



TOXICS RELEASE INVENTORY

Basis of OSHA Carcinogens

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report the annual quantity of such chemicals entering each environmental medium. Such facilities must also report pollution prevention data for such chemicals, pursuant to section 6607 of the Pollution Prevention Act, 42 U.S.C. 13106. EPCRA section 313 is also known as the Toxics Release Inventory (TRI).

DISCLAIMER

This document is intended to assist facilities with EPCRA section 313 requirements. If a conflict exists between guidance in this document and the statutory or regulatory requirements, the conflict must be resolved in favor of the statute or regulation.

Additional guidance documents, including industry specific and chemical specific guidance documents, are also available on TRI's GuideME website:

https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-list

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 minimis*” concentration in mixture. In the final rule (53 FR 4500, Feb. 16, 1988) that implemented the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (aka TRI), EPA adopted a *de minimis* exemption that permits facilities to disregard *de minimis* levels of toxic chemicals for threshold and reporting calculations. The rule adopted a 0.1% *de minimis* level for chemicals that are carcinogens as defined under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200). Subsequently, EPA incorporated language from the OSHA regulations into the EPCRA section 313 regulations at 40 CFR §372.38(a), which reads as follows:

“(a) De minimis concentrations of a toxic chemical in a mixture. (1) If a toxic chemical is present in a mixture of chemicals at a covered facility and the toxic chemical is in a concentration in the mixture which is below 1 percent of the mixture, or 0.1 percent of the mixture in the case of a toxic chemical which is a carcinogen, a person is not required to consider the quantity of the toxic chemical present in such mixture when determining whether an applicable threshold has been met under §372.25 or determining the amount of release to be reported under §372.30. For purposes of the exemption in this paragraph (a), the following sources establish a chemical as a carcinogen or potential carcinogen:

- (i) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);
- (ii) International Agency for Research on Cancer (IARC) Monographs (latest editions); or
- (iii) 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.”

The *de minimis* limitation is 1.0 percent for chemicals that do not meet the above carcinogen criteria. The carcinogen designation in the list of chemicals relates to any chemical that the Agency determined met the above criteria for the 0.1 percent *de minimis* limitation. For convenience purposes, EPA refers to these chemicals as the “OSHA carcinogens.” Certain metal compound categories have two *de minimis* limitations. For example, hexavalent chromium compounds and inorganic arsenic compounds meet the carcinogen criteria, while trivalent chromium compounds and organic arsenic do not meet the carcinogen criteria. In addition, there are no *de minimis* levels for chemicals listed in 40 CFR §372.28 “Lower thresholds for chemicals of special concern,” except for supplier notification purposes.

The following table shows the specific basis for which chemicals have been designated as a known or potential carcinogen.

