



**DEPARTMENT OF LABOR OF ECONOMIC OPPORTUNITY**  
**DIRECTOR'S OFFICE**  
**CONSTRUCTION SAFETY AND HEALTH STANDARD**

Filed with the Secretary of State on January 15, 2002 (as amended March 13, 2013)  
(as amended February 22, 2017) **(as amended September 13, 2019)**

These rules become effective immediately upon filing with the Secretary of State  
unless adopted under section 33, 44, or 45a(6) of 1969 PA 306.

Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of labor and economic opportunity  
by sections 14 and 24 of 1974 PA 154, MCL 408.1014 and 408.1024,  
and Executive Reorganization Orders Nos. 1996-1, 1996-2, 2003-1, 2008-4, 2011-4, and 2019-3  
MCL 330.3101, 445.2001, 445.2011, 445.2025, 445.2030, and 125.1998)

R 325.60151, R 325.60155, R 325.60156, R 325.60157, R 325.60158, R 325.60159, R 325.60160, and  
R 325.60161, of the Michigan Administrative Code are amended, and R 325.60151a is rescinded, as  
follows:

**CONSTRUCTION SAFETY AND HEALTH STANDARD**  
**PART 601. AIR CONTAMINANTS FOR CONSTRUCTION**

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**R 325.60151 Scope, application, and availability of standards.**

**Rule 1.** (1) An employer shall ensure that employee exposures to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, as listed in R 325.60154 to R 325.60161, are avoided.

(2) To achieve compliance with subrule (1) of this rule, an employer shall ensure that administrative or engineering controls are implemented whenever feasible. If administrative or engineering controls are not feasible to achieve full compliance, then protective equipment or other protective measures must be used to keep the exposure of employees to air contaminants within the limits prescribed in this rule. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Respirators must be used in a manner that is in compliance with Occupational Health Standard Part 451 "Respiratory Protection."

(3) General Industry Safety and Health Standard Part 302 "Vinyl Chloride," applies to the exposure of every employee to vinyl chloride in every employment and place of employment covered by these rules in place of any different standard on exposure to vinyl chloride that would otherwise be applicable under subrule (1) of this rule.

(4) The "Threshold Limit Values (TLV) of the American Conference of Governmental Industrial Hygienists (A.C.G.I.H.) for 1970" appear in R 325.60153 to R 325.60161. The Threshold Limit Values identified in these rules as Maximum Allowable Concentrations (MAC) are specified in these rules.

(5) These rules do not apply to the following types of employment:

- (a) Agriculture.
- (b) Domestic.
- (c) Mining.
- (d) General industry work.

(6) Exposure to air contaminants in general industry work is covered by General Industry Safety and Health Standard Part 301 "Air Contaminants for General Industry," as referenced in R 325.60151a.

(7) The following Michigan Occupational Safety and Health Administration (MIOSHA) standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Labor and Economic Opportunity, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at the following website:

[www.michigan.gov/mioshastandards](http://www.michigan.gov/mioshastandards). For quantities greater than 5, the cost, as of the time of adoption of these rules, is 4 cents per page.

(a) General Industry Safety and Health Standard Part 301. "Air Contaminants for General Industry," R 325.51101 to R 325.51108.

(b) General Industry Safety and Health Standard Part 302. "Vinyl Chloride," R 325.51401 to R 325.51414.

(c) General Industry and Construction Safety and Health Standard Part 304. "Ethylene Oxide," R 325.51151 to R 325.51177.

(d) General Industry and Construction Safety and Health Standard Part 306. "Formaldehyde," R 325.51451 to R 325.51477.

(e) General Industry and Construction Safety and Health Standard Part 307. "Acrylonitrile," R 325.51501 to R 325.51527.

(f) General Industry and Construction Safety and Health Standard Part 308. "Inorganic Arsenic." R 325.51601 to R 325.51628.

(g) General Industry Construction Safety and Health Standard Part 311. "Benzene," R 325.77101 to R 325.77115.

(h) Occupational Health Standard Part 312. "1,3-Butadiene," R 325.50091 to R 325.50093.

(i) Occupational Health Standard Part 313. "Methylene Chloride," R 325.51651 to R 325.51653.

(j) General Industry and Construction Safety and Health Standard Part 314. "Coke Oven Emissions," R 325.50100 to R 325.50136.

(k) Occupational Health Standard Part 451. "Respiratory Protection," R 325.60051 to R 325.60052.

(l) Occupational Health Standard Part 602. "Asbestos Standards for Construction," R 325.51301 to R 325.51302.

(m) Construction Safety and Health Standard Part 603. "Lead Exposure in Construction," R 325.51983 to R 325.51993.

(n) Occupational Health Standard Part 604. "Chromium (VI) in Construction," R 325.51995 to R 325.51997.

(o) Construction Safety and Health Standard Part 605. "Methylenedianiline (MDA) in Construction," R 325.60501 to R 325.60501.

(p) Construction Safety and Health Standard Part 609. "Cadmium in Construction," R 325.60901 to R 325.60901.

(q) Occupational Health Standard Part 690. "Silica in Construction," R 325.69001 to R 325.69015.

#### **R 325.60151a Rescinded.**

#### **R 325.60152 Definitions.**

Rule 2. (1) "Maximum allowable concentration" or "MAC" means the threshold limit value or the time-weighted average 8-hour airborne concentration of a contaminant to which a person may be safely exposed.

(2) "Mg/m<sup>3</sup>" means milligrams of particulate per cubic meter of air.

(3) "Mppcf" means millions of particulates per cubic foot of air based on impinger samples counted by light field microscopic techniques.

(4) "Non-respirable atmosphere" means an atmosphere that contains insufficient oxygen, or an elevated level of contaminants that may render a person incapable of self-rescue.

(5) "Ppm" means parts of vapor or gas per million parts of air by volume at 25 degrees Celsius and 760 millimeters of mercury pressure.

(6) "Source" means a process or equipment that releases a contaminant into the air in concentrations exceeding the MAC.

