Technical Appendix A

Listing of All Toxicity Weights for TRI Chemicals and Chemical Categories

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1. Introduction

The RSEI model relies on chemical toxicity data from EPA and other published sources. All of the toxicity data used in the model can be found in the 'Chemical' table in the model data browser. The calculation of the toxicity weight for each chemical can be found in the spreadsheet on the installation CD. This appendix briefly describes the main parameters used, the sources from which the information is obtained, and decisions made regarding special cases. At the end of this appendix is a table summarizing the toxicity data for all of the chemicals that currently have toxicity weights in the model.

2. Parameters

2.1 Reference Dose (RfD) or Reference Concentration (RfC)

The RfD and RfC are defined as "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure [or continuous inhalation exposure for the RfC] to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious [noncancer] effects during a lifetime" (EPA, 1988a; EPA, 1990g). The units of the Reference Dose are mg/kg-day, while the units of the Inhalation Reference Concentration are mg/m^3. A chemical's Reference Dose or Reference Concentration is based on a No Observable Adverse Effect Level (NOAEL) or Lowest Observable Adverse Effect Level (LOAEL), combined with appropriate uncertainty factors to account for intraspecies variability in sensitivity, interspecies extrapolation, extrapolation from LOAELs to NOAELs, and extrapolation from subchronic to chronic data. In addition, a modifying factor can be applied to reflect EPA's best professional judgment on the quality of the entire toxicity database for the chemical. By definition, exposures below the RfD are unlikely to produce an adverse effect; above this value, an exposed individual may be at risk for the effect. Empirical evidence generally shows that as the dosage of a toxicant increases, the severity and/or incidence of effect increases (EPA, 1988a), but for a given dose above the RfD, the specific probability of an effect is not known, nor is its severity. For purposes of the Risk-Screening Environmental Indicators method, we assume that noncancer risk varies as the ratio of the estimated dose to the RfD.

2.2 Oral Slope Factor (Q*)

The oral cancer slope factor is a measure of the incremental lifetime risk of cancer by oral intake of the chemical. It represents the upper-bound estimate of the slope of the dose-response curve in the low-dose region for carcinogens. The units of the slope factor are usually expressed as risk per mg/kg-day. The oral slope factor is also referred to as the Q Star value.

2.3 Inhalation Unit Risk

The unit inhalation risk is the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1 ug/m^3 in air.

2.4 Weight of Evidence (WOE)

Weight of evidence categories indicate how likely a chemical is to be a human carcinogen, based on considerations of the quality and adequacy of data and the type of responses induced by the suspected carcinogen.

For **cancer** effects, the WOE system used in the RSEI model relies on categorical definitions from the EPA Guidelines for Carcinogenic Risk Assessment (EPA, 1986a), which designate the potential for a chemical to be carcinogenic to humans. The Cancer Guidelines define six WOE categories (A, B1, B2, C, D and E) based on the amount of evidence of carcinogenicity available from human epidemiology studies and animal data. In the Indicators model, weight-of-evidence categories A, B1, and B2 (known and probable carcinogens) are combined. Class C chemicals (possible carcinogens) are assigned weights by dividing the calculated toxicity weights by a factor of 10, because evidence that they cause cancer in humans is less certain. The choice of applying a factor of 10 is based on the advice of peer review; an order of magnitude is an arbitrary uncertainty factor. Categories D and E are not considered in this weighting scheme.

In the absence of an EPA consensus WOE, WOE's are obtained from the International Agency for Research on Cancer (IARC). Due to the differences in WOE definition, it is not always possible to translate IARC WOE's into EPA WOE's without examining the toxicity data. WOE's are matched in the following way:

- IARC Group 1 = EPA Group A (Human Carcinogen)
- IARC Group 2A = EPA Group B (Probable Human Carcinogen)
- IARC Group 2B = EPA Group B or EPA Group C (Possible Carcinogen)
- IARC Group 3 = EPA Group D (Not Classifiable as to Human Carcinogenicity)
- IARC Group 4 = EPA Group E (Evidence of Non-Carcinogenicity)

The IARC 2B designation is not easily translated to the EPA designation, because it's definition spans EPA Groups B and C. For the chemicals with IARC 2B designations, summaries of the toxicity data used to generate the oral slope factor or inhalation unit risk were evaluated to derive WOEs. Since these are primarily chemicals with data from CalEPA, the CalEPA "Technical Support Document for Describing Available Cancer Potency Factors" was used for the background information.

For **noncancer** effects, weight-of-evidence is considered qualitatively in the hazard identification step of determining an RfD or an RfC. The WOE evaluation for noncancer effects is different from that for carcinogenic effects. The WOE judgment for noncancer effects focuses on the dose where chemical exposure would be relevant to humans (Dourson, 1993). That is, the focus of the WOE evaluation and the expression of the level of confidence in the RfD is a judgment of the accuracy with which the dose relevant to humans has been estimated. The WOE evaluation is included qualitatively in the RfD, but does not affect its numerical calculation. Since weight of evidence has been considered in developing RfDs, the Risk-Screening Environmental Indicators method does not consider WOE separately for noncancer effects.

3. Chemical Categories and other Special Cases

EPA's annual 'Reporting Form R and Instructions' describes the reporting requirements for several categories that combine similar chemicals into one release report. For these categories, facilities are not required to report the pounds released of each individual chemical in the category, but only the total pounds released for the entire category. Because the proportions of individual chemicals released within each category are not known, professional judgement was used to assign surrogate values for the various toxicity parameters to each category. In most cases, the most toxic chemical of each category, based on the calculated toxicity weight, was selected, and the toxicity data for the chemical were assigned to the entire chemical category. In these cases, the actual risk for the chemical category would be less than or equal to the modeled risk.

This section describes the surrogate toxicity data decisions made for each chemical category. Other "special case" chemicals, where surrogate information was used or anomalous characteristics were noted, are also described below.

3.1 Asbestos

Due to this chemical's fibrous structure, toxicity information is expressed in different units (i.e., risk per fibers/ml) and its toxicity weight is assigned qualitatively.

3.2 Bromacil and Bromacil lithium salt

The toxicity information for the lithium salt of Bromacil is based on Bromacil.

3.3 Butoxyethyl ester, 2,4-D

Toxicity information is based on 2,4-D.

3.4 Butyl alcohol, tert- and sec-

Toxicity information is based on n-butyl alcohol.

3.5 Chlorophenols

Pentachlorophenol had the highest toxicity value, so that chemical was used as a surrogate for toxicity data.

3.6 Chromium and Chromium Compounds

Toxicity data for Chromium compounds was based on chromium(VI), the most toxic value in this category.

3.7 Cyanide Compounds

Because cyanide compounds in a gaseous state exhibit markedly different properties than compounds in solution, two surrogate compounds were used for toxicity scores. For the inhalation toxicity score, hydrogen cyanide was used, as it is the most toxic gaseous compound. For the oral exposure pathway, toxicity data were collected for metal cyanide compounds, the most toxic group of nongaseous cyanide compounds. Copper cyanide was found to be the most toxic of these compounds, so its toxicity score was used.

3.8 Dazomet and Dazomet, Sodium salt

The toxicity information for the sodium salt of Dazomet is based on Dazomet.

3.9 Diisocyanates

Toxicity data was available for two of the chemicals. Of the two, 1,6-hexamethylene diisocyanate (CAS 822–06-0) had the higher toxicity weight, and was chosen as a surrogate for both toxicity and physicochemical data.

3.10 Ethylenebisdithiocarbamic (EBDC) acid, salts and esters

Chemicals regulated in this category include the pesticides maneb, mancozeb, metiram, nabam, zineb, and amobam. Toxicity data were available for four compounds (mancozeb, maneb, metiram, and zineb); of these, metiram had the highest toxicity weight and was selected as a surrogate for toxicity data for this category.

3.11 Ethylhexyl ester, 2,4-D, 2-

Toxicity information is based on 2,4-D.

3.12 Glycol ethers

Of the eight common glycol ethers, four had available toxicity data. Ethylene glycol monomethyl ether had the highest toxicity weight of these four, and therefore was used as a surrogate for the category.

3.13 Hydrazine sulfate

Toxicity information is based on hydrazine.

3.14 Lead and Lead Compounds

The reference dose (RfD) used was derived from the December 1997 CalEPA Public Health Goal. An inhalation unit risk (IUR) from CalEPA was excluded and the oral toxicity weight based on a non-cancer endpoint was used for the inhalation pathway because of the large body of evidence suggesting a low threshold for the non-cancer effects of lead.

3.15 Maneb

The slope factor used for maneb is based on ethylene thiourea, as designated in the OPP 8/2000 Report.

3.16 Mercury and Mercury Compounds

Because mercury in various forms converts to methyl mercury in the environment,[1] toxicity information is based on elemental mercury for the inhalation pathway, and methyl mercury for the oral pathway.

3.17 Nitrate Compounds

Toxicity information is based on nitrate.

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[1]References that show that mercury converts to methyl mercury in the environment include: Beckert, W.F. et al., "Formation of Methylmercury in a Terrestrial Environment." Nature, 249, 674-75 (1974); Berdicevsky, I.H., et al. "Formation of Methylmercury in Marine Sediments," Environ. Res., 20, 325-34 (1979); Hamdy, M.K. and O.R. Noyes, "Formatino of Methyl Mercury by Bacteria," Appl. Microbiol., 30, 424-432 (1975); Jensen, S. and A. Jernelov, "Biological Methylation of Mercury in Aquatic Oganisms," Nature, 223, 753-54 (1969); Wood, J.M. et al., "Synthesis of Methylmercury Compounds by Extracts of a Methanogenic Bacterium," Nature, 200, 173-74 (1968); and Wood, L.M., "Metabolic Cycles for Toxic Elements in the Environment," in Heavy Metals in the Aquatic Environment, P.A. Krenkel (ed.), Pergamon Press, Oxford, England, 105-12 (1975).

3.18 Polycyclic Aromatic Compounds

Toxicity data is based on benzo(a)pyrene, the most toxic of the discrete chemicals covered by this category (only two of which have available toxicity information).

3.19 Sodium dicamba

Toxicity information is based on dicamba.

3.20 Sodium nitrite

Toxicity information is based on nitrite.

3.21 Strychnine and salts

This category includes any unique chemical substance that contains strychnine or a strychnine salt as part of its infrastructure. Toxicity information for this category was based on strychnine.

3.22 Thallium and Thallium Compounds

Toxicity information was based on thallic oxide.

3.23 Thorium dioxide

Oral toxicity weight was based on a qualitative assessment of toxicity.

3.24 Warfarin and salts

This category includes any unique chemical substance that contains warfarin or a warfarin salt as part of its infrastructure. Toxicity information for this category was based on warfarin.

