

VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT

SOUTH CHARLESTON PLANT

SUMMARY

Pursuant to Part 1910 - Occupational Safety and Health Standards, Emergency Temporary Standard for Exposure to Vinyl Chloride, Section 1910.93q, effective April 5, 1974, personal monitoring was initiated at the subject location on March 11, 1974. Detailed sampling and analytical methods appear in Section XI of this report.

Personal monitoring records are documented following this summary. In addition to personal identification of employees and monitoring results, job tasks which are either suspected or known to be associated with significant exposure potential are noted.

Monitoring results obtained by use of a continuously operated gas chromatograph, maintaining surveillance of ambient air at nineteen (19) strategically located sampling points, are also presented. (See descriptive list and unit plot plan for locations.) In addition to serving as an excellent leak test monitor, the instrument provides an insight to potential personnel exposure directly related to specific job tasks and work practices. Other instrumentation used to aid in control strategy (leak testing) are the Miran Infrared Spectrophotometer, J&W TLV Sniffer and the Century Organic Vapor Detector.

With the advent of the Emergency Temporary Standard, a Management directive was issued regarding strict enforcement of appropriate respiratory protection use by all employees when VCM concentrations are suspected or at any time known to exceed 50 PPM as previously determined by monitoring methods described above.

Anticipating a dramatic change in permissible exposure and, having already identified most inherently affected areas, e.g., opening, cleaning r sampling reactors, provision of respiratory protective equipment was in progress prior to the effective date. Attached are memos identifying the affected areas and job tasks and instructions pertaining to use of respiratory equipment. Appropriate revisions, deletions or additions will be made to the listed work practices as the result of future studies and implementation of engineering control.

W.C. Young/jve

7/12/74

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VCM MONITORING - WORKPLACE ENVIRONMENTS
SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 194
AREA (ENVIRONMENTAL) SAMPLES

DATE	LOCATION	DURATION, MINUTES	CONCENTRATION, PPM
5-15-74	Bldg. 194, NE Room	20	< 1
6-15-74	Bldg. 152-4, Control Room	20	2
6-19-74	Bldg. 152-3, Control Room	32	1
6-19-74	Bldg. 152-4, Control Room	21	< 1
6-19-74	Bldg. 152-4, Control Room	20	< 1
6-19-74	Bldg. 152-4, Control Room	20	< 1
6-19-74	Bldg. 152-3, Control Room	20	< 1
6-19-74	Bldg. 152-3, Control Room	20	< 1
6-19-74	Bldg. 152-4, Control Room	19	< 1
6-19-74	Bldg. 152-3, Control Room	29	< 1
6-19-74	Bldg. 154-3, Control Room	30	3
6-19-74	Bldg. 154-3, Control Room	20	< 1

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514-9573 * During NIOSH's investigation we placed our equipment adjacent to their's to check results.

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IN-HOUSE, FIXED VCM MONITORING
MODEL 1200 VFA-FLAME IONIZATION DETECTOR

SOLVENT VINYL RESIN UNIT

June 16, 1974 - June 27, 1974

Sample Point	Location	No. Readings > 50 PPM
1	B-1 Pump Packing	None ↓
2	B-2 Pump Packing	
3	Control Console	
4	Laboratory Bench	
5	B-5 Pump Packing	
6	B-6 Pump Packing	
7	No. 14 Compressor Room	
8	B-1 Agitator Packing Gland	15
9	B-2 Agitator Packing Gland	None
10	B-5 Agitator Packing Gland	10
11	B-6 Agitator Packing Gland	7
12	Control Room, Bldg. 152-3	None ↓
13	No. 1 Dispensator, Bldg. 152	11 None ↓
14	Control Room, Bldg. 152-4	
15	No. 1 Skimmer, Bldg. 152	
16	No. 1 Hard. Tk. - Wash Tk., Bldg. 152-3	
17	No. 1 Hard. Tk. - Wash Tk., Bldg. 152-2	
18	No. 1 Grinder Pump, Bldg. 152-4	↓
19	No. 1 P. Bird Seal, Bldg. 152-5	