#### **R 325.60153 Contaminants; exposures; MAC.**

**Rule 3.** (1) An employer shall not allow an employee to be exposed to a contaminant at concentrations in excess of the MAC as listed in R 325.60154 to R 325.60161.

(2) An employer shall not allow an employee to be exposed to a contaminant or combination of contaminants in concentrations that are hazardous or injurious to the person's health.

#### **R 325.60154 Maximum allowable concentrations.**

**Rule 4.** (1) Maximum allowable concentrations of air contaminants based on a repeated 8-hour work day exposure are listed in tables 1 to 7 in R 325.60155 to R 325.60161.

(2) A substance in tables 1 to 6 that is preceded by the letter A, C, S, or STEL is an especially hazardous contaminant and all the following precautions shall be taken:

(a) If the substance is preceded by the letter "A", then an employer shall ensure that an employee or any part of an employee's anatomy is not exposed to, or allowed to come in contact with, the substance by means of any respiratory, oral, or skin route.

(b) If the substance is preceded by the letter "C", then its MAC means the highest concentration at which an employer may allow a person to be exposed at any time unless noted otherwise. This concentration is commonly referred to as a "ceiling."

(c) If the substance is preceded by the letter "S", then an employer shall ensure that precautions are taken to prevent skin absorption.

(d) If the substance is preceded by "STEL", then it means the STEL listed. For example, an employee's 15-minute, time-weighted average exposure, shall not be exceeded at any time during a work day. The STEL is commonly referred to as the "short-term exposure limit."

**R 325.60155 Maximum allowable concentrations for substances; A and B.**

**Rule 5.** Table 1 for substances A and B, are as follows:

TABLE 1 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; A AND B				
SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Abate	3383-96-8	---	15
	Acetaldehyde	75-07-0	200	360
	Acetic acid	64-19-7	10	25
	Acetic anhydride	108-24-7	5	20
	Acetone	67-64-1	1,000	2,400
	Acetonitrile	75-05-8	40	70
	Acetylene		Inert gas	
	Acetylene dichloride	See 1,2-Dichloroethylene		
	Acetylene tetrabromide	79-27-6	1	14
	Acrolein	107-02-8	0.1	0.25
S	Acrylamide	79-06-1	---	0.3
S	Acrylonitrile	See GI & CS 307. Acrylonitrile*		
S	Aldrin	309-00-2	---	0.25
S	Allyl alcohol	107-18-6	2	5
	Allyl chloride	107-05-1	1	3
C	Allyl glycidyl ether (AGE)	106-92-3	10	45
	Allyl propyl disulfide	2179-59-1	2	12
	Alundum (Al <sub>2</sub> O <sub>3</sub> )		Inert dust	
	2-Aminoethanol	See Ethanolamine		
	2-Aminopyridine	504-29-0	0.5	2
	Ammonia	7664-41-7	50	35

**TABLE 1  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; A AND B**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Ammonium sulfamate (amate)	7773-06-0	---	15
	n-Amyl acetate	628-63-7	100	525
	sec-Amyl acetate	626-38-0	125	650
S	Aniline	62-53-3	5	19
S	Anisidine (o- and p-isomers)	29191-52-4	---	0.5
	Antimony and compounds (as Sb)	7440-36-0	---	0.5
	ANTU (alpha naphthylthiourea)	86-88-4	---	0.3
	Argon		Inert gas	
	Arsenic, inorganic compounds	See GI & CS 308. Inorganic Arsenic*		
	Arsenic, organic compounds (as As)	7440-38-2	---	0.5
	Arsine	7784-42-1	0.05	0.2
S	Azinphos-methyl	86-50-0	---	0.2
	Barium (soluble compounds)	7440-39-3	---	0.5
	Benzene (benzol)	See GI & CS 311. Benzene*		
A, S	Benzidine	92-87-5	---	---
	p-Benzoquinone	See Quinone		
	Benzoyl peroxide	94-36-0	---	5
	Benzyl chloride	100-44-7	1	5
		MAC/Ceiling/STEL		
		ppm	STEL	MAC
			mg/m <sup>3</sup>	mg/m <sup>3</sup>
	Beryllium and beryllium compounds (as Be)	7440-41-7	-----	0.0002 (0.2 µg/m <sup>3</sup> )
STEL	Beryllium and beryllium compounds (as Be)	7440-41-7	0.002 (2.0 µg/m <sup>3</sup> )	
	Biphenyl	See Diphenyl		
	Bisphenol A	See Diglycidyl ether		
SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	Mg/m <sup>3</sup>
	Boron oxide	1303-86-2	---	15
	Boron tribromide	10294-33-4	1	10
C	Boron trifluoride	7637-07-2	1	3
	Bromine	7726-95-6	0.1	0.7
	Bromine pentafluoride	7789-30-2	0.1	0.7
S	Bromoform	75-25-2	0.5	5

**TABLE 1  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; A AND B**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
		ppm	mg/m <sup>3</sup>
Butadiene (1,3-butadiene)	See OH 312 1,3-Butadiene*		
Butanethiol	See Butyl mercaptan		
2-Butanone	78-93-3	200	590
S 2-Butoxy ethanol (butyl cellosolve)	111-76-2	50	240
Butyl acetate (n-butyl acetate)	123-86-4	150	710
sec-Butyl acetate	105-46-4	200	950
tert-Butyl acetate	540-88-5	200	950
Butyl alcohol	71-36-3	100	300
sec-Butyl alcohol	78-92-2	150	450
tert-Butyl alcohol	75-65-0	100	300
S, C Butylamine	109-73-9	5	15
tert-Butyl chromate (as Cr+6)	See OH 604 Chromium (VI) in Construction*, **		
n-Butyl glycidyl ether (BGE)	2426-08-6	50	270
Butyl mercaptan	109-79-5	0.5	1.5
p-tert-Butyltoluene	98-51-1	10	60
1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.		
A	See R 325.60154(2)(a).		
C	See R 325.60154(2)(b).		
S	See R 325.60154(2)(c).		
STEL	See R 325.60154(2)(d).		
*	Caution--these rules contain extensive requirements for exposure to these substances.		
**	If the exposure limit in OH 604 Chromium (VI) in Construction is stayed or is otherwise not in effect, the exposure limit is a ceiling of 0.1 mg/m <sup>3</sup> and has an "S" notation.		
All MIOSHA Standards shown in this table are referenced in R 325.60151.			

