RHG

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AIR POLLUTION 1976

POD # 9(1)

C. DUTRA FILES

Interoffice Communication

To R. E. Lehmkuhl - Houston

From J. E. Cearley - Lake Charles

Date January 5, 1976

Subject: Proposed Schedule for 1976-1977 Chemical Exposure Abatement Program

The initial comprehensive monitoring of the first group of chemicals (Table 1) considered as "high risk" has been completed, and we now know which of these chemicals have the greatest potential for employee exposure to unacceptable levels. Additional chemicals have been added to the monitoring list as the sampling program progressed. The results of the sampling program for the period of June through November, 1975, are presented in Table 2.

The results of the sampling and analyses for the chemicals monitored thus far indicate time-weighted employee exposures are below the action level. The primary exposure problems encountered have been the short-term high level exposures that exceed the ceiling and/or maximum peak concentrations; i.e., methyl chloride, hydrogen chloride, benzene, and ammonia. Corrective measures to reduce these short-term high level exposures to acceptable concentrations are either in the planning stages or are being carried out (Table 3).

The proposed schedule for monitoring of chemicals in the plant for the next two years (1976-1977) is presented in Table 4. We will attempt to adhere to this schedule, although proposed and finalized standards for various chemicals by OSHA may change the priority of our sampling schedule. Our existing manpower prevents us from moving ahead any faster than what is proposed.

The general format that will be followed in our sampling program is as follows:

1. In all monitoring, samples representative of each job classification for all shifts will be collected. We will attempt to monitor at least 50% of the employees in each operation or process. In addition to Operations personnel, Maintenance employees will be monitored, particularly during turnaround and major repair work where the potential for high level exposures is greatest.

2. Monitoring of an operation or process will be repeated at least monthly when the concentration has been found to exceed the action level.

3. If the concentrations exceed the recommended TLV standards, monitoring will be conducted at biweekly intervals until two consecutive surveys indicate the adequacy of the control measures taken.

4. Samples will be collected semi-annually for those chemicals below the action level and considered as "high risk;" i.e., methyl chloride, hydrogen chloride, ethylene oxide, and benzene. Other chemicals below the action level will be monitored every 12 to 18 months, depending on the chemical's toxicity and the potential that exists for employee exposure.

5. For those chemicals that have relatively high established TLV values, and we are assured exposures do not approach the action levels, written determinations will be made and placed in our files. Some of the chemicals currently believed to fit this category are butadiene, pentane, LPA solvent, propane-propylene, and various raw materials and supplies, such as various Nalco products.

   We currently are considering placing phosgene in this category, since a phosgene analyzer has been installed on the HCl feed line and Olin Chemical is in the process of installing an analyzer at their facility. In addition, we analyze the methyl chloride product four to five times daily, and we know how much phosgene must be present in the product for the potential of exposure to unacceptable levels to exist.

6. As time permits, training programs will be developed for the various chemicals. We realize the importance of training programs, but our manpower is such that we are unable to develop this area as rapidly as we would like.

7. Routine plant inspections (one to two times per month) will be made to evaluate housekeeping activities and work habits in the various units.

8. Where feasible, engineering design changes will be made to reduce employee exposures to acceptable levels. Where engineering controls are not feasible, personal protective equipment will be utilized.

The Chemical Plant will adhere to this format as much as possible, although proposed and finalized OSHA regulations for various chemicals may require changes in our current schedule. In addition, there are no established sampling and analytical procedures for some of the chemicals to be monitored, and we may run into difficulties here.

J. E. Cearley

J. E. Cearley

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Enclosures

cc: RDG RAC RHG DDZ DDP

TABLE 1

Chemical	8-Hour Time Weighted Average	Action Level	Acceptable Ceiling Concentration	Acceptable Maximum Peak Above the Acceptable Ceiling Concentration for an 8-Hour Shift
Methyl Chloride	100 ppm	50 ppm	200 ppm (5 minutes in every 3 hrs.)	300 ppm
Methanol	200 ppm	100 ppm	-	-
C Hydrogen Chloride	-	2.5 ppm	5 ppm	-
C Phosgene	-	0.025 ppm	0.05 ppm	-
Ethylene Oxide	50 ppm	25 ppm	-	-
Benzene	10 ppm	5 ppm	25 ppm (10 minutes)	50 ppm
Sulfuric Acid	1 mg/m^3	0.5 mg/m^3	-	-
Butanol	50 ppm	25 ppm	-	-
Hexanol	No Established TLV			
Ethanol	1000 ppm	500 ppm	-	-
Acetic Acid	10 ppm	5 ppm	-	-
C Ammonia	-	25 ppm	50 ppm (5 minutes)	-
Carbon Monoxide	50 ppm	25 ppm	-	-
Vinyl Chloride	1 ppm	0.5 ppm	5 ppm (15 minutes)	-
Chlorine	1 ppm	0.5 ppm	-	-
Calcium Hydroxide	2 mg/m^3	1 mg/m^3	-	-
*Asbestos	Two Fibers	(> 5 micrometers)/cc of air		

*Monitoring handled by Safety

TABLE 1 (CONT'D.)