4. Sources of Data

Information regarding the human health effects data of the TRI chemicals is compiled from the sources listed below. Data from these sources are categorized in three-tiered, hierarchical fashion to give preference to EPA and consensus data sources, where possible. Data is gathered separately for individual endpoints; a chemical's RfD may be from IRIS, while its Oral Slope Factor may be from HEAST. However, if the source of information for any of the four chronic endpoints is IRIS and there are non-IRIS sources for any of the other endpoints of comparable date, then the IRIS file must be evaluated to determine if that source(s) of toxicity data had been evaluated and if a rationale was provided explaining why no toxicity values were applied to that endpoint or pathway. If a clearly stated rationale is provided for not using the available data, RSEI will leave that endpoint blank. For a full description of the hierarchy used in toxicity weighting, please refer to the Methodology Document.

4.1 IRIS

The primary (and most preferred) source of these data is EPA's Integrated Risk Information System (IRIS). IRIS is available on the internet (at http://www.epa.gov/iris/), and includes information on EPA evaluations of chemical toxicity for both cancer and noncancer effects of chemicals. IRIS provides both background information on the studies used to develop the toxicity evaluations and the numerical toxicity values used by EPA to characterize risks from these chemicals. These values include upper-bound Oral Slope Factors or Inhalation Unit Risk values for chemicals with carcinogenic effects as well as RfDs or RfCs for chemicals with noncancer effects. Data contained in IRIS have been peer-reviewed and represent Agency-wide expert judgements. The peer-review process involves literature review and evaluation of a chemical by individual EPA program offices and intra-Agency work groups before inclusion in IRIS.

4.2 OPP

EPA's Office of Pesticide Programs (OPP) "Acute and Chronic Reference Doses" lists OPP's evaluations of the noncarcinogenic potential of chemicals that are of interest to OPP. OPP also publishes the List of Chemicals Evaluated for Carcinogenic Potential, which examines carcinogens. Both of these lists are updated periodically for use by Agency scientists.

4.3 ATSDR

The Agency for Toxic Substances and Disease Registry (ATSDR) is an agency of the U.S. Department of Health and Human Services, which deals with the effect on public health of hazardous substances in the environment. ATSDR develops Minimum Risk Levels (MRLs) for

chemicals on the CERCLA National Priorities List. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancer health effects over a specified duration of exposure. RSEI uses MRLs for chronic exposure only. MRLs are intended to serve as screening levels only, and are useful in identifying contaminants and potential health effects that may be of concern at hazardous waste sites. See http://www.atsdr.cdc.gov/mrls.html for more information on MRLs and specific values.

4.4 CalEPA

The California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard and Assessment (OEHHA) is responsible for developing and distributing toxicological and medical information needed to protect public health. RSEI uses final toxicity values published by CalEPA in the Consolidated Table of OEHHA & California's Air Resources Board (ARB) Approved Risk Assessment Health Values. The table is continuously updated and can be found on the internet at http://www.arb.ca.gov/toxics/healthval/healthval.htm.

4.5 HEAST

EPA's Health Effects Assessment Tables (HEAST) are constructed for use in the Superfund and RCRA programs but do not represent Agency-wide expert judgements. These tables are publicly available from the Superfund program. The tables include Slope Factors, Unit Risks, and WOE categorizations for chemicals with cancer effects, and RfDs and RfCs for noncancer effects.

4.6 Derived Values

For chemicals for which sufficient data was not found in the above sources, a group of EPA expert health scientists reviewed other available data to derive appropriate toxicity weights. Although individual literature searches for toxicological and epidemiological data for each chemical were beyond the scope of this project, sources such as the Hazardous Substances Data Base (HSDB), as well as various EPA and ATSDR summary documents, provided succinct summaries of toxic effects and quantitative data, toxicological and epidemiological studies, and, in some cases, regulatory status data. When the available data on chronic human toxicity were sufficient to derive values, a toxicity weighting summary was developed summarizing the information used to develop each of these values. The summaries are provided in the Toxicity Methodology Document. The EPA scientists use a technical approach analogous to the Agency's method for deriving RfD values, RfC values, cancer risk estimates, and Weight of Evidence (WOE) determinations. However, it must be emphasized that these derived values are not the equivalent of the more rigorous and resource-intensive IRIS process and are only useful for screening-level purposes.

Information collection dates:

- IRIS searches performed on April 1, 1997 (Integrated Risk Information System electronic database, version 1.0) and updated on February 1998, September 1998, January 8, 1999, January 26, 2000, Summer 2000, February 1, 2001, July 2001, December 2001, November 2003, and March 2004 (IRIS Home Page). An IRIS search for new chemicals added for reporting year 2000 was conducted in May 2002.
- CalEPA (California Environmental Protection Agency) values obtained from May 2001, July 2001, November 2003, and December 19, 2003 Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, with the exception of the reference dose (RfD) for lead. The RfD for lead is derived from the December 1997 CalEPA Public Health Goal for Lead.
- OPP non-cancer values obtained from the May 1, 2003 Office of Pesticide Programs' "Acute and Chronic Reference Doses."
- OPP cancer values obtained from April 11, 2003 Office of Pesticide Programs' "List of Chemicals Evaluated for Carcinogenic Potential."
- ATSDR (Agency for Toxic Substances and Disease Registry) values obtained from January 2004 Minimum Risk Levels (MRLs) for Hazardous Substances.
- HEAST values obtained from July 1997 and March 1993 Health Effects Assessment Summary Tables.
- Derived values are those determined by the OPPT Review Process. Refer to the Toxic Release Inventory Relative Risk-Based Environmental Indicators: Interim Toxicity Weighting Summary Document (June 1997) for further discussion of this methodology.

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Abamectin			IRIS 7/1/1989	1300						1300	Non-cancer*	1300	Non-cancer
Acephate (Acetylphosphoramidothioic acid O,S-dimethyl ester)			IRIS 2/1/1990	130			IRIS 10/1/1993	1.7	IRIS 10/1/1993	130	Non-cancer*	130	Non-cancer
Acetaldehyde	IRIS 10/1/1991	200			IRIS 1/1/1991	16			IRIS 1/1/1991	200	Non-cancer	200	Non-cancer*
Acetamide					CalEPA 4/1999	14			OPP 5/29/1990	14	Cancer	14	Cancer*
Acetic acid, 2,4-dichlorophenoxy (2,4-D)			OPP 1/2002	50					OPP 1/29/1997	50	Non-cancer*	50	Non-cancer
Acetonitrile	IRIS 3/3/1999	30							IRIS 3/3/1999	30	Non-cancer	30	Non-cancer*
Acetophenone			IRIS 1/1/1989	5					IRIS 2/1/1991	5	Non-cancer*	5	Non-cancer
Acifluorfen, sodium salt [5-(2-Chloro-4-(triflouromethyl) phenoxy)-2-nitro-benzoic acid, sodium salt]			OPP 4/1999	38			OPP 2001	25	OPP 3/17/1988	38	Non-cancer*	38	Non-cancer
Acrolein	IRIS 6/3/2003	90000	IRIS 6/3/2003	1000					IRIS 6/3/2003	90000	Non-cancer	1000	Non-cancer
Acrylamide			IRIS 3/1/1991	2500	IRIS 7/1/1993	9300	IRIS 7/1/1993	9000	IRIS 7/1/1993	9300	Cancer	9000	Cancer
Acrylic acid	IRIS 5/1/1995	1800	IRIS 5/1/1994	1						1800	Non-cancer	1	Non-cancer
Acrylonitrile	IRIS 12/1/1991	900	OPP 6/15/1993	500	IRIS 1/1/1991	490	IRIS 1/1/1991	1100	IRIS 1/1/1991	900	Non-cancer	1100	Cancer
Alachlor			IRIS 9/1/1993	50			HEAST 7/1997	160	HEAST 7/1997	160	Cancer*	160	Cancer
Aldicarb			OPP 7/2002	10000					OPP 9/15/1998	10000	Non-cancer*	10000	Non-cancer
Aldrin			IRIS 3/1/1988	17000	IRIS 7/1/1993	35000	IRIS 7/1/1993	34000	IRIS 7/1/1993	35000	Cancer	34000	Cancer
Allyl alcohol			IRIS 8/1/1989	100						100	Non-cancer*	100	Non-cancer
Allyl chloride	IRIS 5/1/1995	1800			CalEPA 4/1999	4.3			IRIS 8/1/1994	1800	Non-cancer	1800	Non-cancer*

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	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Aluminum (fume or dust)	final derived 1/8/1998	360	final derived 1/8/1998	5					final derived 1/8/1998	360	Non-cancer	5	Non-cancer
Aluminum phosphide			OPP 6/1998	44						n/a	n/a	44	Non-cancer
Ametryn (N-Ethyl-N'-(1-methylethyl)-6-(methylthio)-1,3,5,-triazine- 2,4 diamine)			IRIS 11/1/1989	56						56	Non-cancer*	56	Non-cancer
Amitraz			IRIS 12/1/1988	200			OPP 10/31/1990	10	OPP 10/31/1991	200	Non-cancer*	200	Non-cancer
Amitrole							OPP 11/30/1992	2300	OPP 11/30/1992	2300	Cancer*	2300	Cancer
Ammonia	IRIS 5/1/1991	18								18	Non-cancer	n/a	n/a
Anilazine			OPP no date	1300						1300	Non-cancer*	1300	Non-cancer
Aniline	IRIS 12/1/1993	1800			CalEPA 4/1999	11	IRIS 2/1/1994	11	IRIS 2/1/1994	1800	Non-cancer	11	Cancer
Anisidine, o-	interim derived	9000	final derived	130			final derived	160	final derived	9000	Non-cancer	160	Cancer
Anthracene			IRIS 7/1/1993	1.7					IRIS 1/1/1991	1.7	Non-cancer*	1.7	Non-cancer
Antimony	CalEPA 1996	9000	IRIS 2/1/1991	1300						9000	Non-cancer	1300	Non-cancer
Antimony compounds	CalEPA 1996	9000	IRIS 2/1/1991	1300						9000	Non-cancer	1300	Non-cancer
Arsenic	CalEPA 1/2001	60000	IRIS 2/1/1993	1700	IRIS 4/10/1998	31000	IRIS 4/10/1998	3000	IRIS 4/10/1998	60000	Non-cancer	3000	Cancer
Arsenic compounds	CalEPA 1/2001	60000	IRIS 2/1/1993	1700	IRIS 4/10/1998	31000	IRIS 4/10/1998	3000	IRIS 4/10/1998	60000	Non-cancer	3000	Cancer
Asbestos (friable)					IRIS 7/1/1993	1000000			IRIS 7/1/1993	1000000	Cancer	n/a	n/a
Atrazine (6-Chloro-N-ethyl-N'-(1-methylethyl)1,3,5,-triazine-2,4-diamine)			OPP 4/2002	28					OPP 12/13/2000	28	Non-cancer*	28	Non-cancer
Barium			IRIS 1/21/1999	7.1					IRIS 3/30/1998	7.1	Non-cancer*	7.1	Non-cancer
Barium compounds			IRIS 1/21/1999	7.1					IRIS 3/30/1998	7.1	Non-cancer*	7.1	Non-cancer

