

BACKGROUND

1. Explanatory Notes

Section 5.48 provides established limits for a worker's exposure to hazardous chemical substances. Generally, these exposure limits are established according to the Threshold Limit Values ("TLVs") adopted by the American Conference of Governmental Industrial Hygienists ("ACGIH"). However, the Board has authority to make exceptions and adopt occupational exposure limits for specific chemical substances that are not consistent with the TLVs established by the ACGIH. This policy sets out those exceptions.

2. The Regulation

Section 5.48:

Except as otherwise determined by the Board, the employer must ensure that no worker is exposed to a substance that exceeds the ceiling limit, short-term exposure limit, or 8-hour TWA limit prescribed by ACGIH.

Section 5.57:

(1) If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers:

- (a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen;
- (b) ACGIH reproductive toxin;
- (c) ACGIH sensitizer;
- (d) ACGIH L endnote.

(2) If it is not practicable to substitute a material which reduces the risk to workers, in accordance with subsection (1), the employer must implement an exposure control plan to maintain workers' exposure as low as reasonably achievable below the exposure limit established under section 5.48.

(3) The exposure control plan must meet the requirements of section 5.54.

3. Preamble to Policy

The following is a preamble to be applied to those exposure limits developed by the Board as an exception to the TLVs established by the ACGIH:

An exposure limit is a maximum allowed airborne concentration and is not intended to represent a fine line between safe and harmful conditions. In determining an exposure limit, it is not possible to take into account all factors that could influence the effect that exposure to the substance may have on an individual worker. Therefore, for all hazardous substances, regardless of any assigned exposure limit, the guiding principle is elimination of exposure or reduction to the lowest level that is reasonably achievable below the exposure limit.

Due to a wide variation in individual susceptibility, some workers may experience discomfort from some substances at concentrations at or below the exposure limit. Others may be affected more seriously by aggravation of a pre-existing condition, or by development of an occupational disease. Furthermore, other workplace contaminants may affect an individual's response. The effects of combined chemical exposures are often unknown or poorly defined.

POLICY

1. Table of Occupational Exposure Limits for Excluded Substances

As presented in the table below, the Board has determined exposure limits for the following specific substances that differ from the TLVs established by the ACGIH. For solid and liquid particulate matter, except where the terms inhalable, thoracic, or respirable particulate mass are used, the exposure limits listed in the table below are expressed in terms of "total particulate matter".

Substance/Chemical Name	CAS No.	Unit	8-hour TWA Limit	Short-term exposure Limit, STEL	Ceiling Limit
ABATE (TEMEPHOS), TOTAL	3383-96-8	mg/m ³	10	20	
ACETAMIDE	60-35-5		No BC exposure limit		
ACETONE CYANOHYDRIN	75-86-5	ppm			1
ALDICARB	116-06-3		No BC exposure limit		
ALLYL AMINE	107-11-9	ppm	2		
ALLYL BROMIDE	106-95-6		No BC exposure limit		
ALLYL METHACRYLATE	96-05-9		No BC exposure limit		

ATRAZINE	1912-24-9	mg/m ³	5		
BENDIOCARB	22781-23-3			No BC exposure limit	
BENZYL CHLORIDE	100-44-7	ppm			1
BORON TRIBROMIDE	10294-33-4	ppm			1
BORON TRICHLORIDE	10294-34-5	ppm		No BC exposure limit	
BORON TRIFLUORIDE	7637-07-2	ppm			1
BORON TRIFLUORIDE ETHERS, as BF ₃	109-63-7, 353-42-4	ppm		No BC exposure limit	
BROMOCHLOROMETHANE	74-97-5	ppm	200	250	
BUTENES, ALL ISOMERS, INCLUDING ISOBUTENE	106-98-9, 107-01-7, 590-18-1, 624-64-6, 25167-67-3, 115-11-7			No BC exposure limit	
n-BUTYL ALCOHOL (n-BUTANOL)	71-36-3	ppm	15		30
n-BUTYL ACETATE	123-86-4	ppm	20		
sec-BUTYL ACETATE	105-46-4	ppm	200		
tert-BUTYL ACETATE	540-88-5	ppm	200		
tert-BUTYL HYDROPEROXIDE	75-91-2			No BC exposure limit	
n-BUTYL METHACRYLATE	97-88-1	ppm	50		
CADUSAFOS	95465-99-9			No BC exposure limit	
CALCIUM CARBONATE (incl. LIMESTONE, MARBLE), TOTAL	1317-65-3	mg/m ³	10	20	
CALCIUM CHROMATE, as Cr, TOTAL	13765-19-20	mg/m ³	0.001		
CALCIUM SILICATE, naturally occurring as WOLLASTONITE	1344-95-2	mg/m ³		No BC exposure limit	
CALCIUM SILICATE, synthetic nonfibrous	1344-95-2	mg/m ³	10 (E)(N)		
CAPROLACTAM DUST	105-60-2	mg/m ³	1	3	
CAPTAFOL	2425-06-1	mg/m ³	0.1		
CARBARYL	63-25-2	mg/m ³	5		
CARBON DIOXIDE	124-38-9	ppm	5000	15000	
CARBON DISULFIDE	75-15-0	ppm	4	12	
CARBON MONOXIDE	630-08-0	ppm	25	100	
CARBON TETRACHLORIDE	56-23-5	ppm	2		
CARFENTRAZONE-ETHYL	128639-02-1			No BC exposure limit	
CHLORDANE	57-74-9	mg/m ³	0.5		
CHLORDANE, INHALABLE FRACTION & VAPOUR	57-74-9	mg/m ³		No BC exposure limit	
CHLORINE	7782-50-5	ppm	0.5	1	
CHLORINE DIOXIDE	10049-04-4	ppm	0.1	0.3	
CHLOROACETIC ACID	79-11-8	ppm	0.3		
o-CHLOROBENZYLIDENE MALONONITRILE	2698-41-1	ppm			0.05
CHLOROBROMOMETHANE (see BROMOCHLOROMETHANE)	74-97-5			(See individual exposure limits for BROMOCHLOROMETHANE)	
1-CHLORO-1,1-DIFLUOROETHANE	75-68-3	ppm	1000		
CHLORODIFLUOROMETHANE	75-45-6	ppm	500	1250	
CHLOROFORM	67-66-3	ppm	2		
β-CHLOROPRENE	126-99-8	ppm	10		
CHLOROTRIFLUOROMETHANE	75-72-9	ppm	1000		
CHROMITE ORE PROCESSING (CHROMATE), as Cr, TOTAL		mg/m ³	0.05		