NOTE:

1. Acceptable Ceiling Concentration (C) - Those chemicals preceded by a "C" shall at no time exceed the ceiling value given for that material in the table, unless a maximum peak value is designated.

2. 8-Hour Time Weighted Average - An employee's exposure to a designated chemical shall not exceed the 8-hour time weighted average in any 8-hour work shift of a 40-hour work week.

3. Action Level - The action level is one-half the TLV; if exposures are below this level, then no further action is required, other than monitoring every 6 months. However, if exposures are greater than the action level, then more frequent monitoring is required (generally monthly), medical surveillance must be implemented, control measures must be improved, and various other requirements are necessary.

4. Maximum Peak Above Acceptable Ceiling Concentration - The ceiling standard may be exceeded for short periods (generally 5 to 30 minutes) up to a concentration defined as "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift."

TABLE

Chemical	<Action	>Action Level < Max Permissible Level	>Max Permissible Level	Method
Methyl Chloride	4991	823	165	(1)
	12	0	0	TWA
	50	8	12(6 above max peak)	Grab
Methanol	6540	228	175	(1)
	11	0	0	TWA
	101	1	0	Dräger
Hydrogen Chloride	120	0	1	Dräger
	4	0	1	TWA
Sulfuric Acid	6	0	0	TWA
Ammonia	9	0	0	TWA
	32	6	7	Dräger
	10	4	4	Area-Monitoring
Acetic Acid	13	2	3	Dräger
Benzene	2097	348	1058	(1)
	116	3	1	Dräger
	11	0	0	TWA
Ethylene Oxide	2398	5	9	(1)
	12	0	0	TWA
	6	2	2	Grab
Chlorine	127	0	0	Dräger
Carbon Monoxide	72	1	0	Dräger
Hexanol	4539[a]	-	-	(1)
	12	0	0	TWA
Ethanol	5290	0	0	(1)
	12	0	0	TWA
Butanol	4470	441	379	(1)
	12	0	0	TWA
Vinyl Chloride	11	0	0	TWA
Phosgene	99[b]	0	0	Dräger

a-Samples averaged 1.0 ppm

b-All samples less than .15 ppm

*(1) Multi-Sample Point Environmental GC
TWA - Time Weighted Average
Grab - Grab Samples

TABLE 3

CORRECTIVE MEASURES FOR REDUCING CHEMICAL EXPOSURES

CHEMICAL	UNIT	MAJOR SOURCE(S) OF EXPOSURE	CORRECTIVE ACTION	COMPLETION DATE	STATUS
Ammonia	Waste Water Holding Pond (Nutrient Addition)	Filling of Ammonium Hydroxide Storage and Day Tank; Discharge for Day Tank	Discharge and vent lines extended to below the water level of the influent waste water		Complete
	Alcohol	Filling of Ammonium Hydroxide Storage Tank - Vents to Atmosphere	Vent line rerouted to Acid Holding Pit and extended to below the water level	2-1-76	Work rescheduled due to priority
HCl	Methyl Chloride	Sampling HCl Feedstock	Redesign sampling system - enclosed loop	4-1-76	Design issued 12-30-75
Ethylene Oxide	Ethoxylation	Vent used to Blowdown ETO Reactor at Grade Level	Install knockout pot and vent to atmosphere	2-1-76	Original cost estimate was high; project redesigned - work rescheduled
Methyl Chloride	Methyl Chloride	Loading of Tank Cars - Venting to Atmosphere Bleeding of Knockout Drums Sample Bomb Collections Additions of Caustic to T 11-20 Various Vents, Relief Valves, and Bleeders	Designs currently underway to provide engineering changes for reduction of emissions	Design to be complete by February 1, 1976	Assigned to Process Engineering for design work
Benzene	Ethylene	Quench Water Settler Vent off of Light Aromatics Distillate Tower	Monitoring for benzene has recently been completed and the data is being evaluated.	Recommendations by 1-31-76	Recommendations as to corrective action needed being prepared
	Ethylene Offsites	API Separator at Waste Water Holding Pond Manholes along Ethylene Oily Water Sewer Line	Recommendation as to corrective measures needed are being prepared		

