Toxics Release Inventory (TRI) Basis of OSHA Carcinogens

Under the TRI Program, a chemical does not have to be counted towards threshold determinations and release and other waste management calculations if it is present in a mixture below a certain concentration. This is known as the "de minimus" concentration in mixture. When the rule was developed that implemented the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), EPA adopted the de minimus percentages from the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standards (29 CFR 1910.1900) because much of the initial information that industry would have relating to chemicals in mixtures would most likely be from the material safety data sheet (MSDS) on that mixture. The OSHA de minimus limitation is 0.1 percent if the chemical is a known or suspect carcinogen by virtue of appearing in one of three sources:

1. National Toxicology Program (NTP), "Annual Report on Carcinogens" (Latest Editions);

2. International Agency for Research on Cancer (IARC) "Monographs" (Latest Editions);

3. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

The de minimus limitation is 1.0 percent for chemicals that do not meet the above OSHA carcinogen criteria. The carcinogen designation in the list of chemicals relates to any chemical that the Agency determined met the above OSHA criteria for the 0.1 percent de minimus limitation. Certain metal compound categories have two de minimus limitations. For example, hexavalent chromium compounds and inorganic arsenic compounds meet the OSHA carcinogen criteria, while trivalent chromium compounds and organic arsenic do not meet the OSHA criteria. In addition, there are no de minimus levels for persistent bioaccumulative toxic (PBT) chemicals, except for supplier notification purposes.

The following table shows the specific bases for which chemicals have been designated as a known or suspect carcinogens. This list is based on a review of the most current NTP, IARC, and OSHA sources as of November 2011.

Basis of OSHA Carcinogen Listing for TRI Chemicals			
Chemical Name	**IARC**	**NTP**	**OSHA–Z**
Acetaldehyde	2B	P	–
Acetamide	2B	–	–
2-Acetylaminofluorene	–	P	Z
Acrylamide	2A	P	–
Acrylonitrile	2B	P	Z
2-Aminoanthraquinone	–	P	–
4-Aminoazobenzene	2B	–	–
4-Aminobiphenyl	1	K	Z
1-Amino-2,4-dibromoanthraquinone	2B	P	–
1-Amino-2-methylanthraquinone	–	P	–
Amitrole	–	P	–
o-Anisidine	2B	–	–
o-Anisidine hydrochloride	–	P	–
Arsenic and inorganic arsenic compounds	1	K*	Z
Asbestos (friable)	1	K	Z
Benzene	1	K	Z
Benzidine	1	K	Z
Benzoic trichloride	2B	P	–
Beryllium and beryllium compounds	1	P*	–
2,2-Bis(bromomethyl)-1,3-propanediol	2B	P	–
Bis(chloromethyl)ether	1	K	Z
1,3-Butadiene	2A	K	–
1,2-Butylene oxide	2B	–	–
Cadmium and cadmium compounds	1	K*	Z
Carbon tetrachloride	2B	P	–
Catechol	2B	–	–
Chlordane	2B	–	–
Chlorendic acid	2B	P	–
p-Chloroaniline	2B	–	–
Chloroform	2B	P	–
Chloromethyl methyl ether	1	K	Z
3-Chloro-2-methyl-1-propene	–	P	–
Chlorophenols	2B	–	–
Chloroprene	2B	P	–
Chlorothalonil	2B	–	–
p-Chloro-o-toluidine	2A	P	–
Chromium (VI) compounds	1	K	–
C.I. Acid Red 114	2B	–	–
C.I. Direct Black 38	1	K	–
C.I. Direct Blue 6	1	K	–
C.I. Direct Brown 95	1	–	–
C.I. Food Red 5	2B	–	–
C.I. Solvent Yellow 3 (o-aminoazotoluene)	2B	P	–