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										Weight	Effect	Weight	Effect
Bendiocarb			OPP 3/3/1987	100					OPP 12/16/1997	100	Non-cancer*	100	Non-cancer
Benfluralin (N-Butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)benzenamine)			OPP 4/2001	100						100	Non-cancer*	100	Non-cancer
Benomyl			OPP 3/2001	3.8			OPP 9/21/2000	0.48	OPP 9/21/2000	3.8	Non-cancer*	3.8	Non-cancer
Benzene	IRIS 4/17/2003	60	IRIS 4/17/2003	130	IRIS 1/19/2000	56	IRIS 1/19/2000	110	IRIS 1/19/2000	60	Non-cancer	130	Non-cancer
Benzidine			IRIS 2/1/1995	170	IRIS 8/1/1992	480000	IRIS 8/1/1992	460000	IRIS 8/1/1992	480000	Cancer	460000	Cancer
Benzotrichloride							IRIS 7/1/1993	26000	IRIS 7/1/1993	26000	Cancer*	26000	Cancer
Benzyl chloride					CalEPA 4/1999	350	IRIS 8/1/1994	340	IRIS 8/1/1994	350	Cancer	340	Cancer
Beryllium	IRIS 4/3/1998	90	IRIS 4/3/1998	250	IRIS 4/3/1998	17000			IRIS 4/3/1998	17000	Cancer	250	Non-cancer
Beryllium Compounds	IRIS 4/3/1998	90	IRIS 4/3/1998	250	IRIS 4/3/1998	17000			IRIS 4/3/1998	17000	Cancer	250	Non-cancer
Bifenthrin			OPP 2/2003	130					OPP 4/29/1992	130	Non-cancer*	130	Non-cancer
Biphenyl			IRIS 8/1/1989	10					IRIS 3/1/1991	10	Non-cancer*	10	Non-cancer
Bis(2-chloroethyl)ether					IRIS 2/1/1994	2400	IRIS 2/1/1994	2200	IRIS 2/1/1994	2400	Cancer	2200	Cancer
Bis(chloromethyl) ether					IRIS 1/1/1991	440000	IRIS 1/1/1991	440000	IRIS 1/1/1991	440000	Cancer	440000	Cancer
Bis(tributyltin) oxide			IRIS 9/1/1997	1700						1700	Non-cancer*	1700	Non-cancer
Boron trifluoride	HEAST 7/1997	2600								2600	Non-cancer	2600	Non-cancer*
Bromacil			OPP 6/16/1994	5					OPP 1/13/1993	5	Non-cancer*	5	Non-cancer
Bromacil lithium salt			OPP 6/16/1994	5					OPP 1/13/1993	5	Non-cancer*	5	Non-cancer
Bromine	CalEPA 1/1992	1100								1100	Non-cancer	1100	Non-cancer*

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										Weight	Effect	Weight	Effect
Bromoform (Tribromomethane)			IRIS 3/1/1991	25	IRIS 1/1/1991	7.9	IRIS 1/1/1991	16	IRIS 1/1/1991	7.9	Cancer	25	Non-cancer
Bromomethane (Methyl Bromide)	IRIS 10/1/1992	360	OPP 6/2001	25					OPP 6/20/2001	360	Non-cancer	25	Non-cancer
Bromoxynil (3,5-Dibromo-4-hydroxybenzonitrile)			OPP 5/1997	33			OPP 3/12/1997	21	OPP 3/12/1997	33	Non-cancer*	33	Non-cancer
Bromoxynil octanoate (Octanoic acid,2,6-dibromo-4-cyanophenyl ester)			IRIS 9/7/1988	25						25	Non-cancer*	25	Non-cancer
Butadiene, 1,3-	IRIS 11/5/2002	900			IRIS 2/1/1991	210			IRIS 2/1/1991	900	Non-cancer	900	Non-cancer*
Butoxyethyl ester, 2,4-D			OPP 1/2002	50					OPP 1/29/1997	50	Non-cancer*	50	Non-cancer
Butyl acrylate	interim derived	1800	interim derived	1						1800	Non-cancer	1	Non-cancer
Butyl alcohol, n-			IRIS 9/1/1990	5					IRIS 3/1/1991	5	Non-cancer*	5	Non-cancer
Butyl alcohol, sec-			IRIS 9/1/1990	5					IRIS 3/1/1991	5	Non-cancer*	5	Non-cancer
Butyl alcohol, tert-			IRIS 9/1/1990	5					IRIS 3/1/1991	5	Non-cancer*	5	Non-cancer
Butylene oxide, 1,2-	IRIS 5/1/1992	90								90	Non-cancer	90	Non-cancer*
C.I. Direct Black 38							HEAST 7/1997	17000	HEAST 7/1997	17000	Cancer*	17000	Cancer
C.I. Direct Blue 6							HEAST 7/1997	16000	HEAST 7/1997	16000	Cancer*	16000	Cancer
C.I. Direct Brown 95							HEAST 7/1997	19000	HEAST 7/1997	19000	Cancer*	19000	Cancer
Cadmium	CalEPA 1/2001	90000	IRIS 2/1/1994	1000	IRIS 6/1/1992	13000			IRIS 6/1/1992	90000	Non-cancer	1000	Non-cancer
Cadmium compounds	CalEPA 1/2001	90000	IRIS 2/1/1994	1000	IRIS 6/1/1992	13000			IRIS 6/1/1992	90000	Non-cancer	1000	Non-cancer
Calcium cyanamide			final derived	500						500	Non-cancer*	500	Non-cancer
Captan			OPP 9/23/1993	3.8			OPP 9/4/1998	2.4	OPP 9/4/1998	3.8	Non-cancer*	3.8	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Carbaryl			OPP 5/2002	50			OPP 12/8/2001	1.8	OPP 12/8/2001	50	Non-cancer*	50	Non-cancer
Carbofuran			OPP 3/2000	600					OPP 6/17/1997	600	Non-cancer*	600	Non-cancer
Carbon disulfide	IRIS 8/1/1995	2.6	IRIS 9/1/1990	5						2.6	Non-cancer	5	Non-cancer
Carbon tetrachloride	CalEPA 1/2001	45	IRIS 6/1/1991	710	IRIS 10/1/1992	110	IRIS 10/1/1992	260	IRIS 10/1/1992	110	Cancer	710	Non-cancer
Carbonyl sulfide	interim derived	150								150	Non-cancer	150	Non-cancer*
Carboxin (5,6-Dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-car-boxamide)			OPP 11/2001	63						63	Non-cancer*	63	Non-cancer
Catechol							interim derived	18	interim derived	18	Cancer*	18	Cancer
CFC-11	CalEPA 1/1991	2.6	IRIS 8/1/1992	1.7						2.6	Non-cancer	1.7	Non-cancer
CFC-12			IRIS 11/1/1995	2.5						2.5	Non-cancer*	2.5	Non-cancer
Chloramben			IRIS 3/1/1988	33						33	Non-cancer*	33	Non-cancer
Chlordane	IRIS 2/7/1998	2600	IRIS 2/7/1998	1000	IRIS 2/7/1998	710	IRIS 2/7/1998	700	IRIS 2/7/1998	2600	Non-cancer	1000	Non-cancer
Chlorimuron ethyl (Ethyl-2-[[[(4-chloro-6-methoxyprimidin-2-yl)-carbonyl]-amino]sulfonyl]benzoate)			IRIS 11/1/1989	25						25	Non-cancer*	25	Non-cancer
Chlorine	CalEPA 2/2000	9000	IRIS 6/1/1994	5						9000	Non-cancer	5	Non-cancer
Chlorine dioxide	IRIS 10/12/2000	9000	IRIS 10/12/2000	17					IRIS 10/12/2000	9000	Non-cancer	17	Non-cancer
Chloro-1,1-difluoroethane, 1-	IRIS 7/1/1995	0.036								0.036	Non-cancer	0.036	Non-cancer*
Chloroacetic acid			HEAST 7/1997	250						250	Non-cancer*	250	Non-cancer
Chloroacetophenone, 2-	IRIS 10/1/1991	60000								60000	Non-cancer	60000	Non-cancer*

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Chloroaniline, p-			IRIS 2/1/1995	130			OPP 4/27/1995	220	OPP 4/27/1995	220	Cancer*	220	Cancer
Chlorobenzene	CalEPA 1/2001	1.8	IRIS 7/1/1993	25					IRIS 3/1/1991	1.8	Non-cancer	25	Non-cancer
Chlorobenzilate			IRIS 12/1/1989	25	HEAST 7/1997	560	HEAST 7/1997	540	HEAST 7/1997	560	Cancer	540	Cancer
Chlorodifluoromethane (HCFC-22)	IRIS 11/1/1993	0.036								0.036	Non-cancer	n/a	n/a
Chloroethane (Ethyl chloride)	IRIS 4/1/1991	0.18								0.18	Non-cancer	0.18	Non-cancer*
Chloroform	CalEPA 4/2000	6	IRIS 10/19/2002	50	IRIS 10/19/2001	160	IRIS 7/1/1992	12	IRIS 7/1/1992	160	Cancer	50	Non-cancer
Chloromethane	IRIS 7/17/2001	20			HEAST 7/1997	1.3	HEAST 7/1997	2.6	IRIS 7/17/2001	20	Non-cancer	2.6	Cancer
Chloro-o-toluidine, p-					CalEPA 4/1999	550	HEAST 7/1997	1200	IARC 2000	550	Cancer	1200	Cancer
Chlorophenols			OPP 12/1997	330			IRIS 7/1/1993	240	IRIS 7/1/1993	330	Non-cancer*	330	Non-cancer
Chloropicrin	CalEPA 12/2001	4500								4500	Non-cancer	4500	Non-cancer*
Chloroprene	CalEPA 1/1992	1800	HEAST 7/1997	25						1800	Non-cancer	25	Non-cancer
Chlorothalonil			OPP 10/17/1996	25			OPP 10/27/1997	15	OPP 10/27/1997	25	Non-cancer*	25	Non-cancer
Chlorpyrifos methyl (O,O-Dimethyl-O-(3,5,6-trichloro-2-pyridyl)phosphorothioate)			OPP 5/1999	500						500	Non-cancer*	500	Non-cancer
Chlorsulfuron (2-Chloro-N-[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]benzenesulfonamide)			OPP 7/2002	25						25	Non-cancer*	25	Non-cancer
Chromium	IRIS 9/3/1998	18000	IRIS 9/3/1998	170	IRIS 9/3/1998	86000			IRIS 9/3/1998	86000	Cancer	170	Non-cancer
Chromium Compounds	IRIS 9/3/1998	18000	IRIS 9/3/1998	170	IRIS 9/3/1998	86000			IRIS 9/3/1998	86000	Cancer	170	Non-cancer
Cobalt	interim derived 1/23/1998	90000			interim derived 1/23/1998	34000			interim derived 1/23/1998	90000	Non-cancer	n/a	n/a

