

DPMC EXPOSURE GUIDELINE

PREPARED BY THE INDUSTRIAL
HYGIENE DEPARTMENT
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DPMC INDUSTRIAL HYGIENE EXPOSURE GUIDELINES

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Basis

Acceptable levels of employee exposure to chemical substances have been established in recent years by various regulatory and scientific groups. This includes the Occupational Safety and Health Administration, (OSHA); the American Conference of Governmental Industrial Hygienists, (ACGIH); and the National Institute for Occupational Safety and Health (NIOSH). Recommendations on acceptable levels of employee exposure for individual chemical substances often vary between these groups due to 1) differences in data interpretation, or 2) a review of new health hazard information not previously considered. Where existing acceptable limits of exposure are determined to be inadequate, Shell may establish a Shell Internal Limit, for example, epichlorohydrin.

To provide an updated listing of recommended acceptable limits of employee exposure, the attached summary of "DPMC Exposure Guidelines" was prepared.

DPMC Exposure Guidelines represent target control levels for employee protection. At the minimum, precautionary workpractices, respiratory protection and where indicated protective clothing should be used to reduce exposure to or below the DPMC Exposure Guideline. For many chemical substances, two guidelines have been set 1) a short term @ 15 minutes and 2) an 8 hour TWA.

DPMC Exposure Guidelines reflect reasonably current health hazard and toxicological information and will be updated annually. DPMC Exposure Guidelines are as strict as those established by OSHA and Incorporate Shell Internal Limits where these have been established. Guidelines have been established for those substances with greater exposure potential or in more frequent use.

Respiratory Protection

For each DPMC Exposure Guideline listed, the minimum type of respiratory protection recommended for use has been identified. Respirators affording a higher level of protection may be used if determined to be appropriate, e.g. a full-face mask may be used to avoid eye irritation instead of a half facepiece; an air supplied respirator may be used instead of a cartridge respirator, etc.

Protective Clothing

Certain chemical substances have the capacity to cause a toxic effect by being absorbed through the skin. This may occur with or without any local skin effect (reddening, rash, burn, etc). Of those substances which can be absorbed, the capacity or rate in which absorption will occur may vary significantly (slightly, moderately, readily absorbed). Each chemical substance reported to have this capacity has been identified on the listing of DPMC Exposure Guidelines. It is generally recommended that uncontaminated PVC gloves be used for protection against chemical substances which may be absorbed through the skin.

ABBREVIATIONS USED

A.C.G.I.H.	American Conference of Governmental Industrial Hygienists - A professional standard setting organization.
A.M. Cartridge	Ammonia Respirator Cartridge
E.N.T.	Eyes, Nose and Throat.
Health Data and Comments	Basic information concerning known toxicity is presented without regard to exposure level, frequency of exposure required to cause health effect, etc.
mg/m ³	Milligram dust per cubic meter of air (weight/volume).
NIOSH	The National Institute for Occupational Safety and Health. This is the research branch of OSHA located under H.E.W.
O.V. Cartridge	Organic Vapor Cartridge - Black in color.
ppm	Parts Per Million (Volume/Volume) - Usually used for gases and vapors.
STEL	Short Term Exposure Limit - Generally referred to as the upper exposure level allowed over a short duration.
Suspect Embryo fetus hazard	Toxicity information and exposures to this chemical are currently being reviewed; has not yet been categorized under the Shell Embryo-Fetus Hazard Program.
TWA	Time-Weighted Average - The usual term referred to for 8 hour exposures.
3M 9920	Disposable 3M welding fume respirator which is suitable for some fumes and welding circumstances
I.D.L.H.	Immediately Dangerous to Life or Health - maximum concentration which would permit escape within a 30 minute period.