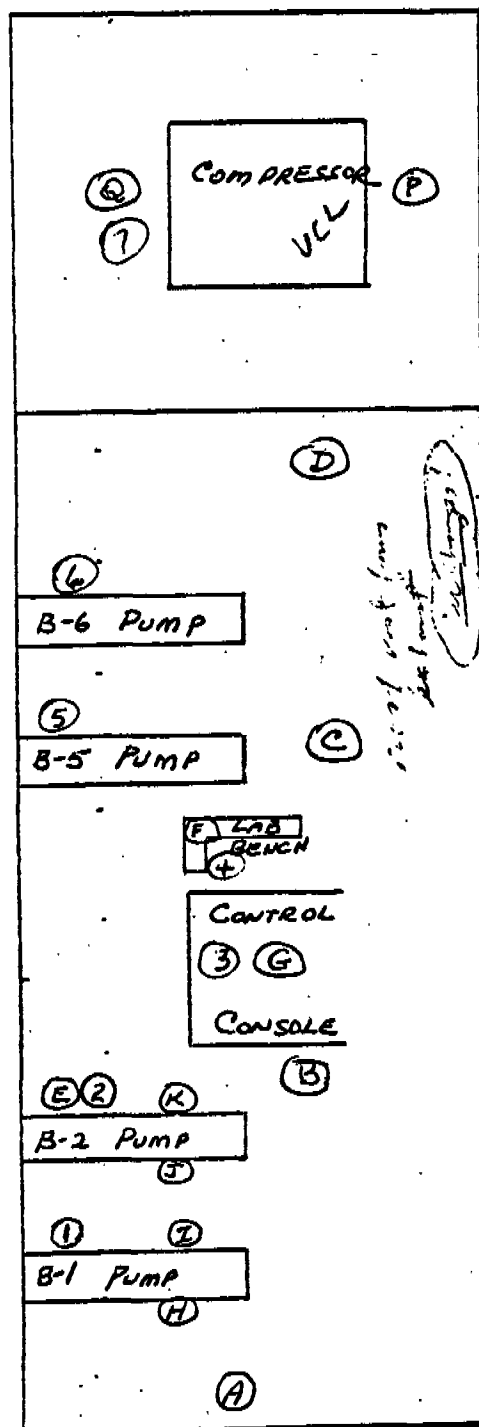
VINYL CHLORIDE MONITOR

<u>Stream No.</u>	<u>Chart Reading</u>	<u>Location</u>
1	5	B-1 Pump Packing
2	10	B-2 Pump Packing
3	15	Control Consol
4	20	Laboratory Bench
5	25	B-5 Pump Packing
6	30	B-6 Pump Packing
7	35	No. 14 Compressor Room
8	40	B-1 Agitator Packing Gland
9	45	B-2 Agitator Packing Gland
10	50	B-5 Agitator Packing Gland
11	55	B-6 Agitator Packing Gland
12	60	Bldg. 152 3rd Floor Control Room
13	65	B-152 No. 1 Dispersator
14	70	B-152 4th Floor Control Room
15	75	B-152 No. 1 Skimmer
16	80 No. 1	Hard. Tk - Wash Tk 3rd Floor
17	85	No. 1 Hard. Tk - Wash Tk 2nd Floor
18	90	No. 1 Grinding Pumps
19	95	No. 1 P. Bird Seal 5th Floor
20	100	Check Sample

FOR SERVICE CALL - MALLORY - PAGER NO. 3576

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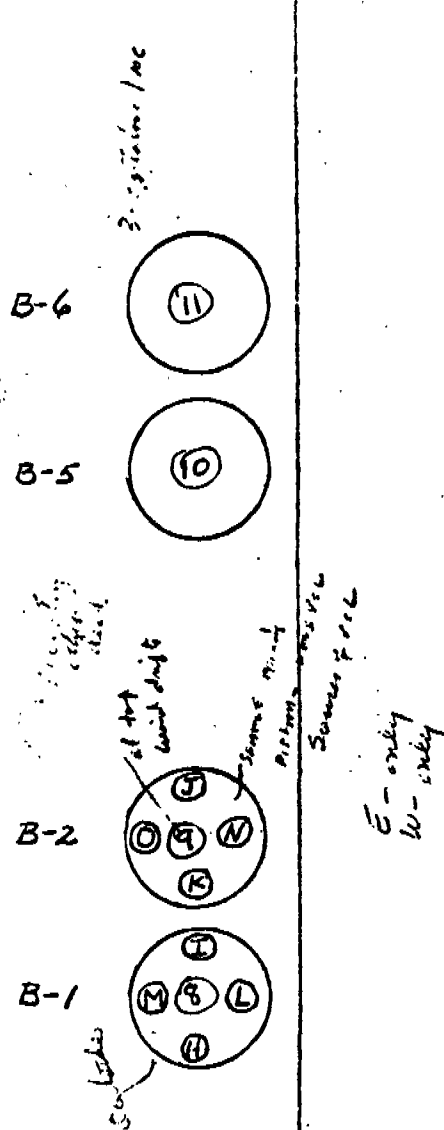
SOLVENT VINYL RESINS REACTION BLDG.