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Cobalt compounds	interim derived 1/23/1998	90000			interim derived 1/23/1998	34000			interim derived 1/23/1998	90000	Non-cancer	n/a	n/a
Copper	CalEPA 1/1992	750							OPP 9/15/1987	750	Non-cancer	750	Non-cancer*
Copper compounds	CalEPA 1/1992	750							OPP 9/15/1987	750	Non-cancer	750	Non-cancer*
Cresidine, p-					CalEPA 4/1999	310	interim derived	300	interim derived	310	Cancer	300	Cancer
Cresol (mixed isomers)	CalEPA 1/2001	3	IRIS 9/1/1990	10					IRIS 8/1/1991	3	Non-cancer	10	Non-cancer
Cresol, m-	CalEPA 1/2001	3	IRIS 9/1/1990	10					IRIS 8/1/1991	3	Non-cancer	10	Non-cancer
Cresol, o-	CalEPA 1/2001	3	IRIS 9/1/1990	10					IRIS 8/1/1991	3	Non-cancer	10	Non-cancer
Cresol, p-	CalEPA 1/2001	3	HEAST 7/1997	100					IRIS 8/1/1991	3	Non-cancer	100	Non-cancer
Crotonaldehyde							HEAST 7/1997	380	IRIS 6/1/1991	380	Cancer*	380	Cancer
Cumene	IRIS 8/1/1997	4.5	IRIS 8/1/1997	5					IRIS 8/1/1997	4.5	Non-cancer	5	Non-cancer
Cumene hydroperoxide	final derived	330							final derived	330	Non-cancer	330	Non-cancer*
Cupferron					CalEPA 4/1999	450	final derived	440	final derived	450	Cancer	440	Cancer
Cyanazine			OPP 6/3/1993	250			OPP 7/30/1991	33	OPP 7/30/1991	250	Non-cancer*	250	Non-cancer
Cyanide compounds	IRIS 11/1/1994	600	IRIS 2/1/1996	100						600	Non-cancer	100	Non-cancer
Cycloate			OPP 3/22/1994	100						100	Non-cancer*	100	Non-cancer
Cyclohexane	IRIS 9/11/2003	0.3								0.3	Non-cancer	0.3	Non-cancer*
Cyfluthrin (3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid,cyano(4-fluoro-3-phenoxyphenyl)methyl ester)			OPP 4/2002	21					OPP 2/11/2001	21	Non-cancer*	21	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Cyhalothrin			OPP 9/2002	500					OPP 9/15/1994	500	Non-cancer*	500	Non-cancer
Dazomet			OPP 11/18/1993	140					OPP 12/7/1993	140	Non-cancer*	140	Non-cancer
Dazomet, Sodium salt			OPP 11/18/1993	140					OPP 12/7/1993	140	Non-cancer*	140	Non-cancer
DB, 2,4-			IRIS 8/1/1992	63						63	Non-cancer*	63	Non-cancer
Decabromodiphenyl oxide			IRIS 2/1/1995	50					IRIS 1/1/1990	50	Non-cancer*	50	Non-cancer
Desmedipham			OPP 11/1998	13					OPP 7/26/1994	13	Non-cancer*	13	Non-cancer
Di(2-ethylhexyl) phthalate	CalEPA 1/1991	26	IRIS 5/1/1991	25	CalEPA 4/1999	17	IRIS 2/1/1993	28	IRIS 2/1/1993	26	Non-cancer	28	Cancer
Diallate			OPP 7/25/1989	100			HEAST 7/1997	120	HEAST 7/1997	120	Cancer*	120	Cancer
Diaminoanisole, 2,4-					CalEPA 4/1999	47			interim derived	47	Cancer	47	Cancer*
Diaminodiphenylether, 4,4'-							final derived	280	final derived	280	Cancer*	280	Cancer
Diaminotoluene (mixed isomers)							interim derived	46000	interim derived	46000	Cancer*	46000	Cancer
Diaminotoluene, 2,4-					CalEPA 4/1999	7900	HEAST 7/1997	6400	HEAST 7/1997	7900	Cancer	6400	Cancer
Diazinon			OPP 11/2000	2500					OPP 9/21/1999	2500	Non-cancer*	2500	Non-cancer
Dibromo-3-chloropropane (DBCP), 1,2-	IRIS 10/1/1991	9000			CalEPA 4/1999	14000	OPP no date	0.024	OPP no date	14000	Cancer	0.024	Cancer
Dibromoethane, 1,2-	CalEPA 12/2001	2300			IRIS 7/1/1997	1600	IRIS 7/1/1997	170000	IRIS 7/1/1997	2300	Non-cancer	170000	Cancer
Dibutyl phthalate			IRIS 8/1/1990	5					IRIS 2/1/1993	5	Non-cancer*	5	Non-cancer
Dicamba (3,6-Dichloro-2-methoxybenzoic acid)			OPP 5/2002	1.1					OPP 7/29/1996	1.1	Non-cancer*	1.1	Non-cancer
Dichloran			OPP 7/2001	20						20	Non-cancer*	20	Non-cancer
Dichloro-2-butene, 1,4-					HEAST 7/1/1997	19000			HEAST 7/1997	19000	Cancer	19000	Cancer*

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
Chemical Name	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Dichlorobenzene (mixed isomers)	interim derived	9	final derived	5.6			final derived	48	final derived	9	Non-cancer	48	Cancer
Dichlorobenzene, 1,2-			IRIS 3/1/1991	5.6					IRIS 1/1/1991	5.6	Non-cancer*	5.6	Non-cancer
Dichlorobenzene, 1,3-	interim derived	9	final derived	5.6			final derived	48	final derived	9	Non-cancer	48	Cancer
Dichlorobenzene, 1,4-	IRIS 11/1/1996	2.3			CalEPA 4/1999	7.9	HEAST 7/1997	4.8	HEAST 7/1997	7.9	Cancer	4.8	Cancer
Dichlorobenzidine, 3,3'-	IRIS 11/1/1991				CalEPA 4/1999	2400	IRIS 7/1/1993	900	IRIS 7/1/1993	2400	Cancer	900	Cancer
Dichlorobromomethane			IRIS 3/1/1991	25			IRIS 3/1/1993	120	IRIS 3/1/1993	120	Cancer*	120	Cancer
Dichloroethane, 1,2-	CalEPA 1/2001	4.5			IRIS 7/1/1993	190	IRIS 7/1/1993	180	IRIS 7/1/1993	190	Cancer	180	Cancer
Dichloroethylene, 1,2-			HEAST 7/1997	56						56	Non-cancer*	56	Non-cancer
Dichloromethane	ATSDR 9/2000	1.7	IRIS 3/1/1988	8.3	IRIS 2/1/1995	3.4	IRIS 2/1/1995	15	IRIS 2/1/1995	3.4	Cancer	15	Cancer
Dichlorophenol, 2,4-			IRIS 6/30/1988	170						170	Non-cancer*	170	Non-cancer
Dichloropropane, 1,2-	IRIS 12/1/1991	450	ATSDR 12/1989	5.6			HEAST 7/1997	140	HEAST 7/1997	450	Non-cancer	140	Cancer
Dichloropropylene, 1,3-	IRIS 5/25/2000	90	IRIS 5/25/2000	17	IRIS 5/25/2000	29	IRIS 5/25/2000	200	IRIS 5/25/2000	90	Non-cancer	200	Cancer
Dichlorvos	IRIS 6/1/1994	3600	OPP 6/1998	1000			OPP 8/18/1999	15	OPP 8/18/1999	3600	Non-cancer	1000	Non-cancer
Diclofop methyl			OPP 8/2000	220			OPP 5/24/2000	460	OPP 5/24/2000	460	Cancer*	460	Cancer
Dicofol			OPP 12/1997	420					OPP 6/24/1992	420	Non-cancer*	420	Non-cancer
Dicyclopentadiene	HEAST 7/1997	9000	HEAST 7/1997	17						9000	Non-cancer	17	Non-cancer
Diethanolamine	CalEPA 12/2001	600	final derived 10/23/1997	360					final derived 10/23/1997	600	Non-cancer	360	Non-cancer
Diethyl sulfate							final derived	2400	final derived	2400	Cancer*	2400	Cancer
Diflubenzuron			OPP 3/2002	25					OPP 4/27/1995	25	Non-cancer*	25	Non-cancer

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Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Diisocyanates	IRIS 9/1/1994	180000								180000	Non-cancer	180000	Non-cancer*
Dimethipin (2,3,-Dihydro-5,6-dimethyl-1,4-dithiin-1,1,4,4-tetraoxide)			IRIS 5/1/1990	25					IRIS 10/1/1993	25	Non-cancer*	25	Non-cancer
Dimethoate			OPP 3/2002	1000					OPP 8/29/1991	1000	Non-cancer*	1000	Non-cancer
Dimethoxybenzidine, 3,3'-							HEAST 7/1997	28	HEAST 7/1997	28	Cancer*	28	Cancer
Dimethyl hydrazine, 1, 1-					HEAST 3/1993	7100	OPP 7/26/1991	920	OPP 7/26/1991	7100	Cancer	920	Cancer
Dimethylaminoazobenzene, 4-					CalEPA 4/1999	9300			interim derived	9300	Cancer	9300	Cancer*
Dimethylaniline, N,N-			IRIS 3/1/1988	250						250	Non-cancer*	250	Non-cancer
Dimethylbenzidine, 3,3'-							HEAST 7/1997	18000	HEAST 7/1997	18000	Cancer*	18000	Cancer
Dimethylformamide, N,N-	IRIS 10/1/1990	60	HEAST 7/1997	5						60	Non-cancer	5	Non-cancer
Dimethylphenol, 2,4-			IRIS 11/1/1990	25						25	Non-cancer*	25	Non-cancer
Dinitrobenzene, m-			IRIS 8/22/1988	5000					IRIS 2/1/1993	5000	Non-cancer*	5000	Non-cancer
Dinitrobenzene, o-			HEAST 7/1997	1300						1300	Non-cancer*	1300	Non-cancer
Dinitrobenzene, p-			HEAST 7/1997	1300						1300	Non-cancer*	1300	Non-cancer
Dinitrobutyl phenol (Dinoseb)			IRIS 8/1/1989	500					IRIS 7/1/1993	500	Non-cancer*	500	Non-cancer
Dinitro-o-cresol, 4,6-	interim derived	3800	interim derived	1400						3800	Non-cancer	1400	Non-cancer
Dinitrophenol, 2,4-			IRIS 7/1/1991	250						250	Non-cancer*	250	Non-cancer
Dinitrotoluene, 2,4-			IRIS 4/1/1993	250	CalEPA 4/1999	640			interim derived	640	Cancer	250	Non-cancer
Dinitrotoluene, 2,6-			HEAST 7/1997	500			IRIS 9/1/1990	1400	IRIS 9/1/1990	1400	Cancer*	1400	Cancer