**R 325.60156 Maximum allowable concentrations for substances; C and D.**

**Rule 6.** Table 2 for substances C and D, are as follows:

TABLE 2 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; C AND D				
SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Cadmium and cadmium compounds	See CS 609. Cadmium in Construction*		
	Calcium arsenate		---	1
	Calcium carbonate	1317-65-3	Inert dust	
	Calcium oxide	1305-78-8	---	5
	Camphor (synthetic)	76-22-2	2	---
	Carbaryl (Sevin®)	63-25-2	---	5
	Carbon black	1333-86-4	---	3.5
	Carbon dioxide	124-38-9	5,000	9,000
S	Carbon disulfide	75-15-0	20	60
	Carbon monoxide	630-08-0	50	55
S, C	Carbon tetrachloride	56-23-5	10	65
	Cellulose (paper fiber)	9004-34-6	Inert dust	
S	Chlordane	57-74-9	---	0.5
S	Chlorinated camphene	8001-35-2	---	0.5
	Chlorinated diphenyl oxide	55720-99-5 or 31242-93-0	---	0.5
	Chlorine	7782-50-5	1	3
	Chlorine dioxide	10049-04-4	0.1	0.3
C	Chlorine trifluoride	7790-91-2	0.1	0.4
C	Chloroacetaldehyde	107-20-0	1	3
	alpha-Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05	0.3
	Chlorobenzene (mono chlorobenzene)	108-90-7	75	350
	o-Chlorobenzylidene malononitrile (OCBM)	2698-41-1	0.05	0.4
	Chlorobromomethane	74-97-5	200	1,050
	2-Chloro-1,3-butadiene	See Chloroprene		
S	Chlorodiphenyl (42% Chlorine)	53469-21-9	---	1
S	Chlorodiphenyl (54% Chlorine)	11097-69-1	---	0.5
	1-Chloro-2,3-epoxy propane	See Epichlorohydrin		
	2-Chloroethanol	See Ethylene chlorohydrin		
	Chloroethylene	See Vinyl chloride		
C	Chloroform (Trichloromethane)	67-66-3	50	240
	1-Chloro-1-nitropropane	600-25-9	20	100

**TABLE 2  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; C AND D**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Chloropicrin	76-06-2	0.1	0.7
S	Chloroprene (2-chloro-1,3-butadiene)	126-99-8	25	90
	Chromic acid and chromates (as CrO <sub>3</sub> )	See OH 604 Chromium (VI) in Construction*, ***		
	Chromium (VI) compounds	See OH 604 Chromium (VI) in Construction*, ***		
	Chromium			
	• sol. chromic and chromous salts (as Cr)	Varies with compound	---	0.5
	• Metal and insol. Salts	7440-47-3	---	1
	Coal tar pitch volatiles (benzene soluble fraction: anthracene, BaP, phenanthrene, acridine, chrysene, pyrene)	65996-93-2	---	0.2
	Cobalt, metal fume and dust	7440-48-4	—	0.1
	Coke oven emissions	See GI & CS 314. Coke Oven Emissions*		
	Copper			
	• Fume	7440-50-8	---	0.1
	• Dusts and mists		---	1
	Corundum (Al <sub>2</sub> O <sub>3</sub> )		Inert dust	
	Cotton dust (raw)	—	---	1
	Crag® herbicide	136-78-7	---	15
S	Cresol (all isomers)	1319-77-3	5	22
	Crotonaldehyde	123-73-9 4170-30-3	2	6
S	Cumene	98-82-8	50	245
S	Cyanide (as CN)	Varies with compound	---	5
	Cyanogen	460-19-5	10	---
	Cyclohexane	110-82-7	300	1,050
	Cyclohexanol	108-93-0	50	200
	Cyclohexanone	108-94-1	50	200
	Cyclohexene	110-83-8	300	1,015
	Cyclopentadiene	542-92-7	75	200
	2,4-D	94-75-7	---	10
S	DDT (Dichlorodiphenyl-trichloroethane)	50-29-3	---	1
	DDVP	See Dichlorvos		
S	Decaborane	17702-41-9	0.05	0.3
S	Demeton®	8065-48-3	---	0.1

**TABLE 2  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; C AND D**

	SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	50	240
	1,2-Diainoethane	See Ethylenediamine		
	Diazomethane	334-88-3	0.2	0.4
	Diborane	19287-45-7	0.1	0.1
S, C	1,2-Dibromoethane (ethylene dibromide)	106-93-4	25	190
	Dibutyl phosphate	107-66-4	1	5
	Dibutyl phthalate	84-74-2	---	5
C	Dichloroacetylene	7572-29-4	0.1	0.4
C	o-Dichlorobenzene	95-50-1	50	300
	p-Dichlorobenzene	106-46-7	75	450
	Dichlorodifluoromethane	75-71-8	1,000	4,950
	1,3-Dichloro-5, 5-dimethyl hydantoin	118-52-5	---	0.2
	1,1-Dichloroethane	75-34-3	100	400
	1,2-Dichloroethane	107-06-2	50	200
	1,2-Dichloroethylene	540-59-0	200	790
S, C	Dichloroethyl ether	111-44-4	15	90
	Dichloromethane	See Methylene chloride		
	Dichloromonofluoromethane	75-69-4	1,000	4,200
C	1,1-Dichloro-1-nitroethane	594-72-9	10	60
	1,2-Dichloropropane	See Propylene dichloride		
	Dichlorotetrafluoroethane	76-14-2	1,000	7,000
S	Dichlorvos (DDVP)	62-73-7	---	1
S	Dieldrin	60-57-1	---	0.25
	Diethylamine	109-89-7	25	75
S	Diethylamino, ethanol	100-37-8	10	50
S, C	Diethylene triamine	111-40-0	10	42
	Diethyl ether	See Ethyl ether		
	Difluorodibromomethane	75-61-6	100	860
C	Diglycidyl ether (DGE)	2238-07-5	0.5	2.8
	Dihydroxybenzene	See Hydroquinone		
	Diisobutyl ketone	108-83-8	50	290
S	Diisopropylamine	108-18-9	5	20
	Dimethoxymethane	See Methylal		
S	Dimethyl acetamide	127-19-5	10	35