Basis of OSHA Carcinogen Listing for TRI Chemicals

| Chemical Name | IARC | NTP | OSHA-Z |
|-----------------------|------|-----|--------|
| Acetaldehyde | 2B | RA | – |
| Acetamide | 2B | – | – |
| 2-Acetylaminofluorene | – | RA | Z |
| Acrolein | 2A | – | – |
| Acrylamide | 2A | RA | – |
| Acrylonitrile | 2B | RA | Z |
| 2-Aminoanthraquinone | – | RA | – |
| 4-Aminoazobenzene | 2B | – | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|---|------|-----|--------|
| 4-Aminobiphenyl | 1 | K | Z |
| 1-Amino-2,4-dibromoanthraquinone | 2B | RA | – |
| 1-Amino-2-methylanthraquinone | – | RA | – |
| Amitrole | – | RA | – |
| Aniline | 2A | – | – |
| <i>o</i> -Anisidine | 2B | – | – |
| <i>o</i> -Anisidine hydrochloride | – | RA | – |
| Arsenic and inorganic arsenic compounds | 1 | K* | Z |
| Asbestos (friable) | 1 | K | Z |
| Benzene | 1 | K | Z |
| Benzidine | 1 | K | Z |
| Benzoic trichloride | 2B | RA | – |
| Beryllium and beryllium compounds | 1 | RA* | – |
| 2,2-Bis(bromomethyl)-1,3-propanediol | 2B | RA | – |
| Bis(chloromethyl) ether | 1 | K | Z |
| 1-Bromopropane | 2B | RA | – |
| 1,3-Butadiene | 2A | K | – |
| 1,2-Butylene oxide | 2B | – | – |
| Cadmium and cadmium compounds | 1 | K* | Z |
| Carbon tetrachloride | 2B | RA | – |
| Catechol | 2B | – | – |
| Chlordane | 2B | – | – |
| Chlorendic acid | 2B | RA | – |
| <i>p</i> -Chloroaniline | 2B | – | – |
| Chloroform | 2B | RA | – |
| Chloromethyl methyl ether | 1 | K | Z |
| 3-Chloro-2-methyl-1-propene | 2B | RA | – |
| Chlorophenols | 2B | – | – |
| Chloroprene | 2B | RA | – |
| Chlorothalonil | 2B | – | – |
| <i>p</i> -Chloro- <i>o</i> -toluidine | 2A | RA | – |
| Chromium (VI) compounds | 1 | K | – |
| C.I. Acid Red 114 | 2B | – | – |
| C.I. Direct Black 38 | 2A | K | – |
| C.I. Direct Blue 6 | 2A | K | – |
| C.I. Direct Blue 218 | 2B | – | – |
| C.I. Direct Brown 95 | 2A | – | – |
| C.I. Food Red 5 | 2B | – | – |
| C.I. Solvent Yellow 3 | 2B | RA | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|---|------|-----|--------|
| C.I. Solvent Yellow 34 | 2B | – | – |
| Cobalt and cobalt compounds | 2B | RA* | – |
| Creosote | 2A | K | – |
| <i>p</i> -Cresidine | 2B | RA | – |
| Cumene | 2B | RA | – |
| Cupferron | – | RA | – |
| 2,4-D** | 2B | – | – |
| 2,4-D 2-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 | – | RA | – |
| 4,4'-Diaminodiphenyl ether | 2B | – | – |
| 2,4-Diaminotoluene | 2B | RA | – |
| Diaminotoluene (mixed isomers) | 2B | RA | – |
| Diazinon | 2A | – | – |
| 1,2-Dibromo-3-chloropropane | 2B | RA | Z |
| 1,2-Dibromoethane | 2A | RA | – |
| 1,4-Dichlorobenzene | 2B | RA | – |
| Dichlorobenzene (mixed isomers) | 2B | RA | – |
| 3,3'-Dichlorobenzidine | 2B | RA | Z |
| 3,3'-Dichlorobenzidine dihydrochloride | 2B | RA | Z |
| 3,3'-Dichlorobenzidine sulfate | 2B | RA | Z |
| Dichlorobromomethane | 2B | RA | – |
| 1,2-Dichloroethane | 2B | RA | – |
| Dichloromethane | 2A | RA | Z |
| 1,2-Dichloropropane | 1 | – | – |
| <i>trans</i> -1,3-Dichloropropene | 2B | – | – |
| 1,3-Dichloropropylene | 2B | RA | – |
| Dichlorvos | 2B | – | – |
| Diepoxybutane | 2B | RA | – |
| Di(2-ethylhexyl) phthalate | – | RA | – |
| Diethyl sulfate | 2A | RA | – |
| Diglycidyl resorcinol ether | 2B | RA | – |
| Dihydrosafrole | 2B | – | – |
| 3,3'-Dimethoxybenzidine | 2B | RA | – |