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Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Dinocap			OPP 2/2000	130					OPP 6/22/1994	130	Non-cancer*	130	Non-cancer
Dioxane, 1,4-	CalEPA 4/2000	0.6			CalEPA 4/1999	55	IRIS 9/1/1990	22	IRIS 9/1/1990	55	Cancer	22	Cancer
Diphenamid			IRIS 3/1/1991	17						17	Non-cancer*	17	Non-cancer
Diphenylamine			IRIS 4/1/1993	20						20	Non-cancer*	20	Non-cancer
Diphenylhydrazine, 1,2-					IRIS 1/1/1991	1600	IRIS 1/1/1991	1600	IRIS 1/1/1991	1600	Cancer	1600	Cancer
Dipropyl isocinchomeronate			OPP no date	4					OPP 6/7/1995	4	Non-cancer*	4	Non-cancer
Diuron			OPP 8/2001	170			OPP 5/8/1997	38	OPP 5/8/1997	170	Non-cancer*	170	Non-cancer
Dodine (Dodecylguanidine monoacetate)			IRIS 9/1/1990	130						130	Non-cancer*	130	Non-cancer
Epichlorohydrin	IRIS 4/1/1992	1800	HEAST 7/1997	250	IRIS 2/1/1994	8.6	IRIS 2/1/1994	20	IRIS 2/1/1994	1800	Non-cancer	250	Non-cancer
Ethoprop			OPP 5/2000	5000			OPP 10/7/1998	56	OPP 10/7/1998	5000	Non-cancer*	5000	Non-cancer
Ethoxyethanol, 2-	IRIS 5/1/1991	9	HEAST 7/1997	1.3						9	Non-cancer	1.3	Non-cancer
Ethyl acrylate	CalEPA 1/1992	38					HEAST 7/1997	96	HEAST 7/1997	38	Non-cancer	96	Cancer
Ethyl dipropylthiocarbamate (EPTC)			OPP 8/1999	20					OPP 8/31/1999	20	Non-cancer*	20	Non-cancer
Ethylbenzene	IRIS 3/1/1991	1.8	IRIS 6/1/1991	5					IRIS 8/1/1991	1.8	Non-cancer	5	Non-cancer
Ethylene	final derived	0.29								0.29	Non-cancer	0.29	Non-cancer*
Ethylene glycol	CalEPA 4/2000	4.5	IRIS 9/1/1989	0.25						4.5	Non-cancer	0.25	Non-cancer
Ethylene oxide	CalEPA 1/2001	60			CalEPA 11/1987	630	OPP 1985	440	OPP 1985	630	Cancer	440	Cancer
Ethylene thiourea			OPP 12/2001	280	CalEPA 4/1999	93	OPP 3/19/1990	120	OPP 3/19/1990	93	Cancer	280	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004													
	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
Chemical Name	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Ethylenebisdithiocarbamic acid, salts and esters			OPP 11/2001	130					OPP 11/15/1999	130	Non-cancer*	130	Non-cancer
Ethylhexyl ester, 2,4-D, 2-			OPP 1/2002	50					OPP 1/29/1997	50	Non-cancer*	50	Non-cancer
Ethylidene dichloride	HEAST 7/1997	3.6	HEAST 7/1997	5	CalEPA 4/1999	1.1			IRIS 10/1/1990	3.6	Non-cancer	5	Non-cancer
Famphur			OPP 6/24/1986	1000						1000	Non-cancer*	1000	Non-cancer
Fenarimol			OPP 7/2002	250					OPP 9/5/2001	250	Non-cancer*	250	Non-cancer
Fenbutatin oxide			OPP 4/2002	29					OPP 10/8/1992	29	Non-cancer*	29	Non-cancer
Fenoxaprop ethyl			OPP 9/1997	200						200	Non-cancer*	200	Non-cancer
Fenoxycarb			OPP 3/22/1994	6.3					OPP 12/22/1997	6.3	Non-cancer*	6.3	Non-cancer
Fenpropathrin (2,2,3,3-Tetramethylcyclopropane carboxylic acid cyano(3-phenoxyphenyl)methyl ester)			IRIS 10/1/1994	20					OPP 3/31/1993	20	Non-cancer*	20	Non-cancer
Fenthion			OPP 2/1999	7100					OPP 3/11/1996	7100	Non-cancer*	7100	Non-cancer
Fenvalerate (4-Chloro-alpha-(1-methylethyl) benzeneacetic acid cyano(3-phenoxyphenyl) methyl ester)			OPP 4/11/1996	20					OPP 7/1/1996	20	Non-cancer*	20	Non-cancer
Fluazifop butyl			OPP 12/7/1995	50						50	Non-cancer*	50	Non-cancer
Fluometuron			OPP 4/6/1995	91			OPP 8/28/1996	3.6	OPP 8/28/1996	91	Non-cancer*	91	Non-cancer
Fluorine			IRIS 6/1/1989	8.3						8.3	Non-cancer*	8.3	Non-cancer
Fluvalinate (N-[2-Chloro-4-(trifluoromethyl)phenyl]-DL-valine-(+)-cyano (3-phenoxyphenyl)methyl ester)			OPP 8/29/1996	50						50	Non-cancer*	50	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Folpet			OPP 5/1998	5.6			IRIS 10/1/1993	7	IRIS 10/1/1993	7	Cancer*	7	Cancer
Fomesafen (5-(2-Chloro-4-(trifluoromethyl) phenoxy)-N-methylsulfonyl-2-nitrobenzamide)							IRIS 10/1/1993	38	IRIS 10/1/1993	38	Cancer*	38	Cancer
Formaldehyde	CalEPA 2/2000	600	IRIS 9/1/1990	2.5	IRIS 5/1/1991	93			IRIS 5/1/1991	600	Non-cancer	2.5	Non-cancer
Formic acid			HEAST 7/1997	0.25						0.25	Non-cancer*	0.25	Non-cancer
Freon 113	CalEPA 1/1991	2.6	IRIS 2/1/1996	0.017						2.6	Non-cancer	0.017	Non-cancer
Glycol Ethers	IRIS 5/1/1991	90								90	Non-cancer	90	Non-cancer*
Heptachlor			IRIS 3/1/1991	1000	IRIS 7/1/1993	9300	IRIS 7/1/1993	9000	IRIS 7/1/1993	9300	Cancer	9000	Cancer
Hexachloro-1,3-butadiene			HEAST 7/1997	2500	IRIS 4/1/1991	16	IRIS 4/1/1991	16	IRIS 4/1/1991	16	Cancer	2500	Non-cancer
Hexachlorobenzene	CalEPA 7/1990	640	IRIS 4/1/1991	630	IRIS 11/1/1996	3300	IRIS 11/1/1996	3200	IRIS 11/1/1996	3300	Cancer	3200	Cancer
Hexachlorocyclohexane, alpha-	CalEPA 1/1991	1800			IRIS 7/1/1993	13000	IRIS 7/1/1993	13000	IRIS 7/1/1993	13000	Cancer	13000	Cancer
Hexachlorocyclopentadiene	IRIS 7/5/2001	9000	IRIS 7/5/2001	83					IRIS 7/5/2001	9000	Non-cancer	83	Non-cancer
Hexachloroethane			IRIS 4/1/1991	500	IRIS 2/1/1994	2.9	IRIS 2/1/1994	2.8	IRIS 2/1/1994	2.9	Cancer	500	Non-cancer
Hexachlorophene			IRIS 4/1/1991	1700						1700	Non-cancer*	1700	Non-cancer
Hexane, n-	IRIS 7/1/1993	9								9	Non-cancer	9	Non-cancer*
Hexazinone			OPP 8/2002	10					OPP 7/27/1994	10	Non-cancer*	10	Non-cancer
Hydramethylnon			IRIS 9/30/1987	1700					OPP 3/28/1991	1700	Non-cancer*	1700	Non-cancer
Hydrazine	CalEPA 1/2001	9000			IRIS 4/1/1991	35000	IRIS 4/1/1991	6000	IRIS 4/1/1991	35000	Cancer	6000	Cancer
Hydrazine sulfate	CalEPA 1/2001	9000			IRIS 4/1/1991	35000	IRIS 4/1/1991	6000	IRIS 4/1/1991	35000	Cancer	6000	Cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Hydrochloric acid	IRIS 7/1/1995	90								90	Non-cancer	90	Non-cancer*
Hydrogen cyanide	IRIS 11/1/1994	600	IRIS 2/1/1993	25						600	Non-cancer	25	Non-cancer
Hydrogen fluoride	CalEPA 8/2003	130	CalEPA 8/2003	13						130	Non-cancer	13	Non-cancer
Hydroquinone			HEAST 7/1997	13						13	Non-cancer*	13	Non-cancer
Imazalil (1-[2-(2,4-Dichlorophenyl)-2-(2-propenyloxy)ethyl]-1H-imidazole)			OPP 6/1999	20			OPP 12/7/1999	120	OPP 12/7/1999	120	Cancer*	120	Cancer
Iodo-2-propynyl butylcarbamate, 3-			OPP 5/6/1993	7.1					OPP 12/4/1996	7.1	Non-cancer*	7.1	Non-cancer
Isobutyraldehyde	final derived 1/6/1998	51							final derived 1/6/1998	51	Non-cancer	n/a	n/a
Isofenphos			OPP 3/22/1994	1000					OPP 1/13/1998	1000	Non-cancer*	1000	Non-cancer
Isopropylidenediphenol, 4,4'-			IRIS 7/1/1993	10						10	Non-cancer*	10	Non-cancer
Lactofen (Benzoic acid, (5-(2-Chloro-4-(trifluoromethyl)phenoxy)-2-nitro-2-ethoxy-1-methyl-2-oxoethyl ester))			OPP 3/2000	63			OPP 4/8/1997	240	OPP 4/8/1997	240	Cancer*	240	Cancer
Lead			CalEPA 12/1997	8800			CalEPA 10/2000	17	IRIS 11/1/1993	8800	Non-cancer*	8800	Non-cancer
Lead compounds			CalEPA 12/1997	8800			CalEPA 10/2000	17	IRIS 11/1/1993	8800	Non-cancer*	8800	Non-cancer
Lindane	CalEPA 1/1991	1800	OPP 7/2000	110	CalEPA 4/1999	220	CalEPA 10/2000	220	OPP 11/29/2001	1800	Non-cancer	220	Cancer
Linuron			OPP 6/10/1993	63					IRIS 10/1/1993	63	Non-cancer*	63	Non-cancer
Malathion			OPP 1/2003	25					OPP 6/20/2000	25	Non-cancer*	25	Non-cancer
Maleic anhydride	CalEPA 12/2001	2600	IRIS 7/1/1993	5						2600	Non-cancer	5	Non-cancer
Malononitrile			HEAST 7/1997	25000						25000	Non-cancer*	25000	Non-cancer