C.I. Solvent Yellow 34 (Auramine)	2B	–	–
Cobalt and cobalt compounds	2B	P*	–
Creosote	2A	K	–
p-Cresidine	2B	P	–
Cupferron	–	P	–
2,4-D**	2B	–	–
2,4-D butoxyethyl ester**	2B	–	–
2,4-D butyl ester**	2B	–	–
2,4-D chlorocrotyl ester**	2B	–	–
2,4-D 2-ethylhexyl ester**	2B	–	–
2,4-D 2-ethyl-4-methylpentyl ester**	2B	–	–
2,4-Diaminoanisole	2B	–	–
2,4-Diaminoanisole sulfate	–	P	–
4,4'-Diaminodiphenyl ether	2B	–	–
2,4-Diaminotoluene	2B	P	–
Diaminotoluene (mixed isomers)	2B	P	–
1,2-Dibromo-3-chloropropane	2B	P	Z
1,2-Dibromoethane	2A	P	–
1,4-Dichlorobenzene	2B	P	–
Dichlorobenzene (mixed isomers)	2B	P	–
3,3'-Dichlorobenzidine	1	P	Z
3,3'-Dichlorobenzidine dihydrochloride	1	P	Z
3,3'-Dichlorobenzidine sulfate	1	P	Z
Dichlorobromomethane	2B	P	–
1,2-Dichloroethane	2B	P	–
Dichloromethane	2B	P	Z
trans-1,3-Dichloropropene	2B	–	–
1,3-Dichloropropylene	2B	P	–
Dichlorvos	2B	–	–
Diepoxybutane	2B	P	–
Di-(2-ethylhexyl)phthalate	–	P	–
Diethyl sulfate	2A	P	–
Diglycidyl resorcinol ether	2B	P	–
Dihydrosafrole	2B	–	–
3,3'-Dimethoxybenzidine	1	P	–
3,3'-Dimethoxybenzidine dihydrochloride	1	P	–
3,3'-Dimethoxybenzidine hydrochloride	1	P	–
4-Dimethylaminoazobenzene	2B	P	Z
3,3'-Dimethylbenzidine	1	P	–
3,3'-Dimethylbenzidine dihydrochloride	1	P	–
3,3'-Dimethylbenzidine dihydrofluoride	1	P	–
Dimethylcarbamyl chloride	2A	P	–
1,1-Dimethylhydrazine	2B	P	–
Dimethyl sulfate	2A	P	–
2,4-Dinitrotoluene	2B	–	–
2,6-Dinitrotoluene	2B	–	–

1,4-Dioxane	2B	P	–
1,2-Diphenylhydrazine	–	P	–
2,4-D isopropyl ester**	2B	–	–
2,4-DP**	2B	–	–
2,4-D propylene glycol butyl ether ester**	2B	–	–
2,4-D sodium salt**	2B	–	–
Epichlorohydrin	2A	P	–
Ethyl acrylate	2B	–	–
Ethyl benzene	2B	–	–
Ethyleneimine	–	–	Z
Ethylene oxide	1	K	Z
Ethylene thiourea	–	P	–
Formaldehyde	1	K	Z
Furan	2B	P	–
Glycidol	2A	P	–
Heptachlor	2B	–	–
Hexachlorobenzene	2B	P	–
alpha-Hexachlorocyclohexane	2B	P	–
Hexachloroethane	2B	P	–
Hexamethylphosphoramide	2B	P	–
Hydrazine	2B	P	–
Hydrazine sulfate	–	P	–
Isoprene	2B	P	–
Lead and inorganic lead compounds	2A	P	Z
Lindane	2B	P	–
Mecoprop**	2B	–	–
Methoxone**	2B	–	–
Methoxone sodium salt**	2B	–	–
4,4-Methylenebis (2-chloroaniline)	1	P	–
4,4'-Methylenebis (N,N-dimethyl) benzeneamine	2B	P	–
4,4'-Methylenedianiline	2B	P	Z
Methyleugenol	2B	P	–
Michler's ketone	–	P	–
Mustard gas	1	K	–
Naphthalene	2B	P	–
alpha-Naphthylamine	–	–	Z
beta-Naphthylamine	1	K	Z
Nickel	2B	P	–
Nickel compounds	1	P*	–
Nitrilotriacetic acid	–	P	–
o-Nitroanisole	2B	P	–
Nitrobenzene	2B	P	–
4-Nitrobiphenyl	–	–	Z
Nitrofen	2B	P	–
Nitrogen mustard	2A	–	–
Nitromethane	2B	P	–

