ATTACHMENT D

Chemical Hazard Information

CHEMICAL HAZARD INFORMATION

	CAS #	OSHA PEL	ACGIH® TLV®/REL	IDLH	Vapor Pressure	Specific Gravity	Skin Hazard	Odor Threshold	Carci Cat
					mm @ 68°F	@ 68°F			
Acetone	67-64-1	1000 ppm	500 ppm 750 ppm S/C	2500 ppm	180	0.79	NO	mint like 47.5 - 1613.9 mg/m³	USEP USE
Aldrin	309-00-2	0.25 mg/m^3	0.25 mg/m^3	Ca[25 mg/m^3]	0.00008	1.6	YES	odorless	USEI IAF
Alpha-BHC (alpha-hexachlorocyclohexane)	319-84-6	--	--	--	0.02	1.87	YES	0.088 ppm (in water)	USEI IAR
Ancenapthalene	83-32-9	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	2.5	--	--	--	
Anthracene	120-12-7	0.2 mg/m^3 (a)	0.2 mg/m³ (a)	--	0.23	1.283 @25°C	YES	Weak aromatic odor	USE
Antimony	7440-36-0	0.5 mg/m³	0.5 mg/m³	50 mg/m^3	0.04	6.69	NO	--	
Aroclor 1248 (Polychlorinated Biphenyl, 48% chlorine)	12672-29-6	--	--	--	0.0004	1.4 @ 15.5°C	YES	~odorless	(For CA 1336 USEI IAR
Aroclor 1254 (Polychlorinted Biphenyl, 54% chlorine)	11097-69-1	0.5 mg/m^3	0.5 mg/m^3	Ca[5 mg/m^3]	0.00006	1.38 @ 77°F	YES	~odorless	USEI IAR
Arsenic (Inorganic)(Metal)	7440-38-2	0.5 mg/m^3 (organic compounds); 0.01 mg/m^3 (inorganic compounds)	0.01 mg/m^3 BEI	Ca[5 mg/m^3]	0.097	5.73	NO	~odorless	USE IAF
Barium (and soluble compounds, as Ba)	7440-39-3	0.5 mg/m³	0.5 mg/m³	50 mg/m³	0.35	3.51	NO	~odorless	USE USEI
Benzene	71-43-2	1 ppm 5 ppm S/C	0.5 ppm 2.5 ppm BEI	Ca[500 ppm]	75	0.88	YES	aromatic 5 - 119 ppm	USE USE IAF
Benzo(a)anthracene	56-55-3	0.2 mg/m³ (a)	L	--	5.00E-09	--	--	--	USE IAR
Benzo(a)pryene	50-32-8	0.2 mg/m³ (a)	L	--	5.00E-09	1.351	YES	faint aroma	USEI IAR
Benzo(b)fluoranthene	205-99-2	0.2 mg/m³ (a)	L	--	~0	--	YES	--	USEI IAR
Benzo(g,h,i)perylene, methyl	191-24-2	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	1.00E-10	--		--	USE
Benzo(k)fluoranthene	207-08-9	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	9.60E-11	--	YES	--	USEF

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					mm @ 68°F	@ 68°F			
Beryllium and compounds, as Be	7440-41-7	0.002 mg/m^3 0.005 mg/m3 C; 0.025 mg/m3 (30 min peak per 8-hr shift)	0.002 mg/m^3 0.01 mg/m3 C	Ca[4 mg/m^3]	~0	1.85	NO	--	USEI USE IAF
Beta-BHC (trans-alpha-benzene hexachloride)	319-85-7	--	--	--	0.005	1.89 @ 19°C	YES	--	USE IAR
BHC, gamma-	319-86-8	--	--	--	0.02	--	--	--	
bis(2-ethyl hexyl) Phthalate	117-81-7	5 mg/m^3	5 mg/m^3	Ca[5000 mg/m^3]	0.2	0.99	NO	--	USEI IAF
Butanone 2- (Methyl Ethyl Ketone)	78-93-3	200 ppm	200 ppm 300 ppm S/C	3000 ppm	71	0.81	NO	mint or acetone like 10 - 20 ppm	USE (Meas inhalabl of the
Butyl Benzopthalate	85-68-7	--	--	--	0.0000086	--	--	--	USE
Butyl Pthalate di-n-	84-74-2	5 mg/m³	5 mg/m³	4000 mg/m^3	0.03	1.05	NO	--	USE
Cadmium (dust)	7440-43-9	0.005 mg/m^3 (Table Z-2 for exclusions in 29 CFR 1910.1027)	0.01 I mg/m^3 0.002 mg/m3 R BEI	Ca[9 mg/m^3]	0.09	8.65 @ 77°F	NO	~odorless	USEI IAF
Carbon Disulfide	75-15-0	20 ppm 30 ppm C; 100 ppm (30 min peak per 8-hr shift)	10 ppm BEI	500 ppm	297	1.26	YES	ether-like odor	
Chlorobenzene (Monochlorobenzene)	108-90-7	75 ppm	10 ppm	1000 ppm	11	1.11	NO	almond-like 1 mg/m³ - 280 mg/m³	USE
Chlorophenol 2-	95-57-8	--	--	--	2.2	1.26	YES	Unpleasant, penetrating 0.00018 mg/l	
Chromium (metal)	7440-47-3	1 mg/m³	0.5 mg/m³	250 mg/m^3	0.02	7.14	NO	~odorless	IAF