CHROMIUM, METAL, TOTAL	7440-47-3	mg/m ³	0.5		
CHROMIUM, Cr(III) COMPOUNDS, TOTAL	7440-47-3	mg/m ³	0.5		
CHROMIUM, INSOLUBLE, Cr(VI) COMPOUNDS, TOTAL	7440-47-3	mg/m ³	0.01		
CHROMIUM, WATER-SOLUBLE, Cr(VI) COMPOUNDS, TOTAL	7440-47-3	mg/m ³	0.025		0.1
CHROMIUM and INORGANIC COMPOUNDS:					
METALIC CHROMIUM, as Cr(0), INHALABLE	7440-47-3			No BC exposure limit	
TRIVALENT CHROMIUM COMPOUNDS, as Cr(III), INHALABLE	7440-47-3			No BC exposure limit	
HEXVALENT CHROMIUM COMPOUNDS, as Cr(VI), INHALABLE	7440-47-3			No BC exposure limit	
CHROMYL CHLORIDE, as Cr(VI), INHALABLE FRACTION & VAPOUR	7440-47-3			No BC exposure limit	
CHROMITE ORE PROCESSING (also known as CHROMITE ORE PROCESSING (CHROMATE), as Cr, TOTAL)		mg/m ³	0.05		
CHROMYL CHLORIDE, TOTAL	14977-61-8	ppm	0.025		
CITRAL, INHALABLE	5292-40-5			No BC exposure limit	
CLOPIDOL	2971-90-6	mg/m ³	10		
COBALT and INORGANIC COMPOUNDS, as Co, TOTAL	7440-48-4	mg/m ³	0.02		
COBALT and INORGANIC COMPOUNDS, as Co, INHALABLE	7440-48-4			No BC exposure limit	
CRESOL, ALL ISOMERS	1319-77-3, 95-48-7, 108-39-4, 106-44-5	mg/m ³	10		
CUMENE	98-82-8	ppm	25	75	
CYANAZINE	21725-46-2			No BC exposure limit	
CYANOACRYLATES, ETHYL and METHYL (also known as "ETHYL CYANOACRYLATE" and "METHYL 2-CYANOACRYLATE" respectively)	7085-85-0, 137-05-3			(See individual exposure limits for ETHYL CYANOACRYLATE and METHYL 2-CYANOACRYLATE)	
CYANOGEN	460-19-5	ppm	10		
CYANOGEN BROMIDE	506-68-3			No BC exposure limit	
CYCLOPENTADIENE	542-92-7	ppm	75		
DIBUTYL PHOSPHATE	107-66-4	ppm	1	2	
DICHLOROMETHANE	75-09-2	ppm	25		
DICYCLOHEXYLMETHANE-4,4'-DIISOCYANATE	5124-30-1	ppm	0.005		0.01
DICYCLOPENTADIENE	77-73-6	ppm	5		
DICYCLOPENTADIENE, including CYCLOPENTADIENE	77-73-6, 542-92-7			(See individual exposure limits for CYCLOPENTADIENE and DICYCLOPENTADIENE)	
2,4-DICHLOROPHOXYACETIC ACID AND ITS ESTERS	94-75-7	mg/m ³	10	20	
DIELDRIN	60-57-1	mg/m ³	0.25		
DIETHANOLAMINE	111-42-2	mg/m ³	2		
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5			No BC exposure limit	
N,N-DIETHYLHYDROXYLAMINE	3710-84-7			No BC exposure limit	