**TABLE 2  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; C AND D**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
		ppm	mg/m <sup>3</sup>
Dimethylamine	124-40-3	10	18
Dimethylaminobenzene	See Xylidene		
S Dimethylaniline (N-dimethylaniline)	121-69-7	5	25
Dimethylbenzene	See Xylene		
Dimethyl-1, 2-dibromo- 2, 2-dichloroethyl phosphate (Dibrom®)	300-76-5	---	3
S Dimethylformamide	68-12-2	10	30
2,6-Dimethylheptanone	See Diisobutyl ketone		
S 1,1-Dimethylhydrazine	57-14-7	0.5	1
Dimethylphthalate	131-11-3	---	5
S Dimethyl sulfate	77-78-1	1	5
S Dinitrobenzene (all isomers)	99-65-0 528-29-0 100-25-4	---	1
S Dinitro-o-cresol	534-52-1	---	0.2
S Dinitrotoluene	25321-14-6	---	1.5
S Dioxane (diethylene dioxide)	123-91-1	100	360
Diphenyl	92-52-4	0.2	1
Diphenylamine	122-39-4	---	10
Diphenylmethane diisocyanate	See Methylene bisphenyl isocyanate (MDI)		
S Dipropylene glycol methyl ether	34590-94-8	100	600
Di-sec-octyl phthalate (di-2-ethylhexylphthalate)	117-81-7	---	5

1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.
A	See R 325.60154(2)(a).
C	See R 325.60154(2)(b).
S	See R 325.60154(2)(c).
STEL	See R 325.60154(2)(d).
*	Caution--these rules contain extensive requirements for exposure to these substances.
***	If the exposure limit in OH 604 Chromium (VI) in Construction is stayed or is otherwise not in effect, the exposure limit is 0.1 mg/m <sup>3</sup> for chromic acid and chromates (CrO <sub>3</sub> ) as an 8-hour TWA.

All MIOSHA Standards shown in this table  
are referenced in R 325.60151.

**R 325.60157 Maximum allowable concentrations for substances; E to H.**

**Rule 7.** Table 3 for substances E to H, are as follows:

TABLE 3 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; E TO H				
SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Emery		Inert dust	
S	Endosulfan (Thiodan®)	115-29-7	---	0.1
S	Endrin	72-20-8	---	0.1
S	Epichlorohydrin	106-89-8	5	19
S	EPN	2104-64-5	---	0.5
	1,2-Epoxypropane	See Propylene oxide		
	2,3-Epoxy-1-propanol	See Glycidol		
	Ethane		Inert gas	
	Ethanethiol	See Ethyl mercaptan		
	Ethanolamine	141-43-5	3	6
S	2-Ethoxyethanol	110-80-5	200	740
S	2-Ethoxyethyl acetate (cellosolve acetate)	111-15-9	100	540
	Ethyl acetate	141-78-6	400	1,400
S	Ethyl acrylate	140-88-5	25	100
	Ethyl alcohol (ethanol)	64-17-5	1,000	1,900
	Ethylamine	75-04-7	10	18
	Ethyl sec-amyl ketone (5-methyl-3-heptanone)	541-85-5	25	130
	Ethyl benzene	100-41-4	100	435
	Ethyl bromide	74-96-4	200	890
	Ethyl butyl ketone (3-heptanone)	106-35-4	50	230
	Ethyl chloride	75-00-3	1,000	2,600
	Ethyl ether	60-29-7	400	1,200
	Ethyl formate	109-94-4	100	300
	Ethyl mercaptan	75-08-1	0.5	1
	Ethyl silicate	78-10-4	100	850
	Ethylene		Inert gas	
S	Ethylene chlorohydrin	107-07-3	5	16
	Ethylenediamine	107-15-3	10	25
	Ethylene dibromide	See 1,2-Dibromoethane		
	Ethylene dichloride	See 1,2-Dichloroethane		
S, C	Ethylene glycol dinitrate	628-96-6	0.2	1
	Ethylene glycol monomethyl ether acetate	See Methyl cellosolve acetate		
S	Ethyleneimine	151-56-4	0.5	1

**TABLE 3  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; E TO H**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL		
		ppm	mg/m <sup>3</sup>	
	Ethylene oxide	See GI & CS 304. Ethylene Oxide*		
	Ethylidene chloride	See 1,1-Dichloroethane		
S	N-Ethylmorpholine	100-74-3	20	94
	Ferbam	14484-64-1	---	15
	Ferrovandium dust	12604-58-9	---	1
	Fibrous glass	Inert dust		
	Fluoride (as F)	Varies with compound	---	2.5
	Fluorine	7782-41-4	0.1	0.2
	Fluorotrichloromethane	75-69-4	1,000	5,600
C	Formaldehyde	See GI & CS 306. Formaldehyde*		
	Formic acid	64-18-6	5	9
S	Furfural	98-01-1	5	20
	Furfuryl alcohol	98-00-0	50	200
	Gasoline (limits will be based on aromatic hydrocarbons in mixture)			
	Glycerine mist	Inert mist		
	Glycidol (2,3-epoxy-1-propanol)	556-52-5	50	150
	Glycol monoethyl ether	See 2-Ethoxyethanol		
	Graphite (synthetic)	Inert dust		
	Guthion®	See Azinphos-methyl		
	Gypsum	13397-24-5	Inert dust	
	Hafnium	7440-58-6	---	0.5
	Helium	Inert gas		
S	Heptachlor	76-44-8	---	0.5
	Heptane (n-heptane)	142-82-5	500	2,000
S	Hexachloroethane	67-72-1	1	10
S	Hexachloronaphthalene	1335-87-1	---	0.2
	Hexane (n-hexane)	110-54-3	500	1,800
	2-Hexanone	591-78-6	100	410
	Hexone (methyl isobutyl ketone)	108-10-1	100	410
	sec-Hexyl acetate	108-84-9	50	300
S	Hydrazine	302-01-2	1	1.3
	Hydrogen	Inert gas		
	Hydrogen bromide	10035-10-6	3	10
C	Hydrogen chloride	7647-01-0	5	7

