

1982

FIRST QUARTER

PLAINTIFF'S
EXHIBIT
DUP-1874

INDUSTRIAL HYGIENE SUMMARY - S. W. Ellis
LABORATORY - BLDG. 550

The gas chromatography instrument dedicated to Industrial Hygiene analyses was out of service from December 20, 1981 to February 1, 1982 due to inadequate hydrogen pressure to the instrument. A COD was completed on February 1, 1982 which increased the pressure from 12 psi to 60 psi. The instrument was returned to service and has operated without problems. The I/H coordinator provided technical assistance during installation and followup and the I/H analyst assisted with the installation, check-out and start-up.

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DUP 0814451

DU 009809

HIGH DENSITY REPORT - FIRST QUARTER 1982

INDUSTRIAL HYGIENE SUMMARY - S. W. Ellis, cont'd LABORATORY - BLDG. 550

High Density Alathon® samples from the steam stripper are devolatilized in the lab with a roll mill at 165°C. Area and personal monitoring was conducted to determine analyst exposure levels to hexane, octene and toluene. Hexane was 0.10 ppm (8 hr. TWA), TLV® = 100 ppm (8 Hr. TWA), octene was 0.001 ppm (8 hr. TWA), P.O.L. = 100 ppm (8 hr. TWA) and toluene was 0.002 ppm (8 hr. TWA), TLV® = 100 ppm, (8 hr. TWA). This data indicates that the potential for exposure to unsafe levels is unlikely. Periodic spot monitoring will be conducted on a 12 month frequency in the future.

GENERAL

The analytical procedure used prior to January 1, 1982 in the Alathon® area for vinyl acetate monitoring was determined unreliable. The vinyl acetate hydrolyzed due to humidity and polymerized on the uninhibited charcoal. Also an external standard was used.

A new procedure was developed and put into service which eliminated the unreliable aspects. The sample is collected on charcoal inhibited with hydroquinone to prevent polymerization through a drying agent. An internal standard is used to improve the accuracy of the procedure.

"F" UNIT

TASK MONITORING FOR VINYL ACETATE

Fourteen tasks were monitored; forty-one samples were taken. Sufficient data has not been obtained using the new vinyl acetate analytical procedure to make a final conclusion as to possible exposure above the 8 hr. and 12 hr. TLV® of 10 ppm or the short term exposure limit (maximum 15 minutes) at 20 ppm. One task, changing a hyper cylinder, gave the highest result of 5 ppm vinyl acetate. Based on the duration of the task, 3.08 hrs, the actual 8 hr. TWA would be 1.9 ppm which is well within control. Task monitoring results while changing a recycle compressor cylinder indicated that the highest 8 hr. TWA exposure would be 3.3 ppm vinyl acetate. The remaining results were less than .5 ppm vinyl acetate 8 hr. TWA. Data obtained to date indicates that the possibility of exposure above safe limits is remote but additional monitoring will continue to verify this. While personnel monitoring results show low exposures, there are several emission sources which are of concern from a short term exposure standpoint and have been monitored to quantify the problem.

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"F" UNIT

TASK MONITORING FOR VINYL ACETATE - cont'd

The rear seals on #1 and #2 extruders allow ethylene and vinyl acetate to leak to the atmosphere. To prevent fires, steam is placed on these seals. Quantitative monitoring results using charcoal tubes or the miran infrared analyzer have been unsatisfactory because of the high level of moisture present. The new procedure (specific for vinyl acetate) eliminates the interference from moisture.

In all, samples were taken during three periods of high VA copolymer production. Levels as high as 211 ppm were detected versus a short term exposure limit of 20 ppm. Generally, the higher readings were found between the extruders. Until engineering solutions can eliminate these elevated concentrations, this area has been barricaded and respirators are required for entry.

On January 26 and 27, 1982 five sets of monitoring were done while producing 18% vinyl acetate copolymer. The monitoring pumps were positioned four feet from the seal and three feet above the floor on the east and west side of each extruder. Data are summarized in Table I.

From February 11, 1982 to February 24, 1982 during a campaign of vinyl acetate copolymer ranging from 2.5% V.A. to 18.0% V.A. monitoring was done at the same positions as Table I. Data are summarized in Table II.

From March 17, 1982 to March 20, 1982 during a campaign of vinyl acetate copolymer ranging from 8.9% V.A. to 18.0% V.A. monitoring was done at three positions on a centerline between #1 and #2 extruders. #1 position was 10 feet to the rear of the seals, #2 position was in a line with seals - 10 feet from each seal and position #3 was 8 feet to the front of the seals. Data are summarized in Table III.

