | X | HRL/Concentration Ratio ≤ 10 ; Public comment |
| 135-98-8 | sec-Butylbenzene | | X | HRL/Concentration Ratio ≤ 10 |

| CASRN | Substance Name | CCL 4 Nomination | Carried Forward from CCL 3 | Listing Basis |
|-------------|-------------------------------|------------------|----------------------------|-----------------------------------|
| 107534-96-3 | Tebuconazole | | X | HRL/Concentration Ratio ≤ 10 |
| 112410-23-8 | Tebufenozide | | X | HRL/Concentration Ratio ≤ 10 |
| 13494-80-9 | Tellurium | | X | HRL/Concentration Ratio ≤ 10 |
| 59669-26-0 | Thiodicarb | | X | HRL/Concentration Ratio ≤ 10 |
| 23564-05-8 | Thiophanate-methyl | | X | HRL/Concentration Ratio ≤ 10 |
| 26471-62-5 | Toluene diisocyanate | | X | Model List decision (TRI) |
| 78-48-8 | Tribufos | | X | HRL/Concentration Ratio ≤ 10 |
| 121-44-8 | Triethylamine | | X | Model List decision (TRI) |
| 76-87-9 | Triphenyltin hydroxide (TPTH) | | X | HRL/Concentration Ratio ≤ 10 |
| 51-79-6 | Urethane | | X | Model List decision (TRI) |
| 7440-62-2 | Vanadium | | X | HRL/Concentration Ratio ≤ 10 |
| 50471-44-8 | Vinclozolin | | X | HRL/Concentration Ratio ≤ 10 |
| 137-30-4 | Ziram | | X | HRL/Concentration Ratio ≤ 10 |

¹ Cyanotoxins are listed as a group on both CCL 3 and CCL 4.

²The organization that nominated "nonylphenol" for CCL 4 provided the CASRN of 25451-52-3. The name "nonylphenol" does not allow for a definitive identification of chemical structure since nonylphenol can exhibit two forms of isomerism. There are at least five CASRNs known to be associated with "nonylphenol:" in addition to 25154-52-3 (which represents n-nonylphenol with the ortho-, meta-, or para-substitution unspecified), other CASRNs include: 104-40-5 (4-n-nonylphenol); 84852-15-3 (4-nonylphenol, branched); 91672-41-2 (2-nonylphenol, branched); and 139-84-4 (3-n-nonylphenol). None of these five CASRNs are adequately general enough to represent both forms of isomerism. For the sake of consistency, the CASRN provided by the nominator was selected and the additional possible CASRNs and structures are delineated here.

Exhibit 2 summarizes the chemical contaminants that were listed on the Final CCL 4 based on their Three-Model List Decision (i.e., a list decision of “L”, “L?”, “L-L?”). Also included for each contaminant are the four attribute scores and the data that were used to score each attribute.

Exhibit 2: Contaminants Listed on CCL 4 Based on Three-Model List Decision

| CASRN | Substance Name | Potency Score | Severity Score | Prevalence Score | Magnitude Score | 3-Model List Decision | Scoring Data |
|----------|-------------------------|---------------|----------------|------------------|-----------------|-----------------------|---|
| 106-99-0 | 1,3-Butadiene | 7 | 8 | 10 | 9 | L | Potency: OEHHA SF of 3.4 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 34 states (TRI, 2004) Magnitude: 1,964,956 pounds released (TRI, 2004) |
| 71-36-3 | 1-Butanol | 4 | 5 | 10 | 10 | L?-L | Potency: IRIS RfD of 0.1 mg/kg-d Severity: Hypoactivity, ataxia (U.S. EPA, 1986) Prevalence: Released in 44 states (TRI, 2004) Magnitude: 17,648,846 pounds released (TRI, 2004) |
| 109-86-4 | 2-Methoxyethanol | 6 | 7 | 9 | 7 | L | Potency: RAISHE RfD of 0.003 mg/kg-d Severity: Reproductive effects Prevalence: Released in 16 states (TRI, 2004) Magnitude: 153,774 pounds released (TRI, 2004) |
| 107-18-6 | 2-Propen-1-ol | 5 | 6 | 8 | 8 | L?-L | Potency: IRIS RfD of 0.005 mg/kg-d Severity: Impaired renal function & increased relative liver, spleen & kidney weights (Carpanini et al., 1978) Prevalence: Released in 13 states (TRI, 2004) Magnitude: 604,872 pounds released (TRI, 2004) |
| 101-77-9 | 4,4'-Methylenedianiline | 7 | 8 | 7 | 7 | L | Potency: OEHHA SF of 1.6 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 10 states (TRI, 2004) Magnitude: 168,919 pounds released (TRI, 2004) |

| CASRN | Substance Name | Potency Score | Severity Score | Prevalence Score | Magnitude Score | 3-Model List Decision | Scoring Data |
|----------|----------------------|---------------|----------------|------------------|-----------------|-----------------------|--|
| 60-35-5 | Acetamide | 5 | 8 | 7 | 9 | L | Potency: OEHHA SF of 0.07 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 7 states (TRI, 2004) Magnitude: 1,202,667 pounds released (TRI, 2004) |
| 62-53-3 | Aniline | 5 | 6 | 9 | 8 | L?-L | Potency: RAISHE RfD of 0.007 mg/kg-d Severity: Blood-effects; Spleen-effects Prevalence: Released in 20 states (TRI, 2004) Magnitude: 937,263 pounds released (TRI, 2004) |
| 100-44-7 | Benzyl chloride | 6 | 8 | 7 | 5 | L?-L | Potency: IRIS 10 ⁻⁴ Lifetime Cancer Risk of 0.02 mg/L Severity: Carcinogenicity Prevalence: Released in 10 states (TRI, 2004) Magnitude: 18,750 pounds released (TRI, 2004) |
| 80-15-9 | Cumene hydroperoxide | 4 | 9 | 8 | 8 | L | Potency: RTECS LOAEL of 32.7 mg/kg-d Severity: Mortality (American Industrial Hygiene Association Journal) Prevalence: Released in 15 states (TRI, 2004) Magnitude: 443,722 pounds released (TRI, 2004) |
| 107-21-1 | Ethylene glycol | 3 | 9 | 10 | 10 | L | Potency: IRIS RfD of 2 mg/kg-d Severity: Kidney toxicity. Increased mortality, neutrophil count, kidney hemoglobin & hematocrit, chronic nephritis (DePass et al., 1986a) Prevalence: Released in 49 states (TRI, 2004) Magnitude: 10,076,483 pounds released (TRI, 2004) |
| 75-21-8 | Ethylene Oxide | 6 | 8 | 10 | 8 | L | Potency: OEHHA SF of 0.31 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 38 states (TRI, 2004) Magnitude: 374,110 pounds released (TRI, 2004) |

| CASRN | Substance Name | Potency Score | Severity Score | Prevalence Score | Magnitude Score | 3-Model List Decision | Scoring Data |
|----------|----------------|---------------|----------------|------------------|-----------------|-----------------------|--|
| 50-00-0 | Formaldehyde | 4 | 6 | 10 | 8 | L? | <p>Potency: IRIS RfD of 0.2 mg/kg-d</p> <p>Severity: Reduced weight gain, histopathology in rats. Decreased absolute heart, liver, testes & kidney weights. Increased relative brain, testes weights (Til et al., 1989).</p> <p>Prevalence: Detected in 55.5% of PWSs – Finished DW (DBP ICR).</p> <p>Magnitude: Median detect of 7.6 µg/L – Finished DW (DBP ICR).</p> |
| 75-45-6 | HCFC-22 | 5 | 5 | 10 | 10 | L?-L | <p>Potency: RTECS LOAEL of 13.5 mg/kg-d</p> <p>Severity: Brain and Coverings - other degenerative changes, Blood - changes in other cell count (unspecified), Nutritional and Gross Metabolic - weight loss or decreased weight gain (GISAAA Gigena i Sanitariya. For English translation, see HYSAAV).</p> <p>Prevalence: Released in 35 states (TRI, 2004)</p> <p>Magnitude: 7,075,769 pounds released (TRI, 2004)</p> |
| 110-54-3 | Hexane | 4 | 3 | 10 | 10 | L? | <p>Potency: EPA RfD of 0.06 mg/kg-d</p> <p>Severity: Decreased body weight gain (EPA - Health and Environmental Effects Document for n-Hexane).</p> <p>Prevalence: Released in 53 states (TRI, 2004)</p> <p>Magnitude: 39,844,882 pounds released (TRI, 2004)</p> |
| 302-01-2 | Hydrazine | 7 | 8 | 9 | 7 | L | <p>Potency: IRIS 10⁻⁴ Lifetime Cancer Risk of 0.001 mg/L</p> <p>Severity: Carcinogenicity</p> <p>Prevalence: Released in 16 states (TRI, 2004)</p> <p>Magnitude: 165,485 pounds released (TRI, 2004)</p> |
| 67-56-1 | Methanol | 3 | 7 | 10 | 10 | L?-L | <p>Potency: IRIS RfD of 2 mg/kg-d</p> <p>Severity: Extra cervical ribs</p> <p>Prevalence: Released in 52 states (TRI, 2004)</p> <p>Magnitude: 201,697,278 pounds released (TRI, 2004)</p> |

| CASRN | Substance Name | Potency Score | Severity Score | Prevalence Score | Magnitude Score | 3-Model List Decision | Scoring Data |
|------------|------------------------|---------------|----------------|------------------|-----------------|-----------------------|--|
| 55-63-0 | Nitroglycerin | 7 | 6 | 7 | 6 | L?-L | Potency: RTECS LOAEL of 0.125 mg/kg-d Severity: Cardiac - cardiomyopathy including infarction, Cardiac - EKG changes not diagnostic of specified effects, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects (FATOAO Farmakologiya i Toksikologiya (Moscow). For English translation, see PHTXA6 and RPTOAN). Prevalence: Released in 9 states (TRI, 2004) Magnitude: 55,979 pounds released (TRI, 2004) |
| 872-50-4 | N-Methyl-2-pyrrolidone | 3 | 5 | 10 | 10 | L? | Potency: IPCS TDI of 0.6 mg/kg-d Severity: Decreased weight gain, neurobehavioral effects, sedative effect Prevalence: Released in 42 states (TRI, 2004) Magnitude: 6,311,503 pounds released (TRI, 2004) |
| 95-53-4 | o-Toluidine | 6 | 8 | 7 | 5 | L?-L | Potency: OEHHA SF of 0.18 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 9 states (TRI, 2004) Magnitude: 10,774 pounds released (TRI, 2004) |
| 75-56-9 | Oxirane, methyl- | 6 | 8 | 10 | 8 | L | Potency: OPP SF of 0.15 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 28 states (TRI, 2004) Magnitude: 433,536 pounds released (TRI, 2004) |
| 91-22-5 | Quinoline | 7 | 8 | 7 | 5 | L?-L | Potency: IRIS 10^{-4} Lifetime Cancer Risk of 0.001 mg/L Severity: Carcinogenicity Prevalence: Released in 8 states (TRI, 2004) Magnitude: 28,629 pounds released (TRI, 2004) |
| 26471-62-5 | Toluene diisocyanate | 5 | 8 | 10 | 7 | L | Potency: OEHHA SF of 0.039 per mg/kg-d Severity: Carcinogenicity Prevalence: Released in 31 states (TRI, 2004) Magnitude: 129,143 pounds released (TRI, 2004) |
| 121-44-8 | Triethylamine | 6 | 5 | 10 | 9 | L | Potency: RTECS LOAEL of 1 mg/kg-d Severity: Brain and Coverings - other degenerative changes (WDZAEK Weisheng Dulixue Zazhi. |

| CASRN | Substance Name | Potency Score | Severity Score | Prevalence Score | Magnitude Score | 3-Model List Decision | Scoring Data |
|---------|----------------|---------------|----------------|------------------|-----------------|-----------------------|---|
| | | | | | | | Journal of Health Toxicology) Prevalence: Released in 35 states (TRI, 2004) Magnitude: 1,167,219 pounds released (TRI, 2004) |
| 51-79-6 | Urethane | 6 | 9 | 7 | 6 | L | Potency: Literature NOEL of 0.9 mg/kg-d Severity: Decreased survival (Food and Chemical Toxicology 43 (2005) 1-19). Prevalence: Released in 7 states (TRI, 2004) Magnitude: 96,050 pounds released (TRI, 2004) |

DBP ICR – Disinfection By-Product Information Collection Rule
 IPCS – International Programme on Chemical Safety (WHO)
 IRIS – Integrated Risk Information System (EPA)
 NOEL – No Observed Effect Level
 OEHHA – Office of Env. Health Hazard Assessment (California)
 OPP – Office of Pesticide Programs (EPA)

RAISHE – Risk Assessment Information System– U.S. Department of Energy (DOE)
 RfD – Reference Dose
 RTECS – Registry for Toxic Effects - Lowest Observed Adverse Effect Level (LOAEL)
 SF – Slope Factor
 TDI – Tolerable Daily Intake
 TRI – Toxics Release Inventory (EPA)

Exhibit 3 summarizes the chemical contaminants that were listed on the Final CCL 4 based on their HRL/concentration ratio. For those contaminants with both non-carcinogenic (NCAR) and carcinogenic (CAR) effects, HRL/concentration ratios were calculated for both NCAR and CAR effects, and the lower of the values was chosen for evaluation. Also included in this table for each contaminant are the HRL ratio, HRL, a designation as to whether the health effects basis for the HRL is based on NCAR effects or CAR, and the health effects and occurrence data that serve as the basis for the HRL and HRL/concentration ratio.

Exhibit 3: Contaminants Listed on CCL 4 Based on HRL/Concentration Ratio

| CASRN | Substance Name | HRL Ratio | HRL (µg/L) | NCAR or CAR | HRL Basis | Occurrence Data |
|-------------|-----------------------------|-----------|------------|-------------|--|---|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 0.323 | 1 | CAR | EPA HA Lifetime Cancer Risk (10^{-4}) of 0.1 mg/L | UCM R1 90 th percentile of 3.1 µg/L |
| 75-34-3 | 1,1-Dichloroethane | 1.1 | 6.14 | CAR | OEHHA SF of 0.0057 per mg/kg-d | UCM R1 90 th percentile of 5.6 µg/L |
| 96-18-4 | 1,2,3-Trichloropropane | 0.00025 | 0.005 | CAR | RAISHE SF of 7 per mg/kg-d | UCM R2 90 th percentile of 20 µg/L |
| 123-91-1 | 1,4-Dioxane | 0.395 | 3 | CAR | EPA HA Lifetime Cancer Risk (10^{-4}) of 0.3 mg/L | CAL DHS 90 th percentile of 7.6 µg/L |
| 57-91-0 | 17 alpha-Estradiol | 4.7 | 0.35 | NCAR | JECFA ADI of 0.00005 mg/kg-d | Kolpin MAX of 0.074 µg/L |
| 16655-82-6 | 3-Hydroxycarbofuran | 0.191 | 0.42 | NCAR | EPA OPP RfD of 0.00006 mg/kg-d | UCM R2 90 th percentile of 2.2 µg/L |
| 30560-19-1 | Acephate | 1.17 | 8.4 | NCAR | EPA OPP RfD of 0.0012 mg/kg-d | OPP SWC EEC of 7.2 µg/L |
| 75-07-0 | Acetaldehyde | 3.15 | 23.3 | NCAR | RTECS LOAEL of 10 mg/kg-d | DBP ICR Median of 7.4 µg/L |
| 107-02-8 | Acrolein | 1.03 | 3.5 | NCAR | EPA IRIS RfD of 0.0005 mg/kg-d | NAWQA 90 th percentile of 3.4 µg/L |
| 171262-17-2 | Alachlor oxanilic acid (OA) | 1.56 | 0.4 | CAR | EPA HA Lifetime Cancer Risk (10^{-4}) of 0.1 mg/L | NAWQA 90 th percentile of 0.256 µg/L |
| 319-84-6 | alpha-Hexachlorocyclohexane | 0.102 | 0.006 | CAR | EPA HA Lifetime Cancer Risk (10^{-4}) of 0.0006 mg/L | NAWQA 90 th percentile of 0.059 µg/L |
| 64285-06-9 | Anatoxin-a ¹ | ~0.35 | 3.5 | NCAR | EPA RfD of 0.0005 mg/kg-d | Cyano HABs MAX of ~10 µg/L |
| 741-58-2 | Bensulide | 0.224 | 35 | NCAR | EPA OPP RfD of 0.005 mg/kg-d | OPP SWC EEC of 158 |

| CASRN | Substance Name | HRL Ratio | HRL (µg/L) | NCAR or CAR | HRL Basis | Occurrence Data |
|-------------|--|-----------|------------|-------------|---------------------------------------|---|
| | | | | | | µg/L |
| 25013-16-5 | Butylated hydroxyanisole | 0.484 | 0.581 | NCAR | RTECS LOAEL of 0.249 mg/kg-d | NREC NA GW Median of 1.2 µg/L |
| 133-06-2 | Captan | 1.35 | 14.6 | CAR | EPA OPP SF of 0.0024 per mg/kg-d | OPP SWC EEC of 10.8 µg/L |
| 14866-68-3 | Chlorate | 0.656 | 210 | NCAR | EPA OPP RfD of 0.03 mg/kg-d | DBP ICR 90 th percentile of 320 µg/L |
| 74-87-3 | Chloromethane (Methyl chloride) | 0.207 | 2.69 | CAR | RAISHE SF of 0.013 per mg/kg-d | UCM R1 90 th percentile of 13 µg/L |
| 110429-62-4 | Clethodim | 9.21 | 70 | NCAR | EPA OPP RfD of 0.01 mg/kg-d | OPP SWC EEC of 7.6 µg/L |
| 7440-48-4 | Cobalt | 6.67 | 70 | NCAR | ATSDR MRL of 0.01 mg/kg-d | NIRS 90 th percentile of 10.5 µg/L |
| 143545-90-8 | Cylindrospermopsin ¹ | ~0.0021 | 0.21 | NCAR | EPA RfD of 0.00003 mg/kg-d | Cyano HABs MAX of ~100 µg/L |
| 141-66-2 | Dicrotophos | 2.45 | 0.49 | NCAR | EPA OPP RfD of 0.00007 mg/kg-d | OPP SWC EEC of 0.2 µg/L |
| 55290-64-7 | Dimethipin | 1.55 | 153 | NCAR | EPA OPP RfD of 0.0218 mg/kg-d | OPP GWC ECC of 99 µg/L |
| 330-54-1 | Diuron | 10 | 21 | NCAR | EPA OPP RfD of 0.003 mg/kg-d | UCMR 1 90 th percentile of 2.1 µg/L |
| 517-09-9 | Equilenin | 1.26 | 0.35 | NCAR | JECFA ADI of 0.00005 mg/kg-d (for E2) | Kolpin MAX of 0.278 µg/L |
| 474-86-2 | Equilin | 2.38 | 0.35 | NCAR | JECFA ADI of 0.00005 mg/kg-d (for E2) | Kolpin MAX of 0.147 µg/L |
| 114-07-8 | Erythromycin | 2.88 | 4.9 | NCAR | JECFA ADI of 0.0007 mg/kg-d | NREC SW MAX of 1.7 µg/L |
| 50-28-2 | Estradiol (17-beta estradiol; E2) | 0.0045 | 0.0009 | CAR | OEHHA SF of 39 per mg/kg-d | Kolpin MAX of 0.2 µg/L |
| 50-27-1 | Estriol | 6.86 | 0.35 | NCAR | JECFA ADI of 0.00005 mg/kg-d (for E2) | Kolpin MAX of 0.051 µg/L |
| 53-16-7 | Estrone | 2.92 | 0.35 | NCAR | JECFA ADI of 0.00005 mg/kg-d (for E2) | Swartz MAX of 0.12 µg/L |
| 57-63-6 | Ethinyl Estradiol (17-alpha ethynyl estradiol) | 0.128 | 0.035 | NCAR | Supplemental LOAEL of 0.015 mg/kg-d | Kolpin MAX of 0.273 µg/L |

| CASRN | Substance Name | HRL Ratio | HRL (µg/L) | NCAR or CAR | HRL Basis | Occurrence Data |
|-------------|-----------------------------------|-----------|------------|-------------|---|---|
| 13194-48-4 | Ethoprop | 7.29 | 0.7 | NCAR | EPA OPP RfD of 0.0001 mg/kg-d | NAWQA 90 th percentile of 0.096 µg/L |
| 96-45-7 | Ethylene thiourea | 6.67 | 1.4 | NCAR | EPA OPP RfD of 0.0002 mg/kg-d | OPP GWC ECC of 0.21 µg/L |
| 7440-56-4 | Germanium | 0.003 | 0.744 | NCAR | RTECS LOAEL of 0.318 mg/kg-d | NIRS 90 th percentile of 220 µg/L |
| 74-97-5 | Halon 1011 (bromochloromethane) | 7 | 70 | NCAR | EPA HA RfD of 0.01 mg/kg-d | UCM R1 90 th percentile of 10 µg/L |
| 7439-96-5 | Manganese | 2.4 | 300 | NCAR | EPA IRIS RfD of 0.047 mg/kg-d | NIRS 90 th percentile of 126 µg/L |
| 72-33-3 | Mestranol | 0.086 | 0.035 | NCAR | Supplemental LOAEL of 0.015 mg/kg-d (for ethinyl estradiol) | Kolpin MAX of 0.407 µg/L |
| 10265-92-6 | Methamidophos | 0.304 | 2.1 | NCAR | EPA OPP RfD of 0.0003 mg/kg-d | OPP SWC EEC of 6.9 µg/L |
| 74-83-9 | Methyl bromide (Bromomethane) | 0.891 | 9.8 | NCAR | EPA IRIS RfD of 0.0014 mg/kg-d | UCM R1 90 th percentile of 11 µg/L |
| 1634-04-4 | Methyl tert-butyl ether | 0.561 | 19.4 | CAR | OEHHA SF of 0.0018 per mg/kg-d | UCMR 1 90 th percentile of 34.6 µg/L |
| 101043-37-2 | Microcystin-LR ¹ | 0.21 | 0.021 | NCAR | Supplemental RfD-like value of 0.000003 | AAWARF Typical Range Max of 0.1 µg/L |
| 7439-98-7 | Molybdenum | 1.17 | 35 | NCAR | EPA IRIS RfD of 0.005 mg/kg-d | NIRS 90 th percentile of 30 µg/L |
| 98-95-3 | Nitrobenzene | 0.14 | 14 | NCAR | EPA IRIS RfD of 0.002 mg/kg-d | UCMR 1 AM 90 th percentile of 100 µg/L |
| 55-18-5 | N-Nitrosodiethylamine (NDEA) | 0.0065 | 0.0002 | CAR | EPA IRIS Lifetime Cancer Risk (10 ⁻⁴) of 0.00002 mg/L | UCMR 2 90 th percentile of 0.031 µg/L |
| 62-75-9 | N-Nitrosodimethylamine (NDMA) | 0.043 | 0.00069 | CAR | EPA IRIS Lifetime Cancer Risk (10 ⁻⁴) of 0.00007 mg/L | UCMR 2 90 th percentile of 0.016 µg/L |
| 621-64-7 | N-Nitroso-di-n-propylamine (NDPA) | 0.00049 | 0.005 | CAR | EPA IRIS Lifetime Cancer Risk (10 ⁻⁴) of 0.0005 mg/L | STORET 90 th percentile of 10.24 µg/L |
| 86-30-6 | N-Nitrosodiphenylamine | 1.84 | 140 | NCAR | RAISHE RfD of 0.02 mg/kg-d | CAL DHS 90 th percentile of 76.2 µg/L |
| 930-55-2 | N-Nitrosopyrrolidine (NPYR) | 2.5 | 0.02 | CAR | EPA IRIS Lifetime Cancer Risk (10 ⁻⁴) of 0.002 mg/L | UCMR 2 90 th percentile of 0.008 µg/L |

| CASRN | Substance Name | HRL Ratio | HRL (µg/L) | NCAR or CAR | HRL Basis | Occurrence Data |
|-------------------------|--------------------------------------|-----------|------------|-------------|--|---|
| 25154-52-3 ² | Nonylphenol | 2.6 | 105 | NCAR | Supplemental NOAEL of 15 mg/kg-d | Kolpin MAX of 40 µg/L |
| 68-22-4 | Norethindrone (19-Norethisterone) | 0.0459 | 0.04 | NCAR | DSSTox MRDD of 0.0167 mg/kg-d | Kolpin MAX of 0.872 µg/L |
| 103-65-1 | n-Propylbenzene | 1.21 | 5.83 | NCAR | RTECS LOAEL of 2.5 mg/kg-d | UCM R1 90 th percentile of 4.8 µg/L |
| 301-12-2 | Oxydemeton-methyl | 1.01 | 0.91 | NCAR | EPA OPP RfD of 0.00013 mg/kg-d | OPP SWC EEC of 0.9 µg/L |
| 42874-03-3 | Oxyfluorfen | 3.0 | 21 | NCAR | EPA IRIS RfD of 0.003 mg/kg-d | OPP SWC EEC of 7.1 µg/L |
| 1763-23-1 | Perfluorooctane sulfonic acid (PFOS) | 0.143 | 0.2 | NCAR | Supplemental NOEL of 0.03 mg/kg-d | MN Municipal Wells MAX of 1.4 µg/L |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1.22 | 1.1 | NCAR | Supplemental LOAEL of 0.46 mg/kg-d | MN Municipal Wells MAX of 0.9 µg/L |
| 52645-53-1 | Permethrin | 4.05 | 3.65 | CAR | EPA OPP SF of 0.0096 per mg/kg-d | OPP SWC EEC of 0.9 µg/L |
| 41198-08-7 | Profenofos | 3.5 | 0.35 | NCAR | EPA OPP RfD of 0.00005 mg/kg-d | OPP SWC EEC of 0.1 µg/L |
| 121-82-4 | RDX | 0.0013 | 0.3 | CAR | EPA HA Lifetime Cancer Risk (10 ⁻⁴) of 0.03 mg/L | STORET 90 th percentile of 229 µg/L |
| 35523-89-8 | Saxitoxin ¹ | 0.069 | 0.0035 | NCAR | Supplemental NOEL of 0.0005 mg/kg-d | OH Finished Water 90 th percentile of 0.051 µg/L |
| 135-98-8 | sec-Butylbenzene | 1.03 | 10.3 | NCAR | RTECS LOAEL of 4.42 mg/kg-d | UCM R1 90 th percentile of 10 µg/L |
| 107534-96-3 | Tebuconazole | 9.09 | 210 | NCAR | EPA OPP RfD of 0.029 mg/kg-d | OPP GWC EEC of 23.1 µg/L |
| 112410-23-8 | Tebufenozide | 8.4 | 126 | NCAR | EPA OPP RfD of 0.018 mg/kg-d | OPP SWC EEC of 15 µg/L |
| 13494-80-9 | Tellurium | 0.673 | 175 | NCAR | Supplemental NOEL of 25 mg/kg-d | NIRS 90 th percentile of 260 µg/L |
| 59669-26-0 | Thiodicarb | 0.07 | 1.86 | CAR | EPA OPP SF of 0.0188 per mg/kg-d | OPP SWC EEC of 26 µg/L |
| 23564-05-8 | Thiophanate-methyl | 0.248 | 3.02 | CAR | EPA OPP SF of 0.0116 per mg/kg-d | OPP SWC EEC of 12.2 µg/L |
| 78-48-8 | Tribufos | 3.89 | 7 | NCAR | EPA OPP RfD of 0.001 mg/kg-d | OPP SWC EEC of 1.8 |

| CASRN | Substance Name | HRL Ratio | HRL (µg/L) | NCAR or CAR | HRL Basis | Occurrence Data |
|------------|-------------------------------|-----------|------------|-------------|----------------------------------|---|
| | | | | | | µg/L |
| 76-87-9 | Triphenyltin hydroxide (TPTH) | 0.0003 | 0.0019 | CAR | EPA OPP SF of 18.3 per mg/kg-d | OPP SWC EEC of 6.4 µg/L |
| 7440-62-2 | Vanadium | 0.913 | 21 | NCAR | ATSDR MRL of 0.003 mg/kg-d | NIRS 90 th percentile of 23 µg/L |
| 50471-44-8 | Vinclozolin | 0.058 | 0.549 | CAR | EPA OPP SF of 0.0638 per mg/kg-d | OPP SWC EEC of 9.4 µg/L |
| 137-30-4 | Ziram | 0.288 | 0.57 | CAR | EPA OPP SF of 0.0611 per mg/kg-d | OPP SWC EEC of 1.98 µg/L |

¹ Cyanotoxins are listed as a group on both CCL 3 and CCL 4.

²The organization that nominated "nonylphenol" for CCL 4 provided the CASRN of 25451-52-3. The name "nonylphenol" does not allow for a definitive identification of chemical structure since nonylphenol can exhibit two forms of isomerism. There are at least five CASRNs known to be associated with "nonylphenol:" in addition to 25154-52-3 (which represents n-nonylphenol with the ortho-, meta-, or para-substitution unspecified), other CASRNs include: 104-40-5 (4-n-nonylphenol); 84852-15-3 (4-nonylphenol, branched); 91672-41-2 (2-nonylphenol, branched); and 139-84-4 (3-n-nonylphenol). None of these five CASRNs are adequately general enough to represent both forms of isomerism. For the sake of consistency, the CASRN provided by the nominator was selected and the additional possible CASRNs and structures are delineated here.

ADI – Acceptable Daily Intake

ATSDR – Agency for Toxic Substances and Disease Registry

AWWARF – America Water Works Association Research Foundation

CAL DHS – California Department of Health Services

DSSTox – Distributed Structure-Searchable Toxicity Database (EPA)

E2 – 17-beta Estradiol

GW – Ground Water

GWC EEC – Ground Water Chronic Estimate Environmental

HA – Health Advisory

HABs – Harmful Algal Blooms

JECFA – Joint Expert Committee on Food Additives (FAO/WHO)

MRL – Minimal Risk Level

NAWQA – National Ambient Water Quality Assessment (USGS)

NIRS – National Inorganics and Radionuclides Survey

NREC NA – National Reconnaissance of Environmental Contaminants National Aggregate

RTECS - Registry of Toxic Effects of Chemical Substances

STORET - STorage and RETrieval (EPA)

SW – Surface Water

SWC EEC – Surface Water Chronic Estimate Environmental Concentration

UCM R1 – Unregulated Contaminant Monitoring, Round 1 (EPA)

UCM R2 – Unregulated Contaminant Monitoring, Round 2 (EPA)

UCMR – Unregulated Contaminant Monitoring Rule (EPA)

HRLs based on non-cancer effects may be determined using the following equations:

| <u>Data Element</u> | <u>Equation</u> |
|---------------------|---|
| RfD | $\text{HRL, mg/L} = \frac{\text{RfD (mg/kg-day)} \times \text{BW (70 kg)} \times \text{RSC (0.2)}}{2 \text{ L/day}}$ |
| NOAEL | $\text{HRL, mg/L} = \frac{\text{NOAEL (mg/kg-day)} \times \text{BW (70 kg)} \times \text{RSC (0.2)}}{2 \text{ L/day} \times \text{UF (1,000)}}$ |
| LOAEL | $\text{HRL, mg/L} = \frac{\text{LOAEL (mg/kg-day)} \times \text{BW (70 kg)} \times \text{RSC (0.2)}}{2 \text{ L/day} \times \text{UF (3,000)}}$ |

HRLs based on carcinogenic effects may be determined using the following equations:

| <u>Data Element</u> | <u>Equation</u> |
|------------------------------|---|
| Slope Factor | $\text{HRL, mg/L} = \frac{\text{Risk (10}^{-6}\text{)} \times \text{BW (70 kg)}}{\text{Slope Factor} \times 2 \text{ L/day}}$ |
| 10 ⁻⁴ Cancer Risk | $\text{HRL, mg/L} = 10^{-4} \text{ Cancer Risk (mg/L)} \times 0.01$ |

All HRLs were then converted from units of mg/L to units of µg/L via the following conversion:

$$(\text{mg/L}) \times (1,000 \text{ } \mu\text{g/mg}) = \mu\text{g/L.}$$

4.0 Summary of the Microbes Classification Process from the PCCL to CCL and CISs Explanation

This section briefly describes the process developed under CCL 3 to select microbial contaminants from the PCCL for the CCL 3 and explains the elements included in the microbial CISs. The same process developed for CCL 3 was used to evaluate the nominated contaminants for the Draft CCL 4, and to evaluate the data and information provided in public comments in determining the Final CCL 4. EPA did not make modifications to the microbial scoring and classification process between the CCL 3 and the CCL 4. A detailed description of the process developed to select microbial contaminants for the CCL 3 is provided in “Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process” (USEPA, 2009g).

Microbes are evaluated for their occurrence in water and their ability to cause adverse health effects in humans. Pathogens on the PCCL were scored for placement on the CCL using a scoring system to assign a numerical value to each pathogen and rank the pathogens based upon their occurrence, health effects and waterborne disease outbreaks (WBDO). Those microbes receiving high scores were considered for placement on the CCL.

Each microbe was scored using three scoring protocols, one protocol each for WBDO, occurrence in water and health effects. The highest of the individual WBDO score or occurrence score is added to the normalized health effects score to produce a composite pathogen score. Although the composite score is not shown on the CISs, the scoring summary table at the top left corner of each CIS shows the values used to calculate the composite score. The formula for calculating the final score is: highest score between the WBDO and occurrence score + [(general population health effects score + highest sensitive population health effects score) x 5/14]. EPA normalized the health effects score so that occurrence (or WBDO) and health effects have equal value in determining the ranking of the CCL. The highest possible score for WBDO or occurrence is 5 and the highest possible health effect score is 14. To equalize this imbalance, the agency multiplies the health effects score by 5/14. An example of this calculation is shown in Appendix 4.

EPA developed three scoring protocols for CCL 3 to define a hierarchy of the relevance that each of these types of data (e.g., occurrence in water, WBDO and health effects) provide in evaluating microbes for the CCL. WBDOs are scored on a five-level hierarchy ranging from never caused a WBDO (score of 1) to two or more documented WBDOs in the U.S. (score of 5). Occurrence is scored on a three-level hierarchy ranging from not detected in the U.S. (score of 1) to detected in drinking water in the U.S. (score of 3). Combining WBDO information and occurrence information allowed EPA to consider: 1) pathogens that are tracked by public health surveillance programs (i.e., Centers for Disease Control (CDC)'s Morbidity and Mortality Weekly Report); and, 2) pathogens that are not yet tracked by public health surveillance programs but for which occurrence information is available (e.g., emerging pathogens).

The health effects scoring protocol evaluates the extent of illness produced in humans from drinking water. These scores reflect the most common clinical presentation and are based on data from recent clinical microbiology manuals. The severity of disease manifestations produced by a pathogen is evaluated across a range of potential endpoints. The seven-level hierarchy developed for this protocol begins with mild, self-limiting illness (score of 1) and progresses to death (score of 7). To obtain a representative characterization of health effects in all populations, EPA evaluated separately the general population and four sensitive populations (children, elderly, pregnant woman and persons with chronic diseases) as to the common clinical presentation of illness for that population. EPA added the general population score to the highest score among the four sensitive populations for an overall health effects score. The resulting score acknowledges that sensitive populations have increased risk for waterborne diseases. For more information on the microbes scoring process, please see "Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process" (USEPA, 2009g), and Appendix 4 of this document.

The scoring tables developed for CCL 3 were updated for each CCL 4 contaminant. Since no new relevant data/information was found by EPA that would change the CCL 3 scores, nor provided by the nominators or public comments, the data supporting the respective scores for the Final CCL 4 remain the same. The references in the scoring tables were updated to reflect references that became available after EPA published the final CCL 3. The table presents the final scores for each of the data types under consideration and a brief description of the data used to assign those scores with their respective references. For the microbial CISs, please see Appendix B.

Elements of each scoring table include:

Scoring Summary – shows the scores used to calculate the final composite score for each microbial contaminant which include: highest score between the WBDO and occurrence, health effects score for the general population and highest health effects score of the sensitive populations.

Data Table – shows the categories for each potential score, the scoring data, if applicable, and reference(s) used to support a particular score. The highest ranking score for each of the three scoring categories is bolded. The WBDOs scoring results is presented first, followed by the occurrence results and the health effects.

References – presents the full references for the data presented in the table.

5.0 References

- USEPA. 2008. Drinking Water Contaminant Candidate List 3—Draft. Federal Register. Vol. 73, No. 35, p. 9628, February 21, 2008.
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- USEPA. 2009b. Final Contaminant Candidate List 3 Chemicals: Identifying the Universe. EPA 815-R-09-006. August 2009.
- USEPA. 2009c. Final Contaminant Candidate List 3 Chemicals: Screening to a PCCL. EPA 815-R-09-007. August 2009.
- USEPA. 2009d. Final Contaminant Candidate List 3 Chemicals: Classification of PCCL to the CCL. EPA 815-R-09-008. August 2009.
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- USEPA. 2009h. Contaminant Information Sheets for the PCCL Chemicals Considered for CCL 3. EPA 815-R-09-014. August 2009.

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USEPA. 2016c. Data Sources for the Fourth Contaminant Candidate List (CCL 4). EPA 815-R-16-007. November, 2016.

USEPA. 2016d. Screening Document for the Fourth Preliminary Contaminant Candidate List 4 (PCCL 4). EPA 815-R-16-008. November, 2016.

USEPA. 2016e. Comment Response Document for the Fourth Drinking Water Contaminant Candidate List (Categorized Public Comments). EPA 815-R-16-004. November, 2016.

Appendix 1: Chemical Contaminant Information Sheets

The following 204 pages contain tables with health effects and occurrence information for the 100 chemical contaminants on the Final CCL 4 (although cyanotoxins are listed as a group on the CCL 4, anatoxin-a, cylindrospermopsin, microcystin-LR, and saxitoxin each have their own CIS).

The following CISs contain data compiled for CCL 3, as well as data submitted by the public during the CCL 4 nomination and public comment periods. Any data submitted via these processes were reviewed in terms of Relevance, Quality, Redundancy and Retrievability. Data that met these criteria were added to the CISs for CCL 4, as described in the document: “Data Sources for the Fourth Contaminant Candidate List (CCL 4)” (USEPA, 2016c). Due to the technical limitations of this Appendix, for further assistance with reasonable accommodation please contact Meredith Russell at russell.meredith@epa.gov or 202-564-0814.