DIISOCYANATES, N.O.S.		ppm	0.005		0.01
DIMETHOXYMETHANE	109-87-5	ppm	1000	1250	
DIMETHYL ETHER	115-10-6	ppm	1000		
DIMETHYL SULFATE	77-78-1	ppm			0.1
DIMETHYLACETAMIDE (also known as N,N-DIMETHYLACETAMIDE)	127-19-5	ppm	10		
DIMETHYLFORMAMIDE	68-12-2	ppm	10		
DIMETHYLPHENOL, ALL ISOMERS	95-65-8; 95-87-4; 105-67-9; 108-68-9; 526-75-0; 576-26-1; 1300-71-6			No BC exposure limit	
DINITROBENZENE, ALL ISOMERS	99-65-0; 100-25-4; 528-29-0; 25154-54-5	ppm	0.15		
DINITRO-O-CRESOL	534-52-1	mg/m ³	0.2		
n-DIOCTYL PHTHALATE	117-84-0	mg/m ³	5		
ENDOSULFAN	115-29-7	mg/m ³	0.1		
ENFLURANE	13838-16-9	ppm	2		
EPICHLOROHYDRIN	106-89-8	ppm	0.1		
EPN, INHALABLE	2104-64-5	mg/m ³	0.1		
EPN, INHALABLE FRACTION & VAPOUR	2104-64-5			No BC exposure limit	
ETHYL ACETATE	141-78-6	ppm	150		
ETHYL CYANOACRYLATE	7085-85-0	ppm	0.2		
ETHYL ISOCYANATE	109-90-0			No BC exposure limit	
ETHYL METHACRYLATE	97-63-2	ppm	50		
ETHYLENE DIBROMIDE	106-93-4	ppm	0.5		
ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)	107-06-2	ppm	1	2	
ETHYLENE GLYCOL, AEROSOL	107-21-1	mg/m ³			100
ETHYLENE GLYCOL, PARTICULATE	107-21-1	mg/m ³	10	20	
ETHYLENE GLYCOL, VAPOUR	107-21-1	ppm			50
ETHYLENEIMINE	151-56-4	ppm	0.5		
ETHYLENE OXIDE	75-21-8	ppm	0.1	1	
ETHYLIDENE NORBORNENE	16219-75-3	ppm			5
FLUDIOXONIL	131341-86-1			No BC exposure limit	
FLUORINE	7782-41-4	ppm	0.1		
FLUORINE, as F	7782-41-4	ppm	(See individual exposure limit for FLUORINE)		
FLUOROXENE	406-90-6	ppm	2		
FOLPET	133-07-3			No BC exposure limit	
FORMALDEHYDE	50-00-0	ppm	0.3		1
FURFURAL	98-01-1	ppm	2		
FURFURYL ALCOHOL	98-00-0	ppm	5	10	
GLYCERIN MIST, TOTAL	56-81-5	mg/m ³	10		
GLYCERIN MIST, RESPIRABLE	56-81-5	mg/m ³	3		
GYPSUM, TOTAL	13397-24-5	mg/m ³	10	20	
HALOTHANE	151-67-7	ppm	2		
HARD METALS, containing COBALT and TUNGSTEN CARBIDE, as Co	7440-48-4, 12070-12-1	mg/m ³		No BC exposure limit	
HEXAMETHYLENE DIISOCYANATE	822-06-0	ppm	0.005		0.01
n-HEXANE	110-54-3	ppm	20		
HEXANE, ALL ISOMERS except n-HEXANE	75-83-2, 79-29-8, 96-14-0, 107-83-5	ppm	200		
HEXYLENE GLYCOL	107-41-5	ppm			25

HYDROGEN FLUORIDE, as F	7664-39-3	ppm			2
HYDROGEN SULFIDE	7783-06-4	ppm			10
INDENE	95-13-6	ppm	10		
INDIUM TIN OXIDE, as In	50926-11-9			No BC exposure limit	
IODIDES				No BC exposure limit	
IODINE	7553-56-2	ppm			0.1
IRON OXIDE, FUME	1309-37-1	mg/m ³	5	10	
IRON PENTACARBONYL	13463-40-6	ppm	0.01		
IRON SALTS, SOLUBLE, as Fe		mg/m ³	1	2	
ISOBUTYL ACETATE	110-19-0	ppm	150		
ISOBUTYL NITRITE, INHALABLE FRACTION & VAPOUR	542-56-3	ppm			1
ISOPHORONE DIISOCYANATE	4098-71-9	ppm	0.005		0.01
ISOPROPYL ACETATE	108-21-4	ppm	100	200	
ISOPROPYL GLYCIDYL ETHER (IGE)	4016-14-2	ppm			50
LEAD CHROMATE, as Cr(VI), INHALABLE	7758-97-6			No BC exposure limit	
LEAD CHROMATE, as Cr, TOTAL	7758-97-6	mg/m ³	0.012		
LEAD CHROMATE, as Pb, TOTAL	7758-97-6	mg/m ³	0.05		
LIQUIFIED PETROLEUM GAS	68476-85-7	ppm	1000	1250	
LITHIUM HYDRIDE	7580-67-8	mg/m ³	0.025		
LITHIUM HYDROXIDE	1310-65-2	mg/m ³			1
MAGNESIUM OXIDE, RESPIRABLE DUST AND FUME, as Mg	1309-48-4	mg/m ³	3	10	
MALEIC ANHYDRIDE	108-31-6	ppm	0.1		
MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, TOTAL	7439-96-5	mg/m ³	0.2		
MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, INHALABLE	7439-96-5			No BC exposure limit	
MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, RESPIRABLE	7439-96-5	mg/m ³	0.02		
MERCURY, ARYL COMPOUNDS	7439-97-6	mg/m ³	0.05		0.1
MESITYL OXIDE	141-79-7	ppm	10	25	
METHOMYL	16752-77-5	mg/m ³	2.5		
METHOXYFLURANE	76-38-0	ppm	2		
2-METHOXY-1-PROPANOL	1589-47-5	ppm	20	40	
1-METHOXYPROPYL-2-ACETATE	108-65-6	ppm	50	75	
2-METHOXYPROPYL-1-ACETATE	70657-70-4	ppm	20	40	
METHYLENE BISPHENYL ISOCYANATE	101-68-8	ppm	0.005		0.01
METHYLENE bis (4-CYCLOHEXYL-ISOCYANATE)	5124-30-1	ppm	0.005		0.01
4,4'-METHYLENE BIS(2-CHLOROANILINE)	101-14-4	ppm	0.01		
4,4'-METHYLENEDIANILINE	101-77-9	ppm	0.01		
METHYL 2-CYANOACRYLATE	137-05-3	ppm	0.2		
METHYL ETHYL KETONE (MEK)	78-93-3	ppm	50	100	
METHYL PARATHION	298-00-0	mg/m ³	0.2		
METHYL PROPYL KETONE (2-PENTANONE)	107-87-9	ppm	150	250	