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	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
Chemical Name	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Maneb			OPP 11/2001	17			OPP 6/9/1999	120	OPP 6/9/1999	120	Cancer*	120	Cancer
Manganese	IRIS 12/1/1993	36000	IRIS 5/1/1996	3.6					IRIS 12/1/1996	36000	Non-cancer	3.6	Non-cancer
Manganese compounds	IRIS 12/1/1993	36000	IRIS 5/1/1996	3.6					IRIS 12/1/1996	36000	Non-cancer	3.6	Non-cancer
Mecoprop			IRIS 8/1/1990	500						500	Non-cancer*	500	Non-cancer
Mercaptobenzo-thiazole, 2-			OPP 4/28/1994	0.83					OPP 11/19/1992	0.83	Non-cancer*	0.83	Non-cancer
Mercury	IRIS 6/1/1995	6000	IRIS 7/27/2001	5000					IRIS 5/1/1995	6000	Non-cancer	5000	Non-cancer
Mercury compounds	IRIS 6/1/1995	6000	IRIS 7/27/2001	5000					IRIS 5/1/1995	6000	Non-cancer	5000	Non-cancer
Merphos			IRIS 4/1/1991	17000						17000	Non-cancer*	17000	Non-cancer
Methacrylonitrile			IRIS 2/1/1996	5000						5000	Non-cancer*	5000	Non-cancer
Metham sodium			OPP 12/1/1994	50			OPP 5/1/1995	400	OPP 5/1/1995	400	Cancer*	400	Cancer
Methanol	CalEPA 4/2000	0.45	IRIS 7/1/1993	1						0.45	Non-cancer	1	Non-cancer
Methiocarb			OPP 11/18/1993	100					OPP 3/2/1993	100	Non-cancer*	100	Non-cancer
Methoxone ((4-Chloro-2-methylphenoxy)acetic acid) (MCPA)			IRIS 1/1/1991	1000						1000	Non-cancer*	1000	Non-cancer
Methoxychlor			IRIS 8/1/1991	100					IRIS 10/1/1990	100	Non-cancer*	100	Non-cancer
Methoxyethanol, 2-	IRIS 5/1/1991	90	IRIS 4/1/1992							90	Non-cancer	90	Non-cancer*
Methyl acrylate			HEAST 7/1997	17						17	Non-cancer*	17	Non-cancer
Methyl ethyl ketone	IRIS 9/26/2003	0.36	IRIS 9/26/2003	0.83					OPP 5/30/1989	0.36	Non-cancer	0.83	Non-cancer
Methyl hydrazine							HEAST 3/1993	2200	HEAST 3/1993	2200	Cancer*	2200	Cancer

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Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Methyl iodide							interim derived	580	interim derived	580	Cancer*	580	Cancer
Methyl isobutyl ketone	IRIS 4/25/2003	0.6								0.6	Non-cancer	0.6	Non-cancer*
Methyl isocyanate	CalEPA 12/2001	1800								1800	Non-cancer	1800	Non-cancer*
Methyl methacrylate	IRIS 3/2/1998	2.6	IRIS 3/2/1998	0.36					IRIS 3/2/1998	2.6	Non-cancer	0.36	Non-cancer
Methyl parathion			OPP 6/2002	2500					OPP 12/1/1997	2500	Non-cancer*	2500	Non-cancer
Methyl tert-butyl ether	IRIS 9/1/1993	0.6			CalEPA 11/1999	0.19			IARC 1999	0.6	Non-cancer	0.6	Non-cancer*
Methyl-1,3-dithiolo[4,5-b]quinoxalin-2-one, 6-			OPP 3/22/1994	83			OPP 2/15/1996	68	OPP 2/15/1996	83	Non-cancer*	83	Non-cancer
Methylene bromide			HEAST 7/1997	50						50	Non-cancer*	50	Non-cancer
Methylenebis(2-chloroaniline), 4,4'-			ATSDR 5/1994	170	CalEPA 4/1999	3100	HEAST 7/1997	260	HEAST 7/1997	3100	Cancer	260	Cancer
Methylenebis(N,N-dimethylbenzenamine), 4,4'-							IRIS 7/1/1993	92	IRIS 7/1/1993	92	Cancer*	92	Cancer
Methylenebis(phenylisocyanate) (MDI)	IRIS 2/7/1998	3000								3000	Non-cancer	3000	Non-cancer*
Methylenedianiline, 4,4'-	CalEPA 12/2001	90			CalEPA 4/1999	3300	CalEPA 10/2000	3200	interim derived	3300	Cancer	3200	Cancer
Methyllactonitrile, 2-			HEAST 7/1997	630						630	Non-cancer*	630	Non-cancer
Metiram			OPP 11/2001	130					OPP 11/15/1999	130	Non-cancer*	130	Non-cancer
Metribuzin			IRIS 1/1/1995	20					IRIS 12/1/1996	20	Non-cancer*	20	Non-cancer
Mevinphos			OPP 4/1999	2000						2000	Non-cancer*	2000	Non-cancer
Michler's ketone					CalEPA 4/1999	180	final derived	170	final derived	180	Cancer	170	Cancer
Molinate (1H-Azepine-1 carbothioic acid, hexahydro-S-ethyl ester)			OPP 10/1998	500			OPP 6/17/1992	9.8	OPP 6/17/1992	500	Non-cancer*	500	Non-cancer

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Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Molybdenum trioxide	interim derived	7500	interim derived	190						7500	Non-cancer	190	Non-cancer
Myclobutanil (alpha-Butyl-alpha-(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile)			OPP 11/1997	20					OPP 6/16/1994	20	Non-cancer*	20	Non-cancer
Naled			OPP 5/2001	250					OPP 8/31/1994	250	Non-cancer*	250	Non-cancer
Naphthalene	IRIS 9/17/1998	600	IRIS 9/17/1998	25					IRIS 9/17/1998	600	Non-cancer	25	Non-cancer
Nickel	CalEPA 2/2000	36000	CalEPA 10/2000	10	CalEPA 8/1991	1900			interim derived	36000	Non-cancer	10	Non-cancer
Nickel compounds	CalEPA 2/2000	36000	CalEPA 10/2000	10	CalEPA 8/1991	1900			interim derived	36000	Non-cancer	10	Non-cancer
Nitrapyrin			OPP 5/8/1992	17			OPP 5/5/2000	85	OPP 5/5/2000	85	Cancer*	85	Cancer
Nitrate compounds (water dissociable)			IRIS 10/1/1991	0.31						0.31	Non-cancer*	0.31	Non-cancer
Nitric acid	final derived	140								140	Non-cancer	140	Non-cancer*
Nitrilotriacetic acid			interim derived	36			interim derived	40	interim derived	40	Cancer*	40	Cancer
Nitrobenzene	CalEPA 1/1991	1100	IRIS 1/1/1991	1000					IRIS 2/1/1995	1100	Non-cancer	1000	Non-cancer
Nitroglycerin			interim derived	17			interim derived	4200	interim derived	4200	Cancer*	4200	Cancer
Nitro-o-anisidine, 5-							HEAST 7/1997	92	HEAST 7/1997	92	Cancer*	92	Cancer
Nitro-o-toluidine, 5-							HEAST 7/1997	6.6	HEAST 7/1997	6.6	Cancer*	6.6	Cancer
Nitrophenol, 4-	final derived	390	final derived	200					OPP 5/14/1996	390	Non-cancer	200	Non-cancer
Nitropropane, 2-	IRIS 3/1/1991	90			HEAST 7/1997	19000			HEAST 7/1997	19000	Cancer	19000	Cancer*
Nitrosodiethylamine, N-					IRIS 7/1/1993	310000	IRIS 7/1/1993	300000	IRIS 7/1/1993	310000	Cancer	300000	Cancer
Nitrosodimethylamine, N-					IRIS 7/1/1993	100000	IRIS 7/1/1993	100000	IRIS 7/1/1993	100000	Cancer	100000	Cancer

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Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Nitrosodi-n-butylamine, N-					IRIS 7/1/1993	11000	IRIS 7/1/1993	11000	IRIS 7/1/1993	11000	Cancer	11000	Cancer
Nitrosodi-n-propylamine, N-					CalEPA 4/1999	14000	IRIS 7/1/1993	14000	IRIS 7/1/1993	14000	Cancer	14000	Cancer
Nitrosodiphenylamine, N-							IRIS 7/1/1993	9.8	IRIS 7/1/1993	9.8	Cancer*	9.8	Cancer
Nitroso-N-ethylurea, N-							HEAST 7/1997	280000	HEAST 7/1997	280000	Cancer*	280000	Cancer
N-Nitrosomorpholine					CalEPA 4/1999	14000			interim derived	14000	Cancer	14000	Cancer*
N-Nitrosopiperidine					CalEPA 4/1999	19000			interim derived	19000	Cancer	19000	Cancer*
Norflurazon (4-Chloro-5-(methylamino)-2-[3-(trifluoromethyl)phenyl]-3(2H)-pyridazinone)			OPP 8/2000	33					OPP 11/2/1990	33	Non-cancer*	33	Non-cancer
Oryzalin (4-(Dipropylamino)-3,5-dinitrobenzenesulfonamide)			OPP 8/26/1993	4.2			OPP 3/12/1986	26	OPP 3/12/1986	26	Cancer*	26	Cancer
Oxydemeton methyl			OPP 7/1999	4000					OPP 7/24/1997	4000	Non-cancer*	4000	Non-cancer
Oxydiazon (3-[2,4-Dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2(3H)-one)			IRIS 3/1/1991	100			OPP 5/1/2001	110	OPP 5/1/2001	110	Cancer*	110	Cancer
Oxyfluorfen			OPP 4/2001	17			OPP 9/29/1989	15	OPP 9/29/1989	17	Non-cancer*	17	Non-cancer
Ozone	CalEPA 1/1992	10								10	Non-cancer	10	Non-cancer*
Paraquat dichloride			OPP 4/2000	110					IRIS 10/1/1993	110	Non-cancer*	110	Non-cancer
Parathion			OPP 8/1999	17000					IRIS 10/1/1993	17000	Non-cancer*	17000	Non-cancer
Pebulate (Butylethylcarbamothioic acid S-propyl ester)			OPP 9/1999	71					OPP 12/7/1998	71	Non-cancer*	71	Non-cancer
Pendimethalin (N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine)			OPP 4/2000	5					OPP 7/24/1992	5	Non-cancer*	5	Non-cancer