| 3,3'-Dimethoxybenzidine dihydrochloride | 2B | RA | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|--|------|-----|--------|
| 3,3'-Dimethoxybenzidine monohydrochloride | 2B | RA | – |
| 4-Dimethylaminoazobenzene | 2B | RA | Z |
| 3,3'-Dimethylbenzidine | 2B | RA | – |
| 3,3'-Dimethylbenzidine dihydrochloride | 2B | RA | – |
| 3,3'-Dimethylbenzidine dihydrofluoride | 2B | RA | – |
| Dimethylcarbonyl chloride | 2A | RA | – |
| <i>N,N</i> -Dimethylformamide | 2A | – | – |
| 1,1-Dimethylhydrazine | 2B | RA | – |
| Dimethyl sulfate | 2A | RA | – |
| 2,4-Dinitrotoluene | 2B | – | – |
| 2,6-Dinitrotoluene | 2B | – | – |
| 1,4-Dioxane | 2B | RA | – |
| Diphenylamine | 2B | – | – |
| 1,2-Diphenylhydrazine | 2B | RA | – |
| 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 | RA | – |
| Ethyl acrylate | 2B | – | – |
| Ethylbenzene | 2B | – | – |
| Ethyleneimine | – | – | Z |
| Ethylene oxide | 1 | K | Z |
| Ethylene thiourea | – | RA | – |
| Formaldehyde | 1 | K | Z |
| Furan | 2B | RA | – |
| Glycidol | 2A | RA | – |
| Heptachlor | 2B | – | – |
| Hexachlorobenzene | 2B | RA | – |
| <i>alpha</i> -Hexachlorocyclohexane | 2B | RA | – |
| Hexachloroethane | 2B | RA | – |
| Hexamethylphosphoramide | 2B | RA | – |
| Hydrazine | 2A | RA | – |
| Hydrazine sulfate (1:1) | – | RA | – |
| Isoprene | 2B | RA | – |
| Lead and inorganic lead compounds | 2A | RA | Z |
| Lindane | 1 | RA | – |
| Malathion | 2A | – | – |
| Mecoprop** | 2B | – | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|---|------|-----|--------|
| 2-Mercaptobenzothiazole | 2A | – | – |
| Methoxone** | 2B | – | – |
| Methoxone sodium salt** | 2B | – | – |
| 4,4'-Methylenebis(2-chloroaniline) | 1 | RA | – |
| 4,4'-Methylenebis(<i>N,N</i> -dimethyl)benzenamine | 2B | RA | – |
| 4,4'-Methylenedianiline | 2B | RA | Z |
| Methyleugenol | 2B | RA | – |
| Methyl acrylate | 2B | – | – |
| Methyl isobutyl ketone | 2B | – | – |
| <i>N</i> -Methylolacrylamide | 2B | – | – |
| Michler's ketone | – | RA | – |
| Molybdenum trioxide | 2B | – | – |
| Mustard gas | 1 | K | – |
| Naphthalene | 2B | RA | – |
| <i>alpha</i> -Naphthylamine | – | – | Z |
| <i>beta</i> -Naphthylamine | 1 | K | Z |
| Nickel | 2B | RA | – |
| Nickel compounds | 1 | RA* | – |
| Nitrilotriacetic acid trisodium salt | 2B | – | – |
| Nitrilotriacetic acid | 2B | RA | – |
| <i>o</i> -Nitroanisole | 2B | RA | – |
| Nitrobenzene | 2B | RA | – |
| 4-Nitrobiphenyl | – | – | Z |
| Nitrofen | 2B | RA | – |
| Nitrogen mustard | 2A | – | – |
| Nitromethane | 2B | RA | – |
| 2-Nitropropane | 2B | RA | – |
| <i>N</i> -Nitrosodi- <i>n</i> -butylamine | 2B | RA | – |
| <i>N</i> -Nitrosodiethylamine | 2A | RA | – |
| <i>N</i> -Nitrosodimethylamine | 2A | RA | Z |
| <i>N</i> -Nitrosodi- <i>n</i> -propylamine | 2B | RA | – |
| <i>N</i> -Nitroso- <i>N</i> -ethylurea | 2A | RA | – |
| <i>N</i> -Nitroso- <i>N</i> -methylurea | 2A | RA | – |
| <i>N</i> -Nitrosomethylvinylamine | 2B | RA | – |
| <i>N</i> -Nitrosomorpholine | 2B | RA | – |
| <i>N</i> -Nitrosornicotine | 1 | RA | – |
| <i>N</i> -Nitrosopiperidine | 2B | RA | – |
| <i>o</i> -Nitrotoluene | 2A | RA | – |
| Parathion | 2B | – | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|--|------|-----|--------|
| 2,3,4,7,8-Pentachlorodibenzofuran | 1 | – | – |
| Pentachlorophenol | 2B | – | – |
| Perfluorooctanoic acid | 2B | – | – |
| Phenolphthalein | 2B | RA | – |
| 1,2-Phenylenediamine | 2B | – | – |