METHYLTETRAHYDROPHTHALIC ANHYDRIDE ISOMERS	3425-89-6; 5333-84-6; 11070-44-3; 19438-63-2; 19438-64-3; 26590-20-5; 42498-58-8			No BC exposure limit	
METHYL VINYL KETONE	78-94-4	ppm			0.2
MONOMETHYLFORMAMIDE	123-39-7			No BC exposure limit	
1,5-NAPHTHYLENE DIISOCYANATE	3173-72-6	ppm	0.005		0.01
NATURAL RUBBER LATEX, AS TOTAL PROTEINS, INHALABLE	9006-04-6	mg/m ³	0.001		
NICKEL, ELEMENTAL, SOLUBLE INORGANIC COMPOUNDS (NOS)	7440-02-0	mg/m ³	0.05		
NICKEL, INSOLUBLE INORGANIC COMPOUNDS (NOS)	7440-02-0	mg/m ³	0.05		
NICKEL CARBONYL, as Ni	13463-39-3	ppm	0.001		0.05
NITRAPYRIN	1929-82-4	mg/m ³	10	20	
NITRAPYRIN, INHALABLE FRACTION & VAPOUR	1929-82-4			No BC exposure limit	
NITROGEN DIOXIDE	10102-44-0	ppm			1
5-NITRO-O-TOLUIDINE	99-55-8	mg/m ³	1		
5-NITRO-O-TOLUIDINE, INHALABLE FRACTION & VAPOUR	99-55-8			No BC exposure limit	
2-NITROPROPANE	79-46-9	ppm	5		
NITROUS OXIDE	10024-97-2	ppm	25		
OIL MIST, MINERAL, MILDLY REFINED		mg/m ³	0.2		
OIL MIST, MINERAL, SEVERELY REFINED		mg/m ³	1		
PARAQUAT, as the cation, INHALABLE	4685-14-7			No BC exposure limit	
PARAQUAT, as the cation, RESPIRABLE	4685-14-7	mg/m ³	0.1		
PARAQUAT, as the cation, TOTAL	4685-14-7	mg/m ³	0.5		
PENTACHLORONAPHTHALENE	1321-64-8	mg/m ³	0.5		
PENTACHLORONAPHTHALENE, INHALABLE FRACTION & VAPOUR	1321-64-8			No BC exposure limit	
PENTACHLOROPHENOL	87-86-5	mg/m ³	0.5		
2,4-PENTANEDIONE	123-54-6			No BC exposure limit	
PERACETIC ACID	79-21-0			No BC exposure limit	
PHENYL ISOCYANATE	103-71-9	ppm	0.005		0.01
PHENYL MERCAPTAN	108-98-5	ppm			0.1
PHOSPHINE	7803-51-2	ppm	0.3	1	
o-PHTHALALDEHYDE	643-79-8			No BC exposure limit	
PHTHALIC ANHYDRIDE	85-44-9	ppm	1		
o-PHTHALODINITRILE	91-15-6			No BC exposure limit	
PIPERAZINE AND ITS SALTS, as PIPERAZINE	110-85-0	mg/m ³	0.3	1	
PIPERIDINE	110-89-4	ppm	1		
PLASTER OF PARIS, TOTAL	26499-65-0	mg/m ³	10	20	
PROPOXUR	114-26-1	mg/m ³	0.5		
n-PROPYL ACETATE	109-60-4	ppm	200	250	
PROPYL ACETATE ISOMERS (including ISOPROPYL ACETATE and n-PROPYL ACETATE)	108-21-4, 109-60-4			(See individual exposure limits for ISOPROPYL ACETATE and n-PROPYL ACETATE)	
PROPYLENE GLYCOL ETHYL ETHER	1569-02-4			No BC exposure limit	
PROPYLENEIMINE	75-55-8	ppm	2		
RHODIUM, METAL AND INSOLUBLE					