The exposure limits for vinyl acetate are as follows:

ACGIH TLV = 10 ppm 8 hr. TWA
ACGIH STEL = 20 ppm MAX 15 Mins.
DUPONT AEL = 10 ppm 8 hr. TWA
DUPONT AEL = 10 ppm 12 hr. TWA

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HIGH DENSITY REPORT - FIRST QUARTER 1982

TABLE I

DATE	TIME	PRODUCT	RATE	POSITION -		V.A., ppm		WIND SPD/DIR
				#1E	#1W	#2E	#2W	
1/26/82	0815-115	VAX3170SB	822RPM	2	12	1	1	12N
1/26/82	1115-1415	VAX3170SB	822RPM	4	56	10	2	12E
1/26/82	1415-1715	VAX3170SB	822RPM	9	56	57	3	10ESE
1/27/82	0815-1245	VAX470	931RPM	5	12	78	1	5E
1/27/82	1245-1545	VAX470	931RPM	NO	17	90	1	5E
				RESULT				

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HIGH DENSITY REPORT - FIRST QUARTER 1982

TABLE II

DATE	TIME	PRODUCT	%V.A.	RATE	POSITION-V.A.,			ppm #2W	WIND SPD DIR
					#1E	#1W	#2E		
2/11/82	0815-1115	A-2650	2.5	1148	1	5	1	1	7E
2/12/82	0845-1145	A-3445	3.5	1258	1	3	3	1	6NNE
2/12/82	1145-1500	A-3445	3.5	1258	1	5	24	3	9NW
2/14/82	0800-1100	VAX3120	7.5	1150	5	7	18	1	9E
2/14/82	1215-1515	VAX3120	7.5	1258	6	8	35	1	5E
2/17/82	0830-1130	VAX760S	9.3	1258	17	3	95	1	10SW
2/17/82	1130-1445	VAX760S	9.3	1154	20	5	96	1	7SW 15S
2/13/82	2200-0100	VAX770	9.5	1258	4	10	75	3	3ESE
2/14/82	0100-0400	VAX770	9.5	1258	2	21	13	1	4SE
2/24/82	1100-1230	VAX3135SB	12.0	931	2	4	65	1	9SW
2/24/82	1230-1400	VAX3135SB	12.0	931	2	4	73	1	8SSE
2/22/82	0800-1100	VAX550	15.0	1050	7	3	123	1	5NW
2/22/82	1100-1300	VAX550	15.0	991	7	4	141	1	4S
2/22/82	1300-1600	VAX3174	18.0	866	7	7	126	1	5SSW 8S
2/22/82	1600-1900	VAX3174	18.0	800	1	3	71	1	8S
2/22/82	1430-1600	VAX31705HB	18.0	931	4	5	211	1	10S

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HIGH DENSITY REPORT - FIRST QUARTER 1982

TABLE III

DATE	TIME	PRODUCT	%V.A.	RATE	POSITION-V.A., ppm			WIND SPD/DI
					#1	#2	#3	
3/17/82	0945-1300	VAX3128	8.9	1258	5	17	9	15SE
3/18/82	1255-1555	VAX3130	12.0	1258	9	21	11	7S
3/19/82	0830-1130	VAX565	15.0	1200	3	19	20	15S
3/20/82	0800-1100	VAX3170SB	18.0	981	8	25	17	5SSE

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HIGH DENSITY REPORT - FIRST QUARTER 1982

"J" UNIT

During the construction of "J" Unit, the original intent was to use insulation that did not contain asbestos. Inadvertently some asbestos tape was used to insulate steam lines, mainly tubing. A program was begun in November 1981 to replace all asbestos tape with calcium silicate insulation. The pipe bridge, the catalyst preparation area and the pumping, purification and compression areas are now classed as non-asbestos areas. It is anticipated that the reaction area will be completed by June 1, 1982. The remaining areas will be completed as time permits. The I/H coordinator will follow the program to verify its completion.

DUST MONITORING

Area monitoring around the absorbers and bag filter area was conducted twice using a GCA-RDM 101 Dust Instrument while probing absorbers. On March 20, 1982 28 samplings averaged 0.39 mg/m^3 total dust. Maximum reading = 2.9 mg/m^3 total dust. On March 22, 1982 32 samplings averaged 0.42 mg/m^3 total dust. Maximum reading = 3.4 mg/m^3 total dust. All results were below the TLV® of 10 mg/m^3 , however, monitoring will continue until enough data is collected to indicate dust exposure is at a safe level on a statistically significant basis.