ID: Contaminant name, Substance Key (a unique numerical identifier), and Chemical Abstracts Service Registry Number (CASRN).

| | |
|-------------------------|-------------|
| Contaminant: | Nonylphenol |
| Substance Key: | 28410 |
| Contaminant ID (CASRN): | 25154523 |

Nonylphenol
CCL 4 Contaminant Information Sheet

| | |
|-------------------------|-------------|
| Contaminant: | Nonylphenol |
| Substance Key: | 28410 |
| Contaminant ID (CASRN): | 25154523 |

| Source | Use |
|--------|--|
| HSDB | In the preparation of lubricating oil additives, resins, plasticizers, surface active agents; antioxidants for plastics and rubber |

HEALTH EFFECTS DATA

| Non-Cancer Data | | Source | Value | Units |
|--|--|--------------|-------|---------|
| Reference Dose (RfD) | | EPA OPP | | mg/kg-d |
| Reference Dose (RfD) | | IRIS | | mg/kg-d |
| Reference Dose (RfD) | | EPA HA | | mg/kg-d |
| Reference Dose (RfD) | | RAIS HE | | mg/kg-d |
| Minimal Risk Level | | ATSDR | | mg/kg-d |
| Acceptable Daily Intake (ADI) | | JMPR | | mg/kg-d |
| Acceptable Daily Intake (ADI) | | CEDI ADI | | mg/kg-d |
| Tolerable Daily Intake (TDI) | | ITER | | mg/kg-d |
| No Observed Effect Level (NOEL) | | CTD JPN | 60 | mg/kg-d |
| No Observed Adverse Effect Level (NOAEL) | | Supplemental | 15 | mg/kg-d |
| Lowest Observed Adverse Effect Level (LOAEL) | | RTECS | 2 | mg/kg-d |
| Lethal Dose 50 (LD50) | | HSDB | | mg/kg |
| Lethal Dose 50 (LD50) | | CTD JPN | | mg/kg |
| Lethal Dose 50 (LD50) | | RTECS | 580 | mg/kg |
| Cancer Data | | Source | Value | Units |
| Lifetime Cancer Risk (10 ⁻⁴) | | EPA | | mg/L |

Available **health effects data** are grouped by non-cancer and cancer effects. The data elements are generally presented in order according to the data hierarchy developed for scoring the potency attribute (with the highest ranking data elements used for scoring generally being presented closer to the top of the page and the lower ranking elements closer to the bottom of the page).

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units |
|----------------------|---------|-------|---------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d |
| Reference Dose (RfD) | IRIS | | mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d |

Attribute Scores allow EPA to rank relative health effects and occurrence likelihood.

- **Potency** indicates the power of a contaminant to cause an adverse health effect or to generate a particular excess cancer risk. Scale: 1-10.
- **Severity** refers to the relative adverse health effect calibrated based on the health-related significance of the adverse effect (e.g. dermatitis versus cancer). Scale: 1-9.
- **Prevalence** provides a measure of how widespread the occurrence of the contaminant is in the environment. Prevalence uses the same data source as Magnitude. Scale: 1-10.
- **Magnitude** is related to the quantity (e.g., concentration) of a contaminant that may be in the environment. Scale: 1-10.

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 10 | 6 |

EPA NDW

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 10 | 6 |

3-Model Categorical Prediction

| |
|--------|
| L? - L |
|--------|

3-Model Categorical Prediction: The net outcome of "list or not list" decisions from each of the three predictive models developed and selected based on expert input. The four primary categories, which are assigned when all three models produce the same prediction, are List(L), List? (L?), Not List? (NL?) and Not List (NL). A range is listed when the models produce slightly different predictions: (L-L?), (NL?-L?), or (NL-NL?).

3-Model Categorical Prediction

| |
|--------|
| L? - L |
|--------|

Health Reference Levels (HRLs) are expressed as a concentration of a contaminant in drinking water. For carcinogens, the HRL is the one-in-a-million cancer risk expressed as a drinking water concentration. For non-carcinogens, the HRL is the estimated concentration in drinking water below which non-carcinogenic effects would not be expected to occur over a lifetime of exposure.

| |
|--|
| Health Reference Level (HRL): 105 ug/L |
| Health Reference Level (HRL) cancer: N/A |

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| |
|--|
| Health Reference Level (HRL): 105 ug/L |
| Health Reference Level (HRL) cancer: N/A |
| HRL/Concentration Ratio(s) |
| NC HRL/Kolpin Max: 2.6 |
| Status |
| CCL 3: No CCL 4 Universe: Yes PCCL 4: Yes Draft CCL 4: Yes |

The HRL/Concentration ratio is the HRL (either for non-carcinogen or carcinogenic effects) divided by the water concentration. The 90th percentile concentration was used if available, or the next highest percentile value, or the maximum concentration of detections. If either ratio was less than 10, the contaminant was typically selected for inclusion on the CCL.

HRL/Concentration Ratio(s)

| |
|------------------------|
| NC HRL/Kolpin Max: 2.6 |
|------------------------|

| Source | Value | Units | Date | Notes |
|--|--------------|-------|---------|--|
| No Observed Adverse Effect Level (NOAEL) | Supplemental | 15 | mg/kg-d | 2004 Reproductive effects World Health Organization (WHO). Nomination data. |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 2 | mg/kg-d | 2001 Endocrine - androgenic, Reproductive - Paternal Effects - testes, epididymis, sperm duct REPTED Reproductive Toxicology. (Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523) V.1- 1987- Volume(issue)/page/year 15,293,2001. Nomination data. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | |
| Lethal Dose 50 (LD50) | RTECS | 580 | mg/kg | Details of toxic effects not reported other than lethal dose value NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year OTS0573098. Nomination data. |

Other Supporting Data

| Source | Value | Units | Notes |
|--|--------|-------|-------|
| Is contaminant on list of carcinogens? | | | |
| Is the contaminant on a list of reproductive toxins? | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | mg/L | |

Other Supporting Data: This section presents other supporting qualitative and quantitative data including whether the contaminant can be found on various lists of carcinogens or reproductive toxins. The Drinking Water Equivalent Level (DWEL) is also presented if derived by EPA. EPA Health Advisories (HAs), World Health Organization (WHO) Guideline Values, and Health Canada Guideline Values are presented where available.

Other Supporting Data

| |
|--|
| Is contaminant on list of carcinogens? |
| Is the contaminant on a list of reproductive toxins? |
| Drinking Water Equivalent Level (DWEL) |

indicate there were no data available. to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult. tive cancer risk data were used.

Shading indicates the data that were used to score the attributes Potency and Severity.

Available **occurrence data** presented in order of the hierarchy established for scoring Prevalence and Magnitude (i.e., finished public water system data are at the top of the page, followed by ambient water data, supplemental water data (often studies from individual States or the primary literature), and application/release data, production data, and other supporting occurrence data and environmental fate parameters (at the bottom right side of the page).

PWSs/Sites/Samples Indicates whether data entries represent the number of public water systems (PWS), number of sites sampled, or number of samples.

| OCCURRENCE DATA | | | | | | | | | | | | |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program | | | Sites | | | | | | | ug/L | 1992-2001 | |
| | | | | | | | | | | ug/L | 1999-2004 | |

Application/Release Data: Pesticide application and toxic release data are used to estimate potential occurrence in water in the absence of water data. These include application rate data for pesticides in lbs/year, environmental release data to surface water and total environmental releases in lbs/year.

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

Other Supporting Data: EPA calculates Estimated Environmental Concentrations (EECs) for pesticides using models that account for registered uses and application rates, how rapidly the pesticide degrades in the environment, and how the pesticide partitions among soil, water, sediment, and air.

| Other Supporting Data |
|---|
| Estimated Environmental Concentration (EEC) |

Shading indicates the data that were used to score the attributes Prevalence and Magnitude.

| | | | | | | | | | | | | |
|-----------|------------|------|--|--|--|--|--|--|--|------|-----------|---|
| 53.4+-5.8 | 185.6+-20 | 83.2 | | | | | | | | ng/L | | Padhye et al. Year-long e of pharmaceuticals, persc disrupting chemicals in ar Water Research. In Pres |
| 12.4+-5.3 | 60.6+-19.2 | 19.5 | | | | | | | | ng/L | | Padhye et al. Year-long e of pharmaceuticals, persc disrupting chemicals in ar Water Research. In Pres |
| | 100 | | | | | | | | | | 2006-2007 | Benotti et al., 2009. Phar Compounds in U.S. Drink Comment. |
| <RL | 72.9 | | | | | | | | | | 2009-2010 | Klosterhaus et al., 2013. of pharmaceuticals, persc surface waters, sediments, and mosses in an urban estuary. Environment International 54 (2013) 92–99. Public Comment. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | < 500K | lbs/yr | 2006 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | | days | |
| Degradation Code | BST | | BST = biodegrades sometimes/recalcitrant; aerobic only |
| Organic Carbon Partitioning Coefficient (Koc) | 31,000 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 5.71 | dimensionless | At 20 degrees Celsius |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.1E-06 | atm-m ³ /mol | |
| Solubility in Water | 6.35 | mg/L | At 25 degrees Celsius |
| Modeled Percent in Water | 18 | % | |

Production: Chemical production data are used to estimate potential occurrence in water in the absence of water data.

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | < 500K | lbs/yr | 2006 |

Available **environmental fate parameters** may include persistence metrics such as half-life and a degradation code based on structural modeling or the half-life. The remaining parameters relate to the mobility of a contaminant in the environment; specifically, it's tendency to partition to water. Environmental fate parameters are used to score Magnitude for contaminants where only production data are available.

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | | days | |
| Degradation Code | BST | | BST = biodegrades sometimes/recalcitrant; aerobic only |
| Organic Carbon Partitioning Coefficient (Koc) | 31,000 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 5.71 | dimensionless | At 20 degrees Celsius |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.1E-06 | atm-m ³ /mol | |
| Solubility in Water | 6.35 | mg/L | At 25 degrees Celsius |
| Modeled Percent in Water | 18 | % | |

Chemical Contaminants Nominated for CCL 4

The following 16 pages contain tables with health effects and occurrence information for the seven chemical contaminants nominated by the public that were included on CCL 4 and saxitoxin, which is included as part of the cyanotoxins group and for which information to develop a CIS was provided by commenters. Data that was provided by the public during the nomination process, collected by EPA during the development of the Draft CCL 4, and new data submitted during the public comment period (if the data met the criteria for CCL evaluation), was included on the CISs.

| | |
|--------------------------------|-----------------------------|
| Contaminant: | alpha-Hexachlorocyclohexane |
| Substance Key: | 6535 |
| Contaminant ID (CASRN): | 319846 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 4 | 3 |

| |
|---|
| Health Reference Level (HRL): 56 ug/L |
| Health Reference Level (HRL) cancer: 0.006 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/NAWQA 90%: 949 CAR HRL/NAWQA 90%: 0.102 |

| Source | Use |
|--------|--|
| HSDB | Component of benzene hexachloride (BHC) former insecticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|--------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.008 | mg/kg-d | 9/2003 | Hepatic | Basis NOAEL 0.8 mg/kg-d; UF = 100. |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1.2 | mg/kg-d | 1991 | Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.), Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - catalases, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other oxidoreductases | 30-day study in rat; TOLED5 Toxicology Letters. (Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands) V.1- 1977- Volume(issue)/page/year 56,137,1991 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|----------|--------|-------------------------|------|-------------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA IRIS | 0.0006 | mg/L | 1986 | |
| Slope Factor (Oral) | OEHHA | 2.7 | (mg/kg-d) ⁻¹ | 2005 | |
| Slope Factor (Oral) | RAIS HE | 6.3 | (mg/kg-d) ⁻¹ | 1986 | Slope factor taken from IRIS. |
| Cancer Classification ² | EPA IRIS | B2 | | 1986 | |
| Cancer Classification ² | IARC | 2B | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|------------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | EPA; RAIS; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|-------|----|-------|-------|--------|------|-------|-------|------|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | 7,119 | 21 | Sites | 0.30% | 0.0004 | 0.21 | 0.011 | 0.059 | 0.21 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|-------|-----|---------|--------|--------|--------|--------|--------|--------|------|-----------|---|
| Toccalino et al., 2010 | 512 | 1 | Samples | 0.2% | 0.0327 | 0.0327 | 0.0327 | 0.0327 | 0.0327 | ug/L | 1993-2007 | Ground water; Source Water; Toccalino et al., 2010, Quality of source water from public-supply wells in the United States, 1993–2007: USGS Sci. Investigations Report 2010-5024, p. 206. Nomination Data. |
| STORage and RETrieval (STORET) | 2,785 | 448 | Sites | 16.09% | 0 | 0.617 | 0 | 0.0038 | 0.0656 | ug/L | | Nomination Data |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|---|
| Half Life | 1.2 | years | |
| Degradation Code | DST | | DST = Degrades sometimes/recalcitrant; hydrolysis only, pH = 7 (HSDB) |
| Organic Carbon Partitioning Coefficient (Koc) | 641-1,995 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.8 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.7E-06 | atm-m ³ /mol | |
| Solubility in Water | 2 | mg/L | |
| Modeled Percent in Water | 7 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Manganese |
| Substance Key: | 18823 |
| Contaminant ID (CASRN): | 7439965 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 1 | 10 | 9 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 300 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NIRS 90%: 2.4 | | | |
| Status | | | |
| CCL 3: No | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Manufacturing of steel alloys, in dry-cell batteries, electrical coils, ceramics, matches, glass, dyes, fertilizers, welding rods, as oxidizing agents, and as animal food additives. |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.047 | mg/kg-d | 1995 | | Reflects a modifying factor of 3 to adjust from increased bioavailability when in drinking water. Nomination data. |
| Reference Dose (RfD) | EPA HA | 0.14 | mg/kg-d | 2004 | | The 3-fold modifying factor for bioavailability from drinking water was applied when calculating HA rather than in determining the RfD. Nomination data. |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Reference Dose (RfD) | IOM | 0.16 | mg/kg-d | 2001 | 11 mg/day = Upper Limit, amount of manganese in typical Western diet for adults (NOAEL) 15 mg/kg-day LOAEL increased serum manganese and manganese dependant lymphocyte SOD activity – Concern for neurotoxicity | Not adjusted for the increased bioavailability from drinking water. Nomination data. |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 10 | mg/kg-d | 2009 | Neurodevelopmental effects in mice (Moreno et al, 2009a). Significant increase in Nitric Oxide Synthase 2 expression in brain of animals exposed as juveniles and adults (Moreno et al, 2009b). | Moreno et al, 2009a. Aged-Dependent Susceptibility to Manganese-Induced Neurological Dysfunction. Toxicological Sciences 112(2): 394-404. Moreno et al, 2009b. Developmental Exposure to Manganese Increases Adult Susceptibility to Inflammatory Activation of Glia and Neuronal Protein Nitration. Toxicological Sciences. 112: 405-415. Nomination Data. |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 7 | mg/kg-d | 2010 | Impaired spontaneous motor activity in rats | Kern et al, 2010. Prewaning Manganese Exposure Causes Hyperactivity, Disinhibition, and Spatial Learning and Memory Deficits Associated with Altered Dopamine Receptor and Transporter Levels. Synapse. 64: 363-378. Nomination data. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA IRIS | D | | 1988 | Nomination Data |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|--|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 1.6 | mg/L | Nomination data |
| Guideline Value (GV) | WHODWQ | 0.4 | mg/L | 2011; Nomination data |
| Health Advisory (HA) | EPA HA | 0.3 | mg/L | The 3-fold modifying factor for bioavailability from drinking water was applied when calculating HA rather than in determining the RfD. Nomination data. |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 672 | PWS | 67.95% | 1 | 1,341 | 11.96 | 126 | 673 | ug/L | 1984-1986 | Nomination Data |

| | | | | | | | | | | | | |
|---|-------|-------|-------|--------|-------|--------|----|-----|-------|------|-----------|-----------------|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 8,002 | 6,447 | Sites | 80.57% | 0.051 | 70,000 | 19 | 180 | 1,300 | ug/L | 1992-2001 | Nomination Data |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|--------|--------|---------|--------|-------|------------|------|-----|---------|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Minnesota Community Finished SW | | | Samples | | ND | 0.81 | 0.01 | | | mg/L | 2009-2011 | Public Comment |
| Minnesota Community Finished GW | | | Samples | | ND | 2.4 | 0.17 | | | mg/L | 2009-2011 | Public Comment |
| Toccalino et al., 2010 | 808 | 543 | Samples | 67.2% | 0.053 | 1,923 | 8.99 | 186 | 732 | ug/L | 1993-2007 | Ground water; Source Water; Toccalino et al., 2010, Quality of source water from public-supply wells in the United States, 1993-2007: USGS Sci. Investigations Report 2010-5024, p. 206. Nomination Data. |
| California Drinking Water Monitoring Data | 4,969 | 2,229 | PWS | 44.9% | 0.001 | 35,000 | 70 | 380 | 1,455 | ug/L | 1995-2007 | Nomination Data |
| Illinois Drinking Water Monitoring Data | 1,223 | 685 | PWS | 56% | 1 | 2,700 | 31 | 190 | 378 | ug/L | 1998-2005 | Nomination Data |
| North Carolina Drinking Water Monitoring Data | 2,382 | 1,265 | PWS | 53.1% | 0.7 | 239,000 | 28 | 175 | 779 | ug/L | 1998-2005 | Nomination Data |
| Ohio Drinking Water Monitoring Data | 775 | 641 | PWS | 82.7% | 0.113 | 216,000 | 33 | 246 | 1964 | ug/L | 1998-2005 | Nomination Data |
| Region 9 Tribes Drinking Water Monitoring Data | 154 | 63 | PWS | 40.9% | 0.85 | 320,000 | 80 | 592 | 239,860 | ug/L | 1998-2005 | Nomination Data |
| Texas Drinking Water Monitoring Data | 6,713 | 3,898 | PWS | 58.1% | 1 | 25,910 | 10 | 70 | 290 | ug/L | 1998-2005 | Nomination Data |
| Wisconsin Drinking Water Monitoring Data | 1,946 | 1,571 | PWS | 80.7% | 0.006 | 400,000 | 28 | 358 | 7,000 | ug/L | 1980-2012 | Nomination Data |
| USGS/California Groundwater Ambient Monitoring and Assessment (GAMA) Program | 1,158 | 917 | Sites | 79.2% | 0.1 | 37,000 | 2 | 220 | 2,386 | ug/L | 2004-2011 | Nomination Data |
| STORage and RETrieval (STORET) | 47,550 | 42,222 | Sites | 88.79% | 0 | 18,604,000 | 51 | 393 | 7,490 | ug/L | | Nomination Data |
| Minnesota Nominations Data | 1,630 | 1,589 | Samples | 97.48% | 0.1 | 3,000 | 110 | 500 | | ug/L | | Ground Water; Mixed Public and Private Water Supplies; Received from Minnesota for the CCL 4 nominations. Nomination Data. |
| Massachusetts Nominations Data | 4,976 | | Samples | | | 28,000 | 7 | 360 | | ug/L | | Ground Water; Mixed Public and Private Water Supplies; Received from Massachusetts for the CCL 4 nominations; Ayotte, J. D., J. M. Gronberg, et al. (2011). Trace Elements and Radon in Groundwater Across the United States. U.S. Geological Survey Scientific Investigations Report 2011-5059: 115. (Source water for public supply wells from the Ayotte et al., 2011 overlaps with Toccalino et al., 2010.). Nomination Data. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 84,545 | lbs/yr | 31 | States | 2010 |
| Toxics Release Inventory (TRI) – Total | 15,872,968 | lbs/yr | 48 | States | 2010 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 500M - < 1B | lbs/yr | 2006 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|------------|-------------------------|-----------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | days | |
| Degradation Code | persistent | | As elemental Mn |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------------------|
| Contaminant: | Methyl tert-butyl ether |
| Substance Key: | 11918 |
| Contaminant ID (CASRN): | 1634044 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 8 | 5 | 8 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 2,100 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 19.4 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCMR 90%: 58.3 | | | |
| CAR HRL/UCMR 90%: 0.561 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Octane booster in gasoline; manufacture of isobutene; extraction solvent |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|--------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.3 | mg/kg-d | 8/1996 | Hepatic: Decreased blood urea nitrogen levels. | Minimal Risk Level - Intermediate Exposure Duration. Basis LOAEL = 100 mg/kg-d; UF = 300 Nomination data. |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | 0.01 | mg/kg-d | 1991 | | Basis NOAEL 100 mg/kg-d |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 300 | mg/kg-d | 1990 | Kidney, Ureter, Bladder - changes in bladder weight, Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol), Nutritional and Gross Metabolic - changes in calcium | 90-day study in rat; JACTDZ Journal of the American College of Toxicology. (Mary Ann Liebert, Inc., 1651 Third Ave., New York, NY 10128) V.1-12, 1982-1993. Discontinued. Volume(issue)/page/year 9(5),525,1990 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.0018 | (mg/kg-d) ⁻¹ | 2005 | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 3 | | 1999 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 3,871 | 19 | PWS | 0.49% | 5 | 49 | 9.2 | 34.6 | 48.75 | ug/L | 2001-2003 | Nomination Data |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|------|--------|-----|------|-------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,328 | 424 | Sites | 9.80% | 0.01 | 23,000 | 0.3 | 7.85 | 1,800 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|--------|-------|--------|-------|-------|-------|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Toccalino et al., 2010 | 832 | 115 | Samples | 13.8% | 0.031 | 12.03 | 0.173 | 1.07 | 7.76 | ug/L | 1993-2007 | Ground water; Source Water; Toccalino et al., 2010, Quality of source water from public-supply wells in the United States, 1993–2007: USGS Sci. Investigations Report 2010-5024, p. 206. Nomination Data. |
| California Drinking Water Monitoring Data | 4,419 | 150 | PWS | 3.4% | 0.15 | 610 | 5.96 | 33 | 214 | ug/L | 1995-2007 | Nomination Data |
| Florida Drinking Water Monitoring Data | 31 | 7 | PWS | 22.6% | 0.09 | 67.18 | 0.755 | 4.56 | 51.2 | ug/L | 2004-2007 | Nomination Data |
| Illinois Drinking Water Monitoring Data | 1,161 | 26 | PWS | 2.2% | 0.5 | 16 | 1.3 | 7 | 16 | ug/L | 1998-2005 | Nomination Data |
| Ohio Drinking Water Monitoring Data | 1,306 | 6 | PWS | 0.5% | 0.5 | 9.51 | 1.21 | 5.36 | 8.55 | ug/L | 1998-2005 | Nomination Data |
| Region 9 Tribes Drinking Water Monitoring Data | 219 | 1 | PWS | 0.5% | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | ug/L | 1998-2005 | Nomination Data |
| Texas Drinking Water Monitoring Data | 5,660 | 41 | PWS | 0.7% | 0.5 | 48 | 2.8 | 10.2 | 25.6 | ug/L | 1998-2005 | Nomination Data |
| Wisconsin Drinking Water Monitoring Data | 1,142 | 38 | PWS | 3.3% | 0.104 | 64.9 | 2.2 | 16.6 | 45.9 | ug/L | 1980-2012 | Nomination Data |
| USGS/California Groundwater Ambient Monitoring and Assessment (GAMA) Program | 1,855 | 101 | Sites | 5.4% | 0.03 | 28.3 | 0.12 | 0.554 | 2.17 | ug/L | 2004-2011 | Nomination Data |
| STORAGE and RETRIEVAL (STORET) | 1,210 | 154 | Sites | 12.73% | 0.046 | 13,000 | 1.5 | 14.5 | 1,600 | ug/L | | Nomination Data |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 800 | lbs/yr | 6 | States | 2010 |
| Toxics Release Inventory (TRI) – Total | 1,471,221 | lbs/yr | 35 | States | 2010 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | ≥ 1B | lbs/yr | 2006 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|-------------------------|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 6 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.94 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.87E-04 | atm-m ³ /mol | |
| Solubility in Water | 51,000 | mg/L | |
| Modeled Percent in Water | 42 | % | |

| | |
|--------------------------------|-----------------------|
| Contaminant: | Microcystin-LR |
| Substance Key: | 76859 |
| Contaminant ID (CASRN): | 101043372 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 10 | 4 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL): 0.021 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/AWWARF Typical Range MAX: 0.21 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| Use | Naturally-occurring cyanobacterial toxin |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|----------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | 0.00005 | mg/kg-d | | Increased liver weight, slight to moderate liver lesions with necrosis with hemorrhages, and increased enzyme levels in rats | EPA HA; Basis LOAEL 0.05 mg/kg-day. Heinze, R. 1999. Toxicity of the cyanobacterial toxin microcystin-LR to rats after 28 days intake with the drinking water. Environ. Toxicol., 14(1): 57-60. UF = 1,000. |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | WHODWQ | 0.00004 | mg/kg-d | | | |
| Reference Dose (RfD)-like value | Primary Literature | 0.000003 | mg/kg-d | 2006 | Liver effects | Draft RfD; Basis NOAEL 3 ug/kg-d. Ueno, Y., Y. Makita, S. Nagata et al., 1999. No chronic oral toxicity of a low-dose of microcystin-LR, a cyanobacterial hepatotoxin, in female Balb/C mice. Environ. Toxicol. 14(1):45-55. |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|-----|-----|-------|------|-------|-------|------|------|------|------|--|---|
| Supplemental Water Data | | | | | | | | | | | | |
| STorage and RETrieval (STORET) | 30 | 30 | Sites | 100% | 0 | 4.26 | 0.25 | 1.22 | 3.32 | ug/L | | Nomination Data |
| US and Canadian drinking water (bloom area, source, finished water) | 677 | 542 | Sites | 80% | | 0.1 | | | | ug/L | | Maximum of typical range of detects (AWWARF, Carmichael). Excludes possible outliers. |
| US and Canadian drinking water (bloom area, source, finished water) | 677 | 542 | Sites | 80% | 0.002 | 1,200 | | | | ug/L | | Maximum and minimum of detects (AWWARF, Carmichael). Includes possible outliers. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|--------------------------------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Biodegradation Code | | | Degradation Code Not Available |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | Nonylphenol |
| Substance Key: | 28410 |
| Contaminant ID (CASRN): | 25154523 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 10 | 6 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 105 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Kolpin Max: 2.6 | | | |
| Status | | | |
| CCL 3: No | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | In the preparation of lubricating oil additives, resins, plasticizers, surface active agents; antioxidants for plastics and rubber |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | 60 | mg/kg-d | | | Nomination data |
| No Observed Adverse Effect Level (NOAEL) | Supplemental | 15 | mg/kg-d | 2004 | Reproductive effects | World Health Organization (WHO). Nomination data. |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 2 | mg/kg-d | 2001 | Endocrine - androgenic, Reproductive - Paternal Effects - testes, epididymis, sperm duct | REPTED Reproductive Toxicology. (Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523) V.1- 1987- Volume(issue)/page/year 15,293,2001. Nomination data. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 580 | mg/kg | | Details of toxic effects not reported other than lethal dose value | NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year OTS0573098. Nomination data. |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Padhye SW | 8 | | Samples | | 53.4+-5.8 | 185.6+-20 | 83.2 | | | ng/L | | Padhye et al. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. Water Research. In Press. Public Comment. |
| Padhye DW | 8 | | Samples | | 12.4+-5.3 | 60.6+-19.2 | 19.5 | | | ng/L | | Padhye et al. Year-long evaluation on the occurrence and fate of pharmaceuticals, personal care products, and endocrine disrupting chemicals in an urban drinking water treatment plant. Water Research. In Press. Public Comment. |
| Benotti | 5 | 2 | Samples | | | 100 | 93 | | | ng/L | 2006-2007 | Benotti et al., 2009. Pharmaceuticals and Endocrine Disrupting Compounds in U.S. Drinking Water. ES&T 43, 597-603. Public Comment. |
| Klosterhaus | 5 | | Sites | 60% | <RL | 72.9 | 34.7 | | | ng/L | 2009-2010 | Klosterhaus et al., 2013. Method validation and reconnaissance of pharmaceuticals, personal care products, and alkylphenols in surface waters, sediments, and mussels in an urban estuary. Environment International 54 (2013) 92-99. Public Comment. |
| Kolpin et al., 2002 | 85 | 43 | Sites | 50.6% | | 40 | 0.8 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. Nomination Data. |
| STOrage and RETrieval (STORET) | 15 | 5 | Sites | 33.33% | 3.26 | 5.17 | 3.74 | 4.52 | 5.11 | ug/L | | Nomination Data |
| Snyder, 2008 | 20 | | Samples | 17% | | 0.104 | 0.084 | | | ug/L | | Finished Drinking Water Monitoring; Snyder, Shane A. 2008. Ozone: Science and Engineering. 30(1): 65-69. Nomination Data. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | < 500K | lbs/yr | 2006 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | | days | |
| Degradation Code | BST | | BST = biodegrades sometimes/recalcitrant; aerobic only |
| Organic Carbon Partitioning Coefficient (Koc) | 31,000 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 5.71 | dimensionless | At 20 degrees Celsius |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.1E-06 | atm-m ³ /mol | |
| Solubility in Water | 6.35 | mg/L | At 25 degrees Celsius |
| Modeled Percent in Water | 18 | % | |

| | |
|--------------------------------|--------------------------------------|
| Contaminant: | Perfluorooctanoic acid (PFOA) |
| Substance Key: | 6614 |
| Contaminant ID (CASRN): | 335671 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 3 | 10 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 1.1 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/MN MW MAX: 1.22 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Production of fluoropolymers (e.g., Teflon) and fluoroelastomers; in fire-fighting applications, cosmetics, greases and lubricants, paints, polishes and adhesives |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.46 | mg/kg-d | 2006 | Increased maternal liver weight at term | BMDL10, Lau, 2006. Tox. Sci., 90, 2, pp. 510-518. EPA Provisional HA: http://www.epa.gov/waterscience/criteria/drinking/pha-PFOA_PFOS.pdf |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|--|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |
| Health Advisory (HA) | EPA HA | 0.4 | ug/L | January 2008; Provisional Health Advisory: http://www.epa.gov/waterscience/criteria/drinking/pha-PFOA_PFOS.pdf |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| STorage and RETrieval (STORET) | 318 | 232 | Sites | 72.96% | 0.000988 | 48,500 | 0.144 | 47.7 | 1,304 | ug/L | | Nomination Data |
| Minnesota (MN) Department of Health (DOH) – Select MN Private Wells | 26 | 1 | Sites | 3.9% | | 0.67 | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Select MN Non-Community Wells | 22 | 0 | Sites | 0% | | | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Select MN Municipal Wells | 37 | 6 | Sites | 16.2% | | 0.9 | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Aggregate of MN Wells | 85 | 7 | Sites | 8.2% | | 0.9 | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| NJDEP | 23 | 18 | Sites | 78.3% | <0.004 | 0.039 | | | | ug/L | | Targeted study "Determination of Perfluorooctanoic Acid (PFOA) in Aqueous Samples, Final Report." Jan 2007, NJDEP, Division of Water Supply. |
| Little Hocking, OH Municipal Wells (FW) | | | N/A | | 1.5 | 7.2 | | | | ug/L | | Emmett, et al., 2006. J. Occ. Env. Med. Little Hocking, OH; data from 2002-2005; no data on # PWSs/sites sampled |
| Cape Fear Drainage Basin | 80 | | Sites | 82.3% | | 0.287 | 0.0126 | | | ug/L | 2006 | Nakayama et al. 2007. Perfluorinated Compounds in the Cape Fear Drainage Basin in N.C. ES&T, 41, 5271–5276. Nomination Data. |
| Upper Mississippi Drainage Basin | 175 | 168 | Sites | 97.1% | | 0.125 | 0.00207 | | | ug/L | 2008 | Nakayama et al. 2010. Determination of Perfluorinated Compounds in the Upper Mississippi River Basin. ES&T, 44, pp. 4103–4109. Nomination Data. |
| Tennessee River, Alabama | 40 | 18 | Sites | 45% | 0.14 | 0.598 | 0.379 | | | ug/L | | Hansen et al. 2002. Quantitative Characterization of Trace Levels of PFOS and PFOA in the Tennessee River. ES&T, 36, pp. 1681-1685. Nomination Data. |
| U.S. PWS Study | 6 | | Sites | | <0.005 | 0.12 | | | | ug/L | | Quinones, O. and S.A. Snyder. 2009. Occurrence of perfluoroalkyl carboxylates and sulfonates in drinking water utilities and related waters from the U.S. ES&T, 43, pp. 9089-9095. Nomination Data. |
| Lake Erie and Lake Ontario | 16 | 16 | Sites | 100% | 0.015 | 0.07 | 0.04 | | | ug/L | 2003 | Boulangier et al. 2004. Detection of Perfluorooctane Surfactants in Great Lakes Water. ES&T, 38, pp. 4064-4070. Nomination Data. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | < 500K | lbs/yr | 2006 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 631 ± 7.9 | L/kg | Zareitalabad, et al., 2013 |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.091 | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | 10 | % | |

| | |
|--------------------------------|------------|
| Contaminant: | Permethrin |
| Substance Key: | 35815 |
| Contaminant ID (CASRN): | 52645531 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 8 | 10 | 7 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 1,750 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 3.65 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 1,944 | | | |
| CAR HRL/SWC EEC: 4.05 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | 0.25 | mg/kg-d | 2009 | Neurotox/Clinical signs (i.e., aggression, abnormal and/or decreased movement) and increased body temperature. Q1* 0.0096 (mg/kg-d)-1. See CAR | Basis NOAEL = 25 mg/kg-d, UF = 100 (rat study) |
| Reference Dose (RfD) | IRIS | 0.05 | mg/kg-d | 1986 | Increased liver weight | Basis = NOEL 5 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.05 | mg/kg-d | 1986 | | |
| Minimal Risk Level | ATSDR | 0.2 | mg/kg-d | 2003 | Neurol. | Minimal Risk Level - Intermediate Exposure Duration |
| Acceptable Daily Intake (ADI) | JMPR | 0.05 | mg/kg-d | 1999 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-----------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0096 | (mg/kg-d) ⁻¹ | 2009 | Nomination Data |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA OPP | Likely | | 2009 | Nomination Data |
| Cancer Classification ² | IARC | 3 | | 1991 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------|-------|-------|-------|
| Is contaminant on list of carcinogens? | EPA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|---|-------|-------|-------|-------|-------|-------|-------|------|-----------|-----------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Drinking Water Monitoring Data | 35 | 0 | PWS | 0% | | | | | | ug/L | 1995-2007 | Nomination Data |
| USGS/California Groundwater Ambient Monitoring and Assessment (GAMA) Program | 1,828 | 0 | Sites | 0% | | | | | | ug/L | 2004-2011 | Nomination Data |
| STORage and RETrieval (STORET) | 722 | 1 | Sites | 0.14% | 0.348 | 0.348 | 0.348 | 0.348 | 0.348 | ug/L | | Nomination Data |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 1,066,056 | lbs/yr | 48 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2010 |
| Toxics Release Inventory (TRI) – Total | 2,116 | lbs/yr | 5 | States | 2010 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|--|---|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 0.9 ug/L; GW Chronic = 0 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BF/BST | | BF = Biodegrades fast; BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | 178,000 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 6.5 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.87E-06 | atm-m ³ /mol | |
| Solubility in Water | 0.006 | mg/L | |
| Modeled Percent in Water | 6 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Saxitoxin |
| Substance Key: | 95000 |
| Contaminant ID (CASRN): | 35523898 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 9 | 5 | 10 | 4 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.0035 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Ohio FW 90%: 0.069 | | | |
| Status | | | |
| CCL 3: No | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|----------------------|
| Use | Cyanobacterial toxin |

| 3-Model Categorical Prediction | |
|--------------------------------|--|
| L? - L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|--------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 0.0005 | mg/kg | | Neurological and sodium channel impact from shellfish consumption | NOAEL units are mg STX equivalents/kg. EFSA. 2009. Scientific Opinion on the Panel on Contaminants in the Food Chain on a request from the European Commission on Marine Biotoxins in Shellfish – Saxitoxin Group. The EFSA Journal 1019, 1-76. |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.0015 | mg/kg | | Neurological and sodium channel impact from shellfish consumption | LOAEL units are mg STX equivalents/kg. EFSA. 2009. Scientific Opinion on the Panel on Contaminants in the Food Chain on a request from the European Commission on Marine Biotoxins in Shellfish – Saxitoxin Group. The EFSA Journal 1019, 1-76. |
| Lowest Observed Adverse Effect Level (LOAEL) | FAO/IOC/WHO | 0.002 | mg/kg | 2004 | | LOAEL units are mg STX equivalents/kg. Report of the Joint FAO/IOC/WHO ad hoc Expert Consultation on Biotoxins in Bivalve Molluscs. 2004. Oslo, Norway, Sept. 26-30, 31 pgs. |
| Lethal Dose 50 (LD50) | HSDB | 0.263 | mg/kg | | | Lewis, R.J. 1996. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, p. 2904. |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|--------|-------|--|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |
| Drinking Water Guidance Value | FAO/IOC/WHO | 0.0105 | mg/L | Report of the Joint FAO/IOC/WHO (2004). Drinking water guidance value calculated using an acute RfD of 0.7 µg STX-eq/kg-day for a 15 kg child who ingests 1 L. |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|-----|-----|---------|------|-------|-------|-------|--------|--|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Ohio Algal Toxin Results | 467 | 170 | Samples | 36.4 | 0.022 | 0.812 | 0.109 | 0.5433 | | ug/L | 2010-2016 | Source water. Ohio Algal Toxin Results from Lake Erie, State Park Beaches, Inland Lakes, and Public Water Supplies - 2010 to Present. |
| Ohio Algal Toxin Results | 267 | 57 | Samples | 21.3 | 0.022 | 0.064 | 0.035 | 0.051 | | ug/L | 2010-2016 | Finished water. Ohio Algal Toxin Results from Lake Erie, State Park Beaches, Inland Lakes, and Public Water Supplies - 2010 to Present. |
| Ohio Algal Toxin Results | 378 | 56 | Samples | 14.8 | 0.023 | 0.746 | 0.09 | 0.394 | | ug/L | 2010-2016 | Ambient water. Ohio Algal Toxin Results from Lake Erie, State Park Beaches, Inland Lakes, and Public Water Supplies - 2010 to Present. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|--------------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | Very soluble | mg/L | HSDB |
| Modeled Percent in Water | | % | |

Chemical Contaminants Carried Forward from CCL 3

The following 184 pages contain tables with health effects and occurrence information for the chemical contaminants carried forward from CCL 3 to CCL 4. For these contaminants, the data presented was mainly collected during development of the CCL 3. EPA also added new data to these CISs that was provided for some contaminants during the CCL 4 public comment period, if the data met the criteria for CCL evaluation. Some of these contaminants were evaluated further under the RD 3 process. The updated data from the RD 3 process can be found in Appendix E of the document “Protocol for the Regulatory Determinations 3. Including Appendices A-F” (USEPA, 2014).