COMPOUNDS, as Rh	7440-16-6	mg/m ³	0.1	0.3	
RHODIUM, SOLUBLE COMPOUNDS, as Rh	7440-16-6	mg/m ³	0.001	0.003	
SELENIUM AND COMPOUNDS, as Se	7782-49-2	mg/m ³	0.1		
SILICA, AMORPHOUS:					
DIATOMACEOUS EARTH, UNCALCINED, TOTAL	61790-53-2	mg/m ³	4		
DIATOMACEOUS EARTH, UNCALCINED, RESPIRABLE	61790-53-2	mg/m ³	1.5		
PRECIPITATED SILICA and SILICA GEL, TOTAL	112926-00-8	mg/m ³	4		
PRECIPITATED SILICA and SILICA GEL, RESPIRABLE	112926-00-8	mg/m ³	1.5		
SILICA FUME, TOTAL	69012-64-2	mg/m ³	4		
SILICA FUME, RESPIRABLE	69012-64-2	mg/m ³	1.5		
SILICON TETRAHYDRIDE (SILANE)	7803-62-5	ppm	0.5	1	
SILVER AND COMPOUNDS, as Ag	7440-22-4	mg/m ³	0.01	0.03	
SIMAZINE	122-34-9		No BC exposure limit		
STEARATES	57-11-4; 557-04-0; 557-05-1; 822-16-2	mg/m ³	10 (J)		
STODDARD SOLVENT (MINERAL SPIRITS)	8052-41-3	mg/m ³	290	580	
STRONTIUM CHROMATE, as Cr, TOTAL	7789-06-2	mg/m ³	0.0005		
STYRENE	100-42-5	ppm	50	75	
SULFOMETURON METHYL	74222-97-2	mg/m ³	5		
SULFOMETURON METHYL, INHALABLE FRACTION & VAPOUR	74222-97-2		No BC exposure limit		
SULFOXAFLOLOR	946578-00-3		No BC exposure limit		
SULFUR DIOXIDE	7446-09-5	ppm	2	5	
SULPROFOS	35400-43-2	mg/m ³	1		
TANTALUM and TANTALUM OXIDE dusts, as Ta	7440-25-7	mg/m ³	5		
TEMEPHOS, TOTAL	3383-96-8		(See individual exposure limits for ABATE (TEMEPHOS), TOTAL)		
1,1,2,2-TETRABROMOETHANE, INHALABLE FRACTION & VAPOUR	79-27-6	ppm	0.1		
1,1,1,2-TETRACHLORO-2,2-DIFLUOROETHANE	76-11-9	ppm	500		
1,1,2,2-TETRACHLORO-1,2-DIFLUOROETHANE	76-12-0	ppm	200		
TETRAETHYL LEAD, as Pb	78-00-2	mg/m ³	0.075		
TETRAMETHYL LEAD, as Pb	75-74-1	mg/m ³	0.075		
TETRAMETHYL SUCCINONITRILE	3333-52-6	ppm	0.5		
THIACLOPRID	111988-49-9		No BC exposure limit		
THIOGLYCOLIC ACID	68-11-1	ppm	1		
THIOGLYCOLIC ACID and salts	68-11-1		No BC exposure limit		
THIONYL CHLORIDE	7719-09-7	ppm			1
THIRAM	137-26-8	mg/m ³	1		
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE and INDIUM	7440-31-5; 18282-10-5; 21651-19-4		(See individual exposure limits for TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE, as Sn, METAL; and for TIN and INORGANIC COMPOUNDS, excluding TIN		

TIN OXIDE, as Sn			HYDRIDE, as Sn, OXIDE and INORGANIC COMPOUNDS)		
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE, as Sn, METAL	7440-31-5	mg/m ³	2		
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE, as Sn, OXIDE and INORGANIC COMPOUNDS	7440-31-5	mg/m ³	2		
2,4-TOLUENE DIISOCYANATE (TDI)	584-84-9	ppm	0.005		0.01
2,6-TOLUENE DIISOCYANATE (TDI)	91-08-7	ppm	0.005		0.01
2,4- and 2,6-TOLUENE DIISOCYANATE AS A MIXTURE	584-84-9 91-08-7		No BC exposure limit (see section 5.51, <i>OHSR</i>)		
TRIBUTYL PHOSPHATE	126-73-8	ppm	0.2		
1,2,3-TRICHLOROPROPANE	96-18-4	ppm	10		
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	ppm	500	1250	
TRIMELLITIC ANHYDRIDE	552-30-7	mg/m ³			0.04
TRIMETHYL HEXAMETHYLENE DIISOCYANATE	28679-16-5	ppm	0.005		0.01
2,4,6-TRINITROTOLUENE (TNT)	118-96-7	mg/m ³	0.1		
2,4,6-TRINITROTOLUENE (TNT), INHALABLE FRACTION & VAPOUR	118-96-7		No BC exposure limit		
TRIORTHOCRESYL PHOSPHATE	78-30-8	mg/m ³	0.1		
TRI-n-BUTYLTIN COMPOUNDS	688-73-3	mg/m ³	0.05		
TUNGSTEN as W:					
Metal and insoluble compounds	7440-33-7	mg/m ³	5	10	
Soluble compounds	7440-33-7	mg/m ³	1	3	
URANIUM COMPOUNDS, NATURAL, SOLUBLE, as U	7440-61-1	mg/m ³	0.05		
VEGETABLE OIL MIST, RESPIRABLE FRACTION, EXCEPT CASTOR, CASHEW NUT, OR SIMILAR IRRITATING OILS	8008-89-7	mg/m ³	3		
VINYLDENE CHLORIDE	75-35-4	ppm	1		
VINYL TOLUENE, ALL ISOMERS	25013-15-4	ppm	25	75	
WARFARIN	81-81-2	mg/m ³	0.1		
WOOD DUST:					
ALLERGENIC		mg/m ³	1		
NON-ALLERGENIC, HARDWOOD		mg/m ³	1		
NON-ALLERGENIC, SOFTWOOD		mg/m ³	2.5		
m-XYLENE ALPHA, ALPHA'-DIAMINE	1477-55-0	mg/m ³			0.1
ZINC CHROMATES, as Cr, TOTAL	11103-86-9, 13530-65-9, 37300-23-5	mg/m ³	0.01		
ZINC STEARATE, TOTAL	557-05-1	mg/m ³	10	20	

(E) = the value is for particulate matter containing no asbestos and less than 1% crystalline silica

(N) = the 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m³ for the respirable fraction

(J) = does not include stearates of toxic metals

2. Dusts

The Board categorizes particulates that are insoluble or poorly soluble in water and do **not** cause toxic effects other than by inflammation or the mechanism of "lung overload", as "nuisance dusts".