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Chromium III	16065-83-1	0.5 mg/m³	0.5 mg/m³	25 mg/m^3	0.02	varies	YES	~odorless	EP EPA (insolut IAF
Chromium VI (inorganic compounds)	7440-47-3	0.1 mg/m^3 C (as CrO_3)	0.05 mg/m^3 BEI (water soluble); 0.01 mg/m^3 (certain water soluble)	250 mg/m^3	0.02	--	NO	~odorless	USE USE IAF
Chrysene (1,2-Benzphenanthrene)	218-01-9	0.2 mg/m³ (a)	L	--	0.000000006	1.274	YES	--	USEI IAF
Coal Tar Pitch Volatiles	65996-93-2	0.2 mg/m³	0.2 mg/m^3	Ca[80 mg/m^3]	varies	varies	YES	--	IAF
Cyanide, potassium salt (as CN)	151-50-8	5 mg/m³	5 mg/m^3 C	25 mg/m3	~0	1.55	YES	faint, bitter, almond	
Cyanide, sodium salt (as CN)	14-33-9	5 mg/m³	5 mg/m^3 C	25 mg/m3	~0	1.6	YES	faint, bitter, almond	
DDE (p,p' Dichlorophenyldichloroethylene)	72-55-9	--	--	--	0.0000065	--	--	--	
DDT (Dichlorodiphenyltrichloroethane)	50-29-3	1 mg/m³	1 mg/m³	Ca[500 mg/m^3]	0.00000015	0.99	YES	fruit-like, aromatic 0.35 ppm in water	USEI IAR
Dibenzofuran	132-64-9	--	--	--	--	--	--	--	USE
Dichlorobenzene 1,2- (o - Dichlorobenzene)	95-50-1	50 ppm C	25 ppm 50 ppm C	200 ppm	1	1.3	YES	Aromatic 50 ppm	USE IAF
Dichlorobenzene 1,3- (m-Dichlorobenzene)	541-73-1	--	--	--	2	1.2884	YES	--	USE
Dichlorobenzene 1,4- (p-Dichlorobenzene)	106-46-7	75 ppm	10 ppm	Ca[150 ppm]	0.18	1.25	NO	Mothball-like Aromatic (strong at 30-60 ppm)	IAR
Dichlorophenol 2,4-	120-83-2	--	--	--	0.53	--	--	--	IAR
Dieldrin	60-57-1	0.25 mg/m³	0.25 mg/m³	Ca[50 mg/m^3]	0.00000016	1.75	YES	odorless to mild, chemical 0.041 ppm	USEI IAF
Endrin	72-20-8	0.1 mg/m³	0.1 mg/m³	2 mg/m^3	0.00000017	1.7	YES	odorless to faint chemical 0.018 ppm	USE IAF