TABLE 4

CHEMICAL	UNIT	METHOD
	January 1 - February 15, 1976	
Methyl Chloride	Methyl Chloride	1
Methanol	Methyl Chloride, Ethylene	1
Hydrogen Chloride	Methyl Chloride	1
Sulfuric Acid	Methyl Chloride, Alcohol, Cooling Towers	1
Ethylene Oxide	Ethoxylation	1
	February 15 - May 1, 1976	
Benzene	Ethylene, Ethylene Offsites	1
Vinyl Chloride	Ethylene	1
Ammonia	Alcohol, Ethylene Offsites	1
Hydrogen Sulfide	Normal Paraffin	1
Butanol	Alcohol	1
Ethanol	Alcohol	1
Hexanol	Alcohol	1
	May 1 - June 1, 1976	
Carbon Monoxide	Alcohol	1
Chlorine	Ethylene and Alcohol Cooling Towers	1
Calcium Hydroxide	Steam Plant	1
Acetic Acid	Ethoxylation	1
Chromate	Alcohol Cooling Tower	1
Mercury	East and West Shops	1
	June 1 - August 1, 1976	
Hexane	Alcohol	1
Phosphoric Acid	Ethylene Offsites, Ethoxylation	1
Caustic	Ethylene, Methyl Chloride	1
Sulfur Dioxide	Steam Plant	1
Methyl Chloride	Methyl Chloride	1
Hydrogen Chloride	Methyl Chloride	1
Ethylene Oxide	Ethoxylation	1
Benzene	Ethylene, Ethylene Offsites	1
	August 1 - October 31, 1976	
Sulfur Dioxide	Normal Paraffin, Methyl Chloride	1
TBC	Ethylene	1
TPT	Alcohol	1
Nalco Products	Ethylene, Ethylene Offsites, Normal Paraffin	1
Methyl Chloride	Methyl Chloride	2
Methanol	Methyl Chloride	2
Ethylene Oxide	Ethoxylation	2
Benzene	Ethylene, Ethylene Offsites	2
Vinyl Chloride	Ethylene	2

TABLE 4 CONT'D.)

CHEMICAL	UNIT	METHOD
	November 1 - December 31, 1976	
Butanol	Alcohol	1, 2
Ethanol	Alcohol	1, 2
Hexanol	Alcohol	1, 2
Total Hydrocarbons	ATE Quench, Waste Water Holding Pond	2
Merox	Ethylene, Ethylene Offsites	1
	January 1 - March 31, 1977	
Methyl Chloride	Methyl Chloride	1
Methanol	Methyl Chloride	1
Hydrogen Chloride	Methyl Chloride	1
Sulfuric Acid	Methyl Chloride, Cooling Towers	1
Ethylene Oxide	Ethoxylation	1
Benzene	Ethylene, Ethylene Offsites	1
Vinyl Chloride	Ethylene	1
Sulfur Dioxide	Ethylene	1
	April 1 - June 30, 1977	
Ammonia	Alcohol, Ethylene Offsites	1
Hydrogen Sulfide	Normal Paraffin	1
Butanol	Alcohol	1
Ethanol	Alcohol	1
Hexanol	Alcohol	1
Sulfur Dioxide	Alcohol	1
Carbon Monoxide	Alcohol	1
Alumina	Alcohol	1
	July 1 - September 30, 1977	
Methyl Chloride	Methyl Chloride	1
Ethylene Oxide	Ethoxylation	1
Benzene	Ethylene, Ethylene Offsites	1
Vinyl Chloride	Ethylene	1
Chlorine	Ethylene and Alcohol Cooling Towers	1
	October 1 - December 31, 1977	
Caustic	Methyl Chloride, Ethylene, Ethylene Offsites	1
Phosphoric Acid	Ethoxylation, Ethylene Offsites	1
Hexane	Alcohol	1
Sulfur Dioxide	Normal Paraffin, Methyl Chloride	1
Calcium Hydroxide	Steam Plant	1
Acetic Acid	Ethoxylation	1

NOTE: Monitoring for asbestos will be conducted whenever employees come in contact with the material, which is only when old insulation is removed. Monitoring is handled by Safety.

1. Personal Dosimetry

2. Mobile Multi-Point GC