**TABLE 3  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; E TO H**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
S	Hydrogen cyanide	74-90-8	10	11
	Hydrogen fluoride	7664-39-3	3	2
	Hydrogen peroxide	7722-84-1	1	1.4
	Hydrogen selenide	7783-07-5	0.05	0.2
	Hydrogen sulfide	7783-06-4	10	15
	Hydroquinone	123-31-9	---	2
1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.			
A	See R 325.60154(2)(a).			
C	See R 325.60154(2)(b).			
S	See R 325.60154(2)(c).			
STEL	See R 325.60154(2)(d).			
*	Caution--these rules contain extensive requirements for exposure to these substances.			
All MIOSHA Standards shown in this table are referenced in R 325.60151.				

**R 325.60158 Maximum allowable concentrations for substances; I to M.**

**Rule 8.** Table 4 for substances I to M, are as follows:

<b>TABLE 4 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; I TO M</b>				
<b>SUBSTANCE</b>		<b>CAS No.<sup>1</sup></b>	<b>MAC/Ceiling/STEL</b>	
			<b>ppm</b>	<b>mg/m<sup>3</sup></b>
	Indene	95-13-6	10	45
	Indium and compounds (as In)	7440-74-6	---	0.1
C	Iodine	7553-56-2	0.1	1
	Iron oxide fume	1309-37-1	---	10
	Iron salts, soluble (as Fe)	Varies with compound	---	1
	Isoamyl acetate	123-92-2	100	525
	Isoamyl alcohol	123-51-3	100	360
	Isobutyl acetate	110-19-0	150	700
	Isobutyl alcohol	78-83-1	100	300
	Isophorone	78-59-1	25	140
	Isopropyl acetate	108-21-4	250	950
	Isopropyl alcohol	67-63-0	400	980
	Isopropylamine	75-31-0	5	12
	Isopropyl ether	108-20-3	500	2,100
	Isopropyl glycidyl ether (IGE)	4016-14-2	50	240
	Kaolin		Inert dust	
	Ketene	463-51-4	0.5	0.9
	Lead and lead compounds	See CS 603. Lead Exposure in Construction*		
	Limestone	1317-65-3	Inert dust	
S	Lindane	58-89-9	---	0.5
	Lithium hydride	7580-67-8	---	0.025
	L.P.G. (Liquified petroleum gas)	68476-85-7	1,000	1,800
	Magnesite	546-93-0	Inert dust	
	Magnesium oxide fume	1309-48-4	15	
S	Malathion	121-75-5	---	15
	Maleic anhydride	108-31-6	0.25	1
C	Manganese and compounds (as Mn)	7439-96-5	---	5
	Marble	1317-65-3	Inert dust	
S	Mercury	7439-97-6	---	0.1
S	Mercury (organic compounds)	Varies with compound	---	0.01
	Mesityl oxide	141-79-7	25	100

**TABLE 4  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; I TO M**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
		ppm	mg/m <sup>3</sup>
Methane		Inert gas	
Methanethiol	See Methyl mercaptan		
Methoxychlor	72-43-5	---	15
2-Methoxyethanol	See Methyl cellosolve		
Methyl acetate	79-20-9	200	610
Methyl acetylene (propyne)	74-99-7	1,000	1,650
Methyl acetylene-propadiene mixture (MAPP)	—	1,000	1,800
S Methyl acrylate	96-33-3	10	35
Methylal (dimethoxymethane)	109-87-5	1,000	3,100
Methyl alcohol (methanol)	67-56-1	200	260
Methylamine	74-89-5	10	12
Methyl amyl alcohol	See Methyl isobutyl carbinol		
Methyl (n-amyl) ketone (2-heptanone)	110-43-0	100	465
S, C Methyl bromide	74-83-9	20	80
Methyl butyl ketone	See 2-Hexanone		
S Methyl cellosolve	109-86-4	25	80
S Methyl cellosolve acetate	110-49-6	25	120
C Methyl chloride	74-87-3	100	210
Methyl chloroform	71-55-6	350	1,900
Methylcyclohexane	108-87-2	500	2,000
Methylcyclohexanol	25639-42-3	100	470
S o-Methylcyclohexanone	583-60-8	100	460
Methylenedianiline (MDA)	See CS 605. Methylenedianiline (MDA) in Construction*		
Methyl ethyl ketone (MEK)	See 2-Butanone		
Methyl formate	107-31-3	100	250
S Methyl iodide	74-88-4	5	28
Methyl isoamyl ketone	110-12-3	100	475
S Methyl isobutyl carbinol	108-11-2	25	100
Methyl isobutyl ketone	See Hexone		
S Methyl isocyanate	624-83-9	0.02	0.05
Methyl mercaptan	74-93-1	0.5	1
Methyl methacrylate	80-62-6	100	410
Methyl propyl ketone	See 2-Pentanone		
C Methyl silicate	681-84-5	5	30

**TABLE 4  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; I TO M**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
C	alpha-Methyl styrene	98-83-9	100	480
C	Methylene bisphenyl isocyanate (MDI)	101-68-8	0.02	0.2
	Methylene chloride (dichloromethane)	See OH 313 Methylene Chloride*		
	Molybdenum			
	• Soluble compounds	7439-98-7	---	5
	• Insoluble compounds		---	15
S	Monomethyl aniline	100-61-8	2	9
S, C	Monomethyl hydrazine	60-34-4	0.2	0.35
S	Morpholine	110-91-8	20	70
1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.			
A	See R 325.60154(2)(a).			
C	See R 325.60154(2)(b).			
S	See R 325.60154(2)(c).			
STEL	See R 325.60154(2)(d)			
*	Caution--these rules contain extensive requirements for exposure to these substances.			
All MIOSHA Standards shown in this table are referenced in R 325.60151.				