Personal monitoring was conducted for dust and hydrocarbons during the absorber probing task. On March 20, 1982 three (3) samplings averaged 0.39 mg/m^3 total dust, and the average hexane concentration was 0.04 ppm . On March 22, 1982 three (3) samplings averaged 0.31 mg/m^3 and the average hexane concentration was 0.01 ppm . The dust concentration was well below the TLV® of 10 mg/m^3 and the hexane concentration was well below the TLV® of 100 ppm . Personal monitoring will again continue until data indicates exposure is at a safe level.

Area monitoring was also conducted while filling the absorber. Fifteen measurements averaged 5.57 mg/m^3 and the maximum was 17.4 mg/m^3 . The area is normally unoccupied during this operation. A dust respirator will be required when entering the area during this operation since the TLV® of 10 mg/m^3 was exceeded. Monitoring will continue.

CENTRAL SHOPS - BLDG. 4

The relief valve testing facility is presently located in the open shop. Impact noise above 180 dBA can be generated when relief valves are tested. The TLV for this category of noise is 140 dBA.

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HIGH DENSITY REPORT - FIRST QUARTER 1982

CENTRAL SHOPS - BLDG. 4 - cont'd

The Engineering Service Division has provided the enclosure design criteria and Victoria Plant Engineering Division is providing the design package. Completion is anticipated during the third quarter. At 140 dBA, this job will still present a shock noise pulse for the entire shop and procedures currently in place to warn personnel of a test will have to be maintained in force after the new installation is complete.

The potential for welder's exposure to welding fumes above the TLV® exists in the welder booths due to poor ventilation. A COD to provide a spot fume removal system for 12 of 21 booths has been approved. The fans and snorkles have been received. Installation of snorkles and fans will begin in June 1982. Construction will fabricate and install the new duct. Project completion is anticipated by the end of the third quarter. After the project is completed, a comprehensive monitoring program will be conducted to verify that welders are being protected from exposure to metals fumes above the safe limits.

One brazing job, brazing cast iron, was monitored for four hours for metal fumes. All results were well within exposure limits. Data are in Table V. Additional monitoring will be conducted to verify that welders are not subjected to metal fumes above the safe limits while brazing. Brazing is done very infrequently, so it is anticipated it will take 18 months to complete the program.

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DUP 0814458

HIGH DENSITY REPORT - FIRST QUARTER 1982

V

<u>Element</u>	<u>Area Sample</u>	<u>Personal Sample</u>	<u>TLV</u>
	<u>mg/m³</u>	<u>mg/m³</u>	<u>mg/m³</u>
Aluminum	1.48×10^{-5}	1.3×10^{-8}	10
Boron	6.36×10^{-5}	2.6×10^{-8}	10
Calcium	1.75×10^{-5}	6.5×10^{-9}	2
Chromium	3.18×10^{-6}	2.6×10^{-9}	0.05
Copper	6.89×10^{-4}	5.2×10^{-9}	0.2
Iron	1.33×10^{-3}	9.36×10^{-7}	5
Magnesium	5.83×10^{-6}	6.5×10^{-9}	10
Manganese	3.39×10^{-5}	2.6×10^{-8}	1
Nickel	5.3×10^{-6}	0	1
Silicon	3.18×10^{-4}	3.12×10^{-7}	5
Titanium	3.18×10^{-6}	1.3×10^{-8}	10
Zinc	2.54×10^{-4}	2.6×10^{-7}	5

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HIGH DENSITY REPORT - FIRST QUARTER 1982