| | |
|--------------------------------|----------------------------------|
| Contaminant: | 1,1,1,2-Tetrachloroethane |
| Substance Key: | 9105 |
| Contaminant ID (CASRN): | 630206 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 3 | 6 |

| |
|--|
| Health Reference Level (HRL):¹ 210 ug/L |
| Health Reference Level (HRL)¹ cancer: 1 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/UCM R1 90%: 67.7 CAR HRL/UCM R1 90%: 0.323 |

| Source | Use |
|--------|-----------------------|
| NTP | Chemical intermediate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.03 | mg/kg-d | 1987 | Mineralization of the kidneys in males, hepatic clear cell change in females | Basis LOAEL = 89.3 mg/kg-d (NTP 1983) |
| Reference Dose (RfD) | EPA HA | 0.03 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.03 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.1 | mg/L | 1989 | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.026 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1989 | |
| Cancer Classification ² | IARC | 3 | | 1999 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | EPA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 1 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 16,956 | 31 | PWS | 0.18% | 0.06 | 9.2 | 0.59 | 3.1 | 9.2 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 24,127 | 51 | PWS | 0.21% | 0.2 | 18 | 0.5 | 1.55 | 18 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|---|-------|-------|-------|--------|---------|--------|--------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,309 | 4 | Sites | 0.09% | 0.011 | 0.0644 | 0.02745 | 0.0644 | 0.0644 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 36 | lbs/yr | 2 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 12,088 | lbs/yr | 7 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|--------|-------------------------|--|
| Half Life | 60 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 93-399 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.66 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.0027 | atm-m ³ /mol | |
| Solubility in Water | 1,100 | mg/L | |
| Modeled Percent in Water | 22 | % | |

| | |
|--------------------------------|---------------------------|
| Contaminant: | 1,1-Dichloroethane |
| Substance Key: | 2647 |
| Contaminant ID (CASRN): | 75343 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 8 | 7 | 7 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 1,400 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 6.14 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 250 | | | |
| CAR HRL/UCM R1 90%: 1.1 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------|
| NTP | Solvent |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|----------------------------|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.2 | mg/kg-d | 2001 | Decreased body weight gain | Muralidhara, et al., 2001, Basis NOAEL 714 mg/kg-d, UF = 3,000 |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.0057 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1990 | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 20,483 | 233 | PWS | 1.14% | 0.01 | 500 | 1.2 | 5.6 | 27 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 24,808 | 184 | PWS | 0.74% | 0.0013 | 159 | 1 | 3.8 | 25 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|-------|----|------|-------|-----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,350 | 135 | Sites | 3.10% | 0.008 | 39 | 0.05 | 0.316 | 5.6 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 63 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 17,368 | lbs/yr | 5 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >500K - 1M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 30 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.79 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.00562 | atm-m ³ /mol | |
| Solubility in Water | 5,040 | mg/L | |
| Modeled Percent in Water | 46 | % | |

| | |
|--------------------------------|-------------------------------|
| Contaminant: | 1,2,3-Trichloropropane |
| Substance Key: | 3817 |
| Contaminant ID (CASRN): | 96184 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 3 | 6 |

| | | | |
|--|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 42 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.005 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R2 90%: 2.1 | | | |
| CAR HRL/UCM R2 90%: 0.00025 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|------------------|
| NTP | Paint ingredient |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.006 | mg/kg-d | 1987 | Alterations in clinical chemistry & reduction in RBC mass | NTP, 1983 ; rats; UF = 1,000; Basis NOAEL = 8 mg/kg-d |
| Reference Dose (RfD) | EPA HA | 0.006 | mg/kg-d | 2006 | | F ¹ 89 |
| Reference Dose (RfD) | RAIS HE | 0.006 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.06 | mg/kg-d | 1992 | Hepatic | Minimal Risk Level - Intermediate Exposure Duration; UF = 100 |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 5.71 | mg/kg-d | 1987 | | ITER NOAEL |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 22.9 | mg/kg-d | | Kidney, Ureter, Bladder - changes in bladder weight, Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol), Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other esterases | 17 week oral study in rats; NTPTR National Toxicology Program Technical Report Series. (Research Triangle Park, NC 27709) No.206- Volume(issue)/page/year NTP-TR-384,1993 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 7 | (mg/kg-d) ⁻¹ | | HEAST |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | CACART; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.2 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 17,392 | 44 | PWS | 0.25% | 0.1 | 112 | 0.92 | 6 | 112 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 24,088 | 19 | PWS | 0.08% | 0.03 | 3,000 | 0.5 | 20 | 3,000 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|----|-------|-------|------|------|-----|------|------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,309 | 43 | Sites | 1.00% | 0.05 | 2.92 | 0.4 | 0.97 | 2.92 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 282 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 9,053 | lbs/yr | 2 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 77-95 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.27 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.000343 | atm-m ³ /mol | |
| Solubility in Water | 1,750 | mg/L | |
| Modeled Percent in Water | 25 | % | |

| | |
|--------------------------------|----------------------|
| Contaminant: | 1,3-Butadiene |
| Substance Key: | 4578 |
| Contaminant ID (CASRN): | 106990 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 10 | 9 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.0103 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No Water Data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------------|
| NTP | Rubber chemical |

| 3-Model Categorical Prediction |
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| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 3.4 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | | |
| Cancer Classification ² | IARC | 2A | | 1999 | Vol. 71; 1999 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------|-------|-------|----------------|
| Is contaminant on list of carcinogens? | EPA; IARC; CACART; OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen List |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 493 | lbs/yr | 8 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,964,956 | lbs/yr | 34 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|---|
| Half Life | 7-28 | days | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 288 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.99 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.074 | atm-m ³ /mol | |
| Solubility in Water | 735 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | 1,4-Dioxane |
| Substance Key: | 5539 |
| Contaminant ID (CASRN): | 123911 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 9 | 8 |

| |
|--|
| Health Reference Level (HRL)¹: 700 ug/L |
| Health Reference Level (HRL)¹ cancer: 3 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/CAL DHS 90%: 92.1 CAR HRL/CAL DHS 90%: 0.395 |

| Source | Use |
|--------|-----------------------------|
| NTP | Solvent; solvent stabilizer |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.1 | mg/kg-d | | | Minimal Risk Level - Intermediate Exposure Duration = 0.6 mg/kg-d |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.3 | mg/L | 1987 | |
| Slope Factor (Oral) | OEHHA | 0.027 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.011 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1987 | |
| Cancer Classification ² | IARC | 2A | | 1999 | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; IARC; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|----|-----|-------|-------|------|-----|-----|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 869 | 89 | PWS | 10.2% | 0.001 | 46.2 | 2.1 | 7.6 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 89,521 | lbs/yr | 7 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 821,067 | lbs/yr | 22 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly |
| Organic Carbon Partitioning Coefficient (Koc) | 1 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.27 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 4.8E-06 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | 17 alpha-Estradiol |
| Substance Key: | 81747 |
| Contaminant ID (CASRN): | 57910 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 9 | 3 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Kolpin MAX: 4.7 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | E2 |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 5.7% | | 0.074 | 0.03 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|--------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | | Value | Units |
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.94 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | 3.9 | mg/L | |
| Modeled Percent in Water | 11 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | 1-Butanol |
| Substance Key: | 2563 |
| Contaminant ID (CASRN): | 71363 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 5 | 10 | 10 |

| |
|---|
| Health Reference Level (HRL)¹: 700 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| No water data |

| Source | Use |
|--------|---|
| HSDB | Paint solvent; chemical intermediate; food additive |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.1 | mg/kg-d | 1987 | Hypoactivity, ataxia | U.S. EPA, 1986; Basis NOAEL = 125 mg/kg-d, UF = 1,000; oral study in rats. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.1 | mg/kg-d | | | IRIS |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.2 | mg/kg-d | | Behavioral - somnolence (general depressed activity) | 30 day oral study in rats; TOLED5 Toxicology Letters. (Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands) V.1- 1977- Volume(issue)/page/year 135,S122,2002 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1991 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 22,011 | lbs/yr | 20 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 17,648,846 | lbs/yr | 44 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 2.443 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.88 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 8.82E-06 | atm-m ³ /mol | |
| Solubility in Water | 63200 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------------|
| Contaminant: | 2-Methoxyethanol |
| Substance Key: | 4803 |
| Contaminant ID (CASRN): | 109864 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 7 | 9 | 7 |

| |
|---|
| Health Reference Level (HRL)¹: 21 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| No water data |

| Source | Use |
|--------|--|
| NTP | Consumer products; synthetic Cosmetics, Perfumes, Fragrances, Hair Preparations, Skin Lotion |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|----------------------|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.003 | mg/kg-d | | Reproductive effects | Unpublished NTP study - Gulati, et al, 1990. |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|---------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | Teratogen / developmental, male |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 14,390 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 153,774 | lbs/yr | 16 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >10M - 50M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 1 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.77 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.3E-07 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|----------------------|
| Contaminant: | 2-Propen-1-ol |
| Substance Key: | 4596 |
| Contaminant ID (CASRN): | 107186 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 8 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Manufacture of flavorings, perfumes; chemical intermediate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.005 | mg/kg-d | 1987 | Impaired renal function & increased relative liver, spleen & kidney weights | Carpanini et al., 1978; Rat; UF = 1,000; Basis NOAEL = 4.8 mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.005 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 2.5 | mg/kg-d | | Liver - liver function tests impaired, Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol), Biochemical - Metabolism (Intermediary) - Plasma proteins not involving coagulation | Rat; VCVGK "Vrednie chemicheskije veshstva, galogen I kislorod sodergashije organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume(issue)/page/year -,121,1994 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 52 | mg/kg | | Details of toxic effects not reported other than lethal dose value | Rabbit; NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year OTS0571508 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 10,971 | lbs/yr | 4 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 604,872 | lbs/yr | 13 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 1.325 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.17 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5E-06 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|----------------------------|
| Contaminant: | 3-Hydroxycarbofuran |
| Substance Key: | 25541 |
| Contaminant ID (CASRN): | 16655826 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 7 | 2 | 7 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.42 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R2 90%: 0.191 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | 0.00006 | mg/kg-d | | Inhibition of brain cholinesterase in pups - The RfD for the parent covers the toxicity of the metabolite | Basis = BMDL10 0.03 mg/kg-d; UF = 500. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 7 | mg/kg | | Decreased body wt. | PCBPBS Pesticide Biochemistry and Physiology. (Academic Press, Inc., 1 E. First St., Duluth, MN 55802) V.1- 1971- Volume(issue)/page/year 3,435,1973 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 12,700 | 18 | PWS | 0.14% | 1 | 66.3 | 2.2 | 2.2 | 66.3 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|---|-------|-------|------|------|------|------|------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,539 | 1 | Sites | 0.02% | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|------|--|-------|--|--|--|------|------|---------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 225 | 1 | Samples | 0.4% | | 0.062 | | | | ug/L | 1999 | Finished Water; Method 9060 (HPLC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 312 | 0 | Samples | 0% | | 0 | | | | ug/L | 1999 | Ambient Water; Method 9060 (HPLC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | 43 | % | |

| | |
|--------------------------------|--------------------------------|
| Contaminant: | 4,4'-Methylenedianiline |
| Substance Key: | 4202 |
| Contaminant ID (CASRN): | 101779 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 7 | 7 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 560 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.022 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Chemical intermediate; corrosion inhibitor; curing agent for polyurethanes |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.08 | mg/kg-d | 1998 | Intense liver degenerative lesions, hyperplasia of the stroma | Minimal Risk Level - Intermediate Exposure Duration; UF = 100 |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 4.34 | mg/kg-d | | Liver - fatty liver degeneration, Kidney, Ureter, Bladder - interstitial nephritis, Blood - normocytic anemia | 15 week oral study in dogs; JJATDK JAT, Journal of Applied Toxicology. (John Wiley & Sons Ltd., Baffins Lane, Chichester, W. Sussex PO19 1UD, UK) V.1- 1981- Volume(issue)/page/year 11,367,1991 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|-------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 1.6 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.25 | (mg/kg-d) ⁻¹ | | Slope factor withdrawn |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | 1987 | Vol. 39, Suppl. 7, 1987 |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | IARC; CACART; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 96,446 | lbs/yr | 2 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 168,919 | lbs/yr | 10 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 4950 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.59 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.58E-11 | atm-m ³ /mol | |
| Solubility in Water | 1,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Acephate |
| Substance Key: | 31325 |
| Contaminant ID (CASRN): | 30560191 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 5 | 10 | 7 |

| | | | |
|--|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 8.4 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 4 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 1.17 | | | |
| CAR HRL/SWC EEC: 0.556 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | 0.0012 | mg/kg-d | 2000 | Brain cholinesterase inhibition (rat study) | UF = 100; Basis NOAEL = 0.12 mg/kg-day |
| Reference Dose (RfD) | IRIS | 0.004 | mg/kg-d | 1989 | | Basis = LOEL females = 0.15 mg/kg-d; LOEL males = 0.12 mg/kg-d; Adjusted Basis Value = LOAEL 0.0004 mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.004 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.03 | mg/kg-d | 1990 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 10 | mg/kg-d | | Brain and Coverings - other degenerative changes, Autonomic Nervous System - sympathomimetic, Biochemical - Metabolism (Intermediary) - amino acids (including renal excretion) | ENVRAL Environmental Research. (Academic Press, Inc., 1 E. First St., Duluth, MN 55802) V.1- 1967- Volume(issue)/page/year 43,342,1987 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.4 | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.0087 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1988 | Liver |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------|-------|-------|-------|
| Is contaminant on list of carcinogens? | EPA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 2,462,354 | lbs/yr | 35 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 20,751 | lbs/yr | 5 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 7.2 ug/L; GW Chronic = 0.02 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|----------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 21.8 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.85 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.02E-13 | dimensionless | |
| Solubility in Water | 818,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|---------------------|
| Contaminant: | Acetaldehyde |
| Substance Key: | 2622 |
| Contaminant ID (CASRN): | 75070 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 3 | 10 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 23.3 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/DBP ICR MED: 3.15 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Pesticide; food additive; chemical intermediate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 10 | mg/kg-d | | Behavioral - changes in motor activity (specific assay) | NTIS National Technical Information Service. (Springfield, VA 22161) |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1988 | |
| Cancer Classification ² | IARC | 2B | | 1999 | Vol. 36, Suppl. 7, Vol. 71; Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------------|-------|-------|----------------|
| Is contaminant on list of carcinogens? | IARC; EPA; CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen list |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-----------------------------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Disinfection By-product (DBP) Information Collection Request (ICR) | 236 | 27 | PWS | 11.44% | | 18.3 | 7.4 | | | ug/L | 1997-1998 | Mean Value of Detects = 8.04 ug/L |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|---|---|-----|-------|---|----|---|---|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 8 | 3 | PWS | 37.5% | 1 | 24 | 2 | 4 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 370,815 | lbs/yr | 31 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 14,683,890 | lbs/yr | 38 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|-----------|-------------------------|--------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast (BIODEG) |
| Organic Carbon Partitioning Coefficient (Koc) | 1.498 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.34 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.68E-05 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Acetamide |
| Substance Key: | 2411 |
| Contaminant ID (CASRN): | 60355 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 7 | 9 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.5 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Solvent; solubilizer; plasticizer; stabilizer |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.07 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 2,754 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,202,667 | lbs/yr | 7 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 5 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -1.26 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.21E-08 | atm-m ³ /mol | |
| Solubility in Water | 2,250,000 | mg/L | |
| Modeled Percent in Water | 39 | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Acetochlor |
| Substance Key: | 32393 |
| Contaminant ID (CASRN): | 34256821 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 1 | 1 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 140 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NAWQA 90%: 179 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| HSDB | Herbicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.02 | mg/kg-d | 1993 | Salivation, increased ALT & ornithine carbamyl transferase; increases in triglyceride & decreased blood glucose levels; histopathological changes in kidneys & testes | ICI, Inc., 1988a, Basis NOAEL = 2 mg/kg-d; UF = 100 |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.02 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 5.45 | mg/kg-d | | Brain and Coverings - other degenerative changes, Blood - methemoglobinemia-carboxyhemoglobin, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases | 42-day study in rat; PRKHDK Problemi na Khigienata. Problems in Hygiene. (Durzhavno Izdatel'stvo Meditsina i Fizkultura, Pl. Slaveikov 11, Sofia, Bulgaria) V.1- 1975- Volume(issue)/page/year 15,96,1990 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 3,615 | 0 | PWS | 0% | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|-------|-------|------|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | 5,529 | 278 | Sites | 5.02% | 0.0011 | 30.4 | 0.032 | 0.784 | 8.49 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--|---------------|--------------------------|---------------------------|-----------------------------|--------------------------------|--------------------------------|-------------------------------|----------------------------------|----------------------------------|--------------------|-------------|-------------------------------------|
| California Department of Health Services | 1,872 | 0 | PWS | 0% | | | | | | ug/L | | Drinking water monitoring |
| STorage and RETrieval (STORET) | 848 | 293 | Sites | 34.6% | 0.026 | 21 | 0.022 | 1.5 | | ug/L | | |
| | Number | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 75th Percentile (Detects) | 95th Percentile (Detects) | Conc. Units | Date | Notes |
| Pesticide Pilot Monitoring Program (PMP) | 228 | 69 | Samples | 30.3% | | 0.395 | | | 0.061 | ug/L | 1999 | Finished Water; Method 2001 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 323 | 115 | Samples | 35.6% | | 0.334 | | | 0.002 | ug/L | 1999 | Ambient Water; Method 2001 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 32,591,175 | lbs/yr | 35 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | 4.3 | days | |
| Degradation Code | BF | | BF = Biodegrades fast (half-life is for soil) |
| Organic Carbon Partitioning Coefficient (Koc) | 98.5-239 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.03 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.4E-11 | atm-m ³ /mol | |
| Solubility in Water | 233 | mg/L | |
| Modeled Percent in Water | 12 | % | |

| | |
|--------------------------------|---|
| Contaminant: | Acetochlor ethanesulfonic acid (ESA) |
| Substance Key: | 79191 |
| Contaminant ID (CASRN): | 187022113 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 3 | 1 | 1 |

Occurrence scores based on parent

| |
|---|
| Health Reference Level (HRL)¹: 161 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|--|
| HRL/Concentration Ratio(s) |
| HRL/NAWQA 90%: 205 (NAWQA data for acetochlor parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 23 | mg/kg-d | | Reduced body weights and body weight gains in both sexes | EPA OPP NOAEL - FOR ACETOCHLOR ESA |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 3,615 | 0 | PWS | 0% | | | | | | ug/L | 2001-2003 | UCMR finished water data for parent, Acetochlor |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|-------|-------|------|------|-----------|---|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 5,529 | 278 | Sites | 5.02% | 0.0011 | 30.4 | 0.032 | 0.784 | 8.49 | ug/L | 1992-2001 | NAWQA ambient water data for parent, Acetochlor |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|-------|-------|------|-------|-----|--|------|-----------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 1,872 | 0 | PWS | 0% | | | | | | ug/L | | CAL DHS data for parent, Acetochlor; Drinking water monitoring |
| Pesticide Data Program (PDP) | 377 | 5 | Samples | 1.3% | 0.02 | 0.02 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| STORage and RETrieval (STORET) | 848 | 293 | Sites | 34.6% | 0.026 | 21 | 0.022 | 1.5 | | ug/L | | STORET data for parent, Acetochlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 32,591,175 | lbs/yr | 35 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------------------------|
| Contaminant: | Acetochlor oxanilic acid (OA) |
| Substance Key: | 79193 |
| Contaminant ID (CASRN): | 194992444 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 3 | 1 | 1 |

Occurrence scores based on parent

| |
|---|
| Health Reference Level (HRL)¹: 161 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|--|
| HRL/Concentration Ratio(s) |
| HRL/NAWQA 90%: 205 (NAWQA data for acetochlor - parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|-----------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 23 | mg/kg-d | | Reduced body weights and body weight gains in both sexes | EPA OPP NOAEL - FOR ACETOCHLOR OA |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 3,615 | 0 | PWS | 0% | | | | | | ug/L | 2001-2003 | UCMR finished water data for parent, Acetochlor |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|-------|-------|------|------|-----------|---|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 5,529 | 278 | Sites | 5.02% | 0.0011 | 30.4 | 0.032 | 0.784 | 8.49 | ug/L | 1992-2001 | NAWQA ambient water data for parent, Acetochlor |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|-------|-------|-------|----|-------|-----|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 1,872 | 0 | PWS | 0% | | | | | | ug/L | | CAL DHS data for parent, Acetochlor; Drinking water monitoring |
| STORAGE and RETRIEVAL (STORET) | 848 | 293 | Sites | 34.6% | 0.026 | 21 | 0.022 | 1.5 | | ug/L | | STORET data for parent, Acetochlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 32,591,175 | lbs/yr | 35 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Acrolein |
| Substance Key: | 4581 |
| Contaminant ID (CASRN): | 107028 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 9 | 3 | 7 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 3.5 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NAWQA 90%: 1.03 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Aquatic herbicide; rodenticide; industrial chemical |

| | |
|---------------------------------------|--|
| 3-Model Categorical Prediction | |
| L? - L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|---------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.0005 | mg/kg-d | 2003 | Decreased survival | Parent, et. al, 1992a, Basis = NOAEL 0.05 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.0005 | mg/kg-d | | | IRIS |
| Minimal Risk Level | ATSDR | 0.0005 | mg/kg-d | 12/1990 | Hemato. | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.5 | mg/kg-d | | Liver - liver function tests impaired, Kidney, Ureter, Bladder - other changes | 26-week study in rat; VCVGK "Vrednie chemicheskije veshstva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume(issue)/page/year -,385,1994 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 3 | | 1995 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|---|-------|-------|-----|-----|------|-----|-----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 1,108 | 2 | Sites | 0.18% | 1.3 | 3.4 | 2.35 | 3.4 | 3.4 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 1 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 284,480 | lbs/yr | 16 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-------------------------------|
| Half Life | 120-180 | hours in water | |
| Degradation Code | BF | | BF = Biodegrades fast; pH = 7 |
| Organic Carbon Partitioning Coefficient (Koc) | 3 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.01 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.000122 | atm-m ³ /mol | |
| Solubility in Water | 212,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|---|
| Contaminant: | Alachlor ethanesulfonic acid (ESA) |
| Substance Key: | 71246 |
| Contaminant ID (CASRN): | 142363539 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 3 | 9 | 3 |

Occurrence scores based on parent

| |
|---|
| Health Reference Level (HRL): 1,100 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|---|
| HRL/Concentration Ratio(s) |
| NC HRL/NAWQA 90%: 4,300 (NAWQA data for alachlor - parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|----------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 157 | mg/kg-d | | Increased incidence of clinical signs of toxicity in males and females and decreased body weight gains in males. | EPA OPP - FOR ALACHLOR ESA |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-----------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.04 | mg/L | | FOR ALACHLOR - PARENT |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|-------|-------|------|------|-----------|---|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 7,166 | 568 | Sites | 7.90% | 0.0008 | 38.2 | 0.015 | 0.256 | 3.33 | ug/L | 1992-2001 | NAWQA ambient water data for parent, Alachlor |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|--------|--------|--------|------|--------|--|------|-----------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 8,112 | 3 | PWS | 0.037% | 0.24 | 14 | 4.29 | 11.087 | | ug/L | | CAL DHS data for parent, Alachlor; Drinking water monitoring |
| Pesticide Data Program (PDP) | 233 | 76 | Samples | 32.6% | 0.02 | 1.443 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Data Program (PDP) | 79 | 3 | Samples | 3.8% | 0.4995 | 0.4995 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2001 |
| STORage and RETrieval (STORET) | 2,111 | 361 | Sites | 17.1% | 0.0125 | 10.78 | 0.06 | 0.55 | | ug/L | | STORET data for parent, Alachlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------------------------|
| Contaminant: | Alachlor oxanilic acid (OA) |
| Substance Key: | 79196 |
| Contaminant ID (CASRN): | 171262172 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 9 | 3 |

Scores based on parent

| |
|--|
| Health Reference Level (HRL)¹: N/A |
| Health Reference Level (HRL)¹ cancer: 0.4 ug/L |

| |
|---|
| HRL/Concentration Ratio(s) |
| CAR HRL/NAWQA 90%: 1.56 (NAWQA data for alachlor - parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.1 | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|-------|-------|------|------|-----------|---|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 7,166 | 568 | Sites | 7.90% | 0.0008 | 38.2 | 0.015 | 0.256 | 3.33 | ug/L | 1992-2001 | NAWQA ambient water data for parent, Alachlor |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|-------|--------|--------|------|--------|--|------|-----------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 8,112 | 3 | PWS | 0.04% | 0.24 | 14 | 4.29 | 11.087 | | ug/L | | CAL DHS data for parent, Alachlor; Drinking water monitoring |
| Pesticide Data Program (PDP) | 411 | 21 | Samples | 5.1% | 0.121 | 0.392 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Data Program (PDP) | 137 | 1 | Samples | 0.7% | 0.4995 | 0.4995 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2001 |
| STORage and RETrieval (STORET) | 2,111 | 361 | Sites | 17.1% | 0.0125 | 10.78 | 0.06 | 0.55 | | ug/L | | STORET data for parent, Alachlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Anatoxin-a |
| Substance Key: | 80772 |
| Contaminant ID (CASRN): | 64285069 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 9 | 9 | 8 |

| |
|---|
| Health Reference Level (HRL)¹: 3.5 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-------------------------------------|
| HRL/Concentration Ratio(s) |
| NC HRL/Cyano HABs MAX: -0.35 |

| Source | Use |
|--------|----------------------|
| Use | Cyanobacterial toxin |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|--------|---------|------|-----------------|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Reference Dose (RfD)-like value | Primary Literature | 0.0005 | mg/kg-d | 2006 | Mortality | draft RfD; Basis NOAEL 0.5 mg/kg-d. Astrachan, N.B. and B.G. Archer. 1981. Simplified monitoring of anatoxin-a by reverse-phase high performance liquid chromatography and the sub-acute effects of anatoxin-a in rats. In: The Water Enviro |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|--|--|---------|----|--|-----|--|--|--|------|--|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Prev: UCMR 1 Meeting summary; Mag: CyanoHABs - The Florida Experience | | | Samples | 4% | | -10 | | | | ug/L | | Prev: Lake Champlain, NY study; Mag: 2000 Florida study |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | | | |
| Biodegradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|----------------|
| Contaminant: | Aniline |
| Substance Key: | 2438 |
| Contaminant ID (CASRN): | 62533 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 9 | 8 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 49 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 6 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Industrial chemical; as solvent; synthesis of explosives, rubber accelerators, isocyanates |

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| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.007 | mg/kg-d | | Blood- effects; Spleen-effects | CIIT, 1982, Provisional value; 104-week chronic study in rat for aniline hydrochloride. |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | 0.007 | mg/kg-d | 1993 | spleen | CIIT,1982, Basis LOAEL 7.2 mg/kg-d, UF = 1,000, rat |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 2.5 | mg/kg-d | | Blood - pigmented or nucleated red blood cells, Blood - methemoglobinemia-carboxyhemoglobin, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other esterases | 12 week oral study in rats; GISAAA Gigena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- Volume(issue)/page/year 24(7),44,1959 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.6 | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.0057 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.0057 | (mg/kg-d) ⁻¹ | | from IRIS |
| Cancer Classification ² | EPA | B2 | | | spleen |
| Cancer Classification ² | IARC | 3 | | 1987 | Vol. 27, Suppl. 7, 1987 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | EPA; CACART; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 1,903 | lbs/yr | 7 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 937,263 | lbs/yr | 20 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 44.78 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.9 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.02E-06 | atm-m ³ /mol | |
| Solubility in Water | 36,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Bensulide |
| Substance Key: | 9553 |
| Contaminant ID (CASRN): | 741582 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 5 | 10 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 0.224 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| HSDB | Herbicide |

| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | 0.005 | mg/kg-d | | Plasma & brain ChE inhibition, decreased body weight gain | Basis = NOAEL 0.5 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 271 | mg/kg | | Details of toxic effects not reported other than lethal dose value | FMCHA2 Farm Chemicals Handbook. (Meister Pub., 37841 Euclid Ave., Willoughy, OH 44094) Volume(issue)/page/year -,C42,1991 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 545,406 | lbs/yr | 34 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|--|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 158 ug/L; GW Chronic = 1 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 9.15E-09 | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | 15 | % | |

| | |
|--------------------------------|------------------------|
| Contaminant: | Benzyl chloride |
| Substance Key: | 4107 |
| Contaminant ID (CASRN): | 100447 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 8 | 7 | 5 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL): 62 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.2 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No data for calculating HRL ratio | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------------------|
| NTP | Chemical intermediate |

| 3-Model Categorical Prediction | |
|--------------------------------|--|
| L? - L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 26.6 | mg/kg-d | | Cardiac - other changes, Gastrointestinal - necrotic changes, Related to Chronic Data - death | JJIND8 JNCI, Journal of the National Cancer Institute. (Washington, DC) V.61-79, 1978-87. For publisher information, see JNCIEQ. Volume(issue)/page/year 76,1231,1986; 26 week oral study in rats |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|-------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.02 | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.17 | (mg/kg-d) ⁻¹ | | 2B from IARC |
| Slope Factor (Oral) | RAIS HE | 0.17 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1989 | Thyroid; Lijinsky, 1986 |
| Cancer Classification ² | IARC | 2B | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; RAIS; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|----|---|-----|----|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Krasner, et al., 2006 and related documentation | 12 | 0 | PWS | 0% | | | | | | ug/L | | Krasner, et al., 2006. Env. Sci. & Technol. 40(23): pp. 7175-7185. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 259 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 18,750 | lbs/yr | 10 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >50M - 100M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-------------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 517.8 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.3 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.000411 | atm-m ³ /mol | |
| Solubility in Water | 20 | mg/L | |
| Modeled Percent in Water | 27 | % | |

| | |
|--------------------------------|--------------------------|
| Contaminant: | Butylated hydroxyanisole |
| Substance Key: | 28160 |
| Contaminant ID (CASRN): | 25013165 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 3 | 8 | 4 |

| |
|---|
| Health Reference Level (HRL)¹: 0.581 ug/L |
| Health Reference Level (HRL)¹ cancer: 175 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/NREC NA GW MED: 0.484 CAR HRL/NREC NA GW MED: 146 |

| Source | Use |
|--------|-----------------------------|
| HSDB | Food additive (antioxidant) |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---------------------------------|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.249 | mg/kg-d | 1959 | Liver - changes in liver weight | AJEBAK Australian Journal of Experimental Biology and Medical Science. (Adelaide, S.A., Australia) V.1-64, 1924-86. Volume(issue)/page/year 37,533,1959 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.0002 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | | Vol. 40, Suppl. 7, 1987 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | 85 | 2 | Sites | 2.40% | | | 0.1 | | | ug/L | 1999-2004 | Surface water; National Reconnaissance |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | 2.92% | | | 0.2 | | | ug/L | 1999-2004 | Surface water; National Aggregate |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | 0.61% | | | | | | ug/L | 1999-2004 | Ground water; National Aggregate. Size of dataset not reported. |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | 1.2 | | | ug/L | 1999-2004 | Ground water; National Aggregate. Size of dataset not reported. |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 85 | | Sites | 2.4% | | 0.2 | 0.1 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |
| Focazio et al., 2008 | 73 | | Sites | 0% | | | | | | ug/L | 2001 | A national reconnaissance for pharmaceuticals and other organic wastewater contaminants in the United States -- II. Untreated drinking water sources. Focazio, et al., 2008. Sci. Tot. Env., 402(2-3), pp. 201-216. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 1,390 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.5 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.17E-06 | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | 15 | % | |

| | |
|--------------------------------|---------------|
| Contaminant: | Captan |
| Substance Key: | 5825 |
| Contaminant ID (CASRN): | 133062 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 8 | 10 | 8 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 910 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 14.6 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 84.3 | | | |
| CAR HRL/SWC EEC: 1.35 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| NTP | Fungicide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | 0.13 | mg/kg-d | 1999 | Decreased pup body weight | Basis = NOEL 12.5 mg/kg-d; UF = 100 |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.13 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.1 | mg/kg-d | 1995 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 19.9 | mg/kg-d | | Kidney, Ureter, Bladder - other changes in urine composition, Blood - pigmented or nucleated red blood cells, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases | GISAAA Gigiena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- Volume(issue)/page/year 38(9),24,1973 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0024 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | 0.0023 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.0035 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 3 | | 1987 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 3,992,782 | lbs/yr | 39 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 15 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 2,938 | lbs/yr | 6 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 10.8 ug/L; GW Chronic = 0 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades Sometimes/Recalcitrant; However, hydrolysis half-life is 4.9 hrs - 18.8 hrs @ pH 7 and 5, respectively. |
| Organic Carbon Partitioning Coefficient (Koc) | 862.2 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.8 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 7.007E-09 | atm-m ³ /mol | |
| Solubility in Water | 5.1 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Chlorate |
| Substance Key: | 24376 |
| Contaminant ID (CASRN): | 14866683 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 10 | 10 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 210 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/DBP ICR 90%: 0.656 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Agricultural defoliant or desiccant and in the production of ClO2. |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | 0.03 | mg/kg-d | | Thyroid hypertrophy and mineralization | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 5 | mg/kg-d | 2005 | Bone marrow hyperplasia; thyroid follicular hypertrophy and mineralization | NTP Abstract for TR-517; 2-year rat study for sodium chlorate |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1.4 | mg/kg-d | | Blood - pigmented or nucleated red blood cells, Blood - changes in erythrocyte (RBC) count, Nutritional and Gross Metabolic - weight loss or decreased weight gain | 1-year oral rat study for sodium chlorate; Journal of Environmental Pathology, Toxicology and Oncology. (Chem-Orbital, POB 134, Park Forest, IL 60466) V.5(4)-1984- Volume(issue)/page/year |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | See Notes | | | Not likely to be carcinogenic at doses that do not alter thyroid. |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|----------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |
| Guideline Value (GV) | WHODWQ | 700 | ppb | Public Comment |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|----------------------------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Disinfection By-product (DBP) Information Collection Request (ICR) | 1,719 | 1,490 | PWS | 86.70% | | 2,234 | 120 | 320 | | ug/L | 1997-1998 | Mean Value of Detects = 172 ug/L |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|----|-----|-------|------|-----|-----|-------|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 116 | 66 | PWS | 56.9% | 0.01 | 747 | 110 | 245.3 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 7,261,557 | lbs/yr | 16 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|-----------|----------------|---------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | cm³/g | |
| Henry's Law Coefficient | | atm-m³/mol | |
| Solubility in Water | 1,000,000 | mg/L | For sodium chlorate |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--|
| Contaminant: | Chloromethane (Methyl chloride) |
| Substance Key: | 2605 |
| Contaminant ID (CASRN): | 74873 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 8 | 7 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 28 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 2.69 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 2.15 | | | |
| CAR HRL/UCM R1 90%: 0.207 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Foaming agent; in organic synthesis; naturally-occurring gas |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | 0.004 | mg/kg-d | 2006 | Mild neurological effects in humans occupationally exposed to chloromethane | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|----------------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.013 | (mg/kg-d) ⁻¹ | 1981 | CIIT, 1981 |
| Cancer Classification ² | EPA | D | | 2001 | |
| Cancer Classification ² | IARC | 3 | | 1999 | Vol. 41, Suppl. 7, Vol. 71; 1999 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | CACART; RAIS | Yes | | developmental |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.1 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 20,246 | 248 | PWS | 1.22% | 0.01 | 550 | 1.9 | 13 | 120 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 23,478 | 528 | PWS | 2.25% | 0.00073 | 312 | 1.4 | 5 | 29 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|-------|----|------|-----|------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 3,959 | 356 | Sites | 8.99% | 0.007 | 21 | 0.04 | 0.1 | 0.58 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|--------|-----|-----|------|------|-----|-----|---|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Krasner, et al., 2006 and related documentation | 12 | 1 | PWS | 8.3% | | 0.2 | | | | ug/L | | Krasner, et al., 2006. Env. Sci. & Technol. 40(23): pp. 7175-7185. |
| California Department of Health Services | 11,984 | 247 | PWS | 2.1% | 0.25 | 46 | 0.7 | 2 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 1,539 | lbs/yr | 10 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,733,197 | lbs/yr | 26 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|-------------------------|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 14 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.91 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.00882 | atm-m ³ /mol | |
| Solubility in Water | 5,320 | mg/L | |
| Modeled Percent in Water | 43 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Clethodim |
| Substance Key: | 76719 |
| Contaminant ID (CASRN): | 110429624 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 4 | 10 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 70 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 9.21 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--------------------------------|
| Use | Herbicide; pesticide degradate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.01 | mg/kg-d | | Increased liver weights increased liver enzymes and liver histopathology | Basis = NOEL 1 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.01 | mg/kg-d | 1999 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 1,360 | mg/kg | | Details of toxic effects not reported other than lethal dose value | FMCHA2 Farm Chemicals Handbook. (Meister Pub., 37841 Euclid Ave., Willoughy, OH 44094) Volume(issue)/page/year -, C272,1991, Oral study in rat |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 670,721 | lbs/yr | 39 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 7.6 ug/L; GW Chronic = 0.49 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|----------------|
| Contaminant: | Cobalt |
| Substance Key: | 18870 |
| Contaminant ID (CASRN): | 7440484 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 4 | 4 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 70 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NIRS 90%: 6.67 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Use data are for cobaltous chloride: Formerly in medicines; as germicide; naturally-occurring |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.02 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.01 | mg/kg-d | 2004 | Blood-increased hemoglobin, polycythemia; respiratory-effects on lung function | Minimal Risk Level - Intermediate Exposure Duration; UF = 100 |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | 0.0014 | mg/kg-d | 2000 | Heart | multiple studies as cited in ATSDR, 1992; UF = 30; human study; RIVM; Basis LOAEL = 0.04 mg/kg-d |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|--|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | 1991 | Vol. 52, 1991; NB: Evaluated as a group; Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | IARC; CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 3 | PWS | 0.30% | 6.4 | 10.6 | 9.7 | 10.5 | 10.6 | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|--------|-------|-----|------|------|------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 3,297 | 782 | Sites | 23.72% | 0.007 | 684 | 0.22 | 3.91 | 53.2 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 1,272 | lbs/yr | 17 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 786,491 | lbs/yr | 38 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|----------------|---|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; assumed persistent; All use and env. Fate data are for cobaltous chloride |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | dimensionless | |
| Solubility in Water | 534,200 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------------------|
| Contaminant: | Cumene hydroperoxide |
| Substance Key: | 2927 |
| Contaminant ID (CASRN): | 80159 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 9 | 8 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 76.4 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| HSDB | Industrial chemical |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 32.7 | mg/kg-d | | Mortality | AIHAAP American Industrial Hygiene Association Journal. (AIHA, 475 Wolf Ledges Pkwy., Akron, OH 44311) V.19- 1958- Volume(issue)/page/year 19,205,1958; 7 week oral study in rats |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 382 | mg/kg | | | Oral study in rats |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 96 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 443,722 | lbs/yr | 15 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.16 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 4.71E-08 | atm-m ³ /mol | |
| Solubility in Water | 13,900 | mg/L | |
| Modeled Percent in Water | 25 | % | |

| | |
|--------------------------------|---------------------------|
| Contaminant: | Cylindrospermopsin |
| Substance Key: | 81115 |
| Contaminant ID (CASRN): | 143545908 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 3 | 5 | 10 |