| 1,2-Phenylenediamine dihydrochloride | 2B | – | – |
| Phenytoin | 2B | RA | – |
| Polybrominated biphenyls (PBBs) | 2A | RA | – |
| Polychlorinated alkanes (C12, 60% chlorinated) | – | RA | – |
| Polychlorinated biphenyls | 1 | RA | – |
| Polycyclic aromatic compounds (PACs): | 2B | – | – |
| Benz[a]anthracene | 2A | RA | – |
| Benzo[b]fluoranthene | 2B | RA | – |
| Benzo[j]fluoranthene | 2B | RA | – |
| Benzo[k]fluoranthene | 2B | RA | – |
| Benzo[r,s,t]pentaphene | 2B | RA | – |
| Benzo[a]pyrene | 2A | RA | – |
| Dibenz[a,h]acridine | 2A | RA | – |
| Dibenz[a,j]acridine | 2B | RA | – |
| Dibenzo[a,h]anthracene | 2B | RA | – |
| 7H-Dibenzo[c,g]carbazole | 2B | RA | – |
| Dibenzo[a,e]pyrene | 2B | RA | – |
| Dibenzo[a,h]pyrene | 2B | RA | – |
| Dibenzo[a,l]pyrene | 2B | RA | – |
| 7,12-Dimethylbenz[a]anthracene | 2B | – | – |
| 1,6-Dinitropyrene | 2B | RA | – |
| 1,8-Dinitropyrene | 2B | RA | – |
| Indeno[1,2,3-cd]pyrene | 2B | RA | – |
| 5-Methylchrysene | 2B | RA | – |
| 6-Nitrochrysene | 2B | RA | – |
| 1-Nitropyrene | 2B | RA | – |
| 4-Nitropyrene | 2B | RA | – |
| Potassium bromate | 2B | – | – |
| 1,3-Propane sultone | 2A | RA | – |
| <i>beta</i> -Propiolactone | 2B | RA | Z |
| Propyleneimine | 2B | RA | – |
| Propylene oxide | 2B | RA | – |
| Pyridine | 2B | – | – |
| Quinoline | 2B | – | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|--|------|-----|--------|
| Safrole | 2B | RA | – |
| Sodium pentachlorophenate | – | RA | – |
| Sodium <i>o</i> -phenylphenoxide | 2B | – | – |
| Styrene | 2B | RA | – |
| Styrene oxide | 2A | – | – |
| 2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin | 1 | K | – |
| 1,1,1,2-Tetrachloroethane | 2B | – | – |
| 1,1,2,2-Tetrachloroethane | 2B | – | – |
| Tetrachloroethylene | 2A | RA | – |
| Tetrachlorvinphos | 2B | – | – |
| Tetrafluoroethylene | 2A | RA | – |
| Tetranitromethane | 2B | RA | – |
| Thioacetamide | 2B | RA | – |
| 4,4'-Thiodianiline | 2B | RA | – |
| Thiourea | – | RA | – |
| Toluene-2,4-diisocyanate | 2B | RA | – |
| Toluene-2,6-diisocyanate | 2B | RA | – |
| Toluene diisocyanate (mixed isomers) | 2B | RA | – |
| <i>o</i> -Toluidine | 1 | RA | – |
| <i>o</i> -Toluidine hydrochloride | – | RA | – |
| Toxaphene | 2B | RA | – |
| 1,1,1-Trichloroethane | 2A | – | – |
| Trichloroethylene | 1 | K | – |
| 2,4,6-Trichlorophenol | 2B | RA | – |
| 1,2,3-Trichloropropane | 2A | RA | – |
| Tris(2,3-dibromopropyl) phosphate | 2A | RA | – |
| Trypan blue | 2B | – | – |
| Urethane | 2B | RA | – |
| Vinyl acetate | 2B | – | – |
| Vinyl bromide | 2A | – | – |
| Vinyl chloride | 1 | K | Z |
| Vinyl fluoride | 2A | RA | – |
| Vinylidene chloride | 2B | – | – |
| 2,6-Xylidine | 2B | – | – |

| Chemical Name | IARC | NTP | OSHA-Z |
|--|------|-----|--------|
| <p>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 <i>de minimis</i> level of 0.1% has been updated, and this list reflects the update.</p> <p>IARC: 1–The chemical is carcinogenic to humans; 2A–The chemical is probably carcinogenic to humans; 2B–The chemical is possibly carcinogenic to humans.</p> <p>NTP: K–The chemical is known to be a human carcinogen; RA–The chemical is reasonably anticipated to be a human carcinogen.</p> <p>OSHA: Z–The chemical appears at 29 CFR part 1910 Subpart Z.</p> <p>* Certain compounds.</p> <p>** Chlorophenoxy herbicides (IARC 2B).</p> | | | |