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					mm @ 68°F	@ 68°F			
Ethyl Benzene	100-41-4	100 ppm	100 ppm 125 ppm S/C BEI	800 ppm [10 % LEL]	8.6	0.87	NO	aromatic	USE IAR
Fluoranthene (1,2-Benzacenaphthene)	206-44-0	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	0.01	1.25 @ 0°C	YES	--	USE
Fluorene (2,3-Benzindene)	867-37-1	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	1.7	1.203 @ 0°C	Yes	--	IAF
Hexachlorobenzene	118-74-1	--	0.002 mg/m^3	--	0.28	1.569 @ 23.6°C	YES	--	USEI IAR
Hexanone 2- (methyl butyl ketone)	591-78-6	100 ppm	5 ppm 10 ppm C/S	1600 ppm	3.5	0.81	YES	acetone-like odor	
Indeno(1,2,3-c,d)pyrene	193-39-5	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	~0	--	YES	--	USEF
Lead (inorganic)	7439-92-1	0.05 mg/m^3 (see 29 CFR 1910.1025)	0.05 mg/m^3 BEI	100 mg/m³	0.04	11.34	NO	~odorless	USEI IAR
Magnesium (dust)	1309-48-4	15 mg/m^3 (Total Particulate)	10 mg/m^3 I	750 mg/m^3	~0	3.58	NO	--	
Manganese	7439-96-5	5 mg/m³ C	0.2 mg/m^3	500 mg/m^3	0.029	7.2	NO	--	USE
Mercury (organo) alkyl compounds (as Hg)		0.01 mg/m^3 0.04 C	0.01 mg/m^3 0.03 mg/m^3 S/C	2 mg/m^3	varies	varies	YES	--	USEI (for elen CA 7439
Methyl Naphthalene 2-	91-57-6	0.2 mg/m³ (a)	0.2 mg/m³ (a)	--	3.1	1.01 @ 20°C	NO	0.01 - 0.05 ppm	USE
Methylene Chloride	75-09-2	25 ppm 125 ppm S/C	50 ppm	Ca[2300 ppm]	350	1.33	NO	sweet, pleasant 160 - 307 ppm	USEI IAR
Methylphenol 2- (o-Creosol)	95-48-7	5 ppm	5 ppm 10 ppm C/S	250 ppm	0.21	--	YES	--	USE
Methylphenol 4-	106-44-5	5 ppm	5 ppm 10 ppm C/S	250 ppm	0.097	--	YES	--	USE
Naphthalene	91-20-3	10 ppm	10 ppm 15 ppm C/S	250 ppm	0.08	1.15	YES	Odor of mothballs	USE USEP

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Nickel (soluble salts)	7440-02-0	1 mg/m^3	0.1 mg/m^3 (Inorganic only)	Ca[10 mg/m^3]	0.02	8.9	NO	--	no esta carci informa solubl USE (refine
Nitrophenol 4-	100-02-7	--	--	--	0.5	1.27	YES	~odorless	
Octyl Phthtalate di-n-	117-84-0	--	--	--	0.05	0.973 @ 25°C	--	--	
Phenanthrene	85-01-8	0.2 mg/m^3 (a)	0.2 mg/m^3 (a)	--	0.28	0.98 @4°C	YES	faint, aromatic	USE
Phenol	108-95-2	5 ppm	5 ppm	250 ppm	0.4	1.06	YES	sweet aromatic 0.05 - 16.4 ppm	USE USE IAF
Pyrene (Benzo(d,e,f)phenanthrene)	129-00-0	0.2 mg/m^3 (a)	0.2 mg/m^3 (a)	--	0.43	1.271 @ 23°C	YES	--	USE
Tetrachlorodibenzo-p-dioxin 2,3,7,8-	1746-01-6	--	--	Ca[N.D.]	6.40E-10	--	YES	--	IAF
Tin (soluable)	7440-31-5	2 mg/m^3	2 mg/m^3	100 mg/m^3	0.03	7.28	YES	--	
Toluene	108-88-3	200 ppm 300 ppm C; 500 ppm (10-min peak per 8-hr shift)	50 ppm BEI	500 ppm	21	0.87	YES	sweet pungent 2.14 ppm	USE IAF
Trichlorobenzene 1,2,4-	120-82-1	--	5 ppm C	--	0.26	1.45	YES	Aromatic 3 ppm	USE
Trichlorophenol 2,4,6-	88-06-6	--	--	--	0.4	--	--	--	
Vanadium pentoxide (as V_2O_5)	1314-62-1	0.5 mg/m^3 C (Respirable dust); 0.1 mg/m3 C (Fume)	0.05 mg/m^3 (respirable dust or fume) BEI	35 mg/m^3	~0	3.36	NO	--	IAR
Xylene, all isomers	1330-20-7	100 ppm	100 ppm 150 ppm S/C	900 ppm	9	NA	NO	aromatic	USEF IAF
Xylene, m-	106-42-3	100 ppm	100 ppm 150 ppm S/C	900 ppm	9	0.86	NO	aromatic	USEF IAF