Default Prevalence score based on related cyanotoxin surveys

| |
|---|
| Health Reference Level (HRL)¹: 0.21 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|--------------------------------------|
| HRL/Concentration Ratio(s) |
| NC HRL/CyanoHABs MAX: -0.0021 |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|----------------------|
| Use | Cyanobacterial toxin |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|---------|---------|------|-------------------------|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Reference Dose (RfD)-like value | Primary Literature | 0.00003 | mg/kg-d | 2006 | Increased kidney weight | draft RfD; Basis LOAEL 60 ug/kg-d; NOAEL 3 ug/kg-d. Humpage, A.R. and I.R. Falconer, 2003. Oral toxicity of the cyanobacterial toxin cylindrospermopsin in male Swiss albino mice: Determination of no observed adverse effect level for deriving a Drinking Water Guideline Value. Environ. Toxicol. 18(2):94-103. |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| UCMR 1 Supplemental | | | PWS | | | 90 | | | | ug/L | | Florida survey; # PWSs/sites (total and with detects) not available |
| CyanoHABs - The Florida Experience | | | Samples | | | ~100 | | | | ug/L | | 2000 Florida study; # PWSs/sites (total and with detects) not available |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------|
| Contaminant: | Dicrotophos |
| Substance Key: | 6098 |
| Contaminant ID (CASRN): | 141662 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 5 | 8 | 6 |

| |
|---|
| Health Reference Level (HRL)¹: 0.49 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| NC HRL/SWC EEC: 2.45 |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.00007 | mg/kg-d | | Decreased plasma, RBC & brain ChE activity | Basis = LOAEL 0.02 mg/kg-d; UF = 300. |
| Reference Dose (RfD) | IRIS | 0.0001 | mg/kg-d | 1986 | Decreased body weight | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.0001 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 11 | mg/kg | | Details of toxic effects not reported other than lethal dose value | GUCHAZ Guide to the Chemicals Used in Crop Protection. (Information Canada, 171 Slater St., Ottawa, Ont., Canada) Volume(issue)/page/year 6,196,1973 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|---------------------|-------------------------|------|------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | Suggestive evidence | | | OPP; no quantification |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|----|--|--|--|--|--|------|------|-------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 221 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water; Method 9002 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 317 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water; Method 9002 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 359,726 | lbs/yr | 13 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date | |
|--|--------|--|-------------------------|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 0.2 ug/L; GW Chronic = 0.005 ug/L | | |
| Environmental Fate Parameters | | Value | Units | Notes |
| Half Life | | | length of time | |
| Degradation Code | | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | 366.2 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | -0.49 | dimensionless | |
| Distribution Coefficient (Kd) | | | L/kg | |
| Henry's Law Coefficient | | 5.05E-11 | atm-m ³ /mol | |
| Solubility in Water | | 1,000,000 | mg/L | |
| Modeled Percent in Water | | 39 | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Dimethipin |
| Substance Key: | 36818 |
| Contaminant ID (CASRN): | 55290647 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 8 | 5 |

| |
|---|
| Health Reference Level (HRL)¹: 153 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| NC HRL/GWC EEC: 1.55 |

| Source | Use |
|--------|-----------------------------------|
| HSDB | Herbicide; plant growth regulator |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|--|--------------------------------------|
| Reference Dose (RfD) | EPA OPP | 0.0218 | mg/kg-d | 1986 | Kidney, lungs, duodenum, liver, glandular stomach, heart, aortic artery & testes toxicity. Decreased body weight gain. | Basis = NOEL 2.18 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | 0.02 | mg/kg-d | | Increased absolute and relative liver weight | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.02 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.02 | mg/kg-d | 1999 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1987 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 282,458 | lbs/yr | 14 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 250 | lbs/yr | 1 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 7.3 ug/L; GW Chronic = 99 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 27.41 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.17 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.3E-11 | atm-m ³ /mol | |
| Solubility in Water | 4,600 | mg/L | |
| Modeled Percent in Water | 46 | % | |

| | |
|--------------------------------|---------------|
| Contaminant: | Diuron |
| Substance Key: | 6583 |
| Contaminant ID (CASRN): | 330541 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 4 | 4 | 7 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 21 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 1.83 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCMR 90%: 10 | | | |
| CAR HRL/UCMR 90%: 0.871 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|------------------|
| HSDB | Herbicide (HSDB) |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | 0.003 | mg/kg-d | | Hemolytic anemia & compensatory hematopotesis (decreased erythrocyte count, hemoglobin level, etc). | du Pont, 1964a; Basis = LOAEL 1.0 mg/kg-d; UF = 300. |
| Reference Dose (RfD) | IRIS | 0.002 | mg/kg-d | 1987 | | Basis NOEL 0.625 mg/kg-d |
| Reference Dose (RfD) | EPA HA | 0.003 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.002 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1.75 | mg/kg-d | | Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol), Liver - changes in liver weight, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases | 30-day study in rat; TXAPA9 Toxicology and Applied Pharmacology. (Academic Press, Inc., 1 E. First St., Duluth, MN 55802) V.1- 1959- Volume(issue)/page/year 36,76,1990 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0191 | (mg/kg-d) ⁻¹ | 2003 | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | Known/Likely | | 2003 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | EPA; CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.1 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 298 | 1 | PWS | 0.34% | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|-----|-------|-------|--------|------|------|-------|-----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,552 | 319 | Sites | 7.00% | 0.0004 | 23.3 | 0.09 | 0.915 | 8.4 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--|--------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---------------------------------------|
| | Number | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 75th Percentile (Detects) | 95th Percentile (Detects) | Conc. Units | Date | Notes |
| Pesticide Data Program (PDP) | 270 | 1 | Samples | 0.4% | 0.058 | 0.058 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Pilot Monitoring Program (PMP) | 225 | 13 | Samples | 5.8% | | 0.079 | | | 0.079 | ug/L | 1999 | Finished Water; Method 9060 (HPLC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 312 | 117 | Samples | 37.5% | | 0.54 | | | 0.319 | ug/L | 1999 | Ambient Water; Method 9060 (HPLC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 4,370,448 | lbs/yr | 39 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 10 | lbs/yr | 2 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 798 | lbs/yr | 5 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | 224-879 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.68 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.8E-10 | atm-m ³ /mol | |
| Solubility in Water | 36.4 | mg/L | |
| Modeled Percent in Water | 15 | % | |

| | |
|--------------------------------|-----------|
| Contaminant: | Equilenin |
| Substance Key: | 81750 |
| Contaminant ID (CASRN): | 517099 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 9 | 5 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Koipin MAX: 1.26 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction | |
|--------------------------------|--|
| L? - L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | E2 |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 2.8% | | 0.278 | 0.14 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|--------|-------|-------------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | | Value | Units |
| Half Life | | | length of time |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | | L/kg |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.93 | | dimensionless |
| Distribution Coefficient (Kd) | | | L/kg |
| Henry's Law Coefficient | | | atm-m ³ /mol |
| Solubility in Water | 1.52 | | mg/L |
| Modeled Percent in Water | | | % |

| | |
|--------------------------------|----------------|
| Contaminant: | Equilin |
| Substance Key: | 81748 |
| Contaminant ID (CASRN): | 474862 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 8 | 5 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Koipin MAX: 2.38 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | E2 |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 1.4% | | 0.147 | 0.147 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|--------|-------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | | Value | Units |
| Half Life | | 38 | days |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | | L/kg |
| Log Octanol-water Partitioning Coefficient (Kow) | | 3.35 | dimensionless |
| Distribution Coefficient (Kd) | | | L/kg |
| Henry's Law Coefficient | | | atm-m ³ /mol |
| Solubility in Water | | 1.41 | mg/L |
| Modeled Percent in Water | | 13 | % |

| | |
|--------------------------------|---------------------|
| Contaminant: | Erythromycin |
| Substance Key: | 75632 |
| Contaminant ID (CASRN): | 114078 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 3 | 10 | 4 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 4.9 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NREC MAX: 2.88 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|----------------------------|
| Use | Pharmaceutical, antibiotic |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|--------|---------|------|--|---------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.0007 | mg/kg-d | 2006 | Inhibition of beneficial gastrointestinal bacteria | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 66.7 | mg/kg-d | | | Maximum Recommended Daily Dose (MRDD) |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-----|----|-------|--------|--|-----|-----|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | 104 | 22 | Sites | 21.50% | | 1.7 | 0.1 | | | ug/L | 1999-2004 | Surface water; National Reconnaissance |
| National Reconnaissance of Emerging Contaminants (NREC) | 90 | 0 | Sites | 0.00% | | | | | | ug/L | 1999-2004 | Ground water; National Reconnaissance |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|----|--|-------|------|--|-----|--|--|--|------|------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Focazio et al., 2008 | 73 | | Sites | 8.1% | | 0.3 | | | | ug/L | 2001 | Drinking water monitoring; Focazio, et al., 2008. Sci.Tot. Env. 402(2-3), pp. 201-216. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|-------------------------|--|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 180 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.06 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.2E-29 | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | 6 | % | |

| | |
|--------------------------------|--------------------------------------|
| Contaminant: | Estradiol (17-beta estradiol) |
| Substance Key: | 2130 |
| Contaminant ID (CASRN): | 50282 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 8 | 10 | 5 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.0009 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Kolpin MAX: 1.75 | | | |
| CAR HRL/Kolpin MAX: 0.0045 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 39 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 1 | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | IARC; CACART; OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 85 | | Sites | 10.6% | | 0.2 | 0.16 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Raw Drinking Water; Snyder, et al., 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Finished Drinking Water; Snyder, et al, 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.01 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.4E-11 | atm-m ³ /mol | |
| Solubility in Water | 3.6 | mg/L | |
| Modeled Percent in Water | 11 | % | |

| | |
|--------------------------------|----------------|
| Contaminant: | Estriol |
| Substance Key: | 75525 |
| Contaminant ID (CASRN): | 50271 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 10 | 3 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Koipin MAX: 6.86 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | E2 |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 21.4% | | 0.051 | 0.019 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Raw Drinking Water; Snyder, et al., 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Finished Drinking Water; Snyder, et al, 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.45 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.33E-12 | atm-m ³ /mol | |
| Solubility in Water | 441 | mg/L | |
| Modeled Percent in Water | 17 | % | |

| | |
|--------------------------------|----------------|
| Contaminant: | Estrone |
| Substance Key: | 2210 |
| Contaminant ID (CASRN): | 53167 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 9 | 3 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Swartz MAX: 2.92 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JECFA | 0.00005 | mg/kg-d | 1999 | Estrogenic hormonal response in post-menopausal women | E2 |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|----|---|---------|------|--|-------|-------|--|--|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Boyd, et al., 2003 | | 0 | N/A | 0 | | | | | | ug/L | | Maximum value is non-detect; Finished Drinking Water; Boyd, et al, 2003. Sci. Tot. Env. 311(1-3): pp. 135-149. |
| Kolpin et al., 2002 | 70 | | Sites | 7.1% | | 0.112 | 0.027 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |
| Swartz, et al., 2006 | | | N/A | | | 0.12 | | | | ug/L | | Ambient Water (SW/GW); Swartz, et al., 2006. Env. Sci. & Technol. 40(16): pp. 4894-4902. |
| Snyder, et al., 2008 | | | Samples | | | 0.002 | | | | ug/L | | Raw Drinking Water; Snyder, et al, 2008. Removal of Endocrine Disruptors and Pharmaceuticals during Water Treatment. In: Fate of Pharmaceuticals in the Environmental and in Water Treatment Systems. |
| Boyd, et al., 2003 | | | N/A | | | 0 | | | | ug/L | | Maximum value is non-detect; Finished Drinking Water; Boyd, et al, 2003. Sci. Tot. Env. 311(1-3): pp. 135-149. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.13 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.8E-10 | atm-m ³ /mol | |
| Solubility in Water | 30 | mg/L | |
| Modeled Percent in Water | 13 | % | |

| | |
|--------------------------------|---|
| Contaminant: | Ethinyl Estradiol (17-alpha ethynyl estradiol) |
| Substance Key: | 2327 |
| Contaminant ID (CASRN): | 57636 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 3 | 10 | 4 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL): 0.035 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Kolpin MAX: 0.128 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| Use | Pharmaceutical, hormone |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|--------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 0.04 | mg/kg-d | 2001 | Hematological effects | Maier and Hermann, 2001. Regulatory Toxicology and Pharmacology, 34, pp 53-61. |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.0005 | mg/kg-d | | | Maximum Recommended Daily Dose (MRDD) |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.015 | mg/kg-d | 1981 | Increased serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and γ-glutamyltransferase (GGT). | Tennant, et al., 1981 as cited in Maier and Hermann, 2001. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 5.7% | | 0.273 | 0.094 | | | ug/L | 1999-2000 | Response to Comment on National Surface Water Reconnaissance Kolpin et al., 2002: Env. Sci. & Technol., 36(18), pp. 4007-4008. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Raw Drinking Water; Snyder, et al., 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |
| Snyder, et al., 2007 | 20 | 0 | Samples | 0% | | | | | | ug/L | | Finished Drinking Water; Snyder, et al., 2007. Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes. American Water Works Association. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|--|
| Half Life | 60 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.67 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 7.94E-12 | atm-m ³ /mol | |
| Solubility in Water | 11.3 | mg/L | |
| Modeled Percent in Water | 9 | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Ethoprop |
| Substance Key: | 22682 |
| Contaminant ID (CASRN): | 13194484 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 3 | 7 | 3 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 0.7 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 1.25 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NAWQA 90%: 7.29 | | | |
| CAR HRL/NAWQA 90%: 13 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.0001 | mg/kg-d | | Plasma ChE inhibition, Q1* 0.0281 (mg/kg-day)-1 - Likely. | Basis = NOAEL 0.01 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.0004 | mg/kg-d | 1999 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 33 | mg/kg | | Behavioral - changes in motor activity (specific assay), Behavioral - muscle contraction or spasticity | HBPTO Handbook of pesticide toxicology. Robert Krieger ed, Academic press, 2001 Volume(issue)/page/year 1,693,2001 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|--|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.12 | mg/L | | |
| Slope Factor (Oral) | EPA | 0.0281 | (mg/kg-d) ⁻¹ | | OPP RED and Ethoprop pesticide tolerances: 73 FR 53725, September 17, 2008 |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | Likely | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|----|-------|-------|-------|------|-------|-------|-----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 7,118 | 84 | Sites | 1.18% | 0.002 | 1.95 | 0.011 | 0.096 | 0.8 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|----|--|--|--|--|--|------|------|-------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 228 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water; Method 2001 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 323 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water; Method 2001 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 1,010,807 | lbs/yr | 28 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 77,786 | lbs/yr | 4 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|---|
| Half Life | 75-133 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; hydrolysis only |
| Organic Carbon Partitioning Coefficient (Koc) | 70-120 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.59 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.7E-07 | atm-m ³ /mol | |
| Solubility in Water | 750 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------------|
| Contaminant: | Ethylene glycol |
| Substance Key: | 4599 |
| Contaminant ID (CASRN): | 107211 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 3 | 9 | 10 | 10 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 14,000 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| NTP | Antifreeze; cancelled pesticide; synthetic chemical used in textile manufacture |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 2 | mg/kg-d | 1987 | Kidney toxicity. Increased mortality, neutrophil count, kidney hemoglobin & hematocrit, chronic nephritis | DePass et al., 1986a; UF = 100; Rat; Basis NOAEL = 200 mg/kg-d |
| Reference Dose (RfD) | EPA HA | 2 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 2 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.8 | mg/kg-d | 2007 | Increased total malformations and incidence of extra rib 14 in developmental study | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | 0.05 | mg/kg-d | 2000 | Kidney | Gaunt et al., 1974; UF = 1,000; Rat |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 600 | mg/kg-d | | Behavioral - fluid intake, Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis), Related to Chronic Data - death | 2 year oral study in rats; FCTXAV Food and Cosmetics Toxicology. (London, UK) V.1-19, 1963-81. For publisher information, see FCTOD7. Volume(issue)/page/year 3,229,1965 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1987 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 70 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 576,990 | lbs/yr | 31 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 10,076,483 | lbs/yr | 49 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 1 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -1.36 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6E-08 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------------|
| Contaminant: | Ethylene Oxide |
| Substance Key: | 2635 |
| Contaminant ID (CASRN): | 75218 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 8 | 10 | 8 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.113 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------|
| NTP | Fumigant; gas |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.31 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 1.02 | (mg/kg-d) ⁻¹ | | HEAST |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 1 | | 1994 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---|-------|-------|--------------------------|
| Is contaminant on list of carcinogens? | CACART; RAIS; OEHHA; EPA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | Teratogen; Developmental |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 4,761 | lbs/yr | 4 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 374,110 | lbs/yr | 38 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-------------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 1.435 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.3 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.000148 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | 43 | % | |

| | |
|--------------------------------|--------------------------|
| Contaminant: | Ethylene thiourea |
| Substance Key: | 3836 |
| Contaminant ID (CASRN): | 96457 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 4 | 1 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 1.4 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.06 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/GWC EEC: 6.67 | | | |
| CAR HRL/GWC EEC: 0.286 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| Mixed | Pesticide Accelerator; industrial intermediate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.0002 | mg/kg-d | | Thyroid toxicity | |
| Reference Dose (RfD) | IRIS | 0.00008 | mg/kg-d | 1991 | Increased incidence of thyroid hyperplasia | Graham et al., 1975, Basis LOAEL 0.25 mg/kg-d. |
| Reference Dose (RfD) | EPA HA | 0.00008 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.00008 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.004 | mg/kg-d | 1993 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1.34 | mg/kg-d | | Nutritional and Gross Metabolic - weight loss or decreased weight gain | 8-week study in rat; JAFCAU Journal of Agricultural and Food Chemistry. (American Chemical Soc., Distribution Office Dept. 223, POB 57136, West End Stn., Washington, DC 20037) V.1- 1953- Volume(issue)/page/year 21,324,1973 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.006 | mg/L | | OPP |
| Slope Factor (Oral) | OEHHA | 0.045 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.06 | (mg/kg-d) ⁻¹ | | OPP |
| Cancer Classification ² | EPA | B2 | | 1988 | |
| Cancer Classification ² | IARC | 3 | | 2001 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | EPA; RAIS; OEHHA; IARC; CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | Teratogen; Developmental |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.003 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 5 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 299 | lbs/yr | 4 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|---|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 0.1 ug/L; GW Chronic = 0.21 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 6.5 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.66 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.4E-07 | atm-m ³ /mol | |
| Solubility in Water | 20,000 | mg/L | @30°C |
| Modeled Percent in Water | 48 | % | |

| | |
|--------------------------------|---------------------|
| Contaminant: | Formaldehyde |
| Substance Key: | 2119 |
| Contaminant ID (CASRN): | 50000 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 6 | 10 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL): 1,400 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/DBP ICR MED: 184 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| NTP | Naturally-occurring fungicide; Disinfection by-Product; gas |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.2 | mg/kg-d | 1990 | Reduced weight gain, histopathology in rats. Decreased absolute heart, liver, testes & kidney weights. Increased relative brain, testes weights. | Til et al., 1989, Basis = NOAEL 15 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | 0.2 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.2 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.2 | mg/kg-d | 1999 | Gastro. | Minimal Risk Level - Intermediate Exposure Duration; Basis = NOAEL 15 mg/kg-d; ATSDR Minimal Risk Level - Intermediate Exposure Duration* = 0.3 mg/kg-d (Til et al., 1989). |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 12.5 | mg/kg-d | | Liver - other changes, Blood - changes in spleen | VCVVK "Vrednie chemicheskije veshstva, galogen i kislorod sodergashije organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume(issue)/page/year -,339,1994 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B1 | | 1993 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | 2A | | 1995 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | CACART; EPA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 7 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|------------------------------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Disinfection By-product (DBP) Information Collection Request (ICR) | 227 | 126 | PWS | 55.50% | 5 | 30.6 | 7.6 | | 29.7 | ug/L | 1997-1998 | Mean Value of Detects = 10.05 ug/L |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 326,298 | lbs/yr | 31 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 26,992,234 | lbs/yr | 46 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 1 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.35 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.38E-07 | atm-m ³ /mol | |
| Solubility in Water | 400,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Germanium |
| Substance Key: | 18876 |
| Contaminant ID (CASRN): | 7440564 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 6 | 4 | 10 |

| |
|---|
| Health Reference Level (HRL)¹: 0.744 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| NC HRL/NIRS 90%: 0.003 |

| Source | Use |
|--------|--|
| HSDB | Use data are for germanium dioxide: Phosphors, transistors and diodes; electroplating; naturally-occurring |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.318 | mg/kg-d | | Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis) | JJMDAT Japanese Journal of Medicine. (Nankodo Co., Ltd., POB 5272, Tokyo International 100-31, Japan) V.1-30, 1962-1991. For publisher information, see IEDIEP. Volume(issue)/page/year 30,67,1991. EPA believes the RTECS LOAEL may be incorrectly cited |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 4 | PWS | 0.40% | 26 | 230 | 220 | 220 | 230 | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|----------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; assumed persistent; all use and env. Fate data are for germanium dioxide |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | dimensionless | |
| Solubility in Water | 4,470 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--|
| Contaminant: | Halon 1011 (bromochloromethane) |
| Substance Key: | 2613 |
| Contaminant ID (CASRN): | 74975 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 3 | 5 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 70 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 7 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Fire extinguishing fluid; chemical intermediate |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | 0.01 | mg/kg-d | | Increased liver-to-body weight ratio. Cloudy swelling and vacuolization of hepatocytes. | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.5 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 12,881 | 65 | PWS | 0.50% | 0.05 | 210 | 1 | 10 | 210 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 22,974 | 106 | PWS | 0.46% | 0.0023 | 33.4 | 1 | 6 | 27.9 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|---|-------|-------|------|------|-----|-------|------|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,238 | 7 | Sites | 0.17% | 0.01 | 0.45 | 0.2 | 0.422 | 0.45 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|--------|----|-----|------|-----|-----|---|-----|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Krasner, et al., 2006 and related documentation | 12 | 0 | PWS | 0% | | | | | | ug/L | | Krasner, et al., 2006. Env. Sci. & Technol. 40(23): pp. 7175-7185. |
| California Department of Health Services | 11,938 | 15 | PWS | 0.1% | 0.5 | 2.1 | 1 | 1.8 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|-------------------------|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 23.7 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.41 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.00146 | atm-m ³ /mol | |
| Solubility in Water | 16700 | mg/L | |
| Modeled Percent in Water | 40 | % | |

| | |
|--------------------------------|----------------|
| Contaminant: | HCFC-22 |
| Substance Key: | 2654 |
| Contaminant ID (CASRN): | 75456 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 5 | 10 | 10 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 31.5 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Refrigerant; low-temperature solvent; fluorocarbon resins, especially tetrafluoroethylene polymers; gas |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 13.5 | mg/kg-d | 1983 | Brain and Coverings - other degenerative changes, Blood - changes in other cell count (unspecified), Nutritional and Gross Metabolic - weight loss or decreased weight gain | 26-week study in rat; GISAAA Gigiena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- Volume(issue)/page/year 48(8),69,1983 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 3 | | 1999 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 2,972 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 7,075,769 | lbs/yr | 35 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|--------|-------------------------|-------------------------------|
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 35.04 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.08 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.0407 | atm-m ³ /mol | |
| Solubility in Water | 2,770 | mg/L | |
| Modeled Percent in Water | 43 | % | |

| | |
|--------------------------------|--------|
| Contaminant: | Hexane |
| Substance Key: | 4858 |
| Contaminant ID (CASRN): | 110543 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 3 | 10 | 10 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 420 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|------------------------------|
| NTP | Naturally-occurring; solvent |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.06 | mg/kg-d | 1989 | Decreased body weight gain | Basis LOAEL = 570 mg/kg-d, UF = 10,000, oral rat study. Health and Environmental Effects Document for n-Hexane, ECAO-CIN-G076, Environmental Criteria and Assessment Office, Final Draft, September 1989. |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1,429 | mg/kg-d | | Nutritional and Gross Metabolic - weight loss or decreased weight gain | TIHEEC Toxicology and Industrial Health. (Princeton Scientific Pub. Co., POB 2155, Princeton, NJ 08540) V.1- 1985- Volume(issue)/page/year 1(3),67,1985 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1987 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 14,489 | lbs/yr | 38 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 39,844,882 | lbs/yr | 53 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 149 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.9 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.8 | atm-m ³ /mol | |
| Solubility in Water | 9.5 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Hydrazine |
| Substance Key: | 6460 |
| Contaminant ID (CASRN): | 302012 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 9 | 7 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.01 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Chemical intermediate; rocket propellant; oxygen/chlorine scavenger |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.001 | mg/L | | |
| Slope Factor (Oral) | OEHHA | 3 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 3 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | | |
| Cancer Classification ² | IARC | 2B | | 1999 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; IARC; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 5 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 165,485 | lbs/yr | 16 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 14.3 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -2.07 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.44E-08 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Mestranol |
| Substance Key: | 2581 |
| Contaminant ID (CASRN): | 72333 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 3 | 9 | 4 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.035 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Koipin MAX: 0.86 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------------------|
| Use | Metabolite of ethinyl estradiol |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|---------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 0.04 | mg/kg-d | 2001 | Hematological effects | Maier and Hermann, 2001. Regulatory Toxicology and Pharmacology, 34, pp 53-61. |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.00083 | mg/kg-d | | | Maximum Recommended Daily Dose (MRDD) |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.015 | mg/kg-d | 1981 | Increased serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and γ-glutamyltransferase (GGT). | Data for ethinyl estradiol. Tennant, et al., 1981 as cited in Maier and Hermann, 2001. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|---|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|--|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 4.3% | | 0.407 | 0.017 | | | ug/L | 1999-2000 | Response to Comment on National Surface Water Reconnaissance Kolpin et al., 2002: Env. Sci. & Technol., 36(18), pp. 4007-4008. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|-----------------------|-------------------------|--|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 60 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.68 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | Practically insoluble | mg/L | |
| Modeled Percent in Water | 9 | % | |

| | |
|--------------------------------|----------------------|
| Contaminant: | Methamidophos |
| Substance Key: | 21025 |
| Contaminant ID (CASRN): | 10265926 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 5 | 10 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 2.1 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 0.304 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|-----------------------|---------------------------------------|
| Reference Dose (RfD) | EPA OPP | 0.0003 | mg/kg-d | | Brain ChE inhibition | Basis = NOAEL 0.03 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | 0.00005 | mg/kg-d | 1987 | Decreased body weight | Basis = LOEL 0.05 mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.00005 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.004 | mg/kg-d | 1990 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 965,584 | lbs/yr | 39 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|--|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 6.9 ug/L; GW Chronic = 3.8 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-------------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 3.848 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.8 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 8.7E-10 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | 39 | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Methanol |
| Substance Key: | 2508 |
| Contaminant ID (CASRN): | 67561 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 3 | 7 | 10 | 10 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 14,000 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Industrial solvent; gasoline additive; anti-freeze |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 2 | mg/kg-d | | Extra cervical ribs | UF = 100; Public Comment |
| Reference Dose (RfD) | IRIS | 0.5 | mg/kg-d | 1988 | Increased SAP & SGPT& liver weight, decreased brain weight | U.S. EPA, 1986; Basis NOEL 500 mg/kg-d; UF = 1,000; Rat |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.5 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 3.13 | mg/kg-d | | Liver - other changes | 200 day oral study in rats; VCVGK "Vrednie chemichescie vesthestva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume(issue)/page/year -,89. |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 5,600 | mg/kg | | Details of toxic effects not reported other than lethal dose value | Rats; VCVGK "Vrednie chemichescie vesthestva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. Volume(issue)/page/year -,87,1984 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 10,966,234 | lbs/yr | 41 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 201,697,278 | lbs/yr | 52 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 1 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.77 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 4.56E-06 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------------------------------------|
| Contaminant: | Methyl bromide (Bromomethane) |
| Substance Key: | 2601 |
| Contaminant ID (CASRN): | 74839 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 6 | 6 | 7 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 9.8 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 0.891 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| NTP | Cancelled fumigant; gas |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|--------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.0014 | mg/kg-d | 1988 | Epithelial hyperplasia in the forestomach | Danse et al., 1984, Basis = NOAEL = 1.4 mg/kg-day, UF = 1,000, Rat |
| Reference Dose (RfD) | EPA HA | 0.001 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.0014 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.003 | mg/kg-d | 9/1992 | Gastro | Minimal Risk Level - Intermediate Exposure Duration |
| Acceptable Daily Intake (ADI) | JMPR | 1 | mg/kg-d | 1966 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 29.9 | mg/kg-d | | Kidney, Ureter, Bladder - other changes in urine composition, Skin and Appendages - hair, Nutritional and Gross Metabolic - weight loss or decreased weight gain | 2-year oral study in rat; FCTOD7 Food and Chemical Toxicology. (Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523) V.20- 1982- Volume(issue)/page/year 28,109,1990 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1989 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | 3 | | 1999 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | CACART | Yes | | Developmental |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.05 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 20,198 | 155 | PWS | 0.77% | 0.07 | 43 | 1 | 11 | 34 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 23,328 | 175 | PWS | 0.75% | 0.09 | 38.1 | 1.6 | 8.1 | 27.2 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|---|-------|-------|------|-----|-----|-----|-----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,317 | 3 | Sites | 0.07% | 0.04 | 0.5 | 0.1 | 0.5 | 0.5 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 32,803,943 | lbs/yr | 29 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 200 | lbs/yr | 3 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 533,748 | lbs/yr | 17 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | 20-26.7 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly; hydrolysis only |
| Organic Carbon Partitioning Coefficient (Koc) | 9-22 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.19 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.00734 | atm-m ³ /mol | |
| Solubility in Water | 13,400 | mg/L | |
| Modeled Percent in Water | 42 | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | Metolachlor |
| Substance Key: | 35270 |
| Contaminant ID (CASRN): | 51218452 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 3 | 6 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 700 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R2 90%: 321 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| HSDB | Herbicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | 0.1 | mg/kg-d | 1995 | Decreased body weight gain | OPP RED, Basis = NOAEL 9.7 mg/kg-d; UF = 100 |
| Reference Dose (RfD) | IRIS | 0.15 | mg/kg-d | 1988 | Decreased body weight gain | Ciba-Geigy, 1983, Basis = NOEL 15 mg/kg-d; UF = 100 |
| Reference Dose (RfD) | EPA HA | 0.1 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.15 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 25 | mg/kg-d | | Behavioral - food intake (animal), Nutritional and Gross Metabolic - weight loss or decreased weight gain, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - phosphatases | NINGADV Nippon Noyaku Gakkaishi. Journal of the Pesticide Science Society of Japan. (Nippon Noyaku Gakkai, 1-43-11, Komagome, Toshima-ku, Tokyo 170, Japan) V.1- 1976- Volume(issue)/page/year 14,103,1989 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 1,150 | mg/kg | | Details of toxic effects not reported other than lethal dose value | NINGADV Nippon Noyaku Gakkaishi. Journal of the Pesticide Science Society of Japan. (Nippon Noyaku Gakkai, 1-43-11, Komagome, Toshima-ku, Tokyo 170, Japan) V.1- 1976- Volume(issue)/page/year 14,103,1989 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1988 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 3.5 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 13,007 | 116 | PWS | 0.89% | 0.01 | 13.8 | 0.57 | 2.18 | 7.1 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|-------|-------|-------|--------|--------|------|-------|------|------|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | 7,165 | 1,817 | Sites | 25.40% | 0.0002 | 77.6 | 0.025 | 0.58 | 6.71 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | 8.76% | | | 0.12 | | | ug/L | 1999-2004 | Surface water; National Reconnaissance |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | 1.23% | | | 0.125 | | | ug/L | 1999-2004 | Ground water; National Reconnaissance |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--|---------------|--------------------------|---------------------------|-----------------------------|--------------------------------|--------------------------------|-------------------------------|----------------------------------|----------------------------------|--------------------|-------------|-------------------------------------|
| California Department of Health Services | 7,345 | 15 | PWS | 0.2% | 0.05 | 0.7 | 0.06 | 0.1 | | ug/L | | Drinking water monitoring |
| Pesticide Data Program (PDP) | 582 | 233 | Samples | 40% | 0.005 | 0.226 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Data Program (PDP) | 203 | 102 | Samples | 50.2% | 0.01 | 0.079 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2001 |
| STORage and RETrieval (STORET) | 2,082 | 676 | Sites | 32.5% | 0.00867 | 86 | 0.19 | 1.4 | | ug/L | | |
| | Number | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 75th Percentile (Detects) | 95th Percentile (Detects) | Conc. Units | Date | Notes |
| Pesticide Pilot Monitoring Program (PMP) | 228 | 198 | Samples | 86.8% | | 0.661 | | | 0.336 | ug/L | 1999 | Finished Water; Method 2001 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 323 | 288 | Samples | 89.2% | | 3.32 | | | 0.033 | ug/L | 1999 | Ambient Water; Method 2001 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|------------------------|--------------|-------------------------|--------------|-------------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 67,336,211 | lbs/yr | 48 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|---------------------|--------------|-------------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date | |
|--|---------------|--------------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | | |
| Environmental Fate Parameters | | Value | Units | Notes |
| Half Life | 47:78 | | days | |
| Degradation Code | BSA | | | BSA = biodegrades slowly with acclimation; aerobic; anaerobic |
| Organic Carbon Partitioning Coefficient (Koc) | 22-310 | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.13 | | dimensionless | |
| Distribution Coefficient (Kd) | | | L/kg | |
| Henry's Law Coefficient | 9E-09 | | atm-m ³ /mol | |
| Solubility in Water | 530 | | mg/L | |
| Modeled Percent in Water | 12 | | % | |

| | |
|--------------------------------|--|
| Contaminant: | Metolachlor ethanesulfonic acid (ESA) |
| Substance Key: | 79218 |
| Contaminant ID (CASRN): | 171118095 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 2 | 1 | 6 | 6 |

Occurrence scores based on parent

| |
|--|
| Health Reference Level (HRL)¹: ≥7,000 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|--|
| HRL/Concentration Ratio(s) |
| HRL/UCM R2 90%: ≥3,210 (UCM R2 data for metolachlor - parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|--------|---------|------|-------------------------------------|-------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | ≥1,000 | mg/kg-d | | No biologically significant effects | EPA OPP NOAEL - FOR METOLACHLOR ESA |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 13,007 | 116 | PWS | 0.89% | 0.01 | 13.8 | 0.57 | 2.18 | 7.1 | ug/L | 1993-1997 | UCM Round 2 finished water data for parent, Metolachlor |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|-------|---------|------|------|-----|--|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 7,345 | 15 | PWS | 0.2% | 0.05 | 0.7 | 0.06 | 0.1 | | ug/L | | CAL DHS data for parent, Metolachlor; Drinking water monitoring |
| Pesticide Data Program (PDP) | 318 | 198 | Samples | 62.3% | 0.02 | 2.24 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Data Program (PDP) | 83 | 19 | Samples | 22.9% | 0.4995 | 2.21 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2001 |
| STORAGE and RETRIEVAL (STORET) | 2,082 | 676 | Sites | 32.5% | 0.00867 | 86 | 0.19 | 1.4 | | ug/L | | STORET data for parent, Metolachlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|---------------------------------------|
| Contaminant: | Metolachlor oxanilic acid (OA) |
| Substance Key: | 79220 |
| Contaminant ID (CASRN): | 152019733 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 2 | 1 | 6 | 6 |