A "nuisance dust" will have an exposure limit or TLV of 10 mg/m³ for total particulate. It is recognized that the respirable fraction of "nuisance dusts" may also be measured. The equivalent exposure limit for respirable particulate is 3 mg/m³. Respirable particulate refers to the fraction of

inhaled dust that is capable of passing through the upper respiratory tract to the gas exchange region of the lung. Total particulate refers to a wide range of particle sizes capable of being deposited in the various regions of the respiratory tract.

EFFECTIVE DATE: May 15, 2019

AUTHORITY: s. 5.48, *Occupational Health and Safety Regulation*

CROSS REFERENCES:

HISTORY: Effective May 15, 2019, housekeeping changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

CHLORDANE
CHLORDANE, INHALABLE FRACTION & VAPOUR
o-CHLOROBENZYLIDENE MALONONITRILE
COBALT and INORGANIC COMPOUNDS, as Co, TOTAL
COBALT and INORGANIC COMPOUNDS, as Co, INHALABLE
CYANAZINE
CYCLOPENTADIENE
DICYCLOPENTADIENE
DICYCLOPENTADIENE, including CYCLOPENTADIENE
DIMETHYLPHENOL, ALL ISOMERS
DINITROBENZENE, ALL ISOMERS
DINITRO-O-CRESOL
EPN, INHALABLE
EPN, INHALABLE FRACTION & VAPOUR
FLUORINE, as F
INDIUM TIN OXIDE, as In
ISOBUTYL NITRITE, INHALABLE FRACTION & VAPOUR
4,4'-METHYLENE BIS(2-CHLOROANILINE)
METHYLTETRAHYDROPHthalic ANHYDRIDE ISOMERS
METHYL VINYL KETONE
MONOMETHYLFORMAMIDE
NITRAPYRIN
NITRAPYRIN, INHALABLE FRACTION & VAPOUR
5-NITRO-O-TOLUIDINE, INHALABLE
5-NITRO-O-TOLUIDINE, INHALABLE FRACTION & VAPOUR
PENTACHLORONAPHTHALENE
PENTACHLORONAPHTHALENE, INHALABLE FRACTION & VAPOUR
o-PHTHALALDEHYDE
PROPYLENE GLYCOL ETHYL ETHER
SULFOMETURON METHYL
SULFOMETURON METHYL, INHALABLE FRACTION & VAPOUR
SULFOXAFLOL
TEMEPHOS, TOTAL
1,1,2,2-TETRABROMOETHANE, INHALABLE FRACTION & VAPOUR
TETRAMETHYL SUCCINONITRILE
THIACLOPRID
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE and INDIUM TIN OXIDE, as Sn
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE, as Sn, METAL
TIN and INORGANIC COMPOUNDS, excluding TIN HYDRIDE, as Sn, OXIDE and INORGANIC
COMPOUNDS
2,4,6-TRINITROTOLUENE (TNT), TOTAL
2,4,6-TRINITROTOLUENE (TNT), INHALABLE FRACTION & VAPOUR
m-XYLENE ALPHA, ALPHA'-DIAMINE

Effective July 3, 2018, housekeeping changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

ALDICARB
ALLYL METHACRYLATE
BENDIOCARB
BORON TRIFLUORIDE ETHERS, as BF₃
tert-BUTYL HYDROPEROXIDE
CALCIUM CHROMATE, as Cr, TOTAL
CARFENTRAZONE-ETHYL

CHLORINE
CHLORINE DIOXIDE
CHROMITE ORE PROCESSING (CHROMATE), as Cr, TOTAL
CHROMIUM AND INORGANIC COMPOUNDS

- METALLIC CHROMIUM, as Cr(0), INHALABLE
- TRIVALENT CHROMIUM COMPOUNDS, as Cr(III), INHALABLE
- HEXAVALENT CHROMIUM COMPOUNDS, as Cr(VI), INHALABLE
- CHROMYL CHLORIDE, as Cr(VI), INHALABLE FRACTION & VAPOUR
- CHROMITE ORE PROCESSING, TOTAL

CHROMYL CHLORIDE, TOTAL
CYANOACRYLATES, ETHYL and METHYL
DIMETHYLACETAMIDE
DIMETHYLFORMAMIDE
ETHYL CYANOACRYLATE
FLUDRIOXONIL
ISOPROPYL ACETATE
LEAD CHROMATE, as Cr(VI), INHALABLE
LEAD CHROMATE, as Cr, TOTAL
LEAD CHROMATE, as Pb, TOTAL
METHYL 2-CYANOACRYLATE
PARAQUAT, as the cation
PHOSPHINE
n-PROPYL ACETATE
PROPYL ACETATE ISOMERS
STRONTIUM CHROMATE, as Cr, TOTAL
THIOGLYCOLIC ACID and salts
ZINC CHROMATES, as Cr, TOTAL