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					mm @ 68°F	@ 68°F			
Xylene, o-	95-47-6	100 ppm	100 ppm 150 ppm S/C	900 ppm	--	--	--	--	USEF IAF
Xylene, p-	108-38-3	100 ppm	100 ppm 150 ppm S/C	900 ppm	9	0.86	NO	aromatic	USEF IAF
Zinc Oxide Dust	1314-13-2	15 mg/m^3 T 5 mg/m^3 R	2 mg/m^3 R 10 mg/m^3 C;R	500 mg/m^3	~0	--	NO	--	USE
Zinc Oxide Fume	1314-13-2	5 mg/m^3	--	500 mg/m^3	~0	5.61	NO	--	USE

CHEMICAL HAZARD INFORMATION

Notes:

ACGIH®	American Conference of Governmental Industrial Hygienists®
a	This PEL/TLV is for all Coal Tar Pitch Volatiles combined. Separate PEL/TLVs have not been established to date.
BEI	ACGIH® has recommended a Biological Exposure Index or Indices
Revision 1	Ceiling Limit; shall not be exceeded at any time during the work day
Sep-05	Chemical Abstracts Service Registry Number
I	Measured as inhalable fraction of the aerosol
IARC	International Agency for Research on Cancer
IDLH	Immediately Dangerous to Life or Health
IRIS	Integrated Risk Information System
L	Exposure by all routes should be carefully contmm @ 68 F
MW	Molecular weight
mg/m³	milligrams of contaminant per cubic meter of air
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit, unless noted is the TWA, Time Weighted Average (usually for 8 hours a day, 5 days a week), mandated by law (1989 standards)
ppm	parts of contaminant per million parts of air
R	Measured as respirable fraction of aerosol; Respirable Dust
REL	Recommended Exposure Limit
S	Short Term Exposure Limit (STEL) usually 15 minutes, four times in one day
Skin Hazard	Contaminant can be absorbed through intact skin
T	Total Dust
TLV®	Threshold Limit Value, unless noted is the TWA, Time Weighted Average (usually for 8 hours a day, 5 days a week), recommended
--	Information not available

Carcinogenic Category

IARC

1	Human Carcinogen
2A	Probable Human Carcinogen (limited evidence in humans; sufficient evidence in animals; in some cases: inadequate evidence in humans and sufficient evidence in animals and strong evidence that the carcinogenesis is mediated by a mechanism that also operates in humans)
2B	Possible Human Carcinogen (limited evidence in humans and less than sufficient evidence in animals; inadequate evidence in humans but sufficient evidence in animals)
3	Unclassifiable as a Human Carcinogen (inadequate evidence in humans and animals; in some cases: inadequate evidence in humans but sufficient evidence in animals and strong evidence that the mechanism of carcinogenicity in animals does not operate in humans)
4	Probably not Carcinogenic to Humans (evidence suggest lack of carcinogenicity)

USEPA

*	Information obtained from the IRIS database available at: www.epa.gov/iris/subst/0457.htm
A	Human Carcinogen
B	Probable Human Carcinogen (limited evidence in humans; sufficient data in animals)
B1	Limited evidence of carcinogenicity from epidemiological studies
B2	Sufficient evidence from animal studies; inadequate evidence or no data from epidemiological studies
C	Possible Human Carcinogen (Limited evidence in animals; absence in human data)
D	Not Classifiable as to Human Carcinogenicity (Inadequate human and animal evidence or no data available)
E	Evidence of Non-Carcinogenicity for Humans (No evidence for carcinogenicity in at least two adequate animal tests in different species or in both adequate epidemiologic and animal studies)
I	Data are Inadequate for an Assessment of Human Carcinogen Potential
K	Known human carcinogen (epidemiologic evidence or a combination of epidemiologic and experimental evidence)
L	Likely to produce cancer in humans
CBD	Cannot be determined (Evidence either: raises concern; is conflicting; inadequate; or, does not exist)
NL	Not likely to be human carcinogens

References:

ACGIH Worldwide. 2004. Guide to Occupational Exposure Values. Ohio: ACGIH®, Inc.
National Institute for Occupational Safety and Health. 2003. Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140. GPO.