

SHELL OIL COMPANY

SHELL CHEMICAL COMPANY

DEER PARK MANUFACTURING COMPLEX

DATE JUNE 6, 1975

TO MANAGER LUBRICATING OILS

FROM MANAGER ENGINEERING OFFICE
DEER PARK MANUFACTURING COMPLEXSUBJECT BAUXITE HANDLING IN
LUBE PERCOLATION
CCE-3993-DWB

In response to your concern for the possibility of dust-type explosions in replacing the existing belt conveyor at the lube with a screw conveyor, we have established the following information.

In discussions with Mr. J. Liner of Milwhite Co. who supply the bauxite used at the percolator plant, he stated that several of their customers have used screw conveyors in this service for years and have had no explosion-type problems. These units operate without added protection against dust explosions.

The National Electrical Code lists only metal, carbon, coal, coke and organic dust as the source of hazardous particulate accumulations.

Further, Mr. D. W. Burleson of our Project group discussed this installation with Mr. T. Ray of the Burgess Power Equipment Co., suppliers of the screw conveyors upon which our estimate was based. He indicated that there are several methods of increasing the safety of operation when hazardous materials are moved. These include: (1) Steam or inert gas purge, (2) increased distance between the screw and duct to reduce the possibility of metal to metal contact, (3) a brass cover on the edge of the screw, and (4) bushings of non-sparking material.

Should it be desirable to provide any of the above modifications to our original project concept, please advise us accordingly and we will revise the original estimate.

Please call if we may supply additional information or assistance.



H. J. Lewis

cc: Messrs. D. W. Burleson
W. C. Stanberry ✓
Engineering Office Reading File

DWB/pa

PLAINTIFF'S EXHIBIT

SH-2039

DPMC-03273

LAM 005683

TABLE G-2

Material	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift.	
			Concentration	Maximum duration
Benzene (Z37.4-1969)	10 p.p.m.	25 p.p.m.	50 p.p.m.	10 minutes.
Beryllium and beryllium compounds (Z37.29-1970)	2 μ g./M ³	5 μ g./M ³	25 μ g./M ³	30 minutes.
Cadmium fume (Z37.5-1970)	0.1 mg./M ³	3 mg./M ³		
Cadmium dust (Z37.5-1970)	0.2 mg./M ³	0.6 mg./M ³		
Carbon disulfide (Z37.3-1968)	20 p.p.m.	30 p.p.m.	100 p.p.m.	Do.
Carbon tetrachloride (Z37.17-1967)	10 p.p.m.	25 p.p.m.	200 p.p.m.	5 minutes in any 4 hours.
Ethylene dibromide (Z37.31-1970)	20 p.p.m.	30 p.p.m.	50 p.p.m.	5 minutes.
Ethylene dichloride (Z37.21-1969)	50 p.p.m.	100 p.p.m.	200 p.p.m.	5 minutes in any 3 hours.
Formaldehyde (Z37.16-1967)	3 p.p.m.	5 p.p.m.	10 p.p.m.	30 minutes.
Hydrogen fluoride (Z37.28-1969)	do.	do.	do.	do.
Fluoride as dust (Z37.28-1969)	2.5 mg./M ³			
Lead and its inorganic compounds (Z37.11-1969)	0.2 mg./M ³			
Methyl chloride (Z37.18-1969)	100 p.p.m.	200 p.p.m.	300 p.p.m.	5 minutes in any 3 hours.
Methylene chloride (Z37.3-1969)	500 p.p.m.	1,000 p.p.m.	2,000 p.p.m.	5 minutes in any 2 hours.
Organo (alkyl) mercury (Z37.30-1969)	0.01 mg./M ³	0.04 mg./M ³		
Styrene (Z37.15-1969)	100 p.p.m.	200 p.p.m.	600 p.p.m.	5 minutes in any 3 hours.
Trichloroethylene (Z37.19-1967)	do.	do.	300 p.p.m.	5 minutes in any 2 hours.
Tetrachloroethylene (Z37.22-1967)	do.	do.	do.	5 minutes in any 3 hours.
Toluene (Z37.12-1967)	200 p.p.m.	300 p.p.m.	500 p.p.m.	10 minutes.
Hydrogen sulfide (Z37.2-1966)		20 p.p.m.	50 p.p.m.	10 minutes once only if no other measurable exposure occurs.
Mercury (Z37.8-1971)		1 mg./10M ³		
Chromic acid and chromates (Z37.7-1971)		do.		

TABLE G-3—MINERAL DUSTS

Substance	Mppcf *	Mg/M ³	Aerodynamic diameter (unit density sphere)	Percent passing selector
Silica:			2	90
Crystalline:			2.5	75
Quartz (respirable)	250 [†]	10mg/M ³ =	3.5	50
	%SiO ₂ +5	%SiO ₂ +2	5.0	25
Quartz (total dust)		30mg/M ³	10	0
		%SiO ₂ +2		
Cristobalite: Use 1/2 the value calculated from the count or mass formulae for quartz.				
Tridymite: Use 1/2 the value calculated from the formulae for quartz.				
Amorphous, including natural diatomaceous earth	20	80mg/M ³		
		%SiO ₂		
Silicates (less than 1% crystalline silica):				
Talc	20			
Serpentine	20			
Talc (non-asbestos-form)	20*			
Talc (fibrous): Use asbestos limit.				
Tremolite (see talc, fibrous)				
Portland cement	30			
Graphite (natural)	15			
Coal dust (respirable fraction less than 5% SiO ₂)		1.4mg/M ³ or 10mg/M ³		
For more than 5% SiO ₂		%SiO ₂ +2		
Inert or Nuisance Dust:				
Respirable fraction	15	5mg/M ³		
Total dust	50	15mg/M ³		

NOTE: Conversion factors—
 mppcf $\times 35.3$ = million particles per cubic meter
 = particles per c.c.
 * Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.
 † The percentage of crystalline silica in the formula is the amount determined from air-borne samples, except in those instances in which other methods have been shown to be applicable.
 ‡ As determined by the membrane filter method at 430X phase contrast magnification.
 § Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:
 • Containing < 1% quartz; if > 1% quartz, use quartz limit.

The measurements under this note refer to the use of an AEC instrument. If the respirable fraction of coal dust is determined with a NRE the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

§ 1910.93a Asbestos.

(a) **Definitions.** For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) **Permissible exposure to airborne concentrations of asbestos fibers—**(1) **Standard effective July 7, 1972.** The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) **Standard effective July 1, 1976.** The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) **Ceiling concentration.** No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of

air, as determined by the method prescribed in paragraph (e) of this section.

(c) **Methods of compliance—**(1) **Engineering methods.** (i) **Engineering controls.** Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) **Local exhaust ventilation.** (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) **Particular tools.** All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) **Work practices—**(i) **Wet methods.** Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) **Particular products and operations.** No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) **Spraying, demolition, or removal.** Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d) (2) (iii) of this section and with special clothing in accordance with paragraph (d) (3) of this section.

(d) **Personal protective equipment—**(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

Sub C Eng. Cont'd
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