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	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Pentachlorobenzene			IRIS 10/9/1985	630						630	Non-cancer*	630	Non-cancer
Pentachlorophenol			OPP 12/1997	330			IRIS 7/1/1993	240	IRIS 7/1/1993	330	Non-cancer*	330	Non-cancer
Peracetic acid	interim derived	2300								2300	Non-cancer	2300	Non-cancer*
Permethrin (3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid,(3-phenoxyphenyl)methyl ester)			OPP 5/2002	6.3			OPP 8/21/2002	19	OPP 8/21/2002	19	Cancer*	19	Cancer
Phenol			IRIS 9/30/2002	1.7					IRIS 9/30/2002	n/a	n/a	1.7	Non-cancer
Phenylenediamine, 1,2-							HEAST 7/1997	94	HEAST 7/1997	94	Cancer*	94	Cancer
Phenylenediamine, 1,3-			IRIS 8/1/1991	83						83	Non-cancer*	83	Non-cancer
Phenylenediamine, p-			HEAST 7/1997	2.6						2.6	Non-cancer*	2.6	Non-cancer
Phenylphenol, 2-							HEAST 7/1997	0.39	HEAST 7/1997	0.39	Cancer*	0.39	Cancer
Phosphine	IRIS 7/1/1995	6000	IRIS 12/1/1993	1700					IRIS 12/1/1996	6000	Non-cancer	1700	Non-cancer
Phosphorus (yellow or white)	IRIS 11/1/1993	2.6	IRIS 2/1/1993	25000					IRIS 7/1/1993	2.6	Non-cancer	25000	Non-cancer
Phthalic anhydride	CalEPA 1/2001	90	IRIS 9/7/1988	0.25						90	Non-cancer	0.25	Non-cancer
Picloram			OPP 3/1983	2.5					OPP 4/1/1994	2.5	Non-cancer*	2.5	Non-cancer
Picric acid	final derived	1800	final derived	8300						1800	Non-cancer	8300	Non-cancer
Pirimiphos methyl (O-(2-(Diethylamino)-6-methyl-4-pyrimidinyl)-O,O-dimethylphosphorothioate)			OPP 5/1999	2500						2500	Non-cancer*	2500	Non-cancer
p-Nitrosodiphenylamine					CalEPA 4/1999	4.5			IARC 1987	4.5	Cancer	4.5	Cancer*

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										Weight	Effect	Weight	Effect
Polybrominated biphenyls (PBBs)			HEAST 7/1997	71000			HEAST 7/1997	18000	HEAST 7/1997	71000	Non-cancer*	71000	Non-cancer
Polychlorinated biphenyls (PCBs)	CalEPA 1/1991	1500	IRIS 6/1/1994	25000	IRIS 6/1/1997	710	IRIS 6/1/1997	4000	IRIS 6/1/1997	1500	Non-cancer	25000	Non-cancer
Polycyclic aromatic compounds							IRIS 11/1/1994	15000	IRIS 11/1/1994	15000	Cancer*	15000	Cancer
Potassium bromate	CalEPA 1/1992	1100			CalEPA 4/1999	1000			interim derived	1100	Non-cancer	1100	Non-cancer*
Profenofos			OPP 9/1999	10000					OPP 2/6/1995	10000	Non-cancer*	10000	Non-cancer
Prometryn (N,N'-Bis(1-methylethyl)-6-methylthio-1,3,5-triazine-2,4-diamine)			OPP 5/19/1994	13					OPP 7/25/1994	13	Non-cancer*	13	Non-cancer
Pronamide			OPP 12/2001	6.3			OPP 5/26/1993	52	OPP 5/26/1993	52	Cancer*	52	Cancer
Propachlor (2-Chloro-N-(1-methylethyl)-N-phenylacetamide)			OPP 12/1997	10					OPP 10/16/1997	10	Non-cancer*	10	Non-cancer
Propane sultone					CalEPA 4/1999	4900			interim derived	4900	Cancer	4900	Cancer*
Propanil (N-(3,4-Dichlorophenyl)propanamide)			OPP 8/2001	17					OPP 8/15/2001	17	Non-cancer*	17	Non-cancer
Propargite			OPP 6/1999	13			OPP 7/23/1992	380	OPP 7/23/1992	380	Cancer*	380	Cancer
Propargyl alcohol			IRIS 1/1/1994	250						250	Non-cancer*	250	Non-cancer
Propetamphos			OPP 12/2000	1000					OPP 12/2/1998	1000	Non-cancer*	1000	Non-cancer
Propiconazole (1-[2-(2,4-Dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]-methyl-1H-1,2,4,-triazole)			OPP 1/2002	5					OPP 9/14/1992	5	Non-cancer*	5	Non-cancer
Propoxur			IRIS 7/1/1992	130			OPP 6/17/1996	7.4	OPP 6/17/1996	130	Non-cancer*	130	Non-cancer
Propylene (Propene)	CalEPA 4/2000	0.6								0.6	Non-cancer	0.6	Non-cancer*
Propylene oxide	IRIS 11/1/1990	60			IRIS 4/1/1994	26	IRIS 4/1/1994	480	IRIS 4/1/1994	60	Non-cancer	480	Cancer

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	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Propyleneimine							final derived	300000	final derived	300000	Cancer*	300000	Cancer
Pyridine			IRIS 6/1/1989	500						500	Non-cancer*	500	Non-cancer
Quinoline							IRIS 9/27/2001	6000	IRIS 9/27/2001	6000	Cancer*	6000	Cancer
Quintozene			OPP 3/2002	50			HEAST 7/1997	52	HEAST 7/1997	52	Cancer*	52	Cancer
Quizalofop-ethyl (2-[4-[(6-Chloro-2-quinoxalinyl)oxy]phenoxy] propanoic acid ethyl ester)			OPP 10/1997	56					IRIS 10/1/1993	56	Non-cancer*	56	Non-cancer
Resmethrin ([5-(Phenylmethyl)-3-furanyl]methyl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate)			OPP 10/20/1994	1.4						1.4	Non-cancer*	1.4	Non-cancer
Selenium	CalEPA 12/2001	90	IRIS 9/1/1991	100					IRIS 7/1/1993	90	Non-cancer	100	Non-cancer
Selenium compounds	CalEPA 12/2001	90	IRIS 9/1/1991	100					IRIS 7/1/1993	90	Non-cancer	100	Non-cancer
Sethoxydim (2-[1-(Ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxyl-2-cyclohexen-1-one)			OPP 3/2003	36						36	Non-cancer*	36	Non-cancer
Silver			IRIS 12/1/1996	100					IRIS 6/1/1989	100	Non-cancer*	100	Non-cancer
Silver compounds			IRIS 12/1/1996	100					IRIS 6/1/1989	100	Non-cancer*	100	Non-cancer
Simazine			OPP 9/1998	100			OPP 5/24/1990	24	OPP 5/24/1990	100	Non-cancer*	100	Non-cancer
Sodium azide			IRIS 3/1/1988	130						130	Non-cancer*	130	Non-cancer
Sodium dicamba			OPP 5/2002	1.1					OPP 7/29/1996	1.1	Non-cancer*	1.1	Non-cancer
Sodium fluoroacetate			OPP 10/27/1994	25000						25000	Non-cancer*	25000	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Sodium nitrite			IRIS 8/1/1992	5						5	Non-cancer*	5	Non-cancer
Sodium o-phenylphenoxide							HEAST 7/1997	0.39	HEAST 7/1997	0.39	Cancer*	0.39	Cancer
Strychnine and salts			IRIS 3/1/1988	1700						1700	Non-cancer*	1700	Non-cancer
Styrene	IRIS 7/1/1993	1.8	IRIS 9/1/1990	2.5						1.8	Non-cancer	2.5	Non-cancer
Sulfuric acid	CalEPA 12/2001	1800	final derived 7/28/1998	0.01					final derived 7/28/1998	1800	Non-cancer	0.01	Non-cancer
Sulfuryl fluoride (Vikane)			OPP 5/2001	18						18	Non-cancer*	18	Non-cancer
Sulprofos			OPP 1/25/1996	170					OPP 3/26/1996	170	Non-cancer*	170	Non-cancer
Tebuthiuron (N-[5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl])- N,N'-dimethylurea)			OPP 4/2002	3.6					OPP 3/1/1991	3.6	Non-cancer*	3.6	Non-cancer
Temephos			OPP 7/25/1989	1000						1000	Non-cancer*	1000	Non-cancer
Terbacil (5-Chloro-3-(1,1-dimethylethyl)-6-methyl- 2,4 (1H,3H)-pyrimidinedione)			OPP 9/8/1994	38					OPP 9/30/1994	38	Non-cancer*	38	Non-cancer
Tetrachloroethane, 1,1,1,2-			IRIS 12/1/1996	17	IRIS 1/1/1991	5.3	IRIS 1/1/1991	5.2	IRIS 1/1/1991	5.3	Cancer	17	Non-cancer
Tetrachloroethane, 1,1,2,2-			ATSDR 8/1996	13	IRIS 2/1/1994	41	IRIS 2/1/1994	40	IRIS 2/1/1994	41	Cancer	40	Cancer
Tetrachloroethylene (Perchloroethylene)	ATSDR 9/1997	6.7	IRIS 3/1/1988	50	CalEPA 10/1991	42			IARC 1995	42	Cancer	50	Non-cancer
Tetrachlorvinphos			OPP 3/2002	12			OPP 3/6/1995	0.37	OPP 3/6/1995	12	Non-cancer*	12	Non-cancer
Thallium			HEAST 3/1993	7100						7100	Non-cancer*	7100	Non-cancer
Thallium compounds			HEAST 3/1993	7100						7100	Non-cancer*	7100	Non-cancer
Thiabendazole			OPP 7/1999	5			OPP 3/4/2002	23	OPP 3/4/2002	23	Cancer*	23	Cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004