Occurrence scores based on parent

| |
|---|
| Health Reference Level (HRL): 7,000 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|---|
| HRL/Concentration Ratio(s) |
| HRL/UCM R2 90%: 3,210 (UCM R2 data for metolachlor - parent) |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------------------|
| Use | Pesticide degradate |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|-------------------------------------|------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 1,000 | mg/kg-d | | No biologically significant effects | EPA OPP NOAEL - FOR METOLACHLOR OA |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 13,007 | 116 | PWS | 0.89% | 0.01 | 13.8 | 0.57 | 2.18 | 7.1 | ug/L | 1993-1997 | UCM Round 2 finished water data for parent, Metolachlor |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|-----|---------|-------|---------|-------|------|-----|--|------|-----------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 7,345 | 15 | PWS | 0.2% | 0.05 | 0.7 | 0.06 | 0.1 | | ug/L | | CAL DHS data for parent, Metolachlor; Drinking water monitoring |
| Pesticide Data Program (PDP) | 404 | 152 | Samples | 37.6% | 0.02 | 1.405 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2002 |
| Pesticide Data Program (PDP) | 138 | 14 | Samples | 10.1% | 0.4995 | 4.42 | | | | ug/L | 2001-2002 | Pesticide Data Program (USDA); 2001 |
| STORAGE and RETRIEVAL (STORET) | 2,082 | 676 | Sites | 32.5% | 0.00867 | 86 | 0.19 | 1.4 | | ug/L | | STORET data for parent, Metolachlor |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Molybdenum |
| Substance Key: | 18825 |
| Contaminant ID (CASRN): | 7439987 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 5 | 9 | 8 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NIRS 90%: 1.17 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Use data for molybdenum trioxide: As steel alloy; chemical reagent; naturally-occurring |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.005 | mg/kg-d | 1992 | increased uric acid levels | Koval'skiy et al., 1961; oral study in humans; UF = 30; Basis LOAEL = 0.14 mg/kg-d |
| Reference Dose (RfD) | EPA HA | 0.005 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.005 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | NAS IOM | 0.029 | mg/kg-d | | | Public Comment |
| Reference Dose (RfD)-like value | Primary Literature | 0.03 | mg/kg-d | | Effects on repro & fetal development (decreased gestational weight gain, prolonged estrus cycle, failure to breed). Renal failure, diuresis, proteinuria | UL; IOM |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.5 | mg/kg-d | | Liver - other changes, Kidney, Ureter, Bladder - other changes, Nutritional and Gross Metabolic - weight loss or decreased weight gain | 19 week oral study in rabbits; VCVN5 "Vrednie chemicheskije veshstva. Neorganicheskie soedinenia elementov V-VII groopp" (Hazardous substances. Inorganic substances containing V-VII group elements), Bandman A.L. et al., Chimia, 1989. Volume(issue)/page/ye |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1993 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen List |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.2 | mg/L | 2006; Drinking Water Equivalent Level |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 77 | PWS | 7.79% | 6.1 | 180 | 10 | 30 | 110 | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|----------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; assumed persistent; all use and env. Fate data for molybdenum trioxide |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | dimensionless | |
| Solubility in Water | 1,066 | mg/L | All use and env. fate data for molybdenum trioxide |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|---------------------|
| Contaminant: | Nitrobenzene |
| Substance Key: | 3998 |
| Contaminant ID (CASRN): | 98953 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 3 | 1 | 10 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 14 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCMR AM 90%: 0.14 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---------|
| NTP | Solvent |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.002 | mg/kg-d | 2009 | Increased reticulocytes and methemoglobinemia | NTP, 1983; subchronic rat study; UF = 1,000; Basis BMDL = 1.8 mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.0005 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | D | | 1990 | Cancer classifications were used for screening, but no related quantitative cancer risk data were identified for potency scoring. |
| Cancer Classification ² | IARC | 2B | | 1996 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------|-------|-------|----------------|
| Is contaminant on list of carcinogens? | CACART; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen List |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|---|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | 3,064 | 2 | PWS | 0.07% | 21.6 | 100 | 60.8 | 100 | 100 | ug/L | 2001-2003 | Analyzed under UCMR 1, List 1, Assessment Monitoring with detection limit of 10 ug/L. |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|-----|---|-----|----|--|--|--|--|--|------|--|---|
| Supplemental Water Data | | | | | | | | | | | | |
| UCMR 1 Supplemental | 338 | 0 | PWS | 0% | | | | | | ug/L | | Analyzed under UCMR 1, List 2, Screening Survey with detection limit of 0.5 ug/L. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 60 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 350,301 | lbs/yr | 14 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-------------------------|
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly |
| Organic Carbon Partitioning Coefficient (Koc) | 30.6-370 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.85 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.4E-05 | atm-m ³ /mol | |
| Solubility in Water | 1800 | mg/L | |
| Modeled Percent in Water | 31 | % | |

| | |
|--------------------------------|----------------------|
| Contaminant: | Nitroglycerin |
| Substance Key: | 2252 |
| Contaminant ID (CASRN): | 55630 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 6 | 7 | 6 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL): 0.292 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 2 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Pharmaceutical/medication; production of explosives; Rocket propellants; |

| | |
|---------------------------------------|--|
| 3-Model Categorical Prediction | |
| L? - L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.125 | mg/kg-d | | Cardiac - cardiomyopathy including infarction, Cardiac - EKG changes not diagnostic of specified effects, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects | 26 week oral study in rats; FATOAO Farmakologiya i Toksikologiya (Moscow). For English translation, see PHTXA6 and RPTOAN. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.2- 1939- Volume(issue)/page/year 48,76,1985 |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.008 | mg/kg-d | | | RTECS LOAEL, acute human study |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 105 | mg/kg | | Behavioral - somnolence (general depressed activity) | YACHDS Yakuri to Chiryō. Pharmacology and Therapeutics. (Raifu Saiensu Shuppan K.K., 2-5-13, Yaesu, Chuo-ku, Tokyo 104, Japan) V.1- 1972- Volume(issue)/page/year 13, 3649, 1985, Oral study in rats |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.2 | mg/L | 1987 | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | EPA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0.2 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 55,979 | lbs/yr | 9 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.62 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 9.87E-08 | atm-m ³ /mol | |
| Solubility in Water | 1380 | mg/L | |
| Modeled Percent in Water | 32 | % | |

| | |
|--------------------------------|-------------------------------|
| Contaminant: | N-Methyl-2-pyrrolidone |
| Substance Key: | 9980 |
| Contaminant ID (CASRN): | 872504 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 3 | 5 | 10 | 10 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL): 4,200 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Chemical industry solvent; solvent for pesticide application for food packing materials |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Reference Dose (RfD)-like value | Primary Literature | 0.6 | mg/kg-d | 2001 | Decreased weight gain, neurobehavioral effects, sedative effects | WHO/UNEP CICAD TDI Study #35; Basis NOAEL = 169 mg/kg-d, UF = 300, 90-day rat study |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 120 | mg/kg-d | | Endocrine - changes in spleen weight | NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year OTS0528073 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 3,914 | mg/kg | | Details of toxic effects not reported other than lethal dose value | ARZNAD Arzneimittel-Forschung. Drug Research. (Editio Cantor Verlag, Postfach 1255, W-7960 Aulendorf, Fed. Rep. Ger.) V.1- 1951- Volume(issue)/page/year 26,1581,1976 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 17,972 | lbs/yr | 13 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 6,311,503 | lbs/yr | 42 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >100M - 500M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.38 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.2E-09 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | 42 | % | |

| | |
|--------------------------------|-------------------------------------|
| Contaminant: | N-Nitrosodiethylamine (NDEA) |
| Substance Key: | 2243 |
| Contaminant ID (CASRN): | 55185 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 9 | 8 | 8 | 2 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.0002 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| CAR HRL/UCMR 2 90%: 0.0065 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Gasoline and lubricant additive; antioxidant; stabilizer in plastics; Disinfection by-Product |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.00002 | mg/L | | |
| Slope Factor (Oral) | OEHHA | 36 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 150 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | | |
| Cancer Classification ² | IARC | 2A | | 1987 | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; OEHHA; IARC; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 2) | 1,198 | 26 | PWS | 2.17% | 0.005 | 0.1 | 0.007 | 0.031 | 0.093 | ug/L | 2008-2010 | Public Comment |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|----|---|-------|----|--|--|--|--|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 26 | 0 | PWS | 0% | | | | | | ug/L | | Drinking water monitoring |
| STORage and RETrieval (STORET) | 26 | 0 | Sites | 0% | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,000 | lbs/yr | 1 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|--|
| Half Life | 38 | days | |
| Degradation Code | BS/BSA | | BS = Biodegrades slowly; BSA = Biodegrades slowly with Acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 142.7 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.48 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 3.63E-06 | atm-m ³ /mol | |
| Solubility in Water | 106,000 | mg/L | |
| Modeled Percent in Water | 53 | % | |

| | |
|--------------------------------|--------------------------------------|
| Contaminant: | N-Nitrosodimethylamine (NDMA) |
| Substance Key: | 2446 |
| Contaminant ID (CASRN): | 62759 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 8 | 10 | 2 |

| |
|--|
| Health Reference Level (HRL)¹: 0.056 ug/L |
| Health Reference Level (HRL)¹ cancer: 0.00069 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/UCMR 2 90%: 3.5 CAR HRL/UCMR 2 90%: 0.043 |

| Source | Use |
|--------|---|
| HSDB | Industrial solvent; antioxidant; formerly in the production of rocket fuel; Disinfection by-Product |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

| Status | | | |
|-------------------|----------------------------|--------------------|-------------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|----------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.000008 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.2 | mg/kg-d | | Immunological Including Allergic - decrease in cellular immune response, Immunological Including Allergic - decrease in humoral immune response, Related to Chronic Data - death | JTEHD6 Journal of Toxicology and Environmental Health. (Hemisphere Pub., 1025 Vermont Ave., NW, Washington, DC 20005) V.1- 1975/76- Volume(issue)/page/year 37,351,1992 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|---------|-------------------------|------|-------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.00007 | mg/L | | IRIS |
| Slope Factor (Oral) | OEHHA | 16 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 51 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1986 | Liver |
| Cancer Classification ² | IARC | 2A | | 1987 | Vol. 17, Suppl. 7, 1987 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; RAIS; EPA; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 2) | 1,198 | 324 | PWS | 27.05% | 0.002 | 0.63 | 0.004 | 0.016 | 0.063 | ug/L | 2008-2010 | Public Comment |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|----|---------|-------|----------|-------|-------|------|--|------|-----------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Fristachi and Rice | 95 | 61 | Samples | | < 0.0006 | 0.024 | | | | mg/L | 2001-2002 | Fristachi and Rice, 2007. Estimation of the total daily oral intake of NDMA attributable to drinking water. Journal of Water and Health. 05.3. Public comment. |
| California Department of Health Services | 409 | 87 | PWS | 21.3% | 0.001 | 440 | 0.009 | 0.17 | | ug/L | | Drinking water monitoring |
| STORage and RETrieval (STORET) | 585 | 0 | Sites | 0% | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 12 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.57 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.82E-06 | atm-m ³ /mol | @37°C |
| Solubility in Water | Soluble | mg/L | |
| Modeled Percent in Water | 52 | % | |

| | |
|--------------------------------|--|
| Contaminant: | N-Nitroso-di-n-propylamine (NDPA) |
| Substance Key: | 8798 |
| Contaminant ID (CASRN): | 621647 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 1 | 1 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.005 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| CAR HRL/STORET 90%: 0.00049 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Research chemical; Disinfection by-Product? |

| 3-Model Categorical Prediction |
|--------------------------------|
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.0005 | mg/L | | IRIS |
| Slope Factor (Oral) | OEHHA | 7 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 7 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1987 | Liver |
| Cancer Classification ² | IARC | 2B | | 1987 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; EPA; RAIS; OEHHA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 2) | 1,198 | 0 | PWS | 0% | | | | | | ug/L | 2008-2010 | Public Comment |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-------|----|-------|------|------|----|----|-------|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 127 | 0 | PWS | 0% | | | | | | ug/L | | Drinking water monitoring |
| STORage and RETrieval (STORET) | 1,309 | 22 | Sites | 1.7% | 0.19 | 20 | 10 | 10.24 | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 506 | lbs/yr | 2 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 130 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.36 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.38E-06 | atm-m ³ /mol | @37°C |
| Solubility in Water | 10,000 | mg/L | |
| Modeled Percent in Water | 44 | % | |

| | |
|--------------------------------|-------------------------------|
| Contaminant: | N-Nitrosodiphenylamine |
| Substance Key: | 3193 |
| Contaminant ID (CASRN): | 86306 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 2 | 1 |

| |
|---|
| Health Reference Level (HRL)¹: 140 ug/L |
| Health Reference Level (HRL)¹ cancer: 7.1 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/CAL DHS 90%: 1.84 CAR HRL/CAL DHS 90%: 0.0932 |

| Source | Use |
|--------|--|
| Mixed | Rubber and polymer additive; chemical reagent; DBP |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.02 | mg/kg-d | | Corneal opacities, epithelial hyperplasia of the bladder and decreased weight gain | NCI, 1979; Basis LOAEL, rat, UF=3,000 |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 20.5 | mg/kg-d | 1966 | Nutritional and Gross Metabolic - weight loss or decreased weight gain | 17-week oral study in rabbit; GTPZAB Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1-36, 1957-1992. For publisher information, see MTPEEI Volume(issue)/page/year |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.009 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.0049 | (mg/kg-d) ⁻¹ | | IRIS |
| Cancer Classification ² | EPA | B2 | | | Cited by OEHHA |
| Cancer Classification ² | IARC | 3 | | 1987 | Vol. 27, Suppl. 7 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------------------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART; EPA; OEHHA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|-----|------|------|------|------|------|--|------|--|---------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| California Department of Health Services | 133 | 1 | PWS | 0.8% | 76.2 | 76.2 | 76.2 | 76.2 | | ug/L | | Drinking water monitoring |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 14 | lbs/yr | 2 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|--|
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation (BIODEG) |
| Organic Carbon Partitioning Coefficient (Koc) | 6,154 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.13 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.21E-06 | atm-m ³ /mol | |
| Solubility in Water | 35 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------------------------|
| Contaminant: | N-Nitrosopyrrolidine (NPYR) |
| Substance Key: | 10160 |
| Contaminant ID (CASRN): | 930552 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 8 | 2 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.02 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| CAR HRL/UCMR 2 90%: 2.5 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------|
| HSDB | Research chemical |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.002 | mg/L | | IRIS |
| Slope Factor (Oral) | OEHHA | 2.1 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 2.1 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1986 | Liver |
| Cancer Classification ² | IARC | 2B | | 1987 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART; EPA; OEHHA; RAIS; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|----------------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 2) | 1,198 | 21 | PWS | 1.75% | 0.002 | 0.024 | 0.004 | 0.008 | 0.021 | ug/L | 2008-2010 | Public Comment |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|----|---|-------|----|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| STORAGE and RETRIEVAL (STORET) | 27 | 0 | Sites | 0% | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|-----------|-------------------------|---|
| Estimated Environmental Concentration (EEC) | OPP | | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | 38 | days | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 19 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.19 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 4.89E-08 | atm-m ³ /mol | @37°C |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | 48 | % | |

| | |
|--------------------------------|--|
| Contaminant: | Norethindrone (19-Norethisterone) |
| Substance Key: | 2525 |
| Contaminant ID (CASRN): | 68224 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 7 | 10 | 4 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.04 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/Kolpin MAX: 0.0459 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|----------------|
| Use | Pharmaceutical |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|--------|---------|------|--|---------------------------------------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | Supplemental | 0.0167 | mg/kg-d | | The norethindrone label indicates that if the drug is taken during the first trimester of pregnancy that the risk for hypospadias in male offspring doubles. | Maximum Recommended Daily Dose (MRDD) |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|---|-------------------------|------|--|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| Cancer Classification ² | NTPMSR | Reasonably anticipated to be carcinogenic | | | NTP 11th Report on Carcinogens; no quantification of dose-response |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|----|--|-------|-------|--|-------|-------|--|--|------|-----------|--|
| Supplemental Water Data | | | | | | | | | | | | |
| Kolpin et al., 2002 | 70 | | Sites | 12.8% | | 0.872 | 0.048 | | | ug/L | 1999-2000 | National Surface Water Reconnaissance; Kolpin, et al., 2002. Env. Sci. & Technol., 36(6), pp. 1202-1211. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|--|
| Half Life | 60 | days | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.97 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 5.8E-10 | atm-m ³ /mol | |
| Solubility in Water | 7.04 | mg/L | |
| Modeled Percent in Water | 12 | % | |

| | |
|--------------------------------|------------------------|
| Contaminant: | n-Propylbenzene |
| Substance Key: | 4328 |
| Contaminant ID (CASRN): | 103651 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 3 | 4 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 5.83 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 1.21 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Manufacture of methylstyrene; textile dyeing; printing solvent; asphalt and naphtha constituent |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 2.5 | mg/kg-d | | Blood - changes in spleen | VCVGH "Vrednie chemichescie veshstva, galogenproisvodnie uglevodorodov". (Hazardous substances Galogenated hydrocarbons) Bandman A.L. et al., Chimia, 1990. Volume(issue)/page/year -,167,1990; 24 week oral study in rat |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 6,040 | mg/kg | | Behavioral - somnolence (general depressed activity) | Rats; FCTXAV Food and Cosmetics Toxicology. (London, UK) V.1-19, 1963-81. For publisher information, see FCTOD7. Volume(issue)/page/year 2,327,1964 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 12,724 | 42 | PWS | 0.33% | 0.03 | 34 | 0.7 | 4.8 | 34 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 22,970 | 54 | PWS | 0.24% | 0.1 | 21 | 0.6 | 4 | 21 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|----|-------|-------|-------|----|-------|---|----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,309 | 53 | Sites | 1.23% | 0.004 | 47 | 0.024 | 5 | 47 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|-------------------------------|
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 495-955 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.69 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.0105 | atm-m ³ /mol | |
| Solubility in Water | 23.4 | mg/L | |
| Modeled Percent in Water | 22 | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | o-Toluidine |
| Substance Key: | 3768 |
| Contaminant ID (CASRN): | 95534 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 8 | 7 | 5 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 793 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.194 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Intermediate in the manufacture of dyes, rubber, pharmaceuticals and pesticides |

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| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 340 | mg/kg-d | | Kidney, Ureter, Bladder - proteinuria, Blood - normocytic anemia, Nutritional and Gross Metabolic - weight loss or decreased weight gain. | VINIT Vsesoyuznyi Institut Nauchnoi i Tekhnicheskoi Informatsii (VINITI). All-Union Institute of Scientific and Technical Information. (Moscow, USSR) Use information broker to obtain publications. Volume(issue)/page |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|---------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.18 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.24 | (mg/kg-d) ⁻¹ | | HEAST |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2A | | 2000 | Vol. 77; 2000 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------------|-------|-------|----------------|
| Is contaminant on list of carcinogens? | IARC; RAIS; OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen list |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 5 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 10,774 | lbs/yr | 9 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >10M - 50M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 74.04 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.32 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.98E-06 | atm-m ³ /mol | |
| Solubility in Water | 16,600 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Oxirane, methyl- |
| Substance Key: | 2661 |
| Contaminant ID (CASRN): | 75569 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 8 | 10 | 8 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 60.7 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.233 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------------------|
| NTP | Chemical intermediate |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.001 | mg/kg-d | 1981 | Increased combined incidence of hyperkeratosis, hyperplasia and papillomas. | Basis = BMDL10 1.4 mg/kg-d; UF = 1000. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 26 | mg/kg-d | | Brain and Coverings - other degenerative changes, Liver - other changes, Blood - other changes | 45-day study in rat; GISAAA Gigiena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- Volume(issue)/page/year 46(7),76,1981 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.15 | (mg/kg-d) ⁻¹ | 2006 | |
| Slope Factor (Oral) | OEHHA | 0.24 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.24 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | 1990 | |
| Cancer Classification ² | IARC | 2B | | 1994 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------------------------------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | CACART; RAIS; OEHHA; EPA; IARC | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 28,761 | lbs/yr | 5 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 433,536 | lbs/yr | 28 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | > 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-------------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 2.324 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.03 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.98E-05 | atm-m ³ /mol | |
| Solubility in Water | 590,000 | mg/L | |
| Modeled Percent in Water | 44 | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Oxydemeton-methyl |
| Substance Key: | 6458 |
| Contaminant ID (CASRN): | 301122 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 5 | 9 | 5 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.91 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 1.01 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | 0.00013 | mg/kg-d | | Decreased erythrocyte & brain ChE | Basis = NOAEL 0.013 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.0025 | mg/kg-d | 1967 | Decreased body weight | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 10 | mg/kg | | Details of toxic effects not reported other than lethal dose value | 85JDAH "Organophosphorus Pesticides Organic and Biological Chemistry," Eto, M., Cleveland, OH, CRC Press, Inc., 1974 Volume(issue)/page/year -,197,1974 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|--------------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | CACART | Yes | | male, female |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|--|---|---------|----|--|--|--|--|--|------|------|----------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water |
| Pesticide Pilot Monitoring Program (PMP) | | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 154,227 | lbs/yr | 19 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 0 | lbs/yr | 0 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|-----------|--|-------------------------------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 0.9 ug/L; GW Chronic = 0.006 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.74 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.62E-13 | atm-m ³ /mol | |
| Solubility in Water | 1,000,000 | mg/L | |
| Modeled Percent in Water | 39 | % | |

| | |
|--------------------------------|-------------|
| Contaminant: | Oxyfluorfen |
| Substance Key: | 34731 |
| Contaminant ID (CASRN): | 42874033 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 5 | 10 | 6 |

| | | | |
|--|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL): 21 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.478 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 3.0 | | | |
| CAR HRL/SWC EEC: 0.067 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|----------------------|
| Use | Pesticide; herbicide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.003 | mg/kg-d | 1986 | Incr. abs. liver weight; nonneoplastic lesions | Basis = NOEL 0.3 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.003 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 5 | mg/kg | | Details of toxic effects not reported other than lethal dose value | PEMNDP Pesticide Manual. (The British Crop Protection Council, 20 Bridport Rd., Thornton Heath CR4 7QG, UK) V.1- 1968- Volume(issue)/page/year 9,643,1991 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0732 | (mg/kg-d) ⁻¹ | 2002 | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | EPA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|----|--|--|--|--|--|------|------|-------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 221 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water; Method 9002 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 317 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water; Method 9002 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 705,255 | lbs/yr | 37 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 5 | lbs/yr | 2 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|---|--|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 7.1 ug/L; GW Chronic = 0.08 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/reclacitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 46,800 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.73 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 8.23E-07 | atm-m ³ /mol | |
| Solubility in Water | 0.116 | mg/L | |
| Modeled Percent in Water | 5 | % | |

| | |
|--------------------------------|---|
| Contaminant: | Perfluorooctane sulfonic acid (PFOS) |
| Substance Key: | 12176 |
| Contaminant ID (CASRN): | 1763231 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 3 | 10 | 7 |

| |
|---|
| Health Reference Level (HRL)¹: 0.2 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |
| HRL/Concentration Ratio(s) |
| NC HRL/MN MW MAX: 0.143 |

| Source | Use |
|--------|--|
| HSDB | Surface-active agents in aqueous media; chemical intermediate; in fire-fighting applications, floor polish; metal plating baths; pesticide active ingredient for ant bait traps. |

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|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Adverse Effect Level (NOAEL) | EPA | 0.1 | mg/kg-d | | Reduced F2 Body Weight | No Observed Adverse Effect Level in 2 generation reproductive study in rats. - FR October 18, 2000 (Volume 65, Number 202) Perfluorooctyl Sulfonates; Proposed Significant New Use Rule [Page 62319-62333] |
| No Observed Effect Level (NOEL) | Supplemental | 0.03 | mg/kg-d | | Decreased body weights, increased liver weights, lowered serum total cholesterol, lowered triiodothyronine (T3) concentration, and lowered estradiol levels | Seacat et al., 2002, Toxicol. Sci. 68, 249-264. EPA Provisional HA: http://www.epa.gov/waterscience/criteria/drinking/pha-PFOA_PFOS.pdf |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | 251 | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|--|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |
| Health Advisory (HA) | EPA HA | 0.2 | ug/L | January 2008; Provisional Health Advisory: http://www.epa.gov/waterscience/criteria/drinking/pha-PFOA_PFOS.pdf |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|---|-----|-----|-------|-------|--------|-------|---------|--|--|------|------|---|
| Supplemental Water Data | | | | | | | | | | | | |
| Minnesota (MN) Department of Health (DOH) – Select MN Private Wells | 26 | 0 | Sites | 0% | | | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Select MN Non-Community Wells | 22 | 0 | Sites | 0% | | | | | | ug/L | | Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Select MN Municipal Wells | 37 | 6 | Sites | 16.2% | | 1.4 | | | | ug/L | | Minimum value not detected. Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| Minnesota (MN) Department of Health (DOH) – Aggregate of MN Wells | 85 | 6 | Sites | 7.1% | | 1.4 | | | | ug/L | | Minimum value not detected. Targeted Sampling 2004-2005 - H. Goeden and J. Kelly. Perfluorochemicals in Minnesota, MN DOH, 2/27/06. |
| NJDEP | 23 | 13 | Sites | 56.5% | 0.0042 | 0.019 | | | | ug/L | | Targeted study "Determination of Perfluorooctanoic Acid (PFOA) in Aqueous Samples, Final Report." Jan 2007, NJDEP, Division of Water Supply. |
| Upper Mississippi Drainage Basin | 173 | 168 | Sites | 97.1% | | 0.245 | 0.00301 | | | ug/L | 2008 | Nakayama et al. 2010. Determination of Perfluorinated Compounds in the Upper Mississippi River Basin. ES&T, 44, pp. 4103–4109. |
| Tennessee River, Alabama | 40 | 40 | Sites | 100% | 0.0168 | 0.144 | 52.3 | | | ug/L | | Hansen et al. 2002. Quantitative Characterization of Trace Levels of PFOS and PFOA in the Tennessee River. Env. Sci. & Tech., 36, pp. 1681-1685 |
| Lake Erie and Lake Ontario | 16 | 16 | Sites | 100% | 0.011 | 0.121 | 0.0365 | | | ug/L | 2003 | Boulanger et al. 2004. Detection of Perfluorooctane Surfactants in Great Lakes Water. ES&T, 38, pp. 4064-4070. |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|-----------------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 0 | lbs/yr | 2003 (EPA est.) |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------------|----------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 1,000 ± 5.0 | L/kg | Zareitalabad, et al., 2013 |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | cm³/g | |
| Henry's Law Coefficient | | atm·m³/mol | |
| Solubility in Water | 370 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Profenofos |
| Substance Key: | 34318 |
| Contaminant ID (CASRN): | 41198087 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 3 | 8 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 0.35 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 3.5 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------------------------------|
| HSDB | Pesticide, insecticide, acaricide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | 0.00005 | mg/kg-d | | Inhibition of plasma & RBC ChE activity | Basis = NOEL 0.005 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.0004 | mg/kg-d | 1990 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.05 | mg/kg-d | | Blood - other changes, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - true cholinesterase | NINGADV Nippon Noyaku Gakkaishi. Journal of the Pesticide Science Society of Japan. (Nippon Noyaku Gakkai, 1-43-11, Komagome, Toshima-ku, Tokyo 170, Japan) V.1- 1976- Volume(issue)/page/year 12,781,1987 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 162 | mg/kg | | Behavioral - somnolence (general depressed activity), Behavioral - tremor, Gastrointestinal - changes in structure or function of salivary glands | TXAPA9 Toxicology and Applied Pharmacology. (Academic Press, Inc., 1 E. First St., Duluth, MN 55802) V.1- 1959- Volume(issue)/page/year 73,16,1984 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|----|--|--|--|--|--|------|------|-------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 221 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water; Method 9002 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 317 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water; Method 9002 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 879,776 | lbs/yr | 14 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 255 | lbs/yr | 1 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 0.1 ug/L; GW Chronic = 0.03 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/reclacitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.68 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.21E-08 | atm-m ³ /mol | |
| Solubility in Water | 28 | mg/L | |
| Modeled Percent in Water | 9 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Quinoline |
| Substance Key: | 3467 |
| Contaminant ID (CASRN): | 91225 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 7 | 8 | 7 | 5 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: N/A | | | |
| Health Reference Level (HRL)¹ cancer: 0.01 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Chemical intermediate; pharmaceutical (anti-malarial); flavoring |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|-----------------|-------|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|--|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.001 | mg/L | 2001 | IRIS |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 3 | (mg/kg-d) ⁻¹ | | IRIS |
| Cancer Classification ² | EPA | B2 | | 2001 | Hirao et al., 1976; oral study in rats |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART: EPA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 62 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 28,629 | lbs/yr | 8 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 1,837 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 2.03 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.67E-06 | atm-m ³ /mol | |
| Solubility in Water | 6,110 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|---------------|
| Contaminant: | RDX |
| Substance Key: | 5404 |
| Contaminant ID (CASRN): | 121824 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 8 | 5 | 5 |

| |
|--|
| Health Reference Level (HRL)¹: 21 ug/L |
| Health Reference Level (HRL)¹ cancer: 0.3 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/STORET 90%: 0.092 CAR HRL/STORET 90%: 0.0013 |

| Source | Use |
|--------|----------------|
| Use | High explosive |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|--------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | 0.003 | mg/kg-d | 1988 | Inflammation of the prostate. | U.S. DOD, 1983, Basis NOEL 0.3 mg/kg-d |
| Reference Dose (RfD) | EPA HA | 0.003 | mg/kg-d | 2006 | | |
| Reference Dose (RfD) | RAIS HE | 0.003 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | 0.03 | mg/kg-d | 6/1995 | | Minimal Risk Level - Intermediate Exposure Duration |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 40 | mg/kg-d | | Cardiac - other changes, Blood - pigmented or nucleated red blood cells, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases | 90-day study in rat: NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year AD-A092-531 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | 0.03 | mg/L | 1988 | EPAHA |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | 0.11 | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 1988 | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-----------|-------|-------|---------------------------------------|
| Is contaminant on list of carcinogens? | EPA; RAIS | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | 0.1 | mg/L | 2006; Drinking Water Equivalent Level |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|----|----|-------|------|----|-----|-----|-----|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| STorage and RETrieval (STORET) | 23 | 23 | Sites | 100% | 15 | 270 | 140 | 229 | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >1M - 10M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | 195.4 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 0.87 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.3E-08 | atm-m ³ /mol | |
| Solubility in Water | 59.7 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------------|
| Contaminant: | sec-Butylbenzene |
| Substance Key: | 5904 |
| Contaminant ID (CASRN): | 135988 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 5 | 3 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 10.3 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/UCM R1 90%: 1.03 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|---|
| HSDB | Solvent for coating compositions, organic synthesis, plasticizer, and surface active agents |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| NL? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 4.42 | mg/kg-d | | Behavioral - alteration of classical conditioning | 24-week oral rat study; VCVGH "Vrednie chemichescie veshstva, galogenproisvodnie uglevodorodov". (Hazardous substances Galogenated hydrocarbons) Bandman A.L. et al., Chimia, 1990. Volume(issue)/page/year -,179,1990 |
| Lethal Dose 50 (LD50) | HSDB | 2,240 | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | 12,343 | 28 | PWS | 0.23% | 0.03 | 19.8 | 0.7 | 10 | 19.8 | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | 22,974 | 34 | PWS | 0.15% | 0.1 | 22 | 0.6 | 4.6 | 22 | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|-------|----|-------|-------|-------|----|------|------|----|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | 4,309 | 25 | Sites | 0.58% | 0.005 | 11 | 0.39 | 2.81 | 11 | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|-------------------------------|
| Half Life | 15 | days | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 7,200 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.57 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.018 | atm-m ³ /mol | |
| Solubility in Water | 17.6 | mg/L | |
| Modeled Percent in Water | 15 | % | |

| | |
|--------------------------------|---------------------|
| Contaminant: | Tebuconazole |
| Substance Key: | 69191 |
| Contaminant ID (CASRN): | 107534963 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 9 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL):¹ 210 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/GWC EEC: 9.09 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| HSDB | Fungicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.029 | mg/kg-d | 2008 | Decreased body weights, absolute brain weights, brain measurements and motor activity in offspring | Basis = LOAEL 8.8 mg/kg-d; UF = 300; Federal Register: May 14, 2008 (Volume 74, Number 94), pp 27748-27756. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.03 | mg/kg-d | 1994 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 1,000 | mg/kg | | Behavioral - food intake (animal) | NTIS National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume(issue)/page/year OTS0545183, Oral study - rabbit |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|------------------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | 2008 | OPP; 73 FR No. 94, pp 27748-27756. |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|----------------------------|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| | | | PWS | | | | | | | ug/L | 2001-2003 | |
| | | | PWS | | | | | | | ug/L | 1988-1992 | |
| | | | PWS | | | | | | | ug/L | 1993-1997 | |
| | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---------------------------|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| | | | Sites | | | | | | | ug/L | 1992-2001 | |
| | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--------------------------|-----------------|--------|------------------|--------|------|
| | 478,568 | lbs/yr | 16 | States | 1997 |
| | | lbs/yr | | States | 2004 |
| | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|------------|--------------|--------|------|
| | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|--|--|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 14 ug/L; GW Chronic = 23.1 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.7 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.45E-10 | atm-m ³ /mol | |
| Solubility in Water | 36 | mg/L | |
| Modeled Percent in Water | 9 | % | |

| | |
|--------------------------------|---------------------|
| Contaminant: | Tebufenozide |
| Substance Key: | 69514 |
| Contaminant ID (CASRN): | 112410238 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 6 | 9 | 5 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 126 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 8.4 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| 3-Model Categorical Prediction |
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HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.018 | mg/kg-d | 1999 | Growth retardation, alterations in hematology parameters, changes in organ weights, and histopathological lesions in the bone, spleen and liver | Basis = NOAEL 1.8 mg/kg-d, UF = 100; Federal Register: 64 FR, No. 203, pp 56690-56697, October 21, 1999. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.02 | mg/kg-d | 2003 | Effect on erythrocytes, periferal hemolytic anaemia. Gross and histopathological lesions in the spleen (congestion, pigment, and extra-medullary haematopoiesis) | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 8.7 | mg/kg-d | | Blood - normocytic anemia, Blood - thrombocytopenia | 1-year study in dog; FEREAC Federal Register. (U.S. Government Printing Office, Supt. of Documents, Washington, DC 20402) V.1- 1936- Volume(issue)/page/year 64,16851,1999 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 104,413 | lbs/yr | 17 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|--|--|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 15 ug/L; GW Chronic = 1.19 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 4.25 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.26E-08 | atm-m ³ /mol | |
| Solubility in Water | 0.83 | mg/L | |
| Modeled Percent in Water | 11 | % | |

| | |
|--------------------------------|------------------|
| Contaminant: | Tellurium |
| Substance Key: | 23035 |
| Contaminant ID (CASRN): | 13494809 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 7 | 4 | 9 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 175 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NIRS 90%: 0.673 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Use data are for sodium tellurite: Bacteriology, medicine; naturally-occurring |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 25 | mg/kg-d | | Maternal toxicity | Johnson et al., 1988 |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 20 | mg/kg | | Details of toxic effects not reported other than lethal dose value | Mouse; 85GMAT "Toxicometric Parameters of Industrial Toxic Chemicals Under Single Exposure," Izmerov, N.F., et al., Moscow, Centre of International Projects, GKNT, 1982 Volume(issue)/page/year -,107,1982 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-----------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 4 | PWS | 0.40% | 15 | 370 | 22 | 260 | 360 | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|----------------|---|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; assumed persistent; all use and env. Fate data are for sodium tellurite |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | dimensionless | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------------|
| Contaminant: | Thiodicarb |
| Substance Key: | 38116 |
| Contaminant ID (CASRN): | 59669260 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 10 | 6 |

| | | | |
|---|----------------------------|--------------------|-------------------------|
| Health Reference Level (HRL)¹: 210 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 1.86 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 8.1 | | | |
| CAR HRL/SWC EEC: 0.07 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------|
| HSDB | Insecticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | 0.03 | mg/kg-d | 1998 | Extramedullary hematopoiesis and decreased red blood cell cholinesterase activity | Basis = NOEL 3.3 mg/kg-d (males) and 4.5 mg/kg-d (females); UF = 100; chronic rat study |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.03 | mg/kg-d | 2000 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0188 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART; EPA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 821,267 | lbs/yr | 27 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0.05 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,430 | lbs/yr | 3 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|---|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 26 ug/L; GW Chronic = 0 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.7 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 9.33E-07 | atm-m ³ /mol | |
| Solubility in Water | 35 | mg/L | |
| Modeled Percent in Water | 36 | % | |

| | |
|--------------------------------|--------------------|
| Contaminant: | Thiophanate-methyl |
| Substance Key: | 27753 |
| Contaminant ID (CASRN): | 23564058 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 10 | 6 |

| |
|---|
| Health Reference Level (HRL)¹: 560 ug/L |
| Health Reference Level (HRL)¹ cancer: 3.02 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/SWC EEC: 45.9 CAR HRL/SWC EEC: 0.248 |

| Source | Use |
|--------|-----------|
| HSDB | Fungicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|---|
| Reference Dose (RfD) | EPA OPP | 0.08 | mg/kg-d | 2004 | Thyroid/liver effects and decreased body weight | Basis = NOEL 8 mg/kg-d; UF = 100; chronic dog study |
| Reference Dose (RfD) | IRIS | 0.08 | mg/kg-d | 1986 | Decreased body weight, decreased spermatogenesis and histological evidence of hyperthyroidism | Basis = NOEL 8 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.08 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.08 | mg/kg-d | 1998 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1.2 | mg/kg-d | | Endocrine - evidence of thyroid hypofunction, Endocrine - changes in thyroid weight, Nutritional and Gross Metabolic - weight loss or decreased weight gain | FEREAC Federal Register. (U.S. Government Printing Office, Supt. of Documents, Washington, DC 20402) V.1- 1936- Volume(issue)/page/year 67,14944,2002 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 2,270 | mg/kg | | Sense Organs and Special Senses (Eye) - mydriasis (pupillary dilation), Behavioral - somnolence (general depressed activity), Behavioral - convulsions or effect on seizure threshold | TXAPA9 Toxicology and Applied Pharmacology. (Academic Press, Inc., 1 E. First St., Duluth, MN 55802) V.1- 1959- Volume(issue)/page/year 23,606,1972 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0116 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | C | | | OPP |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------------------------------------|
| Is contaminant on list of carcinogens? | EPA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | CACART | Yes | | Female & male reproductive toxicity |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 453,792 | lbs/yr | 40 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 92 | lbs/yr | 3 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|----------|--|-----------------------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 12.2 ug/L; GW Chronic = 3.03 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 14.32 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.4 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.94E-13 | atm-m ³ /mol | |
| Solubility in Water | 438.9 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------------------|
| Contaminant: | Toluene diisocyanate |
| Substance Key: | 29421 |
| Contaminant ID (CASRN): | 26471625 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 10 | 7 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL): 210 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.9 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------|
| NTP | In plastics manufacture |

| | |
|---------------------------------------|--|
| 3-Model Categorical Prediction | |
| L | |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---------------------------------|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | 30 | mg/kg-d | | Burns throat immediately. | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 85.7 | mg/kg-d | | Related to Chronic Data - death | NTPTR National Toxicology Program Technical Report Series. (Research Triangle Park, NC 27709) No.206- Volume(issue)/page/year NTP-TR-251,1986 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|--|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 0.039 | (mg/kg-d) ⁻¹ | | Applies to mixture of 2,4- and 2,6- isomers. |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | 1999 | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------|-------|-------|-------|
| Is contaminant on list of carcinogens? | CACART; IARC; OEHHA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| Ambient Water Data | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| Supplemental Water Data | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 1 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 129,143 | lbs/yr | 31 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >500M - 1B | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 9,114 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.74 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.11E-05 | atm-m ³ /mol | |
| Solubility in Water | 37.57 | mg/L | |
| Modeled Percent in Water | 17 | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Tribufos |
| Substance Key: | 2814 |
| Contaminant ID (CASRN): | 78488 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 3 | 9 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL): 7 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 3.89 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-------------------------------|
| HSDB | Insecticide; cotton defoliant |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|---------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.001 | mg/kg-d | | Plasma ChE inhibition | Basis = NOAEL 0.1 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | 0.00003 | mg/kg-d | 1988 | | Abou-Donia et al., 1979, Basis NOAEL = 0.1 mg/kg-d |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.00003 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 4.08 | mg/kg-d | | Gastrointestinal - other changes, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other hydrolases, Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - peptidases | 43 week study in rodent; FATOAO Farmakologiya i Toksikologiya (Moscow). For English translation, see PHTXA6 and RPTOAN. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.2- 1939- Volume(issue)/page/year 38,96,1975 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 77 | mg/kg | | Details of toxic effects not reported other than lethal dose value | 85JCAE "Prehled Prumyslove Toxikologie; Organicke Latky," Marhold, J., Prague, Czechoslovakia, Avicenum, 1986 Volume(issue)/page/year -,1188,1986 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--|-----|---|---------|----|--|--|--|--|--|------|------|-------------------------------------|
| Supplemental Water Data | | | | | | | | | | | | |
| Pesticide Pilot Monitoring Program (PMP) | 221 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Finished Water; Method 9002 (GC/MS) |
| Pesticide Pilot Monitoring Program (PMP) | 317 | 0 | Samples | 0% | | | | | | ug/L | 1999 | Ambient Water; Method 9002 (GC/MS) |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 4,918,265 | lbs/yr | 16 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 4 | lbs/yr | 1 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 7 | lbs/yr | 1 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | 10K - 500K | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|--|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 1.8 ug/L; GW Chronic = 0 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-----------------------|
| Half Life | | length of time | |
| Degradation Code | BF | | BF = Biodegrades fast |
| Organic Carbon Partitioning Coefficient (Koc) | 1,888 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 5.7 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 2.94E-07 | atm-m ³ /mol | |
| Solubility in Water | 2.3 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|----------------------|
| Contaminant: | Triethylamine |
| Substance Key: | 5379 |
| Contaminant ID (CASRN): | 121448 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 5 | 10 | 9 |

| |
|---|
| Health Reference Level (HRL)¹: 2.33 ug/L |
| Health Reference Level (HRL)¹ cancer: N/A |

| |
|-----------------------------------|
| HRL/Concentration Ratio(s) |
| No water data |

| Source | Use |
|--------|---|
| HSDB | Chemical intermediate; stabilizer; in herbicides/pesticides; in consumer products; food additive; photographic chemical; in carpet cleaners |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1 | mg/kg-d | | Brain and Coverings - other degenerative changes | 30-week oral rat study; WDZAEK Weisheng Dulixue Zazhi. Journal of Health Toxicology. (Weisheng Dulixue Zazhi Bianjibu, Dongdaqiao, Chaoyang Menwai, Beijing, Peop. Rep. China) V.1- 1987 Volume(issue)/page/year 4,45,1990 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | 460 | mg/kg | | Details of toxic effects not reported other than lethal dose value | AMIHBC AMA Archives of Industrial Hygiene and Occupational Medicine. (Chicago, IL) V.2-10, 1950-54. For publisher information, see AEHLAU. Volume(issue)/page/year 4,119,1951 |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 12,000 | lbs/yr | 14 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 1,167,219 | lbs/yr | 35 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >10M - 50M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BSA | | BSA = Biodegrades slowly with acclimation (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | 107.2 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 1.45 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 0.000149 | atm-m ³ /mol | |
| Solubility in Water | 73,700 | mg/L | |
| Modeled Percent in Water | 46 | % | |