**R 325.60159 Maximum allowable concentrations for substances; N to P.**

**Rule 9.** Table 5 for substances N to P, are as follows:

<b>TABLE 5 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; N TO P</b>				
<b>SUBSTANCE</b>		<b>CAS No.<sup>1</sup></b>	<b>MAC/Ceiling/STEL</b>	
			<b>ppm</b>	<b>mg/m<sup>3</sup></b>
	Naphtha (coal tar)	8030-30-6	100	400
	Naphtha (petroleum) (MAC will be based on aromatic hydrocarbons in mixture)			
	Naphthalene	91-20-3	10	50
A	beta-Naphthylamine	91-59-8	---	
	Neon		Inert gas	
	Nickel carbonyl	13463-39-3	0.001	0.007
	Nickel, metal and soluble compounds (as Ni)	7440-02-0	---	1
S	Nicotine	54-11-5	---	0.5
	Nitric acid	7697-37-2	2	5
	Nitric oxide	10102-43-9	25	30
S	p-Nitroaniline	100-01-6	1	6
S	Nitrobenzene	98-95-3	1	5
S	p-Nitrochlorobenzene	100-00-5	---	1
	Nitroethane	79-24-3	100	310
	Nitrogen		Inert gas	
	Nitrogen dioxide	10102-44-0	5	9
	Nitrogen trifluoride	7783-54-2	10	29
S	Nitroglycerin	55-63-0	0.2	2
	Nitromethane	75-52-5	100	250
	1-Nitropropane	108-03-2	25	90
	2-Nitropropane	79-46-9	25	90
S, A	N-Nitrosodimethylamine (dimethylnitrosamine)	62-75-9	---	
S	Nitrotoluene	Varies with compound	5	30
	Nitrotrichloromethane See Chloropicrin			
	Nitrous oxide		Inert gas	
S	Octachloronaphthalene	2234-13-1	---	0.1
	Octane	111-65-9	400	1,900
	Oil mist, particulate	8012-95-1	---	5
	Oil mist, vapor (MAC will be based on aromatic hydrocarbons in mixture)			
	Osmium tetroxide	20816-12-0	---	0.002
	Oxalic acid	144-62-7	---	1



**TABLE 5  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; N TO P**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Oxygen difluoride	7783-41-7	0.05	0.1
	Ozone	10028-15-6	0.1	0.2
S	Paraquat	1910-42-5 2074-50-2 4685-14-7	---	0.5
S	Parathion	56-38-2	---	0.1
	Pentaborane	19624-22-7	0.005	0.01
S	Pentachloronaphthalene	1321-64-8	---	0.5
S	Pentachlorophenol	87-86-5	---	0.5
	Pentaerythritol	115-77-5	Inert particulate	
	Pentane	109-66-0	500	1,500
	2-Pentanone	107-87-9	200	700
	Perchloroethylene	127-18-4	100	670
	Perchloromethyl mercaptan	594-42-3	0.1	0.8
	Perchloryl fluoride	7616-94-6	3	13.5
	Petroleum distillates (naphtha) (MAC will be based on aromatic hydrocarbons in mixture)			
S	Phenol	108-95-2	5	19
S	p-Phenylenediamine	101-84-8	---	0.1
	Phenyl ether (vapor)	—	1	7
	Phenyl ether-biphenyl mixture (vapor)	8004-13-5	1	7
	Phenylethylene	See Styrene		
	Phenyl glycidyl ether (PGE)	122-60-1	10	60
S	Phenylhydrazine	100-63-0	5	22
S	Phosdrin (Mevinphos®)	7786-34-7	---	0.1
	Phosgene (carbonyl chloride)	75-44-5	0.1	0.4
	Phosphine	7803-51-2	0.3	0.4
	Phosphoric acid	7664-38-2	---	1
	Phosphorus (yellow)	7723-14-0	---	0.1
	Phosphorus pentachloride	10026-13-8	---	1
	Phosphorus pentasulfide	1314-80-3	---	1
	Phosphorus trichloride	7719-12-2	0.5	3
	Phthalic anhydride	85-44-9	2	12
S	Picric acid	88-89-1	---	0.1
	Pival® (2-pivalyl-1,3-indandione)	83-26-1	---	0.1

**TABLE 5  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; N TO P**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	Plaster of Paris	26499-65-0	Inert dust	
	Platinum, soluble salts (as Pt)	7440-06-4	---	0.002
	Polytetrafluoroethylene decomposition products	See Teflon® decomposition products		
	Propane	74-98-6	Inert gas	
S	Propargyl alcohol	107-19-7	1	---
A	beta-Propiolactone	57-57-8	---	
	n-Propyl acetate	109-60-4	200	840
	Propyl alcohol	71-23-8	200	500
	n-Propyl nitrate	627-13-4	25	110
	Propylene dichloride	78-87-5	75	350
S	Propylene imine	75-55-8	2	5
	Propylene oxide	75-56-9	100	240
	Propyne	See Methyl acetylene		
	Pyrethrum	8003-34-7	---	5
	Pyridine	110-86-1	5	15
1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.			
A	See R 325.60154(2)(a).			
C	See R 325.60154(2)(b).			
S	See R 325.60154(2)(c).			
STEL	See R 325.60154(2)(d).			
All MIOSHA Standards shown in this table are referenced in R 325.60151.				