Chemical Name	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Thioacetamide					CalEPA 4/1999	12000			interim derived	12000	Cancer	12000	Cancer*
Thiobencarb (Carbamic acid, diethylthio-,(S-(p-chlorobenzyl)ester)			OPP 2/8/1996	50					OPP 6/10/1996	50	Non-cancer*	50	Non-cancer
Thiodicarb			OPP 4/1998	17			OPP 6/10/1996	38	OPP 6/10/1996	38	Cancer*	38	Cancer
Thiophanate-methyl			OPP 3/2002	6.3			OPP 12/8/2001	23	OPP 12/8/2001	23	Cancer*	23	Cancer
Thiourea							final derived	2000	final derived	2000	Cancer*	2000	Cancer
Thiram			OPP 1/2000	60						60	Non-cancer*	60	Non-cancer
Thorium dioxide	final derived	1800					final derived	1000000	final derived	1800	Non-cancer	1000000	Cancer
Titanium tetrachloride	ATSDR 9/1997	18000								18000	Non-cancer	18000	Non-cancer*
Toluene	IRIS 8/1/1992	4.5	IRIS 4/1/1994	2.5					IRIS 2/1/1994	4.5	Non-cancer	2.5	Non-cancer
Toluene diisocyanate (mixed isomers)	IRIS 9/1/1995	26000	interim derived	2.2	CalEPA 4/1999	79	interim derived	78	interim derived	26000	Non-cancer	78	Cancer
Toluene-2,4-diisocyanate	IRIS 9/1/1995	26000	interim derived	2.2	CalEPA 4/1999	79	interim derived	78	interim derived	26000	Non-cancer	78	Cancer
Toluene-2,6-diisocyanate	IRIS 9/1/1995	26000	interim derived	2.2	CalEPA 4/1999	79	interim derived	78	interim derived	26000	Non-cancer	78	Cancer
Toluidine hydrochloride, o-							HEAST 7/1997	360	HEAST 7/1997	360	Cancer*	360	Cancer
Toluidine, o-							HEAST 7/1997	480	HEAST 7/1997	480	Cancer*	480	Cancer
Toxaphene			OPP 5/19/1986	2000	IRIS 1/1/1991	2300	IRIS 1/1/1991	2200	IRIS 1/1/1991	2300	Cancer	2200	Cancer
Triadimefon (1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanone)			OPP 10/1997	13					OPP 12/4/1996	13	Non-cancer*	13	Non-cancer
Triallate			OPP 7/1999	20			OPP 1/12/1994	14	OPP 1/12/1994	20	Non-cancer*	20	Non-cancer
Tribenuron methyl			IRIS 4/1/1990	63					OPP 7/14/1989	63	Non-cancer*	63	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004													
	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
Chemical Name	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Tributyltrithiophosphate (DEF), S,S,S-			OPP 6/2000	500			OPP 5/22/1997	170	OPP 5/22/1997	500	Non-cancer*	500	Non-cancer
Trichlorfon			OPP 8/1999	250					OPP 7/15/1999	250	Non-cancer*	250	Non-cancer
Trichlorobenzene, 1,2,4-	HEAST 7/1997	9	IRIS 11/1/1996	50					IRIS 7/1/1993	9	Non-cancer	50	Non-cancer
Trichloroethane, 1,1,1-	CalEPA 2/2000	1.8	final derived 8/18/1998	1					IRIS 9/1/1990	1.8	Non-cancer	1	Non-cancer
Trichloroethane, 1,1,2-			IRIS 2/1/1995	130	IRIS 2/1/1994	11	IRIS 2/1/1994	11	IRIS 2/1/1994	11	Cancer	130	Non-cancer
Trichloroethylene	CalEPA 4/2000	3			CalEPA 10/1990	14			IARC 1995	14	Cancer	14	Cancer*
Trichlorophenol, 2,4,5-			IRIS 3/1/1988	5						5	Non-cancer*	5	Non-cancer
Trichlorophenol, 2,4,6-					IRIS 2/1/1994	22	IRIS 2/1/1994	22	IRIS 2/1/1994	22	Cancer	22	Cancer
Trichloropropane, 1,2,3-			IRIS 8/1/1990	83			HEAST 7/1997	14000	HEAST 7/1997	14000	Cancer*	14000	Cancer
Triethylamine	IRIS 4/1/1991	260								260	Non-cancer	260	Non-cancer*
Trifluralin			OPP 6/2/1994	21			IRIS 10/1/1993	1.5	IRIS 10/1/1993	21	Non-cancer*	21	Non-cancer
Triforine			OPP 11/19/1986	20						20	Non-cancer*	20	Non-cancer
Trimethylbenzene, 1,2,4-	final derived	300	final derived	1000						300	Non-cancer	1000	Non-cancer
Triphenyltin hydroxide			OPP 3/2001	1700			OPP 5/24/1990	3700	OPP 5/24/1990	3700	Cancer*	3700	Cancer
Urethane (Ethyl carbamate)					CalEPA 4/1999	2100			interim derived	2100	Cancer	2100	Cancer*
Vanadium			HEAST 7/1997	71						71	Non-cancer*	71	Non-cancer
Vanadium compounds			HEAST 7/1997	71						71	Non-cancer*	71	Non-cancer
Vinclozolin (3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolidinedione)			OPP 12/1999	42					OPP 6/20/2000	42	Non-cancer*	42	Non-cancer

Table A-1. Toxicity Weights[1] for All Scored TRI Chemicals and Chemical Categories, in Alphabetical Order DATE: August 2004													
	Non-Cancer				Cancer					Modeled RSEI Toxicity Weights			
Chemical Name	RfC[2] Source/Date	RfC Tox Wt	RfD[3] Source/Date	RfD Tox Wt	IUR[4] Source/Date	IUR Tox Wt	SF[5] Source/Date	SF Tox Wt	WOE[6] Source/Date	Inhalation		Oral	
										Weight	Effect	Weight	Effect
Vinyl acetate	IRIS 10/1/1990	9	HEAST 7/1997	0.5						9	Non-cancer	0.5	Non-cancer
Vinyl bromide	IRIS 11/1/1994	600								600	Non-cancer	600	Non-cancer*
Vinyl chloride	IRIS 8/7/2000	18	IRIS 8/7/2000	170	IRIS 8/7/2000	63	IRIS 8/7/2000	3000	IRIS 8/7/2000	63	Cancer	3000	Cancer
Vinylidene chloride	IRIS 8/13/2002	9	IRIS 8/13/2002	10					IRIS 8/13/2002	9	Non-cancer	10	Non-cancer
Warfarin and salts			IRIS 3/1/1988	1700						1700	Non-cancer*	1700	Non-cancer
Xylene (mixed isomers)	IRIS 2/21/2003	18	IRIS 2/21/2003	2.5					OPP 12/2/1987	18	Non-cancer	2.5	Non-cancer
Xylene, m-	IRIS 2/21/2003	18	IRIS 2/21/2003	2.5					OPP 12/2/1987	18	Non-cancer	2.5	Non-cancer
Xylene, o-	IRIS 2/21/2003	18	IRIS 2/21/2003	2.5					OPP 12/2/1987	18	Non-cancer	2.5	Non-cancer
Xylene, p-	IRIS 2/21/2003	18	IRIS 2/21/2003	2.5					OPP 12/2/1987	18	Non-cancer	2.5	Non-cancer
Zinc (fume or dust)	CalEPA 7/1990	51	IRIS 10/1/1992	1.7					IRIS 2/1/1991	51	Non-cancer	1.7	Non-cancer
Zinc compounds	CalEPA 7/1990	51	IRIS 10/1/1992	1.7					IRIS 2/1/1991	51	Non-cancer	1.7	Non-cancer
Zineb			IRIS 3/1/1988	10						10	Non-cancer*	10	Non-cancer

* Toxicity weight adopted from the other exposure route (breathing/inhalation or ingestion/oral).

1. The following sources of toxicity information were used to generate toxicity weights: **IRIS** searches were performed on April 1, 1997 (Integrated Risk Information System electronic database, version 1.0) and updated on February 1998, September 1998, January 8, 1999, January 26, 2000, Summer 2000, February 1, 2001, July 2001, December 2001, November 2003, and March 2004 (IRIS Home Page).
   An IRIS search for new chemicals added for reporting year 2000 was conducted in May 2002.
   CalEPA (California Environmental Protection Agency) values were obtained from the May 2001, July 2001, November 2003, and December 19, 2003 Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, with the exception of the reference dose (RfD) for lead.
   The RfD for lead is derived from the December 1997 CalEPA Public Health Goal for Lead in Drinking Water.
   OPP non-cancer values were obtained from the May 1, 2003 Office of Pesticide Programs "Acute and Chronic Reference Doses." OPP cancer values were obtained from the April 11, 2003 Office of Pesticide Programs "List of Chemicals Evaluated for Carcinogenic Potential."
   ATSDR (Agency for Toxic Substances and Disease Registry) values were obtained from the January 2004 Minimum Risk Levels (MRLs) for Hazardous Substances.
   HEAST values were obtained from the July 1997 and March 1993 Health Effects Assessment Summary Tables.

Cancer weight-of-evidence (WOE) designations were obtained from **IARC** (International Agency for Research on Cancer) in the absence of WOE designations from the sources described above. **Derived** values are those determined by the OPPT Review Process.
Refer to the Toxic Release Inventory Relative Risk-Based Environmental Indicators: Interim Toxicity Weighting Summary Document (EPA, June 1997) for further discussion of this methodology. The dates shown in this table refer to the actual listing dates of toxicity information as provided by the data source, and not the date of the search or the date of the publication. However, since HEAST does not provide listing dates for each chemical, the listing dates in this table refer to the date of the HEAST publication.

2. RfC = Reference Concentration (mg/m^3; non-cancer, inhalation pathway)
3. RfD = Reference Dose (mg/kg/day; non-cancer, oral pathway)
4. IUR = Inhalation Unit Risk (risk per mg/m^3; cancer, inhalation pathway)
5. SF = Oral Slope Factor (risk per mg/kg/day; cancer, oral pathway)
6. WOE = weight-of-evidence (provided for cancer toxicity values only)

Chemical-Specific Footnotes:

Asbestos: Toxicity information is expressed in different units (i.e., risk per fibers/ml) and its toxicity weight is assigned qualitatively.
Butoxyethyl ester, 2,4-D: Toxicity information based on 2,4-D.
Butyl alcohol, tert- and sec-: Toxicity information based on n-butyl alcohol.
Chlorophenols: Toxicity information based on pentachlorophenol.
Chromium and Chromium Compounds: Toxicity information based on chromium(VI).
Cyanide compounds: Toxicity information based on hydrogen cyanide for inhalation pathway and copper cyanide for oral pathway.
Diisocyanates: Toxicity information based on HDI (1,6-Hexamethylene diisocyanate).
Ethylenebisdithiocarbamic acid, salts and esters: Toxicity information based on Metiram.
Ethylhexyl ester, 2,4-D, 2-: Toxicity information based on 2,4-D.
Glycol ethers: Toxicity information based on ethylene glycol monomethyl ether.
Hydrazine sulfate: Toxicity information based on hydrazine.
Lead and Lead Compounds: RfD derived from CalEPA Public Health Goal; an IUR from CalEPA was excluded and the oral toxicity weight based on a non-cancer endpoint was used for the inhalation pathway because of the large body of evidence suggesting a low threshold for non-cancer effects of lead.
Maneb: Slope factor based on ethylene thiourea, as designated in OPP 8/2000 Report.
Mercury and Mercury Compounds: Toxicity information based on elemental mercury for inhalation pathway and methyl mercury for oral pathway.
Nitrate compounds: Toxicity information based on nitrate.
Polycyclic aromatic compounds: Toxicity information based on benzo(a)pyrene.
Sodium dicamba: Toxicity information based on dicamba.
Sodium nitrite: Toxicity information based on nitrite.
Sodium o-phenylphenoxide: Toxicity information based on 2-phenylphenol.
Strychnine and salts: Toxicity information based on strychnine.
Thallium and Thallium Compounds: Toxicity information based on thallic oxide.
Thorium dioxide: Oral toxicity weight based upon a qualitative assessment of toxicity.
Warfarin and salts: Toxicity information based on warfarin.