| | |
|--------------------------------|-------------------------------|
| Contaminant: | Triphenyltin hydroxide (TPTH) |
| Substance Key: | 2738 |
| Contaminant ID (CASRN): | 76879 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 8 | 8 | 10 | 6 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 2.1 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.0019 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 0.33 | | | |
| CAR HRL/SWC EEC: 0.0003 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|-----------|
| NTP | Pesticide |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|--------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.0003 | mg/kg-d | 1999 | Decreased white blood cells | OPP RED |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.0005 | mg/kg-d | 1970 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 0.15 | mg/kg-d | | Blood - changes in other cell count (unspecified), Blood - changes in leukocyte (WBC) count | 90-day study in guinea pig; FCTXAV Food and Cosmetics Toxicology. (London, UK) V.1-19, 1963-81. For publisher information, see FCTOD7. Volume(issue)/page/year 4,35,1966 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 18.3 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | B2 | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|-------------|-------|-------|--------------------------|
| Is contaminant on list of carcinogens? | EPA; CACART | Yes | | |
| Is the contaminant on a list of reproductive toxins? | UMD; CACART | Yes | | Teratogen; Developmental |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 660,971 | lbs/yr | 26 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 0 | lbs/yr | 0 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|--|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 6.4 ug/L; GW Chronic = 0 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|-------|
| Half Life | | length of time | |
| Degradation Code | | | |
| Organic Carbon Partitioning Coefficient (Koc) | 2,000 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.53 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 4.26E-07 | atm-m ³ /mol | |
| Solubility in Water | 0.4 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Urethane |
| Substance Key: | 2189 |
| Contaminant ID (CASRN): | 51796 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 9 | 7 | 6 |

| | | | |
|--|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 6.3 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.035 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| No water data | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|------------------|
| NTP | Paint ingredient |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 0.9 | mg/kg-d | 2005 | Decreased survival | Food and Chemical Toxicology 43 (2005) 1-19 |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 78 | mg/kg-d | | Liver - changes in liver weight, Kidney, Ureter, Bladder - changes in bladder weight, Blood - changes in leukocyte (WBC) count | 13 week oral study in rats; NTPTR National Toxicology Program Technical Report Series. (Research Triangle Park, NC 27709) No.206- Volume(issue)/page/year NIH-96-3937 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|-------|-------------------------|------|------------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | 1 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | 2B | | 1987 | Vol. 7, Suppl. 7; 1987 |

| Other Supporting Data | Source | Value | Units | Notes |
|--|---------------------|-------|-------|---------------|
| Is contaminant on list of carcinogens? | IARC; CACART; OEHHA | Yes | | Developmental |
| Is the contaminant on a list of reproductive toxins? | UMD | Yes | | Teratogen |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 96,050 | lbs/yr | 7 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | No Reports | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|---------|-------------------------|-------------------------------|
| Half Life | | length of time | |
| Degradation Code | BS | | BS = Biodegrades slowly (PBT) |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | -0.15 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.4E-08 | atm-m ³ /mol | |
| Solubility in Water | 480,000 | mg/L | |
| Modeled Percent in Water | 40 | % | |

| | |
|--------------------------------|-----------------|
| Contaminant: | Vanadium |
| Substance Key: | 18882 |
| Contaminant ID (CASRN): | 7440622 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 6 | 5 | 10 | 8 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 21 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: N/A | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/NIRS 90%: 0.913 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--|
| HSDB | Use data are for vanadium pentoxide: Chemical intermediate; catalyst;; naturally-occurring |

| |
|---------------------------------------|
| 3-Model Categorical Prediction |
| L? - L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------------|-------|---------|------|--|---|
| Reference Dose (RfD) | EPA OPP | | mg/kg-d | | | |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.007 | mg/kg-d | | | HEAST |
| Minimal Risk Level | ATSDR | 0.003 | mg/kg-d | 1992 | Minor renal effects (altered renal function as indicated by increased plasma urea, and mild histological changes). | Minimal Risk Level - Intermediate Exposure Duration; UF = 100 |
| Acceptable Daily Intake (ADI) | JMPR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| Reference Dose (RfD)-like value | Primary Literature | 0.026 | mg/kg-d | 2001 | Kidney lesions and increases in plasma urea and uric acid | IOM 2001 Dietary Reference Intakes. Technical correction. |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 960 | mg/kg-d | | | Domestic mammal |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|-----------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | 989 | 146 | PWS | 14.76% | 3.1 | 70.4 | 7.27 | 23 | 45 | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | | lbs/yr | | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|-------|------|
| Estimated Environmental Concentration (EEC) | OPP | | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|-------|-------------------------|---|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant; assumed persistent; all use and env. Fate data are for vanadium pentoxide |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | | atm-m ³ /mol | |
| Solubility in Water | 8000 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|-------------|
| Contaminant: | Vinclozolin |
| Substance Key: | 35005 |
| Contaminant ID (CASRN): | 50471448 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 10 | 5 |

| |
|--|
| Health Reference Level (HRL)¹: 84 ug/L |
| Health Reference Level (HRL)¹ cancer: 0.549 ug/L |
| HRL/Concentration Ratio(s) |
| NC HRL/SWC EEC: 8.94 CAR HRL/SWC EEC: 0.058 |

| Source | Use |
|--------|-----------|
| HSDB | Fungicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L? - L |

| Status | | | |
|------------|---------------------|-------------|------------------|
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|----------|-------|---------|------|---|--------------------------------------|
| Reference Dose (RfD) | EPA OPP | 0.012 | mg/kg-d | | Histopathological lesions in the lungs, liver, ovaries & eyes. Q1* 0.0638 (mg/kg-day)-1. Group C. See CAR | Basis = NOAEL 1.2 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | 0.025 | mg/kg-d | 1986 | | Basis = NOEL 2.5 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | 0.025 | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.01 | mg/kg-d | 1995 | | |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | | mg/kg-d | | | |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------|--------|-------------------------|------|-------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0638 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | | | | |
| Cancer Classification ² | IARC | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|---------------|
| Is contaminant on list of carcinogens? | EPA | Yes | | |
| Is the contaminant on a list of reproductive toxins? | CACART | Yes | | Developmental |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
|------------------------------------|--------|----------|------------|------------|--------------|
| Cancer Classification ² | NTP | | | | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 121,959 | lbs/yr | 26 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | 0 | lbs/yr | 0 | States | 2004 |
| Toxics Release Inventory (TRI) – Total | 0 | lbs/yr | 0 | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|---|--------|--|------|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 9.4 ug/L; GW Chronic = 0 ug/L | |

| Environmental Fate Parameters | Value | Units | Notes |
|--|----------|-------------------------|--|
| Half Life | | length of time | |
| Degradation Code | BST | | BST = Biodegrades sometimes/recalcitrant |
| Organic Carbon Partitioning Coefficient (Koc) | 289 | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | 3.1 | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 1.33E-08 | atm-m ³ /mol | |
| Solubility in Water | 2.6 | mg/L | |
| Modeled Percent in Water | | % | |

| | |
|--------------------------------|--------|
| Contaminant: | Ziram |
| Substance Key: | 5947 |
| Contaminant ID (CASRN): | 137304 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 5 | 8 | 10 | 7 |

| | | | |
|---|---------------------|-------------|------------------|
| Health Reference Level (HRL)¹: 112 ug/L | | | |
| Health Reference Level (HRL)¹ cancer: 0.57 ug/L | | | |
| HRL/Concentration Ratio(s) | | | |
| NC HRL/SWC EEC: 56.6 | | | |
| CAR HRL/SWC EEC: 0.288 | | | |
| Status | | | |
| CCL 3: Yes | CCL 4 Universe: Yes | PCCL 4: Yes | Draft CCL 4: Yes |

| Source | Use |
|--------|--------------------------------------|
| NTP | Synthetic rubber chemical; fungicide |

| 3-Model Categorical Prediction |
|--------------------------------|
| L |

HEALTH EFFECTS DATA

| Non-Cancer Data | Source | Value | Units | Date | Critical Effect | Notes |
|--|--------------|-------|---------|------|--|--|
| Reference Dose (RfD) | EPA OPP | 0.016 | mg/kg-d | | Decreased body weight gain | Basis = NOAEL 1.6 mg/kg-d; UF = 100. |
| Reference Dose (RfD) | IRIS | | mg/kg-d | | | |
| Reference Dose (RfD) | EPA HA | | mg/kg-d | | | |
| Reference Dose (RfD) | RAIS HE | | mg/kg-d | | | |
| Minimal Risk Level | ATSDR | | mg/kg-d | | | |
| Acceptable Daily Intake (ADI) | JMPR | 0.003 | mg/kg-d | 1996 | Decreased body weight | Group ADI for Ferbam and Ziram |
| Acceptable Daily Intake (ADI) | CEDI ADI | | mg/kg-d | | | |
| Tolerable Daily Intake (TDI) | ITER | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | CTD JPN | | mg/kg-d | | | |
| No Observed Effect Level (NOEL) | Supplemental | 1.6 | mg/kg-d | | | OPP |
| Lowest Observed Adverse Effect Level (LOAEL) | RTECS | 1 | mg/kg-d | | Gastrointestinal - hypermotility, diarrhea | NNGADV Nippon Noyaku Gakkaishi. Journal of the Pesticide Science Society of Japan. (Nippon Noyaku Gakkai, 1-43-11, Komagome, Toshima-ku, Tokyo 170, Japan) V.1- 1976- Volume(issue)/page/year 17,S155,1992 |
| Lethal Dose 50 (LD50) | HSDB | | mg/kg | | | |
| Lethal Dose 50 (LD50) | CTD JPN | | mg/kg | | | |
| Lethal Dose 50 (LD50) | RTECS | | mg/kg | | | |

| Cancer Data | Source | Value | Units | Date | Notes |
|--|---------------|---------------------|-------------------------|-------------------|---------------------|
| Lifetime Cancer Risk (10 ⁻⁴) | EPA | | mg/L | | |
| Slope Factor (Oral) | EPA OPP | 0.0611 | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | OEHHA | | (mg/kg-d) ⁻¹ | | |
| Slope Factor (Oral) | RAIS HE | | (mg/kg-d) ⁻¹ | | |
| Cancer Classification ² | EPA | Suggestive evidence | | | Not quantified |
| Cancer Classification ² | IARC | 3 | | | |
| | Source | Male Rat | Female Rat | Male Mouse | Female Mouse |
| Cancer Classification ² | NTP | | | | |

| Other Supporting Data | Source | Value | Units | Notes |
|--|--------|-------|-------|-------|
| Is contaminant on list of carcinogens? | | | | |
| Is the contaminant on a list of reproductive toxins? | | | | |
| Drinking Water Equivalent Level (DWEL) | EPA HA | | mg/L | |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

¹ For the CCL process HRLs were calculated by converting the RfD or other dose to ug/L, assuming 2 L/day of water consumed by a 70 Kg adult, and a Relative Source Contribution of 20%. For carcinogens, the concentration at the 10⁻⁶ cancer risk was used.

² Cancer classifications were only used for screening. For potency scoring quantitative cancer risk data were used.

OCCURRENCE DATA

| | Number of PWSs/Sites/Samples | Number of Detects | PWSs/Sites/Samples | Percent with Detects | Minimum Conc. (Detects) | Maximum Conc. (Detects) | Median Conc. (Detects) | 90th Percentile (Detects) | 99th Percentile (Detects) | Conc. Units | Date | Notes |
|--|------------------------------|-------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------|---------------------------|---------------------------|-------------|-----------|-------|
| Finished Water Data | | | | | | | | | | | | |
| Unregulated Contaminant Monitoring Rule (UCMR 1) | | | PWS | | | | | | | ug/L | 2001-2003 | |
| Unregulated Contaminant Monitoring (UCM) Round 1 | | | PWS | | | | | | | ug/L | 1988-1992 | |
| Unregulated Contaminant Monitoring (UCM) Round 2 | | | PWS | | | | | | | ug/L | 1993-1997 | |
| National Inorganics and Radionuclide Survey (NIRS) | | | PWS | | | | | | | ug/L | 1984-1986 | |

| | | | | | | | | | | | | |
|---|--|--|-------|--|--|--|--|--|--|------|-----------|--|
| Ambient Water Data | | | | | | | | | | | | |
| National Water-Quality Assessment Program (NAWQA) | | | Sites | | | | | | | ug/L | 1992-2001 | |
| National Reconnaissance of Emerging Contaminants (NREC) | | | Sites | | | | | | | ug/L | 1999-2004 | |

| | | | | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|------|--|--|
| Supplemental Water Data | | | | | | | | | | | | |
| No Data | | | | | | | | | | ug/L | | |

| Application/Release Data | Amount Released | Units | Number of States | Units | Date |
|--|-----------------|--------|------------------|--------|------|
| National Center for Food and Agricultural Policy (NCFAP) – Application | 1,992,552 | lbs/yr | 29 | States | 1997 |
| Toxics Release Inventory (TRI) – Surface Water | | lbs/yr | | States | 2004 |
| Toxics Release Inventory (TRI) – Total | | lbs/yr | | States | 2004 |

| Production | Amount Range | Units | Date |
|---|--------------|--------|------|
| Chemical Update System/Inventory Update Reporting (CUS/IUR) | >500K - 1M | lbs/yr | 2002 |

Note: Highlighted data indicate value was used in attribute scoring. Blank fields indicate there were no data available.

| Other Supporting Data | Source | Value | Date |
|--|---------|--|---|
| Estimated Environmental Concentration (EEC) | OPP | SW Chronic = 1.98 ug/L; GW Chronic = 0.03 ug/L | |
| Environmental Fate Parameters | Value | Units | Notes |
| Half Life | | length of time | |
| Degradation Code | BFA | | BFA = Biodegrades fast with acclimation |
| Organic Carbon Partitioning Coefficient (Koc) | | L/kg | |
| Log Octanol-water Partitioning Coefficient (Kow) | | dimensionless | |
| Distribution Coefficient (Kd) | | L/kg | |
| Henry's Law Coefficient | 6.2E-10 | atm-m ³ /mol | |
| Solubility in Water | | mg/L | |
| Modeled Percent in Water | | % | |

Appendix 2: Microbial Contaminant Information Sheets

The following 54 pages contain tables with health effects and occurrence information for the 12 microbial contaminants included on the Final CCL 4. For these contaminants, the data that is presented was collected during development of the CCL 3. EPA also added new data to these CISs that was provided for some contaminants during the CCL 4 public comment period, if the data met the criteria for CCL evaluation, however no changes in the scores were made as a result of this data. Due to the technical limitations of this Appendix, for further assistance with reasonable accommodation please contact Hannah Holsinger at hannah.holsinger@epa.gov or 202-564-0403.

Microbial Contaminants Nominated for CCL 4

The following eight pages contain tables with health effects and occurrence information for the two nominated microbial contaminants (*Adenovirus* and *Naegleria fowleri*) included on the Final CCL 4. For these contaminants, the data that is presented was collected during development of the CCL 3. EPA also added new data to these CISs that was provided for some contaminants during the CCL 4 public comment period, if the data met the criteria for CCL evaluation, however no changes in the scores were made as a result of this data.

Adenovirus Scoring Data

| Scoring Summary ^{1,2} | |
|---|----------|
| Occurrence | 3 |
| Health Effects | |
| General population | 6 |
| Sensitive subpopulation(s) [CD, C] | 4 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score ² | Data Element | Scoring Data | Reference ³ |
|-------------------------------------|--|--|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2008 | No | CDC, 1991 – CDC, 2011 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2008 | No | CDC, 1991 – CDC, 2011 |
| 3 | Has caused documented WBDOs at any time in the U.S.? | No | |
| 2 | Has caused WBDOs in countries other than the U.S.? | Yes Europe | Kukkula et al., 1997 |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes PCR in connection with an outbreak. | O'Reilly et al., 2007 Fong et al., 2007 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|-----------------------|---|---|---|
| 2 | Detected in source water in the U.S.? | Yes 38% of surface water samples collected as part of the Information Collection Rule contained Adenovirus 40/41. | USEPA, 2007 |
| 1 | Not detected in the U.S.? | N/A | |
| <i>Health Effects</i> | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | | |
| 6 [G] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [G] A frequent cause of pneumonia among (unvaccinated) military recruits. Two deaths in previously-healthy adults. ARD is still a significant problem in military. Less common manifestations include fatal neonatal disease, meningoencephalitis and myocarditis. | Gray et al., 2001 Robinson in Murray, 2010 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | None reported | |
| 4 [C, CD] | Does the illness require short term hospitalization (< week)? | [CD] Children with chronic disease required respiratory ventilation. [C] Young adults may contract acute respiratory disease. | CDC, 1983 CDC, 1998 |
| 3 | Does the illness require physician intervention? | Physician office visits are indicated for ocular infections. | Robinson in Murray, 2010 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|--------------------------|
| 2 [E, P] | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | [E, P] Approximately 50% of cases are asymptomatic, symptomatic cases usually present as upper respiratory infections similar to the common cold. | Robinson in Murray, 2010 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

References

CDC, 1983. Adenovirus type 7 outbreak in a pediatric chronic-care facility – Pennsylvania. 1972. *MMWR*, 1983;32:258-60.

CDC, 1998. Civilian Outbreak of Adenovirus Acute Respiratory Disease – South Dakota, 1997. *MMWR* 1998: 47(27);567-570.

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Naegleria fowleri Scoring Data

| Scoring Summary^{1,2} | |
|---|----------|
| Waterborne Disease Outbreak | 4 |
| Health Effects | |
| General population | 7 |
| Sensitive subpopulation(s) [C, P, E, CD] | 7 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|-------------------------------------|---|----------------------------|------------------------------|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2008? | No | CDC, 1991 – CDC, 2011 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2008? | Yes 1 Community | CDC, 2004 |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|--|
| | <i>Occurrence</i> | | |
| 3 | Detected in drinking water in the U.S.? | Yes Arizona storage - Sampled pre-treatment multiple-well study in Arizona. | Gerba et al., 2007 Marciano-Cabral et al., 2003 |
| 2 | Detected in source water in the U.S.? | Yes | Schuster and Visvesvara, 2004 |
| 1 | Not detected in the U.S.? | N/A | |
| | <i>Health Effects</i> | | |
| 7 [G, C, P, E, CD] | Does the organism cause significant mortality (> 1/1,000 cases)? | [All populations] Recovery from primary amoebic meningoencephalitis is rare. | Heymann, 2005 |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | Acute fulminating disease. Only a few patients have survived. | Visvesvara in Murray, 2010 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | No | |
| 4 | Does the illness require short term hospitalization (< week)? | All cases are hospitalized for diagnosis and treatment. | Visvesvara in Murray, 2010 |
| 3 | Does the illness require physician intervention? | | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--------------|------------------------|
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Microbial Contaminants Carried Forward from CCL 3

The following 44 pages contain tables with health effects and occurrence information for the 10 microbial contaminants carried forward from CCL 3 and included on the Final CCL 4. For these contaminants, the data that is presented was collected during development of the CCL 3. EPA also added new data to these CISs that was provided for some contaminants during the CCL 4 public comment period, if the data met the criteria for CCL evaluation, however no changes in the scores were made as a result of this data.

Calicivirus Scoring Data

| Scoring Summary^{1,2} | |
|--|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 2 |
| Sensitive subpopulation(s) [C, E, CD] | 4 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|-------------------------------------|---|--|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004 | Yes 1 (Norwalk) Community outbreak (Previously unreported) 4 (Norwalk) Noncommunity (1 Previously unreported) 5 (Norovirus) Noncommunity 1 (Norovirus) Community (1 Previously unreported) 2 (Norovirus) Noncommunity | CDC, 2000 CDC, 2002 CDC, 2004 CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004 | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|-----------------------|---|---|---|
| | country, but has been epidemiologically associated with water related disease? | | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes Detection by PCR. | Huffman et al., 2003 |
| 2 | Detected in source water in the U.S.? | Yes Detected in ground water by PCR. | Borchardt et al., 2003 Fout et al., 2003 |
| 1 | Not detected in the U.S.? | N/A | |
| <i>Health Effects</i> | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | | |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | No long term sequelae have been reported. | CDC, 2001 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | No | CDC, 2001 |
| 4 [C, E, CD] | Does the illness require short term hospitalization (< week)? | [E, CD] (Norwalk) Although rare, severe dehydration can be fatal, with this outcome occurring among susceptible persons (e.g., older persons with debilitating health conditions). | CDC, 2001 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|------------------------|
| | | [C] Sappoviruses cause disease mainly in children. | Farkas in Murray, 2007 |
| 3 | Does the illness require physician intervention? | | |
| 2 [G, P] | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | [G, P] Acute gastroenteritis. Highly contagious, able to cause large outbreaks and environmentally stable. | Farkas in Murray, 2007 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Campylobacter jejuni Scoring Data

| Scoring Summary ^{1,2} | |
|--|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [C, E] | 4 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score ² | Data Element | Scoring Data | Reference ³ |
|-------------------------------------|--|--|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 2 Noncommunity 1 Community 2 Noncommunity 1 Noncommunity 2 Noncommunity 2 Community (1 Previously unreported) | CDC, 1996 CDC, 2002 CDC, 2004 CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | Yes Finland | Kuusi, 2005 |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|-----------------------|---|--|--------------------------------------|
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Sacks et al., 1986 O'Reilly, 2007 |
| 2 | Detected in source water in the U.S.? | Yes | Carter et al., 1987 |
| 1 | Not detected in the U.S.? | N/A | |
| <i>Health Effects</i> | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | Death is uncommon. | Fitzgerald in Murray, 2007 |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | Complications include hepatitis, bacteremia, cholecystitis, pancreatitis, nephritis, abortion and neonatal sepsis, urinary tract infection, meningitis and septic arthritis. Bacteremia occurs in 0.15% of intestinal infections with elderly mostly affected. | Fitzgerald in Murray, 2007 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|--|
| 4 [C, E] | Does the illness require short term hospitalization (< week)? | [C,E] Most cases do not require hospitalization, pediatric cases and elderly are more likely to require hospitalization than normal adult cases. The highest incidence is in children and infants. Bacteremia occurs at 1.5 per 1,000 cases with the highest rate occurring in the elderly. | Fitzgerald in Murray, 2007 |
| 3 [G, P, CD] | Does the illness require physician intervention? | [G, P, CD] Guillain-Barré syndrome, reactive arthritis. Guillain-Barré 1/1000 cases. Reactive arthritis 1/100 cases. | Fitzgerald in Murray, 2007 Altekruse et al., 1999 |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | Duration 2-5 days, usually self-limiting. Several days to more than 1 week, self-limiting, relapse in 5-10% cases. | Heymann, 2005 Fitzgerald in Murray, 2007 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | Asymptomatic to acute diarrhea, abdominal pain, malaise, and fever. | Fitzgerald in Murray, 2007 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Enterovirus Scoring Data

| Scoring Summary ^{1,2} | |
|---------------------------------------|----------|
| Occurrence | 3 |
| Health Effects | |
| General population | 4 |
| Sensitive subpopulation(s) [C] | 6 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score ² | Data Element | Scoring Data | Reference ³ |
|-------------------------------------|---|--|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | No | CDC, 1991 – CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | No | CDC, 1991 – CDC, 2006 |
| 3 | Has caused documented WBDOs at any time in the U.S.? | No | |
| 2 | Has caused WBDOs in countries other than the U.S.? | Yes Switzerland and others. | Hafliger et al., 2000 |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Mack et al., 1972 Lieberman et al., 2003 Keswick et al., 1984 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|-----------------------|---|--|--|
| 2 | Detected in source water in the U.S.? | Yes | Borchardt et al., 2003 |
| 1 | Not detected in the U.S.? | N/A | |
| <i>Health Effects</i> | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | | |
| 6 [C] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | <p>[C] Aseptic meningitis and neonatal sepsis are the most common complications.</p> <p>EVs are the most common cause of meningitis in the U.S., over 80% of all viral meningitides (estimated 30,000 to 50,000 hospitalizations for non-polio EV each year (principally echo and coxsackie)).</p> <p>Enterovirus causes myocarditis, viral meningitis, encephalitis and meningoencephalitis.</p> | <p>Heymann, 2005</p> <p>Romero in Murray, 2007</p> <p>Khetsuriani et al., 2002</p> <p>Kim et al., 2001</p> <p>Khetsuriani, 2003</p> |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | Diabetes has been associated with enterovirus infection. | Heymann, 2005 |
| 4 [G] | Does the illness require short term hospitalization (< week)? | <p>[G] Hospitalization may be required for severe manifestations of disease. Approximately 20-30% of meningitis outbreak cases in young adults require hospitalization.</p> <p>During the summer and</p> | <p>Sawyer, 2002</p> <p>Romero in Murray,</p> |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|---|
| | | fall, responsible for 50 – 60% of hospital admissions for evaluation of febrile illnesses for infants and children. | 2007 |
| 3 | Does the illness require physician intervention? | Children with acute pharyngitis may be taken to a physician to differentiate between streptococcal and viral sore throat. Upper respiratory illness lasts 4-6 days, lower respiratory illness lasts 5-7 days, and meningitis lasts 7-10 days. | Romero in Murray, 2007 Heymann, 2005 |
| 2 [E, P, CD] | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | [E, P, CD] Most cases are asymptomatic. Most common symptoms are acute nonspecific febrile illness. | Romero in Murray, 2007 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Escherichia coli (O157)† Scoring Data

| Scoring Summary^{1,2} | |
|--|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [C, E] | 6 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|--|--|---|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 2 Noncommunity (1 Previously unreported) 1 Noncommunity 1 Community 1 Noncommunity 2 Community | CDC, 1998 CDC, 2000 CDC, 2002 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Bopp et al., 2003 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|-----------------------|---|--|---|
| 2 | Detected in source water in the U.S.? | Yes As a result of animal fecal contamination. | Kramer et al., 1996 |
| 1 | Not detected in the U.S.? | N/A | |
| Health Effects | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | No Approximately 60 deaths per 73,000 cases per year (nearly >1/1,000) are reported due to <i>E. coli</i> (O157). A case fatality rate of 0.5 has been reported for outbreak-related cases caused by <i>E. coli</i> O157:H7 | Nataro in Murray, 2007 Rangel et al., 2005 |
| 6 [C, E] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [C, E] Patients at extremes of age have an increased risk for infection and associated complications. Children under 5 are most frequently diagnosed with infection and are at greatest risk of developing HUS. The elderly also appear to be a increased risk of complications. HUS develops in 10% of patients under the age of 10. | Chinyu, 1995 Heymann, 2005 Nataro and Kaper, 1998 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | 25% of HUS survivors develop long term renal sequelae. 3.2% of children with diarrhea plus HUS develop diabetes. | Garg et al., 2003 Suri et al., 2005 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|---------------------|---|--|------------------------|
| | | Adults have a greater likelihood of hypertension and reduced renal function. | Garg et al, 2005 |
| 4 | Does the illness require short term hospitalization (< week)? | | |
| 3 [G, P, CD] | Does the illness require physician intervention? | [G, P, CD] Fluid replacement is the cornerstone of treatment for EHEC diarrhea; some clinicians choose to hospitalize all patients with E. coli O157:H7 for hydration to prevent HUS. | Heymann, 2005 |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | Can present as mild nonbloody diarrhea. | Nataro in Murray, 2007 |

[†]The names *E. coli* O157 and *E. coli* O157:H7 are used interchangeably for CCL 4 due to ongoing taxonomical debate in the scientific literature.

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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***Helicobacter pylori* Scoring Data**

| Scoring Summary^{1,2} | |
|---------------------------------------|----------|
| Occurrence | 3 |
| Health Effects | |
| General population | 7 |
| Sensitive subpopulation(s) [E] | 7 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|--|---|---------------------|---|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | No | CDC, 1991 – CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | No | CDC, 1991 – CDC, 2006 |
| 3 | Has caused documented WBDOs at any time in the U.S.? | No | |
| 2 | Has caused WBDOs in countries other than the U.S.? | No | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | Yes | Klein and Graham, 1991 Hulten et al., 1996 Rolle-Kampczyk, 2004. |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Hegarty and Baker, 1999 |
| 2 | Detected in source water in the U.S.? | N/A | |
| 1 | Not detected in the U.S.? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|---|
| | <i>Health Effects</i> | | |
| 7 [G, E] | Does the organism cause significant mortality (> 1/1,000 cases)? | [G, E] 6500 deaths per year. 1.2 Million acute cases per year (>1/1,000 deaths). 46% of deaths occur before age of 64. | CDC, 1997 Stratton et al, 2000 |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | 40 – 50% infection rates in the elderly. More likely to suffer from gastric ulcer, gastric adenocarcinomas and MALT. | Fox in Murray, 2007 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | Main cause for peptic ulcers and a major risk factor for gastric cancer. | Fox in Murray, 2007 |
| 4 | Does the illness require short term hospitalization (< week)? | | |
| 3 [C, P, CD] | Does the illness require physician intervention? | [C, P, CD] Many patients have recurrent abdominal symptoms; 16% develop duodenal ulcers. NIH (1994) recommends diagnosis and antimicrobial treatment for anyone with peptic ulcers. | Fox in Murray, 2007 |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | No Infection persists lifelong without treatment. | Fox in Murray, 2007 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation.

These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

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³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Hepatitis A Virus Scoring Data

| Scoring Summary ^{1,2} | |
|---------------------------------------|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [E] | 6 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score ² | Data Element | Scoring Data | Reference ³ |
|-------------------------------------|--|---|--------------------------------------|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 1 Community 1 Noncommunity (Previously unreported) | CDC, 1991 CDC, 1996 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | | |
| 2 | Detected in source | Yes | Abbaszadegan et al., |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|--|
| | water in the U.S.? | | 2003 Borchardt et al., 2004 |
| 1 | Not detected in the U.S.? | N/A | |
| | <i>Health Effects</i> | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | Reported case fatality is normally low, 0.1% – 0.3%; it can reach 1.8% for adults over 50. | Heymann, 2005 |
| 6 [E] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [E] Fulminant hepatitis may develop. Disease severity shows a general increase with age. | Anderson in Murray, 2007 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | | |
| 4 | Does the illness require short term hospitalization (< week)? | | |
| 3 [G, C, P, CD] | Does the illness require physician intervention? | [G, C, P, CD] Commonly begins with “flu-like” symptoms. May develop jaundice. Physician office visit is common for diagnosis and/or vaccination. | Anderson in Murray, 2007 |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | |
| 1 | Does the illness result in | | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|--|--------------|------------------------|
| | mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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CDC, 1996. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1993—1994. *MMWR Surveillance Summaries*, 45(SS-1); 1-33.

CDC, 1998. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1995—1996. *MMWR Surveillance Summaries*, 47(SS-5); 1-33.

CDC, 2000. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1997—1998. *MMWR Surveillance Summaries*, 49(SS-4); 1-35.

CDC, 2002. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1999—2000. *MMWR Surveillance Summaries*, 51(SS-8); 1-36.

CDC, 2004. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 2001—2002. *MMWR Surveillance Summaries*, 53(SS08); 23-45.

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Heymann, D. (ed.). 2005. Control of Communicable Diseases Manual, 18th ed. American Public Health Association, Washington, DC.

***Legionella pneumophila* Scoring Data**

| Scoring Summary^{1,2} | |
|---|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 4 |
| Sensitive subpopulation(s) [E, CD] | 6 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|--|--|--|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 1 Community 1 Noncommunity 7 Community 1 Community (Previously unreported) 1 Noncommunity (Previously unreported) | CDC, 2004 CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | AwwaRF, 2004 Lin et al., 1998 Maier et al., |

| Score ² | Data Element | Scoring Data | Reference ³ |
|------------------------------|---|--|--|
| | | | 2000 |
| 2 | Detected in source water in the U.S.? | Yes | Maier et al., 2000 |
| 1 | Not detected in the U.S.? | N/A | |
| <i>Health Effects</i> | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | <p>Avg. 12% fatality rate; death rates of 15% (general pop.) up to 75% (immunocompromised) if untreated.</p> <p>Avg. 25% death rate (between 20-40% during an outbreak.</p> <p>10 – 15% death rate.</p> <p>Fatality rate has been as high as 39% in hospitalized cases; it is generally higher in those with compromised immunity.</p> | <p>Edelstein in Murray, 2007</p> <p>AwwaRF, 2004</p> <p>CDC, 2005</p> <p>Heymann, 2005</p> |
| 6 [E, CD] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [E, CD] Acute pneumonia may progress to respiratory collapse and death if diagnosis and effective antibiotic therapy are delayed. The elderly and individuals with chronic diseases are at higher risk. | <p>Edelstein in Murray, 2007</p> <p>CDC, 2005</p> |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | No | |
| 4 [G, C, P] | Does the illness require short term hospitalization (< week)? | [G, C, P] Hospitalization is required for treatment of acute pneumonia. | Edelstein in Murray, 2007 |
| 3 | Does the illness require physician intervention? | | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | Pontiac fever resolves without treatment and has flu-like symptoms. | Edelstein in Murray, 2007 Heymann, 2005 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--------------|------------------------|
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Mycobacterium avium Scoring Data

| Scoring Summary ^{1,2} | |
|---------------------------------------|----------|
| Waterborne Disease Outbreak | 4 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [E] | 5 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score ² | Data Element | Scoring Data | Reference ³ |
|-------------------------------------|---|---|---|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | No | CDC, 1991 – CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes Not listed in CDC's MMWR however, data linking patient, outbreak and drinking water. | Tobin-D'Angelo et al., 2004 |
| 3 | Has caused documented WBDOs at any time in the U.S.? | No | |
| 2 | Has caused WBDOs in countries other than the U.S.? | No | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | Yes | Glover et al., 1994 Aronson et al., 1999 von Reyn et al., 1994 |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Glover et al., 1994 Covert et al., 1999 Falkinham et al., 2001 |
| 2 | Detected in source water in the U.S.? | Yes | Covert et al., 1999 Falkinham et al., 2004 |
| 1 | Not detected in the U.S.? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|----------------------------|
| | <i>Health Effects</i> | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | | |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | Disseminated MAC infections are a major problem in HIV-Infected individuals. | Heymann, 2005 |
| 5 [E] | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | [E] Most commonly immunocompetent patients develop a slowly evolving cavitary disease that resembles tuberculosis. Elderly non-smoking females, can develop “Lady Windermere’s syndrome” which has been associated with significant morbidity and mortality. | Murray et al., 2005 |
| 4 [CD] | Does the illness require short term hospitalization (< week)? | [CD] Tuberculosis-like upper lobe fibrocavitary disease occurs typically in men 45 – 60 who have preexisting lung disease. | Pfyffer in Murray, 2007 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|--|
| 3 [G] | Does the illness require physician intervention? | [G] Symptoms of infection include pulmonary disease, lymphadenitis, post-traumatic wound infection. Diagnosis of disease and treatment requires physician intervention. | Pfyffer in Murray, 2007 Heymann, 2005 |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Salmonella enterica Scoring Data

| Scoring Summary^{1,2} | |
|--|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [C, E] | 4 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|-------------------------------------|--|---|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 1 Community 1 Community 1 Noncommunity | CDC, 1996 CDC, 2002 CDC, 2006 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Angulo et al., 1997 CDC, 1998(a). |
| 2 | Detected in source water in the U.S.? | N/A | |
| 1 | Not detected in the U.S.? | N/A | |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|---|--|
| | <i>Health Effects</i> | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | Each year, 1.4 M cases of illness and 600 deaths are caused by non-typhoidal salmonellosis in the U.S. Estimated 800 cases per year of typhoid fever in the U.S., with fewer than 5 deaths/yr.; >70% of U.S. cases related to foreign travel. | Nataro et al. in Murray, 2007 |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | Nontyphoidal salmonellosis usually causes intestinal infection; can cause extraintestinal infections in rare cases (bacteremia, urinary tract infection, osteomyelitis), especially in immunocompromised persons. | Nataro et al. in Murray, 2007 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | None reported. | |
| 4 [C, E] | Does the illness require short term hospitalization (< week)? | [C] Extra-intestinal infections highest in infants and young children. [E] Dehydration, especially among infants or in the elderly, may be severe. Deaths are uncommon, except in the young and old, the debilitated and immunosuppressed. | Nataro et al. in Murray, 2007 Heymann, 2005 |
| 3 [G, P, CD] | Does the illness require physician intervention? | [G,P,CD] Antibiotic and rehydration may | Heymann, 2005 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|-------------------------------|
| | | be necessary. | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | Non-typhoidal Salmonella usually cause intestinal infection that often lasts 1 week or longer. | Nataro et al. in Murray, 2007 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Shigella sonnei Scoring Data

| Scoring Summary^{1,2} | |
|--|----------|
| Waterborne Disease Outbreak | 5 |
| Health Effects | |
| General population | 3 |
| Sensitive subpopulation(s) [C, E] | 6 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease

| Score² | Data Element | Scoring Data | Reference³ |
|-------------------------------------|--|---|--|
| <i>Waterborne Disease Outbreaks</i> | | | |
| 5 | Has caused multiple (2 or more) documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | Yes 1 Noncommunity 2 Noncommunity (1 Previously unreported) 2 Noncommunity 1 Community | CDC, 1993 CDC, 1996 CDC, 1998 CDC, 2000 |
| 4 | Has caused at least one documented WBDOs in the U.S. as reported by CDC surveillance between 1990 and 2004? | N/A | |
| 3 | Has caused documented WBDOs at any time in the U.S.? | N/A | |
| 2 | Has caused WBDOs in countries other than the U.S.? | N/A | |
| 1 | Has never caused WBDOs in any country, but has been epidemiologically associated with water related disease? | N/A | |
| <i>Occurrence</i> | | | |
| 3 | Detected in drinking water in the U.S.? | Yes | Craun, 2003 |
| 2 | Detected in source water in the U.S.? | Yes | Black et al., 1978 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|-------------------------|
| 1 | Not detected in the U.S.? | N/A | |
| | <i>Health Effects</i> | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases)? | In U.S. approximately 450,000 cases occur each year with 70 deaths. | Nataro in Murray, 2007. |
| 6 [C, E] | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [C, E] <i>S. dysenteriae</i> is associated with more serious symptoms than other species with complications such as toxic megacolon, hemolytic uremic syndrome and intestinal perforation. Cases may be severe in infants and the elderly and convulsions may occur in young children. | Heymann, 2005 |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | Reiter's syndrome. | Heymann, 2005 |
| 4 | Does the illness require short term hospitalization (< week)? | Hospitalization is usually required for intravenous antibiotic therapy due to bacteremia, which is uncommon. | Heymann, 2005 |
| 3 [G] | Does the illness require physician intervention? | [G] Most cases occur in children under 10 years, infants under 6 months rarely infected, increased severity in children and elderly, high secondary case rate in outbreaks, outbreaks occur in daycare centers, institutions, refugee camps, among homosexual men, 20% of U.S. cases result | Heymann, 2005 |

| Score ² | Data Element | Scoring Data | Reference ³ |
|--------------------|---|--|------------------------|
| | | from international travel, specific antibiotic therapy available for prolonged or severe cases, multi-antibiotic resistance occurs. | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | Acute diarrhea, fever, nausea, vomiting, cramps and tenesmus, stools contain blood and mucus (dysentery), usually self-limiting in 4-7 days without treatment. | Heymann, 2005 |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | <i>S. sonnei</i> causes most of the shigellosis cases in the U.S., cases may be asymptomatic or mildly symptomatic, but they are frequently acute. | Heymann, 2005 |

¹ Bolded Text indicates the highest score for that particular protocol. For the health effects protocol two scores were selected: the general population [G] and the highest score for a sensitive subpopulation. These 2 scores were added and normalized by multiplying by 5/14 for a final health effects score. The higher score between the WBDO and Occurrence protocols was used for total pathogen score calculation. Health Effects protocol: G – General, C - Child, E-Elderly, P - Pregnant Women, CD -Chronic Disease.