Effective July 3, 2018, housekeeping changes were made to remove the following six substances from the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

ACETYLENE
ARGON
HELIUM
HYDROGEN
NEON
NITROGEN

Effective July 3, 2018, the following editorial changes were made to the Table of Occupational Exposure Limits for Excluded Substances to improve readability and clarity:

- Adding a clarifying opening statement regarding substances' size-selective exposure limits
- Standardizing terminology for substances and exposure limits with size-selective fractions
- Changing "No previous limit" to "No BC exposure limit"
- Implementing formatting changes

Effective June 1, 2018, housekeeping changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

GLYCERIN MIST, TOTAL AEROSOL
MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, INHALABLE FRACTION
MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, RESPIRABLE FRACTION
NICKEL CARBONYL, as Ni

Effective June 1, 2018, housekeeping changes were made to remove sixteen substances from the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

ACETONE
ALIPHATIC HYDROCARBON GASES, ALKANES [C₁ - C₄]
BARIUM SULFATE
1-BROMOPROPANE

BUTANE, ISOMERS:

- n-BUTANE
- ISOBUTANE

ETHYL TERT-BUTYL ETHER
1-METHOXY-2-PROPANOL
METHYL FORMATE
METHYL ISOAMYL KETONE
METHYL ISOCYANATE
NAPHTHALENE
OXALIC ACID, ANHYDROUS
OXALIC ACID, DIHYDRATE
PENTANE, ALL ISOMERS
TRICHLOROACETIC ACID
TRIETHYLAMINE

The following substances / chemical names were corrected:

- GLYCERIN MIST, RESPIRABLE was corrected to GLYCERIN MIST, RESPIRABLE FRACTION
- MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn was corrected to MANGANESE, ELEMENTAL AND INORGANIC COMPOUNDS, as Mn, TOTAL DUST
- NICKEL CARBONYL was corrected to NICKEL CARBONYL, as Ni

Effective June 1, 2017, housekeeping changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

ACETAMIDE
ISOBUTANE
CADUSAFOS
CAPTAFOL
β-CHLOROPRENE
ETHYLENE GLYCOL (AEROSOL)
FOLPET
FURFURAL
HEXYLENE GLYCOL
PHTHALIC ANHYDRIDE
STEARATES
TUNGSTEN as W, metal and insoluble compounds; soluble compounds

Effective July 15, 2016, housekeeping changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances in accordance with the OEL review and adoption procedure:

BORON TRIBROMIDE
BORON TRICHLORIDE
BORON TRIFLUORIDE
SEC-BUTYL ACETATE
TERT-BUTYL ACETATE
CALCIUM SILICATE, naturally occurring as WOLLASTONITE
CALCIUM SILICATE, synthetic nonfibrous
CYANOGEN
HARD METALS, containing COBALT and TUNGSTEN CARBIDE as Co
ISOBUTYL ACETATE
PROPOXUR
SIMAZINE
TOLUENE DIISOCYANATE, 2,4- and 2,6- as a mixture
TRIORTHOCRESYL PHOSPHATE
WARFARIN

Effective May 1, 2015, changes were made to add the following substances to the Table of Occupational Exposure Limits for Excluded Substances:

ACETYLENE

CYANOGEN BROMIDE (NEW TLV)
LITHIUM HYDRIDE
METHYL FORMATE
OXALIC ACID, ANHYDROUS and DIHYDRATE
1,2,3-TRICHLOROPROPANE
TRIETHYLAMINE

Effective February 1, 2015, changes were made to remove eight substances from the Table of Occupational Exposure Limits for Excluded Substances:

BERYLLIUM AND COMPOUNDS
CARBONYL SULFIDE
DIACETYL
ETHYL FORMATE
ALPHA-METHYL STYRENE
NONANE
PORTLAND CEMENT
VANADIUM PENTOXIDE

On April 7, 2014 changes were made to correct the exposure limit for Ethylidene norbornene.

Effective April 1, 2014, changes were made to add 17 substances to the Table of Occupational Exposure Limits for Excluded Substances:

ARGON
ATRAZINE
BARIUM SULFATE
1-BROMOPROPANE
ETHYLIDENE NORBORNENE
ETHYL ISOCYANATE
HELIUM
HYDROGEN
METHOMYL
METHYL ISOCYANATE
NAPHTHALENE
NEON
NITROGEN
PENTACHLOROPHENOL
PENTANE, all isomers
PERACETIC ACID
TRICHLOROACETIC ACID

Effective May 1, 2013, changes were made to add eight substances to the Table of Occupational Exposure Limits for Excluded Substances:

ALIPHATIC HYDROCARBON GASES, ALKANES [C1-C4]
CLOPIDOL
DIETHYLENE GLYCOL MONOBUTYL ETHER
N,N-DIETHYLHYDROXYLAMINE
ETHYL TERT-BUTYL ETHER
MANGANESE, elemental and inorganic compounds, as Mn
METHYL ISOAMYL KETONE
TRIBUTYL PHOSPHATE

Effective April 10, 2012, changes were made to add six substances to the Table of Occupational Exposure Limits for Excluded Substances:

ALLYL BROMIDE
CARBONYL SULFIDE
DIACETYL
ETHYL FORMATE
NONANE
o-PHTHALODINITRILE

CAS No for piperazine and its salts was corrected from 142-64-3 to 110-85-0.