**R 325.60160 Maximum allowable concentrations for substances; Q to Z.**

**Rule 10.** Table 6 for substances Q to Z, are as follows:

<b>TABLE 6 MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; Q TO Z</b>				
<b>SUBSTANCE</b>		<b>CAS No.<sup>1</sup></b>	<b>MAC/Ceiling/STEL</b>	
			<b>ppm</b>	<b>mg/m<sup>3</sup></b>
	Quinone	106-51-4	0.1	0.4
S	RDX	121-82-4	---	1.5
	Rhodium			
	<ul style="list-style-type: none"> <li>• metal fume, dusts, and insoluble compounds (as Rh)</li> </ul>	7440-16-6	---	0.1
	<ul style="list-style-type: none"> <li>• soluble compounds (as Rh)</li> </ul>		---	0.001
	Ronnel	299-84-3	---	10
	Rotenone (commercial)	83-79-4	---	5
	Rouge	Inert dust		
	Selenium compounds (as Se)	7782-49-2	---	0.2
	Selenium hexafluoride	7783-79-1	0.05	0.4
	Silica, crystalline, respirable dust**	See OH 690 Silica in Construction		
	<ul style="list-style-type: none"> <li>• Cristobalite</li> </ul>	14464-46-1		
	<ul style="list-style-type: none"> <li>• Quartz</li> </ul>	14808-60-7		
	<ul style="list-style-type: none"> <li>• Tripoli ( as quartz)</li> </ul>	1317-95-9		
	<ul style="list-style-type: none"> <li>• Trydimite</li> </ul>	15468-32-3		
	Silicon carbide	409-21-2	Inert dust	
	Silver, metal and soluble compounds	7440-22-4	---	0.01
S	Sodium fluoroacetate (1080)	62-74-8	---	0.05
	Sodium hydroxide	1310-73-2	---	2
	Starch	9005-25-8	Inert dust	
	Stibine	7803-52-3	0.1	0.5
	Stoddard solvent	8052-41-3	200	1,150
	Strychnine	57-24-9	---	0.15
C	Styrene monomer (phenylethylene)	100-42-5	100	420
	Sucrose	57-50-1	Inert dust	
	Sulfur dioxide	7446-09-5	5	13
	Sulfur hexafluoride	2551-62-4	1,000	6,000
	Sulfuric acid	7664-93-9	---	1
	Sulfur monochloride	10025-67-9	1	6
	Sulfur pentafluoride	5714-22-7	0.025	0.25
	Sulfuryl fluoride	2699-79-8	5	20
	Systox	See Demeton®		

**TABLE 6  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; Q TO Z**

SUBSTANCE		CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
			ppm	mg/m <sup>3</sup>
	2,4,5T	93-76-5	---	10
	Tantalum	7440-25-7	---	5
S	TEDP	3689-24-5	---	0.2
Teflon® decomposition products (maintain minimal air concentration)				
	Tellurium	13494-80-9	---	0.1
	Tellurium hexafluoride	7783-80-4	0.02	0.2
S	TEPP	107-49-3	---	0.05
C	Terphenyls	26140-60-3	1	9
	1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	500	4,170
	1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	500	4,170
S	1,1,2,2-Tetrachloroethane	79-34-5	5	35
	Tetrachloroethylene	See Perchloroethylene		
	Tetrachloromethane	See Carbon tetrachloride		
S	Tetrachloronaphthalene	1335-88-2	---	2
S	Tetraethyl lead (as Pb)	78-00-2	---	0.075 <sup>a</sup>
	Tetrahydrofuran	109-99-9	200	590
S	Tetramethyl lead (TML)(as Pb)	75-74-1	---	0.150
S	Tetramethyl succinonitrile	3333-52-6	0.5	3
	Tetranitromethane	509-14-8	1	8
S	Tetryl (2,4,6-trinitrophenylmethyl-nitramine)	479-45-8	---	1.5
S	Thallium, soluble compounds (as Tl)	7440-28-0	---	0.1
	Thiram	137-26-8	---	5
Tin				
	• Inorganic compounds, except SnH <sub>4</sub> and SnO <sub>2</sub>	7440-31-5	---	2
	• Organic compounds	7440-31-5	---	0.1
	• Oxide	21651-19-4	Inert particulate	
	Titanium dioxide	13463-67-7	Inert particulate	
	Toluene (toluol)	108-88-3	200	750
C	Toluene-2,4-diisocyanate	584-84-9	0.02	0.14
S	o-Toluidine	95-53-4	5	22
	Toxaphene	See Chlorinated camphene		
	Tributyl phosphate	126-73-8	---	5
	1,1,1-Trichloroethane	See Methyl chloroform		
S	1,1,2-Trichloroethane	79-00-5	10	45

**TABLE 6  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; Q TO Z**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
		ppm	mg/m <sup>3</sup>
Trichloroethylene	79-01-6	100	535
Trichloromethane	See Chloroform		
S Trichloronaphthalene	1321-65-9	---	5
1,2,3-Trichloropropane	96-18-4	50	300
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1,000	7,600
Triethylamine	121-44-8	25	100
Trifluoromonobromomethane	75-63-8	1,000	6,100
Trimethyl benzene	25551-13-7	25	120
2,4,6-Trinitrophenol	See Picric acid		
2,4,6-Trinitrophenylmethylnitramine	See Tetryl		
S Trinitrotoluene	118-96-7	---	1.5
Triorthocresyl phosphate	78-30-8	---	0.1
Triphenyl phosphate	115-86-6	---	3
Tungsten and compounds (as W)			
• Insoluble	7440-33-7	---	5
• Soluble		---	1
Turpentine	8006-64-2	100	560
Uranium (natural) soluble and insoluble compounds (as U)	7440-61-1	---	0.2
C Vanadium			
• (V <sub>2</sub> O <sub>5</sub> dust)	1314-62-1	---	0.5
• (V <sub>2</sub> O <sub>5</sub> fume)		---	0.1
Vinyl benzene	See Styrene		
C Vinyl chloride	See GI 302. Vinyl Chloride*		
Vinyl cyanide	See Acrylonitrile		
Vinyl toluene	25013-15-4	100	480
Warfarin	81-81-2	---	0.1
Xylene (xylol)	1330-20-7	100	435
S Xylidine	1300-73-8	5	25
Yttrium	7440-65-5	---	1
Zinc chloride fume	7646-85-7	---	1
Zinc oxide fume	1314-13-2	---	5
Zirconium compounds (as Zr)	7440-67-7	---	5

**TABLE 6  
MAXIMUM ALLOWABLE CONCENTRATIONS FOR SUBSTANCES; Q TO Z**

SUBSTANCE	CAS No. <sup>1</sup>	MAC/Ceiling/STEL	
		ppm	mg/m <sup>3</sup>
1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.		
A	See R 325.60154(2)(a).		
C	See R 325.60154(2)(b).		
S	See R 325.60154(2)(c).		
STEL	See R 325.60154(2)(d)		
<sup>a</sup>	The 1970 ACGIH standard for Tetraethyl lead is 0.100 mg/m <sup>3</sup> .		
*	Caution--these rules contain extensive requirements for exposure to these substances.		
**	See Table 7 for the exposure limit for any operations or sectors where the exposure limit in OH 690. "Silica in Construction" is stayed or is otherwise not in effect.		
All MIOSHA Standards shown in this table are referenced in R 325.60151.			