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DPMC EXPOSURE GUIDELINES

SUBSTANCE	DPMC GUIDELINES			ODOR THRESHOLD	IDLH	MINIMUM RESPIRATOR SELECTION (Requirements)	HEALTH DATA AND COMMENTS
	TWA	STEL	UNITS				

A Section

Acetone	750.0	1000.0	ppm	62.0	20,000	Above 750 ppm & up to 1000 ppm half-face mask w/black dual organic vapor cartridge.	Mild ENT irritant at conc. below 1000 ppm; may be narcosis producing above 1000 ppm.
Acetonitrile	40.0	60.0	ppm	1160	4,000	Above 40 ppm or unknown concentrations supplied - air respirator <u>only</u> .	Colorless liquid. Acute toxicity due to cyanide. Skin absorption possible. Possible respiratory tract effects. Hydrogen cyanide gas may be formed in a fire.
*Acetophenone (Phenyl Methyl Ketone)	10.0		ppm	<1.0		Full facepiece mask w/dual black O.V. cartridges for anticipated exposure to vapors of heated material.	Skin irritation, mild burns and transient eye injury possible. Persistent pleasant sweet, almond odor colorless liquid. Low acute toxicity but potentially narcotic at high concentrations.

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DPMC EXPOSURE GUIDELINES

SUBSTANCE	DPMC GUIDELINES		ODOR		IDLH		MINIMUM RESPIRATOR SELECTION (Requirements)	HEALTH DATA AND COMMENTS
	TWA	STEL	UNITS	THRESHOLD				
Acrolein	0.1	-0.25	ppm	1.8	5.0		Above 0.1 ppm & up to 1 ppm full-face mask w/dual O.V. black cartridges.	Vapors extremely irritating at 0.3-1.0 ppm. Skin absorption possible.
Allyl Chloride	1.0	2.0	ppm	1.2	300.0		Above 1 ppm & up to 10 ppm half-face mask w/dual O.V. black cartridge.	Unpleasant pungent odor. Possible liver and kidney effects.
Allyl Glycidyl Ether	5.0	10.0	ppm	10.0	270.0		Above 5 ppm & up to 50 ppm half-face mask w/black dual O.V. cartridge.	Skin absorption possible. Eye, nose, throat & resp. irritant.
Aluminum Metal Dust - Respirable - Total	- 5.0 15.0	-	mg/m ³	-	-		Disposable 3M 9920 mask for operations which may exceed 5.0 mg/m ³ .	Considered an inert or nuisance dust.
Aluminum Metal Fumes	5.0	-	mg/m ³	-	-		Disposable 3M 9920 mask for operations which may exceed 5 mg/m ³ .	
Ammonia	25.0	35.0	ppm	17.0	500.0		Above 25 ppm & up to 250 ppm full-face mask w/green dual cartridge.	Marked E.N.T. irritant; irritating at 50 ppm. Skin burns may occur with liquid contact.

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DPMC EXPOSURE GUIDELINES

SUBSTANCE	DPMC GUIDELINES			ODOR		IDLH	MINIMUM RESPIRATOR SELECTION		HEALTH DATA AND COMMENTS
	TWA	STEL	UNITS	THRESHOLD			(Requirements)		
Aniline	2.0	5.0	ppm	2.4		100.0	Above 2 ppm & up to 20 ppm half-face mask w/dual 0.V. black cartridge.		<u>Skin absorption possible.</u> Causes blood effects, headaches, dizziness, etc.
Asbestos	0.2	1.0	Fibers per cc	-		-	Above 0.2 and up to 2.0 f/cc half-face mask with dual HEPA (purple cartridges) for asbestos related work removal, cutting, demolition.		Recognized lung carcinogen; may also cause asbestosis (lung scarring). Refer to Safety order S-125.
Asphalt Fumes (mineral pitch, petroleum pitch, mixture of polycyclic aromatic and paraffinic hydrocarbons)	5.0	-	mg/m ³	-		-	Half-face mask w/dual black 0.V. cartridge & dust covers for operations which may exceed 5 mg/m ³ .		Respiratory & skin irritant; contact can cause acne-like sores or dermatitis.
Benzene	1ppm	5.0	ppm	61.		2000.0	Above 1 ppm & up to 10 ppm half-face mask with dual 0.V. black cartridge, full-face with 0.V. cartridges up to 50 ppm. Supplied-air required above 50 ppm.		<u>Skin absorption possible;</u> Suspect human carcinogen. Category "A" Embryo Fetus hazard. Refer to Safety Order S-130

B Section

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