2-Nitropropane	2B	P	–
N-Nitrosodi-n-butylamine	2B	P	–
N-Nitrosodiethylamine	2A	P	–
N-Nitrosodimethylamine	2A	P	Z
N-Nitrosodi-n-propylamine	2B	P	–
N-Nitroso-N-ethylurea	2A	P	–
N-Nitroso-N-methylurea	2A	P	–
N-Nitrosomethylvinylamine	2B	P	–
N-Nitrosomorpholine	2B	P	–
N-Nitrosonornicotine	1	P	–
N-Nitrosopiperidine	2B	P	–
Pentachlorophenol	2B	–	–
Phenolphthalein	2B	P	–
Phenytoin	2B	P	–
Polybrominated biphenyls (PBBs)	2B	P	–
Polychlorinated alkanes (C_{12}, 60% chlorinated)	–	P	–
Polychlorinated biphenyls (PCBs)	2A	P	–
Polycyclic aromatic compounds (PACs):	2B		–
Benz(a)anthracene	2A	P	–
Benzo(b)fluoranthene	2B	P	–
Benzo(j)fluoranthene	2B	P	–
Benzo(k)fluoranthene	2B	P	–
Benzo(rst)pentaphene	2B	–	–
Benzo(a)pyrene	2A	P	–
Dibenz(a,h)acridine	2A	P	–
Dibenz(a,j)acridine	2B	P	–
Dibenzo(a,h)anthracene	2B	P	–
7H–Dibenzo(c,g)carbazole	2B	P	–
Dibenzo(a,e)pyrene	2B	P	–
Dibenzo(a,h)pyrene	2B	P	–
Dibenzo(a,l)pyrene	2B	P	–
7,12–Dimethylbenz(a)anthracene	2B	–	–
1,6-Dinitropyrene	2B	P	–
1,8-Dinitropyrene	2B	P	–
Indeno[1,2,3–cd]pyrene	2B	P	–
5–Methylchrysene	2B	P	–
6-Nitrochrysene	2B	P	–
1-Nitropyrene	2B	P	–
4-Nitropyrene	2B	P	–
Potassium bromate	2B	–	–
Propane sultone	2B	P	–
beta-Propiolactone	2B	P	Z
Propyleneimine	2B	P	–
Propylene oxide	2B	P	–
Safrole	2B	P	–
Sodium o-phenylphenoxide	2B	–	–

Styrene	2B	P	–
Styrene oxide	2A	–	–
Tetrachloroethylene	2B	P	–
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	K	–
Tetrafluoroethylene	2B	P	–
Tetranitromethane	2B	P	–
Thioacetamide	2B	P	–
4,4'-Thiodianiline	2B	P	–
Thiourea	–	P	–
Toluene-2,4-diisocyanate	2B	P	–
Toluene-2,6-diisocyanate	2B	P	–
Toluene diisocyanate (mixed isomers)	2B	P	–
o-Toluidine	1	P	–
o-Toluidine hydrochloride	–	P	–
Toxaphene	2B	P	–
Trichloroethylene	2A	P	–
2,4,6-Trichlorophenol	2B	P	–
1,2,3-Trichloropropane	2A	P	–
Tris(2,3-dibromopropyl)phosphate	2A	P	–
Trypan blue	2B	–	–
Urethane	2B	P	–
Vinyl acetate	2B	–	–
Vinyl bromide	2A	–	–
Vinyl chloride	1	K	Z
Vinyl fluoride	2A	P	–
2,6-Xylidine	2B	–	–
Note: The list of TRI chemicals meeting the OSHA carcinogen standard and, therefore, not reported when in a mixture at a concentration level below the de minimus level of 0.1% has been updated, and this list reflects the update.			
IARC: 1–The chemical is carcinogenic to humans; 2A–The chemical is probably carcinogenic to humans; 2B–The chemical is possibly carcinogenic to humans.			
NTP: K–The chemical is known to be a human carcinogen; P–The chemical is reasonably anticipated to be a human carcinogen.			
OSHA: Z–The chemical appears at 29 CFR part 1910 Subpart Z.			
* Certain compounds.			
** Chlorophenoxy herbicides (IARC 2B).			