PAINT SHOP - BLDG. 31

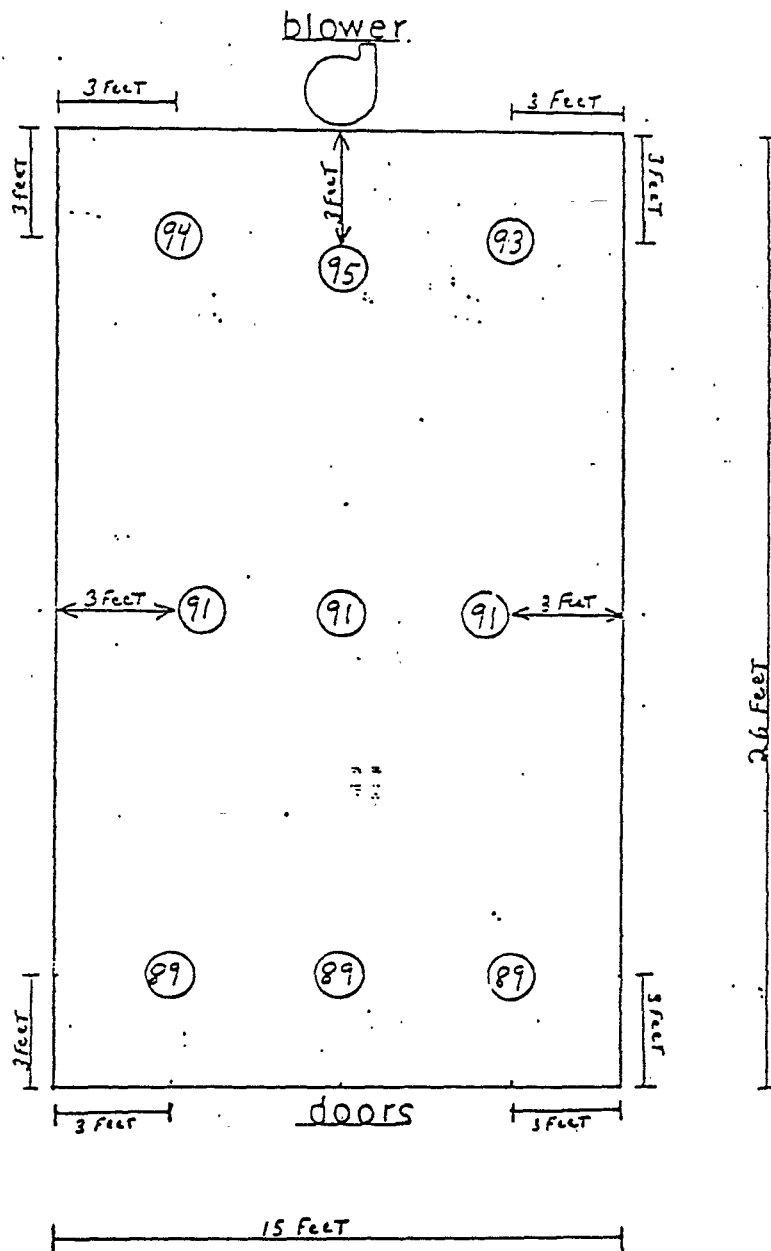
A noise survey of the paint spray booth was conducted on March 9, 1982. The average of 9 measurements was 91.3 dBA, 4.3 dBA above the TLV® of 87dBA. This required that the booth be made an ear protection required area when the blower is in operation. An engineering study will be conducted to determine the feasibility of reducing the noise level below 87dBA. Data are in Table IV.

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TABLE IV



CARPENTER SHOP

PAINT BOOTH

Readings are in dB,
TLV is 87dBA

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ELECTRICAL - INSTRUMENT

The Environmental Protection Agency, Region VI, conducted an unannounced inspection of the eight electrical transformers and 275 capacitors that contain polychlorinated biphenyls on January 7 and 8.

No violations were observed.

NECESSITY

COMONOMER COLUMN TAILS OCTENE RECOVERY - G. J. Snyder

Revisions were made to improve control, alarms and interlocks on the CMC tails octene recovery system.

1. Level control of the separator was switched to the makeup fuel oil valve coming from Nylon instead of the effluent tails line valve which flows to the Nylon boiler. This change was required because CMC tails now flows directly to the boiler and is regulated by Nylon personnel. When the CMC tails storage tank is returned to service the controls will be switched back. Authorization to reactivate the storage tank has been obtained and work is in progress.
2. High level alarms and interlocks were added to the CMC tails recovery separator and condenser. These changes help prevent carrying fuel oil over to the flare header system.
3. A proposal to improve temperature control of the fuel oil supply coming from the "day" tanks in the Nylon area has been made. This change will provide alternate steam control valves to match the small flow of fuel oil used in the "J" Unit CMC tails system. The existing large valves are sized to handle large fuel oil flows for boiler operation.

FLOW ACCOUNTING - T. R. Armusewicz

Several changes have been made to the "J" Unit computer to improve our process control and accounting. A discrepancy between make-up monomer flow and indicated flow to reaction (~3-10%) has been corrected using an empirical relationship. This discrepancy is thought to be caused by piping configurations.

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DU 009820