Housekeeping change effective October 14, 2011 to correct the reference to section 5.57 of the regulation. This is not a substantive change.

Effective September 15, 2011, changes were made to remove seven substances from the Table of Occupational Exposure Limits for Excluded Substances:

ACETIC ANHYDRIDE
CARBON BLACK
ETHYL BENZENE
METHYL ISOPROPYL KETONE
SOAPSTONE
SOAPSTONE, RESPIRABLE
4,4' THIOBIS (6-tert-butyl-m-CRESOL)

Effective June 1, 2011, changes were made to remove three substances from the Table of Occupational Exposure Limits for Excluded Substances:

COTTON DUST, raw
METHYL ISOBUTYL KETONE
THALLIUM AND SOLUBLE COMPOUNDS

Housekeeping changes effective June 1, 2011, to replace "exposure level" with "exposure limit" in Item 3 of the Background of this Policy. These changes also add 2,4-Pentanedione to the Table of Occupational Exposure Limits for Excluded Substances pursuant to the Occupational Exposure Limit review and adoption procedure approved by the Board of Directors at their March 2010 meeting.

Housekeeping changes effective April 19, 2011 in accordance with the new Occupational Exposure Limit review and adoption procedure approved by the Board of Directors at their March 2010 meeting. The changes add seven substances to the Table of Occupational Exposure Limits for Excluded Substances:

ACETIC ANHYDRIDE
CARBON BLACK
ETHYL BENZENE
MALEIC ANHYDRIDE
METHYL ISOPROPYL KETONE
SOAPSTONE
4,4' THIOBIS (6-tert-butyl-m-CRESOL)

Housekeeping changes effective September 15, 2010 to update regulation reference, delete practice reference, and make formatting changes.

The Table of Occupational Exposure Limits for Excluded Substances has been amended to include 18 substances for which the Board of Directors has made an exception to the adoption of these substances for which the American Conference of Governmental Industrial Hygienists changed the Threshold Limit Values in 2008 and 2009. The effect of this amendment is that the substances will be re-assigned the OELs that were in effect prior to the revision by ACGIH. The Table of Occupational Exposure Limits for Excluded Substances has been amended to delete two substances so the more protective American Conference of Governmental Industrial Hygienists Threshold Limit Values will now apply to these substances. The revisions were made to the Table effective September 1, 2010.

The Table of Occupational Exposure Limits for Excluded Substances has been amended to include new or revised substances for which the American Conference of Governmental Industrial Hygienists has changed the Threshold Limit Values in 2010. The effect of this amendment was that the existing occupational exposure limits for these substances continue to be in effect. These substances were added to the Table effective April 1, 2010.

This item was originally developed to implement the amendments made to the *Occupational Health and Safety Regulation*, effective October 29, 2003 pertaining to occupational exposure limits. A review of the policy was conducted to ensure that all substances for which an exception was warranted were listed, and there was no duplication with the information provided by the ACGIH.

APPLICATION:

Each amendment of this policy applies to incidents occurring on and after the effective date of the amendment. If a decision made before the amendment effective date is within the appeal period, at Review Division, or at WCAT, it remains subject to the policy in effect at the time of the incident.

BACKGROUND

1. Explanatory Notes

Section 5.54 sets out the requirement for an exposure control plan in certain circumstances and the necessary elements if an exposure control plan is required. Among those elements is health monitoring under section 5.54(2)(f).

2. The Regulation

Section 5.54:

(1) An exposure control plan must be implemented when

- (a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit,
- (b) measurement is not possible at 50% of the applicable exposure limit, or
- (c) otherwise required by this Regulation.

(2) The exposure control plan must incorporate the following elements:

- (a) a statement of purpose and responsibilities;
- (b) risk identification, assessment and control;
- (c) education and training;
- (d) written work procedures, when required;
- (e) hygiene facilities and decontamination procedures, when required;
- (f) health monitoring, when required;
- (g) documentation, when required.

(3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable.

POLICY

At the request of persons outside the Board or Board staff, the Board may arrange for samples to be analyzed as part of a health monitoring program under section 5.54(2)(f). The Board will have the results organized into broad categories of body burden levels and reported to the person who made the request and to Board staff and industry representatives concerned with the particular program.

The actual body burden levels of individuals are confidential and will only be revealed to a worker if the worker inquires, and to anyone else with the worker's written authorization. Questions regarding specific analysis results should be referred to the Board staff concerned with the particular program.

EFFECTIVE DATE:	April 1, 2001
AUTHORITY:	s. 5.54(2)(f), <i>Occupational Health and Safety Regulation</i>
CROSS REFERENCES:	
HISTORY:	Housekeeping changes effective September 15, 2010 to delete practice reference and make formatting changes. Replaces Policy No. 13.01(6) of the Prevention Division <i>Policy and Procedure Manual</i>
APPLICATION:	This Item results from the 2000/2001 "editorial" consolidation of all prevention policies into the <i>Prevention Manual</i> . The POLICY in this Item merely continues the substantive requirements of Policy No. 13.01(6), as they existed prior to the Effective Date, with any wording changes necessary to reflect legislative and regulatory changes since Policy No. 13.01(6) was issued.

CONTROLLING EXPOSURE

R5.48-1 [RE: Chemical and Biological Substances - Occupational Exposure Limits](#)

R5.54-1 [RE: Chemical and Biological Substances - Controlling Exposure - Exposure Control Plan](#)