²See *Final Contaminant Candidate List 3 Microbes: PCCL to CCL Process*. EPA 815-R-09-009. Final. August 2009 for a detailed description on how to calculate the total pathogen score.

³EPA based the WBDO scores on the CDC MMWR reports from 1991 – 2008 and then collected occurrence citations if there were no CDC WBDOs.

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Appendix 3: CIS Infographics

Introduction

Chemical Infographics

A summary of the classification process used to select contaminants from the PCCL to be included on the CCL is included in Section 2 of this document.

The pages below provide examples of the CCL decision making process for four chemicals: one that made the CCL based on the model decision (ethylene glycol); one that made the CCL based on the HRL/ concentration ratio (nonylphenol, a nominated contaminant); one that did not make the CCL based on the model decision (2,4,5-trichlorophenol); and one that did not make the CCL based on the HRL/ concentration ratio (bentazon, a nominated contaminant). The scoring criteria for all four attributes are further described in Appendix 4 of this document.

Listed Based on Classification Model Results – Ethylene Glycol Example

This infographic shows **ethylene glycol** as an example of a contaminant for which EPA lacked water occurrence data (therefore no HRL/concentration ratio was able to be calculated), and therefore ethylene glycol was listed on the CCL based on the classification model results of List (“L”).

The graphic shows a box for each of the four attributes (potency, severity, prevalence, and magnitude) that serve as input to the classification model, and the categorical listing decision that was the output of the model.

The attribute boxes for potency, prevalence and magnitude for ethylene glycol show:

- The type of data that was used for scoring
- The value used to score that attribute (in the left hand column)
- The scoring criteria for that particular type of data (in the middle column)
- The score the contaminant received for that particular attribute (in the right hand column highlighted in the box)
- The bottom row of each attribute box gives more details on the data source that was used
- The data for prevalence and magnitude are presented in the order of the data hierarchy established for scoring occurrence attributes from left (higher ranking data) to right (lower ranking data) (e.g., finished water, ambient water, release data)
- For potency, data elements are presented in the general order of the data hierarchy for health effects from higher ranking to lower ranking data (e.g., RfD, TDI, LOAEL, etc.)
- The data element the contaminant was scored on is shown in the expanded box

The potency attribute for ethylene glycol:

- Was scored based on non-cancer data from IRIS, 1987
- The Reference Dose (RfD) = 2 mg/kg-day
- This RfD value falls in the scoring criteria range from 0.317- 3.16 mg/kg-day, which corresponds to a score of 3

The severity attribute was scored based on the same data source used to score the potency, so only the critical effect and the score are listed in the severity box.

- Ethylene glycol received a severity score of 9 based on the critical effect of “death”

Similarly, for occurrence the prevalence attribute for ethylene glycol:

- Was scored based on Toxic Release Inventory (total release) data (2004)
- There were releases of ethylene glycol to 49 states
- The scoring criteria range indicated that releases to greater than 25 states corresponds to a score of 10

The magnitude attribute for ethylene glycol:

- Was scored based on TRI (total release, 2004) of 10,076,843 lbs per year
- This value falls within the scoring criteria range of >3M lbs/year, corresponding to a score of 10

The four attribute scores input to the model are summarized in the box in the upper right hand-corner, and the listing decision of “L” from the model output is displayed in the box below the attribute scores.

Attribute scores allow EPA to rank relative health effects and occurrence likelihood.

| | |
|-------------------------|-----------------|
| Contaminant: | Ethylene Glycol |
| Substance Key: | 4599 |
| Contaminant ID (CASRN): | 107211 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 3 | 9 | 10 | 10 |

| 3-Model Categorical Prediction | |
|--------------------------------|--|
| L | |

3-Model Categorical Prediction: The net outcome of "list or not list" decisions from each of three predictive models developed and selected based on expert input.

| Potency | | |
|---------------------------------------|--------------------------|----------|
| Value mg/kg-day | Scoring Criteria | Score |
| | 0 - 0.000000316 | 10 |
| | 0.000000317 - 0.00000316 | 9 |
| | 0.00000317 - 0.0000316 | 8 |
| | 0.0000317 - 0.000316 | 7 |
| | 0.000317 - 0.00316 | 6 |
| | 0.00317 - 0.0316 | 5 |
| | 0.0317 - 0.316 | 4 |
| 2 | 0.317 - 3.16 | 3 |
| | 3.17 - 31.6 | 2 |
| | 31.7 - >31.7 | 1 |
| Source: IRIS Reference Dose | | |

| Severity | |
|--|----------|
| Death | 9 |
| Tumors or Disorders Likely Leading to Death | 8 |
| Developmental or Reproductive Effects | 7 |
| Significant, Irreversible nonlethal conditions | 6 |
| Significant functional changes | 5 |
| Cellular/Physiological Changes | 4 |
| Reversible Effects | 3 |
| Cosmetic Effects | 2 |
| No Adverse Effects | 1 |

Available data presented in order of the hierarchy established for scoring attributes from preferred data on the left to less preferred data on the right (i.e., finished water data are on the far left of the graphic, followed by ambient water data, application/release data). The data element the contaminant was scored on is shown.

| Prevalence | | |
|--|------------------|-----------|
| Value (# of States) | Scoring Criteria | Score |
| 49 | >25 | 10 |
| | 16-25 | 9 |
| | 11-15 | 8 |
| | 7-10 | 7 |
| | 6 | 6 |
| | 5 | 5 |
| | 4 | 4 |
| | 3 | 3 |
| | 2 | 2 |
| | 1 | 1 |
| Source: Total Release TRI Data 2004 | | |

Shading indicates the data that were used to score the attributes.

| Magnitude | | |
|--|------------------|-----------|
| Value (lbs / year) | Scoring Criteria | Score |
| 10,076,483 | >3M | 10 |
| | 1M-3M | 9 |
| | 300,001-1M | 8 |
| | 100,001-300,000 | 7 |
| | 30,001-100,000 | 6 |
| | 10,001-30,000 | 5 |
| | 3,001-10,000 | 4 |
| | 1,001-3,000 | 3 |
| | 301-1,000 | 2 |
| | <300 | 1 |
| Source: Total Release TRI Data 2004 | | |

Listed Based on HRL/Concentration ratio – Nonylphenol Example

Nonylphenol is an example of a contaminant that was listed on the CCL based on an HRL/concentration ratio of 2.6. Contaminants with HRL/concentration ratios less than or equal to 10 were listed on the CCL 4 (the concentration value is within a factor of 10 of the HRL, which is the benchmark used to determine the level of potential public health concern).

The magnitude attribute for nonylphenol:

- Was scored based on Kolpin ambient water monitoring data
- The median concentration was 0.08 µg/L

The HRL of 105 µg/L was calculated using the NOAEL of 15 mg/kg-day from the World Health Organization (WHO, 2004) in the following equation:

$$15 \text{ mg/kg-d} \cdot (70 \text{ kg} \cdot 0.2 / (2 \text{ L/d} \cdot 1000)) = 0.105 \text{ mg/L converted to } 105 \text{ } \mu\text{g/L}$$

The HRL/concentration ratio = 105 µg/L divided by the maximum value (since a 90th percentile value is not available) ambient water concentration from Kolpin et al. (2002) of 40 µg/L.

$$\text{HRL/concentration ratio} = 105 \text{ } \mu\text{g/L} / 40 \text{ } \mu\text{g/L} = 2.6 \text{ (ratio } < 10)$$

Not Listed Based on Classification Model Results – 2,4,5-Trichlorophenol Example

This infographic shows **2,4,5-trichlorophenol** as an example of a contaminant for which EPA lacked water occurrence data (no HRL/concentration ratio), and therefore it was not listed on the CCL 4 based on the classification model results of “Not List to Not List?” (“NL–NL?”).

The graphic shows a box for each of the four attributes (potency, severity, prevalence, and magnitude) that serve as input to the classification model, and the categorical listing decision that was the output of the model.

The attribute boxes for potency, prevalence and magnitude for 2,4,5-trichlorophenol show:

- The type of data that was used for scoring
- The value used to score that attribute (in the left hand column)
- The scoring criteria for that particular type of data (in the middle column)
- The score the contaminant received for that particular attribute (in the right hand column)
- The bottom row of each attribute box gives more details on the data source that was used
- The data for prevalence and magnitude are presented in the general order of the data hierarchy established for scoring occurrence attributes from left (higher ranking data) to right (lower ranking data) (e.g., finished water, ambient water, release data)
- For potency, the data elements are presented in the general order of the data hierarchy for health effects from higher ranking to lower ranking data (e.g., RfD, TDI, LOAEL, etc.)
- The data element the contaminant was scored on is shown in the expanded box

The potency attribute for 2,4,5-trichlorophenol:

- Was scored based on non-cancer data from IRIS (1986)
- The Reference Dose (RfD) = 0.1 mg/kg-day
- This RfD value falls in the scoring criteria range from 0.0317- 0.316 mg/kg-day which corresponds to a score of 4

The severity attribute was scored based on the same data source used to score the potency, so only the critical effect and the score are listed in the severity box.

- 2,4,5-trichlorophenol received a severity score of 6 based on the critical effect of “liver and kidney pathology (degenerative changes)”

For occurrence the prevalence attribute for 2,4,5-trichlorophenol:

- Was scored based on Toxic Release Inventory (total release) data (2004)
- There were releases of 2,4,5-trichlorophenol to 2 states
- The scoring criteria range indicated that releases equal to 2 states corresponds to a score of 2

The magnitude attribute for 2,4,5-trichlorophenol:

- Was scored based on TRI (total release, 2004) of 18,879 lbs per year
- This value falls within the scoring criteria range of 10,001-30,000 lbs/year, corresponding to a score of 5

The four attribute scores input to the model are summarized in the box in the upper right hand-corner, and the listing decision for 2,4,5-trichlorophenol of “NL-NL?” from the model output is displayed in the box below the attribute scores.

Attribute scores allow EPA to rank relative health effects and occurrence likelihood.

| | |
|-------------------------|-----------------------|
| Contaminant: | 2,4,5-Trichlorophenol |
| Substance Key: | 3800 |
| Contaminant ID (CASRN): | 95954 |

| Attribute Scores | | | |
|------------------|----------|------------|-----------|
| Potency | Severity | Prevalence | Magnitude |
| 4 | 6 | 2 | 5 |

3-Model Categorical Prediction
NL - NL?

3-Model Categorical Prediction: The net outcome of "list or not list" decisions from each of three predictive models developed and selected based on expert input.

| Potency | | |
|------------------------------------|------------------------|----------|
| Value mg/kg-day | Scoring Criteria | Score |
| | 0 - 0.00000316 | 10 |
| | 0.00000317 - 0.0000316 | 9 |
| | 0.0000317 - 0.000316 | 8 |
| | 0.000317 - 0.00316 | 7 |
| | 0.00317 - 0.0316 | 6 |
| | 0.0317 - 0.316 | 5 |
| 0.1 | 0.0317 - 0.316 | 4 |
| | 0.317 - 3.16 | 3 |
| | 3.17 - 31.6 | 2 |
| | 31.7 - >31.7 | 1 |
| Source: IRIS Reference Dose | | |

| Severity | |
|---|----------|
| Death | 9 |
| Tumors or Disorders Likely Leading to Death | 8 |
| Developmental or Reproductive Effects | 7 |
| Significant, Irreversible nonlethal conditions | 6 |
| Significant functional changes | 5 |
| Cellular/Physiological Changes | 4 |
| Reversible Effects | 3 |
| Cosmetic Effects | 2 |
| No Adverse Effects | 1 |

Shading indicates the data that were used to score the attributes.

Available data presented in order of the hierarchy established for scoring attributes from preferred data on the left to less preferred data on the right (i.e., finished water data are on the far left of the graphic, followed by ambient water data, application/release data). The data element the contaminant was scored on is shown.

| | Prevalence | | |
|------------------------------|---------------------|------------------|----------|
| | Value (# of States) | Scoring Criteria | Score |
| Finished Water Data (N/A) | | >25 | 10 |
| Ambient Water Data (N/A) | | 16-25 | 9 |
| Pesticide Use Data (N/A) | | 11-15 | 8 |
| | | 7-10 | 7 |
| | | 6 | 6 |
| | | 5 | 5 |
| | | 4 | 4 |
| | | 3 | 3 |
| | 2 | 2 | 2 |
| | | 1 | 1 |
| Source: Total Release | | | |
| | TRI Data | 2004 | |

| | Magnitude | | |
|------------------------------|--------------------|----------------------|----------|
| | Value (lbs / year) | Scoring Criteria | Score |
| Finished Water Data (N/A) | | >3M | 10 |
| Ambient Water Data (N/A) | | 1M-3M | 9 |
| Pesticide Use Data (N/A) | | 300,001-1M | 8 |
| | | 100,001-300,000 | 7 |
| | | 30,001-100,000 | 6 |
| | 18,879 | 10,001-30,000 | 5 |
| | | 3,001-10,000 | 4 |
| | | 1,001-3,000 | 3 |
| | | 301-1,000 | 2 |
| | | <300 | 1 |
| Source: Total Release | | | |
| | TRI Data | 2004 | |

Not Listed Based on HRL/Concentration ratio – Bentazon Example

Bentazon, a nominated contaminant, is an example of a contaminant that was not listed on the CCL based on an HRL ratio/concentration of 276. Contaminants with HRL/concentration ratios less than or equal to 10 were listed on the CCL 4. Since 276 is greater than the cutoff of 10, bentazon was not listed on the CCL 4 (the HRL is more than 10 times the concentration value, indicating the contaminant is not occurring at levels of potential public health concern).

The magnitude attribute for bentazon:

- Was scored based on NAWQA ambient water monitoring data
- The median concentration was 0.1 µg/L

The HRL of 210 µg/L for bentazon was calculated using the RfD of 0.03 mg/kg-day (IRIS, 1998) in the following equation:

$$0.03 \text{ mg/kg-d} \cdot (70 \text{ kg} \cdot 0.2 / 2 \text{ L/d}) = 0.21 \text{ mg/L converted to } 210 \text{ } \mu\text{g/L}$$

The HRL/concentration ratio = 210 µg/L divided by the 90th percentile value from USGS NAWQA ambient water monitoring data, 0.76 µg/L

$$\text{HRL/concentration ratio} = 210 \text{ } \mu\text{g/L} / 0.76 \text{ } \mu\text{g/L} = 276 \text{ (ratio } > 10)$$

Introduction

Microbes Infographics

Selection of microbes from the CCL Universe for placement on the PCCL is based upon exclusionary screening criteria that assess the potential of water-related transmission (occurrence) and the plausibility of causing waterborne disease by ingestion, inhalation or dermal contact (health effects). Microbes that met any of the exclusionary criteria were not included on the PCCL. The screening criteria developed for CCL 3 were also used for CCL 4 and can be found in the “Screening Document for the Fourth Preliminary Contaminant Candidate List 4 (PCCL 4)” (USEPA, 2016d). See Appendix 4 for additional information on the microbial scoring protocol. The microbial classification process is described in Section 4 of this document.

The 29 PCCL pathogens are ranked according to an equal weighting of their summed scores for normalized health effects and the higher of the individual scores for WBDO and occurrence in drinking water. This ranking indicates the most important pathogens to consider for the CCL 3. To determine which of the 29 PCCL pathogens should be the highest priority for EPA’s Drinking Water Program and included on the CCL, the agency considered both scientific and policy factors. The factors included the PCCL scores for WBDO, occurrence, and health effects; comments and recommendations from the various expert panels; the specific intent of SDWA; and the need to focus agency resources on pathogens to provide the most effective opportunities to advance public health protection. After consideration of these factors, EPA has determined that the CCL will include the 12 highest ranked pathogens.

Additionally, there are a few “natural” break points in the ranked scores for the 29 pathogens, with the top 12 forming the highest ranked group of pathogens. EPA determined that the overall rankings strongly reflect the best available scientific data and high quality expert input employed in the CCL selection process, and therefore should be important factors in helping to identify the top priority pathogens for the draft CCL 3.

The pages below provide examples of the CCL decision making process for two microbes: Adenovirus, which was included on the CCL 4, and *Vibrio cholerae*, which was not included on CCL 4.

Listed on CCL 4– Adenovirus Example

This infographic shows **Adenovirus** as an example of a contaminant that was listed on the CCL 4.

The graphic shows a box for each of the three attributes (Occurrence, WBDO, and Health Effects) that serve as input to the scoring model.

The attribute boxes show:

- The data used for scoring each attribute, in bold, and indicated by a “yes” in the right hand column.
- The score the contaminant received for that particular attribute (in the left hand column).
- The occurrence score (of 3) for Adenovirus was chosen, as shown in the upper left hand corner, because it is greater than the WBDO score (of 2).
- The health effects scores for the general population (of 6) and the sensitive population (of 4) are added together (equaling 10) and multiplied by 5/14 (the health effects score equalizing value), which equals 3.6.
- The occurrence score is added to the adjusted health effects score for a total score for Adenovirus of 6.6, above the cut-off point for the top 12 microbes.

$$\text{Pathogen Total Score} = \text{Highest Score between WBDO and Occurrence} + \left(\left(\text{General Population Score} + \text{Highest Sensitive Population} \right) \times 5/14 \right)$$

Example: Calculation of Adenovirus Total Score

Adenovirus *Total Score* = **3** (Occurrence Score) + ((**6** (General Population Score) + **4** (Children/CD) x 5/14); Adenovirus *Total Score* = 3 + 3.6;

Adenovirus *Total Score* = **6.6**

Adenovirus: Microbe Included on the CCL 4

| Scoring Summary | | | Adenovirus | | |
|----------------------|---|---|------------------------------|---|--------------------------|
| Occurrence | | 3 | Total Score: 6.6 | | |
| Health Effects | | | | | |
| General population | | 6 | Waterborne Disease Outbreaks | | |
| Sensitive population | | 4 | Score | Data Element | Scoring Data |
| Occurrence | | | 5 | Multiple WBDOs in US (1990-2004) | |
| Score | Data Element | Scoring Data | 4 | At least one WBDOs in US (1990-2004) | |
| 3 | Detected in drinking water in the US | Yes ^{2,3} | 3 | Caused WBDOs at any time in US | |
| 2 | Detected in Source water in the US | | 2 | Caused WBDOs in countries other than US | Yes: Europe ¹ |
| 1 | Not detected in the US | | 1 | Never caused WBDOs, associated w/ water related disease | |
| Health Effects | | | | | |
| Score | Data Element | Scoring Data | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases) | | | | |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | [General population] A frequent cause of pneumonia among (unvaccinated) military recruits. Two deaths in previously-healthy adults. ⁴ ARD is still significant problem in military. Less common manifestations include fatal neonatal disease, meningoencephalitis and myocarditis. ⁵ | | | |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | | | | |
| 4 | Does the illness require short term hospitalization (< week)? | [Chronic Disease] Children with chronic disease required respiratory ventilation. ⁶ [Children] Young adults may contract acute respiratory disease. ⁷ | | | |
| 3 | Does the illness require physician intervention? | | | | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | | | |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | | | |

Pathogen Total Score = Highest Score between WBDO and Occurrence + ((General Population Score + Highest Sensitive population Score) x 5/14)

Adenovirus Total Score = 3 (Occurrence Score) + ((6 (General Population Score) + 4 (Children/CD) x 5/14); Adenovirus Total Score = 3 + 3.6 = 6.6

¹ Kukkula, M., Arstila P., Klossner M.L., Maunula L., Bonsdorff C.H., and P. Jaatinen. 1997. Scandinavian Journal of Infectious Disease, 29(4): 415-8.

² O'Reilly, C.E., A.B. Bowen, E.P. Nytzia, J.P. Sarisky, C.A. Shepherd, M.D. Miller, B.C. Hubbard, M. Herring, S.D. Buchanan, C.C. Fitzgerald, V. Hill, M.J. Arrowood, L.X. Xiao, R.M. Hoekstra, E.D. Mintz, M.F. Lynch, and the Outbreak Working Group. 2007. A Waterborne Outbreak of Gastroenteritis with Multiple Etiologies among Resort Island Visitors and Residents: Ohio, 2004. Clinical Infectious Diseases, 44:506-512.
<http://www.journals.uchicago.edu/CID/journal/issues/v44n4/40825/40825.text.html> - fn1#fn1
<http://www.journals.uchicago.edu/CID/journal/issues/v44n4/40825/40825.text.html> - fn2#fn2

³ Fong, T., L. Mansfield, D. Wilson, D. Schwab, S. Molloy and J. Rose. 2007. Massive Microbiological Groundwater Contamination Associated with a Waterborne Outbreak in Lake Erie, South Bass Island, OH. Environmental Health Perspectives.

⁴ Gray, G C, P R Goswami, M D Malasig, A W Hawksworth, D H Trump, M A Ryan and D P Schnurr. 2001. Adult Adenovirus Infections: Loss of Orphaned Vaccines Precipitates Military Respiratory Disease Epidemics. Clinical Infectious Diseases, 31: 663-70.

⁵ Robinson, C. and M. Echavaria. 2007. Adenoviruses. In Murray, P. R., E. J. Baron, J. H. Jorgensen, M.L. Landry, and M. A. Pfaller (ed.) The Manual of Clinical Microbiology, 9th. edition, American Society for Microbiology, Washington, DC. Vol. 2: p. 1592.

⁶ CDC, 1983. Adenovirus type 7 outbreak in a pediatric chronic-care facility - Pennsylvania. 1972. MMWR, 1983;32:258-60.

⁷ CDC, 1998. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1995—1996. MMWR Surveillance Summaries, 47(SS-5): 1-33.

Not Listed on CCL 4— *Vibrio cholerae* Example

This infographic shows *Vibrio cholerae* as an example of a contaminant that was not listed on the CCL 4.

The graphic shows a box for each of the three attributes (Occurrence, WBDO, and Health Effects) that serve as input to the scoring model.

The attribute boxes show:

- The data used for scoring each attribute, in bold, and indicated by a “yes” in the right hand column.
- The score the contaminant received for that particular attribute (in the left hand column).
- The WBDO score of 4 was chosen, as shown in the upper left hand corner, because it is greater than the occurrence score (of 3).
- The health effects scores for the general population and sensitive population are added together (equaling 6) and multiplied by 5/14 (the health effects score equalizing value), which equals 2.1.
- The WBDO score (4) is added to the adjusted health effects score (2.1) for a total score of 6.1, below the cut-off point of the top 12 microbes.

$$\text{Pathogen Total Score} = \text{Highest Score between WBDO and Occurrence} + \left(\left(\text{General Population Score} + \text{Highest Sensitive Population} \right) \times 5/14 \right)$$

Example: Calculation of *Vibrio cholerae* Total Score

Vibrio cholerae Total Score = **4** (WBDO Score) + ((**3** (General Population Score) + **3** (All sensitive populations) x 5/14); *Vibrio cholerae* Total Score = 4 + 2.1;

Vibrio cholerae Total Score = **6.1**

***Vibrio cholerae*: Microbe that was not Included on the CCL 4**

| Scoring Summary | | | <i>Vibrio cholerae</i> | | |
|----------------------|---|--|------------------------------|---|------------------|
| WBDO | 4 | | Total Score: 6.1 | | |
| Health Effects | | | | | |
| General population | 3 | | Waterborne Disease Outbreaks | | |
| Sensitive population | 3 | | Score | Data Element | Scoring Data |
| Occurrence | | | 5 | Multiple WBDOs in US (1990-2004) | |
| Score | Data Element | Scoring Data | 4 | At least one WBDOs in US (1990-2004) | Yes ⁴ |
| 3 | Detected in drinking water in the US | Yes ^{2,3} | 3 | Caused WBDOs at any time in US | |
| 2 | Detected in Source water in the US | | 2 | Caused WBDOs in countries other than US | |
| 1 | Not detected in the US | | 1 | Never caused WBDOs, associated w/ water related disease | |
| Health Effects | | | | | |
| Score | Data Element | Scoring Data | | | |
| 7 | Does the organism cause significant mortality (> 1/1,000 cases) | | | | |
| 6 | Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | | | | |
| 5 | Does the illness result in long term or permanent dysfunction or disability, i.e. sequelae? | | | | |
| 4 | Does the illness require short term hospitalization (< week)? | | | | |
| 3 | Does the illness require physician intervention? | [All populations] In most cases infection is asymptomatic or causes self-limiting diarrhea ¹ . Treatment consists of fluid replacement by oral rehydration therapy and/or intravenous fluids ¹ . | | | |
| 2 | Is the illness self-limiting within 72 hours (without requiring medical intervention)? | | | | |
| 1 | Does the illness result in mild symptoms with minimal or no impact on daily activities? | | | | |

Pathogen Total Score = Highest Score between WBDO and Occurrence + ((General Population Score + Highest Sensitive Population Score) x 5/14)

Vibrio cholerae Total Score = 4 (WBDO Score) + ((3 (General Population Score) + 3 (All sensitive populations) x 5/14); *Vibrio cholerae* Total Score = 4 + 2.1 = **6.1**;

1 Abbott, S. L., J. M. Janda, and J. J. Farmer. 2010. *Vibrio* and Related Organisms. In Murray, P. R., E. J. Baron, J. H. Jorgensen, M. A. Pfaller, and R. H. Tenover (ed.) The Manual of Clinical Microbiology, 8th. edition, American Society for Microbiology, Washington, DC. Vol. 1: pp. 666.

2 CDC, 1991. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- Page A2 - 16

3 EPA OGWDW Contaminant Information Sheets EPA 815-R-15-003 for Microbes

United States, 1989—1990. MMWR Surveillance Summaries, 40(SS-3); 1-21.

4 CDC, 1996. Surveillance for Waterborne-Disease Outbreaks Associated with Drinking Water --- United States, 1993—1994. MMWR Surveillance Summaries, 45(SS-1); 1-33.

Appendix 4: CCL Attribute Scoring Protocols

The following attribute scoring protocols remain unchanged from CCL 3; however, they are included here to compile as much useful supporting information for CCL 4 in one document as is practical.

4.1 Potency Scoring Protocol

This section describes the process for assigning a numerical score for the Potency attribute.

Protocol for Potency Scoring

Step One: Open the spreadsheet for Potency and Severity Scoring (a sample of this spreadsheet is shown in Exhibit 4.1).

Step Two: Identify and score highest-ranked non-cancer data element for potency using the following hierarchy of values:

RfD or equivalent > NOAEL that is lower than the lowest LOAEL > LOAEL > Toxic Dose_{LO} (TD_{LO}-RTECS) > LD₅₀

- Measured > Modeled

For RfDs (or equivalent) only:

- EPA RfD > ATSDR Minimal Risk Level (MRL) (Chronic > Intermediate > Acute) > RAISHE RfD > Cal EPA Public Health Goal (PHG)¹ > TDIs from WHO/EU/Health Canada > UL from IOM
- OPP > IRIS for Pesticides

Step Three: Enter the selected quantitative measure of non-cancer potency into the appropriate column of the spreadsheet.

Step Four: Select a measure for cancer potency if one is available. The preferable measure will be the 10⁻⁴ risk concentration in drinking water in mg/L. If the risk is expressed at levels other than 10⁻⁴, convert the value to the target risk (10⁻⁴). If the cancer potency measure is the slope factor, calculate the 10⁻⁴ risk concentration using the following equation:

$$10^{-4} \text{ Risk concentration} = \frac{0.0001 \times 35 \text{ kg/day/L}}{\text{Slope Factor (mg/kg/day)}^{-1}}$$

Step Five: In a case where the potency value is a LD₅₀ value reported as greater than a particular dose, or as a NOAEL with no LOAEL, decrease the score calculated using the spreadsheet by one integer. Situations for which there is a NOAEL but not a LOAEL can be identified by the lack of a critical effect, because the NOAEL was the highest dose tested.

¹ The California PHG will have to be converted from mg/L to a dose by multiplying it by the [Drinking Water Intake (L) ÷ (the body weight (kg) x Relative Source Contribution)].

Step Six: Choose the higher of the non-cancer or cancer potency scores as the measure of potency.

Note: if no value for Potency can be found that qualifies for this protocol, please refer the contaminant for expert judgment. The only endpoints that may be applied to this protocol are those listed explicitly in the hierarchy of values. Further, the only endpoints considered as equivalent to an RfD are MRLs from ATSDR, RAISHE RfDs, Cal EPA RfDs, WHO or HC, TDIs, and IOM ULs.

Exhibit 4.1. Potency Scoring Table

| SCORE | RfD mg/kg-day | LOAEL/NOAEL mg/kg- day | LD ₅₀ mg/kg | 10 ⁻⁴ Cancer Risk mg/L |
|-------|--------------------------|---------------------------|---------------------------|--------------------------------------|
| 10 | 0 - 0.000000316 | 0 - 0.000316 | 0 - 0.0316 | 0 - 0.00000316 |
| 9 | 0.000000317 - 0.00000316 | 0.000317 - 0.00316 | 0.0317 - 0.316 | 3.17E-06 - 0.0000316 |
| 8 | 0.00000317 - 0.0000316 | 0.00317 - 0.0316 | 0.317 - 3.16 | 3.17E-05 - 0.000316 |
| 7 | 0.0000317 - 0.000316 | 0.0317 - 0.316 | 3.17 - 31.6 | 0.000317 - 0.00316 |
| 6 | 0.000317 - 0.00316 | 0.317 - 3.16 | 31.7 - 316 | 0.00317 - 0.0316 |
| 5 | 0.00317 - 0.0316 | 3.17 - 31.6 | 317 - 3,160 | 0.0317 - 0.316 |
| 4 | 0.0317 - 0.316 | 31.7 - 316 | 3,170 - 31,600 | 0.317 - 3.16 |
| 3 | 0.317 - 3.16 | 317 - 3,160 | 31,700 - 316,000 | 3.17 - 31.6 |
| 2 | 3.17 - 31.6 | 3,170 - 31,600 | 317,000 - 3,160,000 | 31.7 - 316 |
| 1 | 31.7 - >31.7 | 31,700 - >31,700 | 3,170,000 - >31,700,000 | 317 - >317 |

4.2 Severity Scoring Protocol

The score for Severity is based upon the critical effect associated with the data element (RfD, LOAEL, etc.) used to score Potency. Potency must be scored prior to Severity.

Protocol for Severity Scoring

- Step One:** Identify the critical effect for the contaminant, based on the data used to score the attribute of potency, and enter it into the severity scoring worksheet. If the contaminant has more than one critical effect all of the listed effects should be included. NOTE: If the critical effect is death and the LD₅₀ data element was used to score potency, go to Step Four. If the effects are for a LOAEL from RTECS go to Step Five.
- Step Two:** Locate the critical effect within the “Compendium of Critical Effects Table” (see Exhibit 4.2) and enter the severity score associated with that critical effect in the severity scoring worksheet. If a contaminant has more than one critical effect, choose the highest of the scores.
NOTE: If the critical effect is not listed in the Table, go to Step Three.
- Step Three:** If the critical effect is not listed in the Table, the scorer should flag that critical effect as ‘not listed.’ (Health effects experts should be consulted to score these effects.) Once the effect is scored it should be added to the compendium for future use and consistent scoring.
- Step Four:** If a critical effect is not available, or is “death,” use one of the following options for scoring:
- 1) Search sources identified as supplemental sources for CCL for additional health effects data that could be used to score potency and severity for the contaminant. If data are found that provide a data element from the potency protocol other than LD₅₀ to score the contaminant, then that element can be used for scoring. Sources that may be most helpful in this search include: Hazardous Substances Data Bank (HSDB), International Program on Chemical Safety (INCHEM), and the National Toxicology Program (NTP). The element that is found may be used to re-score the contaminant for potency, and subsequently severity, using the score associated with the critical effect endpoint.
 - 2) Search for an alternative critical effect associated with the LD₅₀ determination. Locate the LD₅₀ study and search for information regarding the types of effects occurring prior to animal death. If a critical effect other than death is given in the study, it may be used to score the severity of the contaminant. (The potency score is still given by the value of the LD₅₀.)
 - 3) If no additional information can be found, recommend that the contaminant be returned to the Universe.
- Step Five:** If the Potency score is a LOAEL from RTECS, the effects listed represent all effects and not just the critical effect (s). There are three available options for

improving the scoring in this situation.

- 1) If the RTECS data source is included in the supplemental data, review the supplemental information to identify the critical effect. If the supplemental source includes a NOAEL for the critical effect, replace the LOAEL with the NOAEL and re-score potency if necessary.
- 2) In cases where the data source for the LOAEL is not in the supplemental data search the supplemental data for an alternative data source. If the data identified provides a NOAEL or LOAEL that is the same or lower than that in RTECS or is from a study of higher quality than the RTECS study, use that NOAEL or LOAEL and its critical effect to score both potency and severity.
- 3) If it is not possible to find better information in the supplemental data sources score the most serious of the effects listed in RTECS.