**R 325.60161 Maximum allowable concentrations for mineral dusts.**

**Rule 11.** Table 7 for mineral dusts, are as follows:

<b>TABLE 7 MAXIMUM ALLOWABLE CONCENTRATIONS FOR MINERAL DUSTS</b>																																	
<b>SUBSTANCE</b>	<b>CAS No.<sup>1</sup></b>	<b>MAC</b>																															
		<b>mppcf</b>	<b>mg/m<sup>3</sup></b>																														
<b>Silica</b>																																	
<ul style="list-style-type: none"> <li>• Crystalline *                             <ul style="list-style-type: none"> <li>• Quartz (respirable)</li> <li>• Cristobalite</li> </ul> </li> <li>• Amorphous, including natural diatomaceous earth</li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">14808-60-7</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">14464-46-1</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">61790-53-2</td> <td style="width: 50%;"></td> </tr> </table>	14808-60-7		14464-46-1		61790-53-2		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"><u>250</u> % SiO<sub>2</sub>+5</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">20</td> <td style="width: 50%;"></td> </tr> </table>	<u>250</u> % SiO <sub>2</sub> +5		20		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"><u>10 mg/m<sup>3</sup></u> %SiO<sub>2</sub>+2</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;"><u>80 mg/m<sup>3</sup></u> %SiO<sub>2</sub></td> <td style="width: 50%;"></td> </tr> </table>	<u>10 mg/m<sup>3</sup></u> %SiO <sub>2</sub> +2		<u>80 mg/m<sup>3</sup></u> %SiO <sub>2</sub>																	
14808-60-7																																	
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<u>250</u> % SiO <sub>2</sub> +5																																	
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<u>10 mg/m<sup>3</sup></u> %SiO <sub>2</sub> +2																																	
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<b>Silicates (less than 1% crystalline silica)</b>																																	
<ul style="list-style-type: none"> <li>• Asbestos, all types</li> <li>• Mica</li> <li>• Portland cement</li> <li>• Soapstone</li> <li>• Talc (non-asbestiform)</li> <li>• Talc (fibrous)</li> <li>• Tremolite</li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">See OH 602 Asbestos Standards for Construction</td> </tr> <tr> <td style="width: 50%; text-align: center;">12001-26-2</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">65997-15-1</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">-</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%; text-align: center;">14807-96-6</td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">See OH 602 Asbestos Standards for Construction</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">See OH 602 Asbestos Standards for Construction</td> </tr> </table>		See OH 602 Asbestos Standards for Construction	12001-26-2		65997-15-1		-		14807-96-6			See OH 602 Asbestos Standards for Construction		See OH 602 Asbestos Standards for Construction	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">20</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">50</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">20</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">20</td> </tr> </table>		20		50		20		20	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>								
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<b>Graphite (natural)</b>	7782-42-5	15																															
<b>Inert or nuisance particles **</b>		50 of total dust less than 1% SiO <sub>2</sub> (or 15 mg/m <sup>3</sup> , whichever is the smaller)																															
*	The percentage of crystalline silica, SiO <sub>2</sub> , in the formula is the amount determined from airborne samples. Note: This MAC applies to any operations or sectors for which the respirable crystalline silica standard, 690. "Silica in Construction" is stayed or otherwise is not in effect.																																
**	The following are some examples of inert or nuisance particulates when toxic impurities are not present; e.g. quartz less than 1%. <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 33%;">Alundum (Al<sub>2</sub>O<sub>3</sub>)</td> <td style="width: 33%;">Gypsum</td> <td style="width: 33%;">Rouge</td> </tr> <tr> <td>Calcium carbonate</td> <td>Limestone</td> <td>Silicon carbide</td> </tr> <tr> <td>Cellulose</td> <td>Magnesite</td> <td>Starch</td> </tr> <tr> <td>Corundum (Al<sub>2</sub>O<sub>3</sub>)</td> <td>Marble</td> <td>Sucrose</td> </tr> <tr> <td>Emery</td> <td>Pentaerythritol</td> <td>Tin oxide</td> </tr> <tr> <td>Glycerine mist</td> <td>Plaster of Paris</td> <td>Titanium dioxide</td> </tr> <tr> <td>Graphite (synthetic)</td> <td>Portland cement</td> <td>Vegetable oil mists (except castor, cashew nut, or similar irritant oils)</td> </tr> </table>			Alundum (Al <sub>2</sub> O <sub>3</sub> )	Gypsum	Rouge	Calcium carbonate	Limestone	Silicon carbide	Cellulose	Magnesite	Starch	Corundum (Al <sub>2</sub> O <sub>3</sub> )	Marble	Sucrose	Emery	Pentaerythritol	Tin oxide	Glycerine mist	Plaster of Paris	Titanium dioxide	Graphite (synthetic)	Portland cement	Vegetable oil mists (except castor, cashew nut, or similar irritant oils)									
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1	The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than 1 metal compound measured as the metal, the CAS number for the metal is given - not the CAS number for the individual compounds.																																
All MIOSHA Standards shown in this table are referenced in R 325.60151.																																	



Michigan Occupational Safety and Health Administration  
PO Box 30643  
Lansing, Michigan 48909-8143  
For technical questions of this standard – Ph: 517-284-7680 (CSHD) or 517-284-7720 (CETD)  
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