Exhibit 4.2. Compendium of Critical Effects Table (from Health Advisories & IRIS) For Scoring Severity

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|---|---|
| 1 | NO ADVERSE EFFECT | No observed effect(s) No observed adverse effect(s) Absence of effects No critical effect(s) identified No effect(s) related to treatment Absence of biologically significant adverse effect(s) Absence of gross light microscopic histopathological change(s) Exceedance of the Taste Threshold |
| 2 | COSMETIC EFFECT <i>(Interpretation: Consider those effects that alter the appearance of the body without affecting structure or functions)</i> | Dental fluorosis Abnormal appearance Facial flushing Flushing Argyria Dermal sensitization Skin pigmentation Hyperpigmentation Alopecia Keratosi |
| 3 | REVERSIBLE EFFECTS; DIFFERENCES IN ORGAN WEIGHTS OR SIZE, BODY WEIGHTS OR CHANGES IN BIOCHEMICAL PARAMETERS WITH MINIMAL CLINICAL SIGNIFICANCE <i>(Interpretation: Transient, adaptive effects)</i> | <i>Growth and Weight Effects</i> Decreased body weight and or body weight gain Increased absolute organ weights Increased liver weight Increased kidney weight Increased relative organ weight Decreased relative organ weight Lower ovarian weight Decreased maternal weight gain Increased absolute and relative (to body and/or brain) liver weight Increased kidney body weight ratio Increase in spleen weight |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|------------------|--|
| 3 (cont.) | | <p>Increase in thyroid/body weight ratio Changes in thymus weight Decreased body weight Decreased growth</p> <p style="text-align: center;"><i>Gastrointestinal Disturbances</i></p> <p>Decreased stool quantity Osmotic diarrhea Diarrhea Nausea Vomiting GI irritation GI disturbances</p> <p style="text-align: center;"><i>Irritation/Irritability</i></p> <p>Chronic irritation Maternal hyperirritability Chronic irritation without histopathology changes</p> <p style="text-align: center;"><i>Biochemical Changes</i></p> <p>Decreased glucose Increased blood sugar Increased enzymes Increased triglycerides Increase serum concentration of compound Clinical serum effects Alterations in clinical chemistry Increased serum alkaline phosphatase Significant elevation of serum calcium levels Enzyme inhibition, induction, or change in blood tissue levels Decreased ESOD activity Decrease in erythrocyte superoxide dismutase (ESOD) concentration Minor alteration in clinical chemistry, e.g., decrease in erythrocyte superoxide dismutase (ESOD)</p> <p style="text-align: center;"><i>Hematological effects</i></p> <p>Hematological effects Abnormal pigments in blood Decreased lymphocyte count Decreased blood counts Decreased white blood cells Methemoglobinemia Increased carboxyhemoglobin Hemosiderosis Anemia Normocytic anemia Iron deposits and elevated Heinz bodies in liver Decreased hemoglobin and possible erythrocyte destruction Decreased RBC, packed cell volume, and hemoglobin Hematologic, hepatic, and renal toxicity as evidenced by a statistically significant decrease in hemoglobin, hematocrit, and RBC levels RBC and liver effects as evidenced by increase Heinz bodies in RBC</p> |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|--|---|
| 3 (cont.) | | <p>Sporadic decrease in hemoglobin and RBC, decreased RBC and hematocrit</p> <p><i>Cholinesterase Effects</i> Reversible PChE (plasma) or RBC-ChE inhibition without cholinergic symptoms or signs RBC ChE depression without cholinergic symptoms or sweating Plasma cholinesterase (ChE) inhibition without cholinergic symptoms or sweating</p> <p><i>Hormone Changes</i> Decrease in T3, T4 Dose-related decrease in T4, T3, and increase TSH Elevated thyroid stimulating hormone (TSH) concentration ACTH decrease</p> <p><i>Cellular Vacuolization</i> Mild to moderate vacuolization Tubular epithelial vacuolization Brain cell vacuolization</p> <p><i>Additional Effects</i> Changes in teeth and supporting structures Sensory organ effects Centrilobular eosinophilic liver changes Possible vascular complication Inhibition of the concentration of beneficial bacteria in the gastrointestinal microflora</p> |
| 4 | <p>CELLULAR/PHYSIOLOGICAL CHANGES THAT COULD LEAD TO DISORDERS (risk factors or precursor effects) <i>(Interpretation: Considers cellular/physiological changes in the body that are used as indicators of disease susceptibility)</i></p> | <p><i>Hematological Effects</i> Jaundice Anemia Hemolytic anemia Erythrocyte destruction Hemolysis</p> <p><i>Immunological Effects</i> Decreased delayed hypersensitivity response Decrease in cellular immune response Decrease in humoral immune response</p> <p><i>Liver Effects</i> Fatty cyst - liver and elevated liver enzymes (i.e., SGPT, LDH) Liver cell enlargement or alteration Liver cell polymorphism Proteinuria Renal cytomegaly</p> <p><i>Cholinergic Effects</i> Cholinesterase inhibition with symptoms Cholinergic signs or symptoms</p> <p><i>Other Effects</i> Hypothermia Mild CNS Effects</p> |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|--|---|
| 5 | <p>SIGNIFICANT FUNCTIONAL CHANGES THAT ARE REVERSIBLE OR PERMANENT CHANGES OF MINIMAL TOXICOLOGICAL SIGNIFICANCE</p> <p><i>(Interpretation: Consider those disorders in which the removal of chemical exposure will restore health back to prior condition)</i></p> | <p><i>Increased cholinergic effects</i> ChE inhibition with sweating, diarrhea, hypotension, and/or fishy body odor RBC and/or plasma acetylcholinesterase (AChE) inhibition with cholinergic symptoms or sweating Brain acetylcholinesterase inhibition with or without signs or symptoms</p> <p><i>Hematological Effects</i> GI bleeding Coagulation defects Extramedullary hematopoiesis Tendency to hemorrhage</p> <p><i>Structural Effects</i> Rachitic bone</p> <p><i>Renal Effects</i> Renal cytomegaly Renal effects/toxicity (increased uric acid levels; increased urinary coproporphyrins) Inflammatory foci – kidneys</p> <p><i>Hepatic Effects</i> Liver function tests impaired Fatty-cyst in liver hemosiderosis</p> <p><i>Multiple Organ Effects</i> Effects on the lungs, liver, kidney, thyroid and thyroid hormones</p> <p><i>Ocular Effects</i> Corneal damage</p> <p><i>Neurological Effects</i> Mild neurological signs Alteration of classic conditioning Brain ChE inhibition Myelin degeneration CNS depression Brain/ other coverings- recordings from specific areas of CNS Tremors Dyspnea Changes in motor activity Hypoactivity Ataxia</p> <p><i>Other Effects</i> Chronic pneumonitis Clinical selenosis Non-neoplastic lesions - splenic capsule Intestinal lesions Splénomegaly</p> |
| 6 | <p>SIGNIFICANT, IRREVERSIBLE, NONLETHAL CONDITIONS OR DISORDERS</p> <p><i>(Interpretation: Consider those disorders that persist for over a long period of time but do not lead to death)</i></p> | <p><i>Multiple Organ Effects</i> Histopathological effects in liver, kidney, and thyroid Minimal to moderate congestion of liver, kidney, and lungs Liver and kidney pathology Kidney and spleen pathology</p> |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|------------------|--|
| 6 (cont.) | | <p style="text-align: center;"><i>Hepatic Effects</i></p> <p>Hepatic lesions/necrosis Hepatocyte degeneration Hepatotoxicity Liver cell polymorphism Liver effects/toxicity Liver lesions</p> <p style="text-align: center;"><i>Renal Effects</i></p> <p>Atrophy and degeneration of the renal tubules – nephropathy (unspecified) Kidney toxicity Mineralization of the kidneys Renal dysfunction Renal effects/toxicity (increased uric acid levels; increased urinary coproporphyrins) Functional and histopathological effects in kidney Kidney damage (unspecified) Kidney lesions (unspecified) Impaired renal clearance/function Tubular epithelial vacuolation</p> <p style="text-align: center;"><i>Sensory and Neurological Effects</i></p> <p>Significant decrease in brain and brain to body weight ratio Degenerative changes for brain/ other coverings Peripheral neuropathy- neuropathy (unspecified) Neurotoxicity Nerve damage (unspecified) Optic nerve degeneration/ damage Sensory neuropathy Minimal lens opacity and cataracts Nasal olfactory lesions</p> <p style="text-align: center;"><i>Hyperplasia</i></p> <p>Thyroid hyperplasia Urothelial hyperplasia Hyperplasia Squamous and basal hyperplasia of the forestomach Epithelial hyperplasia – forestomach</p> <p style="text-align: center;"><i>Cardiac Effects</i></p> <p>Cardiac toxicity Cardiomyopathy, including infarction Vascular complications Right atrial dilation Convulsions Mild histological lesions</p> <p style="text-align: center;"><i>Other Effects</i></p> <p>Gastrointestinal necrotic changes Chronic irritation with histopathology findings Forestomach lesions (unspecified) Organ atrophy Thyroid effects (unspecified) Thyroid mineralization Spleen toxicity (unspecified)</p> |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|---|--|
| 6 (cont.) | | Bladder toxicity (unspecified) Bone marrow toxicity (unspecified) Hormonal response to extrogenic substances in post-menopausal women |
| 7 | <p>DEVELOPMENTAL OR REPRODUCTIVE EFFECTS LEADING TO MAJOR DYSFUNCTION (Interpretation: Considers those chemicals that cause permanent developmental effects or that impact the ability to reproduce)</p> | <p><i>Reproductive Organ Effects</i> Testicular atrophy/damage Testicular and uterine effects Atrophied seminiferous epithelium Histopathological changes in testes Hypospasia Lesions observed in reproductive organs Decreased testes weight and testes to body weight ratio, atrophied seminiferous epithelium; and decreased tubular size in testes Endometriosis Decreased tubular size in testes Decreased ovarian weight and function Altered cellular foci</p> <p><i>Maternal Toxicity</i> Maternal toxicity Decreased maternal weight gain</p> <p><i>Fertility effects</i> Spermatogenic arrest Reduced numbers of corpora allata Reduced or deformed sperms Adverse reproductive effects Reduction in fertility Decreased fertility index Decrease in size of litter</p> <p><i>Growth inhibition</i> Reduced offspring weight gain, total litter weight, or litter size Decreased pup weight Decreased lactation indices Increased runt incidence Decreased crown-rump length</p> <p><i>Decreased offspring viability</i> Excessive loss of litters Increase in number of stillbirths Maternal and fetal toxicity Increased intrauterine death Decreased pup survival or viability Increased abortion rate Increase in number of stillbirths Increased dead pups at birth Decreased pup viability index Parturition mortality Fetal resorptions</p> <p><i>Developmental effects</i> Fetal toxicity/malformations Developmental toxicity (skeletal or visceral abnormalities)</p> |

| Severity Score | Score Definition | Compendium of Critical Effects |
|----------------|---|---|
| | | Delayed ossification Neurodevelopmental effects Brain cell vacuolization in neonates Myelin degeneration Skeletal or visceral abnormalities (Extra ribs and other measures of sexual maturation) Increased retinal folds in weanlings Mixed sexual differentiation (i.e., effeminization or emasculanization) Imbalance in sex ratio |
| 8 | TUMORS OR DISORDERS LIKELY LEADING TO DEATH <i>(Interpretation: Considers chemical exposures that result in a fatal disorder and all types of tumors)</i> | Cancer Suspected carcinogenicity (including short latency periods and rare tumors) Any type of cancer |
| 9 | DEATH | Increased mortality Longevity Mortality Survival Decreased survival Increased mortality Decreased adult survival Decreased adult longevity High incidence of mortality at early age (i.e., 25% to 50% by mid-life) in chronic studies Maternal death during pregnancy Reduced longevity Death |

4.3 Prevalence Scoring Protocol

This section describes how to assign a numerical score for the attribute Prevalence.

Step One: Identify highest-ranked data value

When more than one data value is available for a particular contaminant candidate, a hierarchy was used. The highest-ranked data element for scoring Prevalence is the frequency of detection in finished drinking water, followed by the frequency of detection in ambient water. These are followed by “surrogates” for occurrence in water, including the number of states reporting pesticide application, the number of states reporting releases via TRI, and production data from CUS/IUR (in order of decreasing rank). Exhibit 2 in the main body of this report indicates the highest-ranking data element used for scoring for those contaminants that were listed on the Final CCL 4 based on their Three-Model List Decision. The same type of data used to score Prevalence was used to score Magnitude.

Step Two: Use scoring table to find attribute score for value identified in Step One.

For each element there is a corresponding column in the Prevalence Scoring table (see Exhibit 4.3), which contains a range of data values assigned to a numeric prevalence score between 1 and

10. Once a data value has been found for a particular element, look up the value in Exhibit 4.3 to determine the prevalence score. For CUS/IUR data, use the most recent year reported. For pesticides, if the compound is a degradate and does not have its own data, use the parent to score.

Exhibit 4.3. Prevalence Scoring Scales

| Prevalence Score | Hierarchy | | | | |
|------------------|--|--|---|--|---|
| | 1 | 2 | 3 | 4 | 5 |
| | % Finished Water PWSs with Detections of Contaminant | % Ambient Water Sites with Detections of Contaminant | # States Reporting Pesticide in Use | # of States Reporting TRI Total Releases | CUS/IUR (production data) Number of Pounds (by category) produced |
| | All PWSs | All sites/samples | | | |
| 1 | <=0.10 | <=0.10 | -- | 1 | <500K |
| 2 | 0.11-0.16 | 0.11-0.16 | -- | 2 | -- |
| 3 | 0.17-0.25 | 0.17-0.25 | Default for any pesticide in non-environmental use | 3 | >500K-1M |
| 4 | 0.26-0.44 | 0.26-0.44 | -- | 4 | -- |
| 5 | 0.45-0.61 | 0.45-0.61 | Default for any pesticide in environmental use without data | 5 | >1M-10M |
| 6 | 0.62-1.00 | 0.62-1.00 | <6 | 6 | >10M-50M |
| 7 | 1.01-1.30 | 1.01-1.30 | 6-10 | 7-10 | >50M-100M |
| 8 | 1.31-2.50 | 1.31-2.50 | 11-15 | 11-15 | >100M-500M |
| 9 | 2.51-10.00 | 2.51-10.00 | 16-25 | 16-25 | >500M-1B |
| 10 | >10.00 | >10.00 | >25 | >25 | >1B |

Notes:

Use data in the highest category to score. (Category 1 being the highest ranking, category 5 the lowest ranking).

For CUS/IUR data, use the most recent year reported. "Not Reported" means there has been no change in production volume since the last report.

For pesticides, if the compound is a degradate and does not have its own data, use the parent to score.

4.4 Magnitude Scoring Protocol

This section describes how to assign a numerical score for the attribute Magnitude.

Step One: Identify the highest ranked data element

When more than one data element is available for a particular contaminant, a hierarchy was used. The highest-ranked data element for scoring Magnitude is the median of detections in finished drinking water, followed by the median of detections in ambient water. These are followed by "surrogates" for occurrence in water including the pounds applied and the pounds released via TRI. (in order of decreasing rank). Exhibit 2 in the main body of this report indicates the highest-ranking data element used for scoring for those contaminants listed on the Final CCL 4 is based on the Three-Model List Decision. Note that the Magnitude element should be correlated

with the value used to score the Prevalence attribute, except when production data are used for Prevalence and then Persistence-Mobility is used for Magnitude.

Step Two: Use scoring table to find attribute score for value identified in Step One.

For each data element, there is a corresponding column in the Magnitude Scoring table (Exhibit 4.4), which contains a range of data values assigned to a numerical magnitude score. Locate the column in the table associated with the highest-ranking data element identified in step one. Use the information in the column to determine the numerical score associated with the data value for the chemical being scored. In cases where there are no data for Scoring Magnitude in Exhibit 4.4 (e.g., Prevalence is scored using Production Volume data), use the Persistence-Mobility Scoring approach to develop a Magnitude Score.

Persistence-Mobility Scoring

The approach for scoring persistence and mobility includes assigning two values, one for persistence and one for mobility, on a numeric scale of 1 through 3, representing low, medium, and high for each property as it relates to the likelihood of the contaminant to partition to and/or remain in water. Using a hierarchy of physical property data elements, each contaminant is scored for both persistence and mobility. The average of these two values is multiplied by 10/3 to obtain the persistence-mobility score. Exhibit 4.5 displays the hierarchy of available properties for each data element representing either persistence or mobility.

Protocol for Persistence-Mobility Scoring

Step One: Identify and score highest-ranked data value for Persistence

When several values for a physical property are available, the highest scoring value should be used, unless that value is not representative of environmental conditions in drinking water.

Step Two: Identify and score highest-ranked data value for Mobility

When several values for a particular physical property are available, the highest scoring value should be used for scoring, unless that value is not representative of environmental conditions in drinking water.

Step Three: Multiply the average of the Persistence and Mobility values by 10/3 for the Magnitude score.

Exhibit 4.4 Magnitude Scales

| Hierarchy | | | | | |
|--------------------|---------------------------------|--|--------------------------|---------------------------------|--|
| Magnitude Scale | 1 | 2 | 3 | 4 | 5 |
| | Finished Water Occurrence Scale | Ambient Water Occurrence Scale | Pesticide Use Scale | TRI Total Releases Scale | Persistence/Mobility |
| Data Used to Score | Median of detections - all PWSs | Median of detections - all sites/samples | Number of pounds applied | Total number of pounds released | |
| Units | µg/L | µg/L | lbs | lbs | |
| Score | | | | | Used when Production data are used to score for prevalence. See Persistence/Mobility protocol |
| 1 | <0.003 | <0.003 | <10,000 | <300 | |
| 2 | 0.003 - 0.01 | 0.003 - 0.01 | -- | 301-1,000 | |
| 3 | >0.01 - 0.03 | >0.01 - 0.03 | 10,000-30,000 | 1,001-3,000 | |
| 4 | >0.03 - 0.1 | >0.03 - 0.1 | 30,001-100,000 | 3,001-10,000 | |
| 5 | >0.1 - 0.3 | >0.1 - 0.3 | 100,001-300,000 | 10,001-30,000 | |
| 6 | >0.3 - 1 | >0.3 - 1 | 300,001-1M | 30,001-100,000 | |
| 7 | >1 - 3 | >1 - 3 | 1M - 3M | 100,001-300,000 | |
| 8 | >3 - 10 | >3 - 10 | 3M - 10M | 300,001-1M | |
| 9 | >10 - 30 | >10 - 30 | 10M - 30M | 1M - 3M | |
| 10 | >30 | >30 | >30M | >3M | |

Notes:

Use data in the highest category to score. (Category 1 being the highest ranking, category 5 the lowest ranking).

The number corresponding to each "Score" is the maximum in that category, e.g., 0.1 µg/L scores 4, not 5.

For pesticides, if the compound is a degradate and does not have its own data, use the parent to score.

Exhibit 4.5. Magnitude Scales for Environmental Fate Data**Magnitude Hierarchy 5
Mobility Scale**

| | Units | Value | | |
|--|-------------------------|-------------------|------------------------------------|-----------------------|
| | | 1 (Low) | 2 (Medium) | 3 (High) |
| Organic Carbon Partitioning Coefficient (K_{oc}) | mL/g | >1,000 | 100-1,000 | <100 |
| Log Octanol/Water Partitioning Coefficient (log K_{ow}) | dimensionless | >4 | 1-4 | <1 |
| Soil/Water Distribution Coefficient (K_d) | mL/g | >10 | 1-10 | <1 |
| Henry's Law Coefficient (K_H) | atm-m ³ /mol | >10 ⁻³ | 10 ⁻⁷ -10 ⁻³ | <10 ⁻⁷ |
| Henry's Law Coefficient (K_H) | dimensionless | >0.042 | 0.042-4.2x10 ⁻⁶ | <4.2x10 ⁻⁶ |
| Solubility | mg/L | <1 | 1-1,000 | >1,000 |
| Percent in water (PBT Profiler) | dimensionless | ≤ 25 | >25-50 | > 50 |

Persistence Scale

| | Units | Value | | |
|-------------------------|-------|------------------|---------------------|----------------------|
| | | 1 (Low) | 2 (Medium) | 3 (High) |
| Half Life ($t_{1/2}$) | time | days, days-weeks | weeks, weeks-months | months, recalcitrant |

Magnitude Hierarchy 5**Mobility Scale**

| | | Value | | |
|--|------|--|---|-------------------------------|
| | | Units | 1 (Low) | 2 (Medium) |
| Measured Degradation Rate ¹ | time | days, days- weeks (BF, BFA) ² | weeks, weeks- months (BS, BSA) | months, recalcitrant (BST) |
| Modeled Degradation Rate (PBT Profiler) | time | days, days- weeks | weeks, weeks- months | months, recalcitrant |

¹ When two results are found for a measured degradation rate, the data are "averaged" and then a value determined.

² BF = Biodegrades Fast, BFA = Biodegrades Fast with Acclimation, BS = Biodegrades Slow, BST = Biodegrades Sometimes.

4.6 Occurrence

The occurrence attribute is the direct detection of microbes using cultural, immunochemical, or molecular detection of pathogens in water. It characterizes pathogen introduction, survival, and distribution in the environment. Occurrence implies that pathogens are present in water and they may be capable of surviving and moving through water to produce illness in persons exposed to water by ingestion, inhalation, or dermal contact.

Pathogen occurrence is considered broadly to include public drinking water, and all waters (e.g., recreational, ground water, surface water) used as drinking water. This attribute does not characterize the extent to which pathogen's occurrence poses a public health threat from drinking water exposure. Because viability and infectivity cannot be determined by non-cultural methods, the public health significance of non-cultural detections is unknown.

Exhibit 4.6. Occurrence Scoring Protocol for Pathogens

| Category | Score |
|--|-------|
| Detected in drinking water in the U.S. | 3 |
| Detected in source water in the U.S. | 2 |
| Not detected in the U.S. | 1 |

4.7 Health Effects

The health effects protocol evaluates the extent of illness produced in humans from drinking water. The severity of disease manifestations produced by a pathogen is evaluated across a range of potential endpoints. The seven-level hierarchy developed for this protocol begins with mild, self-limiting illness (score of 1) and progresses to death (score of 7). These scores reflect the most common clinical presentation and are based on data from recent clinical microbiology manuals.

The agency considered whether the potency of an organism could be evaluated for CCL, (i.e., the concentration of a pathogen during exposure that is necessary to cause illness in a susceptible host (infectious dose)). However, because infectious doses are not available for most pathogens, the agency instead uses this health effect protocol to score both the severity of disease and the organisms' potency with the best available data.

The final outcome of a host-pathogen relationship resulting from drinking water exposure is a function of viability, infectivity, and pathogenicity of the microbe to which the host is exposed and the host's susceptibility and immune response. SDWA directs EPA to consider subgroups of the population at greater risk of adverse health effects (sensitive populations), in the selection of the CCL. Sensitive populations may have increased susceptibility and may experience increased severity of symptoms, compared to the general population. SDWA refers to several categories of sensitive populations including the following: children and infants, elderly, pregnant women, and persons with a history of serious illness.

To obtain a representative characterization of health effects in all populations, EPA evaluated separately the general population and four sensitive populations (children, elderly, pregnant woman and persons with chronic diseases) as to the common clinical presentation of illness for that population. EPA added the general population score to the highest score among the four sensitive populations for an overall health effects score. The resulting score acknowledges that sensitive populations have increased risk for waterborne diseases.

Exhibit 4.7. Health Effects Scoring Protocol for Pathogens

| Outcome Category | Score | Manifestation in Population Class | | | | |
|---|-------|-----------------------------------|--------------------|---------|----------------|-----------------|
| | | General Population | Children / Infants | Elderly | Pregnant Women | Chronic Disease |
| Does the organism cause significant mortality (> 1/1,000 cases)? | 7 | | | | | |
| Does the organism cause pneumonia, meningitis, hepatitis, encephalitis, endocarditis, cancer, or other severe manifestations of illness necessitating long term hospitalization (> week)? | 6 | | | | | |
| Does the illness result in long term or permanent dysfunction or disability (i.e., sequelae)? | 5 | | | | | |
| Does the illness require short term hospitalization (< week)? | 4 | | | | | |
| Does the illness require physician intervention? | 3 | | | | | |

| Outcome Category | Score | Manifestation in Population Class | | | | |
|---|-------|-----------------------------------|--------------------|---------|----------------|-----------------|
| | | General Population | Children / Infants | Elderly | Pregnant Women | Chronic Disease |
| Is the illness self-limiting within 72 hours (without requiring medical intervention)? | 2 | | | | | |
| Does the illness result in mild symptoms with minimal or no impact on daily activities? | 1 | | | | | |

4.8 Combining Protocol Scores to Rank Pathogens

Pathogens are first scored using the WBDO and occurrence protocols, and then the highest score is selected. Selection of the higher score from the WBDO or occurrence protocol elevates pathogens that have been detected in drinking water or source water in the U.S. (occurrence score of 2 or 3) above pathogens that have caused WBDOs in other countries but not in the U.S. (WBDO score of 2) or pathogens that have not caused WBDOs in any country but have been epidemiologically associated with water-related disease (WBDO score of 1). This scoring protocol recognizes the importance of WBDO data in evaluating the public health risk posed by pathogens in drinking water, while ensuring that pathogens that have been detected in public water systems and have not been identified as causative agents WBDOs remain in the CCL process.

Next, pathogens are scored using the health effects protocol. This protocol scores the representative health effect characteristic of each pathogen for the general population, e.g., noroviruses characteristically cause gastrointestinal symptoms that are self-limiting within two days in otherwise healthy adults. All five population categories are scored for each pathogen using the most common clinical presentation for the specific pathogen for the population category under consideration. The pathogen's score for the general population is added to the highest score among the four sensitive populations to produce a sum score between 2 and 14.

Finally, EPA normalizes the Health Effects and WBDO/Occurrence score because the agency believes they are of equal importance. The highest possible score for WBDO/Occurrence is 5 and the highest possible Health Effect score is 14. To equalize this imbalance, the agency

multiplies the combined health effects score by 5/14.

$$\text{Pathogen Total Score} = \text{Highest Score between WBDO and Occurrence} + \left(\left(\text{General Population Score} + \text{Highest Sensitive Population} \right) \times \frac{5}{14} \right)$$

Example: Calculation of Adenovirus Total Score

Adenovirus *Total Score* = **3** (Occurrence Score) + ((**6** (General Population Score) + **4** (Children/CD)) x 5/14); Adenovirus *Total Score* = 3 + 3.6;
Adenovirus *Total Score* = **6.6**

Appendix 5: Sensitivity Analyses Performed During CCL 3

The training data set for chemicals used during CCL 3 development is the set of data used to train (or teach) the classification models to mimic expert list-not list decisions. The training data set used to train the models for CCL 3 was comprised of 202 discrete sets of attribute scores for contaminants and consensus list-not list decisions made by a team of EPA subject matter experts.

Some analyses that were performed in the development process may be considered sensitivity analyses. These included the following:

- Training the models on subsets of the training data set. This included the partial training data set (as it was being developed) and cross-validation exercises, wherein randomly-selected contaminants were held back from training to provide independent error checks.
- Training after selected “outliers” are removed from the training data set. Those selected outliers found to have strong influence on the overall performance were investigated further to see if there were valid reasons for excluding them from the training data set.
- Graphical and statistical analyses. These analyses were used to identify significant differences in attribute “weights” or influence on model performance. If any attribute had been found to be insignificant, it could have been ignored, perhaps saving some data development resources. (Though attributes were found to have different weights, none were found to be insignificant.)

Rather than detail all of the sensitivity analyses conducted for all classes of models, a more detailed description of the analyses described above using selected applications is provided in Section 4.2 of the Final CCL 3: Classification of PCCL to the CCL (USEPA, 2009d) and in section III.A.3.b of the Draft CCL 3 *Federal Register* Notice (73 FR 9628, USEPA, 2008)

Appendix 6: Data Source Type for CCL 4 Contaminants

The following table outlines the occurrence data sources and health assessment currently available for each contaminant on CCL 4. Under the RD 3 process, EPA relied on externally peer-reviewed health assessments to determine if, how, and at what level a contaminant “may have an adverse effect on the health of persons.” Health effects data sources evaluated under RD 3 included EPA health assessments, or health assessments developed by other organizations such as the National Academy of Sciences, the agency for Toxic Substances and Disease Registry, World Health Organization, the California EPA’s Office of Environmental Health Hazard Assessment, Registry of Toxic Effects of Chemical Substances, and/or supplemental data from a single study, if the health assessment uses comparable methods, standards, and guidelines to an EPA health assessment.

For RD evaluations, the occurrence data availability assessment is used to identify contaminants that may have sufficient data and information to characterize their status as known or likely to occur in PWSs. EPA uses data from many sources to evaluate occurrence for contaminants considered for RD (see Appendix C of USEPA (2014) for occurrence data sources evaluated under RD 3). For this evaluation, EPA prefers to have nationally representative finished drinking water occurrence data, but finished drinking water data that are not nationally representative may also be used to determine if the contaminant occurs frequently at levels of public health concern. Data presented in this table were used to derive Exhibit 2 of the Final CCL 4 *FR* notice.

Exhibit 6.1: CCL 4 Chemical Data Sources

| CASRN | Contaminant Name | Occurrence Data Source | Health Assessment Type |
|--|---------------------------------------|--------------------------------|---|
| Contaminants with Nationally Representative Finished Water Occurrence Data and Peer Reviewed Health Assessments | | | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | UCM | IRIS RfD (1987) ¹ |
| 96-18-4 | 1,2,3-Trichloropropane | UCMR3 (AM) | IRIS (2009) |
| 123-91-1 | 1,4-Dioxane | UCMR3 (AM) | IRIS (2013) |
| 16655-82-6 | 3-Hydroxycarbofuran | UCM | OPP (2006) ² |
| 34256-82-1 | Acetochlor | UCMR2 (SS) | OPP (2013) |
| 187022-11-3 | Acetochlor ethanesulfonic acid (ESA) | UCMR2 (SS) | OPP (2013) ² |
| 194992-44-4 | Acetochlor oxanilic acid (OA) | UCMR2 (SS) | OPP (2013) ² |
| 142363-53-9 | Alachlor ethanesulfonic acid (ESA) | UCMR2 (SS) | OPP (1998) |
| 171262-17-2 | Alachlor oxanilic acid (OA) | UCMR2 (SS) | OPP (1998) ² |
| 14866-68-3 | Chlorate | UCMR3 (AM) | OPP (2006) |
| 7440-48-4 | Cobalt | UCMR3 (AM) | ATSDR (2004) ¹ |
| NA | Enterovirus | UCMR 3 (PST) | Scientific Literature |
| 7439-96-5 | Manganese | NIRS [Proposed for UCMR4 (AM)] | IRIS (1995)/Health Canada (2016) |
| 74-83-9 | Methyl bromide (Bromomethane) | UCMR3 (AM) | OPP (2006) ¹ |
| 51218-45-2 | Metolachlor | UCMR2 (SS) | OPP (1995) |
| 171118-09-5 | Metolachlor ethanesulfonic acid (ESA) | UCMR2 (SS) | OPP (1995) |
| 152019-73-3 | Metolachlor oxanilic acid (OA) | UCMR2 (SS) | OPP (1995) |
| 7439-98-7 | Molybdenum | UCMR3 (AM) | NAS (2001)/IRIS (1991)/ATSDR in Process |
| 98-95-3 | Nitrobenzene | UCMR1 (AM) | IRIS (2009) |

| CASRN | Contaminant Name | Occurrence Data Source | Health Assessment Type |
|--|--------------------------------------|---|---|
| 55-18-5 | N-Nitrosodiethylamine (NDEA) | UCMR2 (SS) | IRIS (1987)/ OW/OST HA Draft In Process |
| 62-75-9 | N-nitrosodimethylamine (NDMA) | UCMR2 (SS) | IRIS (1987)/ OW/OST HA Draft In Process ¹ |
| 621-64-7 | N-Nitroso-di-n-propylamine (NDPA) | UCMR2 (SS) | IRIS (1987)/ OW/OST HA Draft In Process |
| 930-55-2 | N-nitrosopyrrolidine (NPYR) | UCMR2 (SS) | IRIS (1987)/ OW/OST HA Draft In Process ¹ |
| 1763-23-1 | Perfluorooctane sulfonic acid (PFOS) | UCMR3 (AM) | OW/OST HA (2016) |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | UCMR3 (AM) | OW/OST HA (2016) |
| 121-82-4 | RDX | UCMR2 (AM) | IRIS (1988) |
| 7440-62-2 | Vanadium | UCMR3 (AM) | ATSDR (2012) ¹ |
| Contaminants with Non-Nationally Representative Finished Water Occurrence Data and Peer Reviewed Health Assessments | | | |
| 71-36-3 | 1-Butanol | State data [Proposed for UCMR4 (AM)] | IRIS (1988) and update in process |
| 30560-19-1 | Acephate | State data | OPP (2006) |
| 107-02-8 | Acrolein | State data | IRIS (2003) ¹ |
| NA | Adenovirus | Supplemental | Scientific literature |
| 319-84-6 | alpha-Hexachlorocyclohexane | Supplemental [Proposed for UCMR4 (AM)] | IRIS (1987) |
| 741-58-2 | Bensulide | State data | OPP (2006) |
| 100-44-7 | Benzyl chloride | Supplemental | IRIS (1989) ¹ |
| NA | Calicivirus | Supplemental | Scientific literature |
| 133-06-2 | Captan | State data | OPP (2004) |
| 143545-90-8 | Cyanotoxins | Supplemental [Proposed for UCMR4 (AM)] ³ | OW/ OST HA (2015) microcystins and cylindrospermopsin, but no for other cyanotoxins |
| 141-66-2 | Dicrotophos | State data | OPP (2006) |
| 330-54-1 | Diuron | UCMR1 (SS) | OPP (2007) |
| 13194-48-4 | Ethoprop | Supplemental [Proposed for UCMR4 (AM)] | OPP (2008) |
| 107-21-1 | Ethylene glycol | State data | ATSDR (2010) |
| 96-45-7 | Ethylene thiourea | Supplemental | OPP (2008) |
| 50-00-0 | Formaldehyde | DBP ICR | IRIS (1990) |
| NA | <i>Legionella pneumophila</i> | Supplemental | Scientific literature |
| 10265-92-6 | Methamidophos | State data | OPP (2006) |
| NA | <i>Mycobacterium avium</i> | Supplemental | Scientific literature |
| 86-30-6 | N-Nitrosodiphenylamine (NDPhA) | State data | IRIS (1987)/ OW/OST HA Draft In Process ¹ |
| 301-12-2 | Oxydemeton-methyl | Supplemental | OPP (2006) |
| 42874-03-3 | Oxyfluorfen | Supplemental [Proposed for UCMR4 (AM)] | OPP (2002) |

| CASRN | Contaminant Name | Occurrence Data Source | Health Assessment Type |
|--|--|--|---|
| 52645-53-1 | Permethrin | State data [Proposed for UCMR4 (AM)] | OPP (2009) |
| 41198-08-7 | Profenofos | Supplemental [Proposed for UCMR4 (AM)] | OPP (2006) |
| 107534-96-3 | Tebuconazole | Supplemental [Proposed for UCMR4 (AM)] | OPP (2015) |
| 78-48-8 | Tribufos | Supplemental [Proposed for UCMR4 (AM)] | OPP (2006) |
| 50471-44-8 | Vinclozolin | Supplemental | OPP (2000) |
| 137-30-4 | Ziram | State data | OPP (2003) |
| Contaminants with Nationally Representative Finished Water Occurrence Data Lacking Peer Reviewed Health Assessments | | | |
| 75-34-3 | 1,1-Dichloroethane | UCMR3 (AM) | OEHHA(CA) (2003) ¹ |
| 106-99-0 | 1,3-Butadiene | UCMR3 (AM) | OEHHA(CA) (2000) |
| 74-87-3 | Chloromethane (Methyl chloride) | UCMR3 (AM) | No oral assessment ⁴ |
| 474-86-2 | Equilin | UCMR3 (SS) | WHO (1999) |
| 50-28-2 | Estradiol (17-beta estradiol) | UCMR3 (SS) | OEHHA(CA) |
| 50-27-1 | Estriol | UCMR3 (SS) | WHO (1999) |
| 53-16-7 | Estrone | UCMR3 (SS) | WHO (1999) |
| 57-63-6 | Ethinyl Estradiol (17-alpha ethynyl estradiol) | UCMR3 (SS) | Supplemental Data (1981)/NTP 2010, 2011 |
| 7440-56-4 | Germanium | NIRS [Proposed for UCMR4 (AM)] | UK & FDA |
| 74-97-5 | Halon 1011 (bromochloromethane) | UCMR3 (AM) | OW/OST HA (1989) |
| 75-45-6 | HCFC-22 | UCMR3 (AM) | RTECS |
| 1634-04-4 | Methyl tert-butyl ether (MTBE) | UCMR1 (AM) | OEHHA(CA) (1999) |
| 103-65-1 | n-Propylbenzene | UCM | RTECS ¹ |
| 135-98-8 | sec-Butylbenzene | UCM | RTECS ¹ |
| 13494-80-9 | Tellurium | NIRS | Supplemental Data (1988) |
| Contaminants with Non-Nationally Representative Finished Water Occurrence Data Lacking Peer Reviewed Health Assessments | | | |
| 57-91-0 | 17alpha-estradiol | Supplemental | WHO (1999) |
| 75-07-0 | Acetaldehyde | DBP ICR | RTECS |
| 64285-06-9 | Anatoxin-a | Supplemental [Proposed for UCMR4 (AM)] | Supplemental Data (1981) |
| 62-53-3 | Aniline | State data | RAISHE ¹ |
| 25013-16-5 | Butylated hydroxyanisole | Supplemental [Proposed for UCMR4 (AM)] | RTECS |
| 517-09-9 | Equilenin | Supplemental | WHO (1999) |
| 114-07-8 | Erythromycin | Supplemental | WHO (2006) |
| 110-54-3 | Hexane | State data | RAISHE ¹ |
| 72-33-3 | Mestranol | Supplemental | Supplemental Data (1981) |
| NA | <i>Naegleria fowleri</i> | Supplemental | Scientific literature |
| 25154-52-3 ⁵ | Nonylphenol | Supplemental | WHO (2004) |

| CASRN | Contaminant Name | Occurrence Data Source | Health Assessment Type |
|--|-----------------------------------|---------------------------------|--|
| 68-22-4 | Norethindrone (19-Norethisterone) | Supplemental | Supplemental Data |
| 35523898 | Saxitoxin | State data | Supplemental Data (2009) |
| Contaminants with Peer Reviewed Health Assessments Lacking Finished Water Occurrence Data | | | |
| 107-18-6 | 2-Propen-1-ol | TRI [Proposed for UCMR4 (AM)] | IRIS (1987) ¹ |
| 110429-62-4 | Clethodim | NCFAP | OPP (2014) |
| 55290-64-7 | Dimethipin | NCFAP [Proposed for UCMR4 (AM)] | OPP (2005) |
| NA | <i>Escherichia coli</i> | No data | Scientific literature |
| NA | <i>Helicobacter pylori</i> | No data | Scientific literature |
| NA | Hepatitis A virus | No data | Scientific literature |
| 302-01-2 | Hydrazine | TRI | IRIS (1989) ¹ |
| 67-56-1 | Methanol | TRI | IRIS (2013) |
| 55-63-0 | Nitroglycerin | TRI | EPA HA (1987) ¹ |
| 872-50-4 | N-Methyl-2-pyrrolidone | TRI | WHO (2001) |
| 75-56-9 | Oxirane, methyl- | TRI | OPP (2006) |
| 91-22-5 | Quinoline | TRI [Proposed for UCMR4 (AM)] | IRIS (2001) |
| 112410-23-8 | Tebufenozide | NCFAP | OPP (2008) |
| 59669-26-0 | Thiodicarb | NCFAP | OPP (1998) |
| 23564-05-8 | Thiophanate-methyl | NCFAP | OPP (2009) |
| 76-87-9 | Triphenyltin hydroxide (TPTH) | NCFAP | OPP (1999) |
| Contaminants Lacking Finished Water Occurrence Data and Current, Peer Reviewed Health Assessments | | | |
| 109-86-4 | 2-Methoxyethanol | TRI [Proposed for UCMR4 (AM)] | RAISHE ¹ |
| 60-35-5 | Acetamide | TRI | OEHHA(CA) |
| NA | <i>Campylobacter jejuni</i> | No data | Scientific literature |
| 80-15-9 | Cumene hydroperoxide | TRI | RTECS |
| 75-21-8 | Ethylene oxide | TRI | OEHHA(CA) (2000) |
| 95-53-4 | o-Toluidine | TRI [Proposed for UCMR4 (AM)] | OEHHA(CA) (1997) ¹ |
| NA | <i>Salmonella enterica</i> | No data | Scientific literature |
| NA | <i>Shigella sonnei</i> | No data | Scientific literature |
| 26471-62-5 | Toluene diisocyanate | TRI | OEHHA(CA) (2000) |
| 121-44-8 | Triethylamine | TRI | RTECS |
| 51-79-6 | Urethane | TRI | Supplemental Data (2005)/ IARC 2010 |
| 101-77-9 | 4,4'-Methylenedianiline | TRI | OEHHA(CA) (2001) |

¹Provisional Peer Reviewed Toxicity Value (PPRTV) in the form of chronic, oral RfD subchronic, oral RfD, cancer weight evidence, or cancer slope factor available. <https://hhprrtv.ornl.gov/>

²Metabolite with parent assessment—no independent health assessment available.

³Evaluations of occurrence data availability for cyanotoxins in this table are based on anatoxin-a, cylindrospermopsin, and microcystin-LR. Cyanotoxins proposed for UCMR 4 monitoring include total microcystins (MC), MC-LA, MC-LF, MC-LR, MC-LY, MC-RR, MC-YR, nodularin, anatoxin-a and cylindrospermopsin.

⁴ IRIS 2001 assessment, but an RfD could not be derived; listed as a D carcinogen.

⁵ The organization that nominated "nonylphenol" for CCL 4 provided the CASRN of 25451-52-3. The name "nonylphenol" does not allow for a definitive identification of chemical structure since nonylphenol can exhibit two forms of isomerism. There are at least five CASRNs known to be associated with "nonylphenol" in addition to 25154-52-3 (which represents n-nonylphenol with the ortho-, meta-, or para-substitution unspecified), other CASRNs include: 104-40-5 (4-n-nonylphenol); 84852-15-3 (4-nonylphenol, branched); 91672-41-2 (2-nonylphenol, branched); and 139-84-4 (3-n-nonylphenol). None of these five CASRNs is adequately general enough to represent both forms of isomerism. For the sake of consistency, the CASRN provided by the nominator was selected and the additional possible CASRNs and structures are delineated here.

ATSDR – Agency for Toxic Substances and Disease Registry

EPA HA - EPA Health Advisory

OW/OST HA – Office of Water/Office of Science and Technology Health Advisory

DBP ICR – Disinfection By-Product Rule Information Collection Request

IARC - International Agency for Research on Cancer

IRIS – Integrated Risk Information System

NAWQA - National Water Quality Assessment

NCFAP - National Center for Food and Agricultural Policy

NIRS - National Inorganics and Radionuclides Survey

NTP - National Toxicology Program

OEHHA – California Office of Environmental Health Hazard Assessment

OPP - Office of Pesticide Programs

RAIS - Risk Assessment Information System

RTECS - Registry of Toxic Effects of Chemical Substances

TRI - Toxics Release Inventory

UCM Round 1 - Unregulated Contaminant Monitoring

UCMR 1 AM; SS – First Unregulated Contaminant Monitoring Rule Assessment Monitoring; Screening Survey

UCMR 2 AM; SS – Second Unregulated Contaminant Monitoring Rule Assessment Monitoring; Screening Survey

UCMR 3 AM; SS; PST– Third Unregulated Contaminant Monitoring Rule Assessment Monitoring; Screening Survey; Pre-Screen Testing

UCMR 4 AM – Fourth Unregulated Contaminant Monitoring Rule Assessment Monitoring

WHO – World Health Organization