VINYL CHLORIDE
SAMPLING

BLDG. 153-1

SOLVENT VINYL RESINS REACTION BLDG.



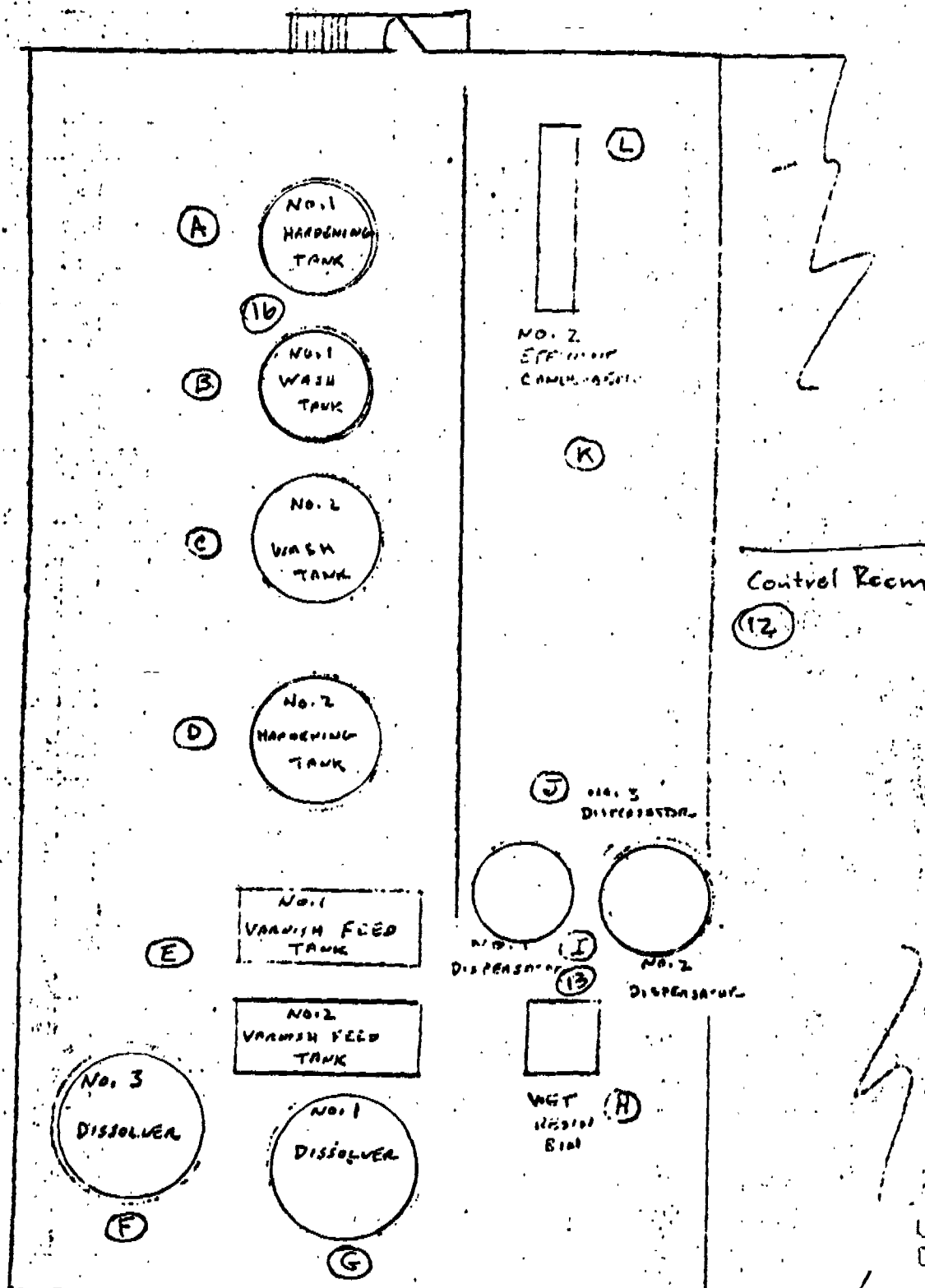
VINYL CHLORIDE
SAMPLING

BLDG. 153
TOP REACTORS

CHECKED BY _____ DATE: _____

BUILDING 15-3

NO. 10



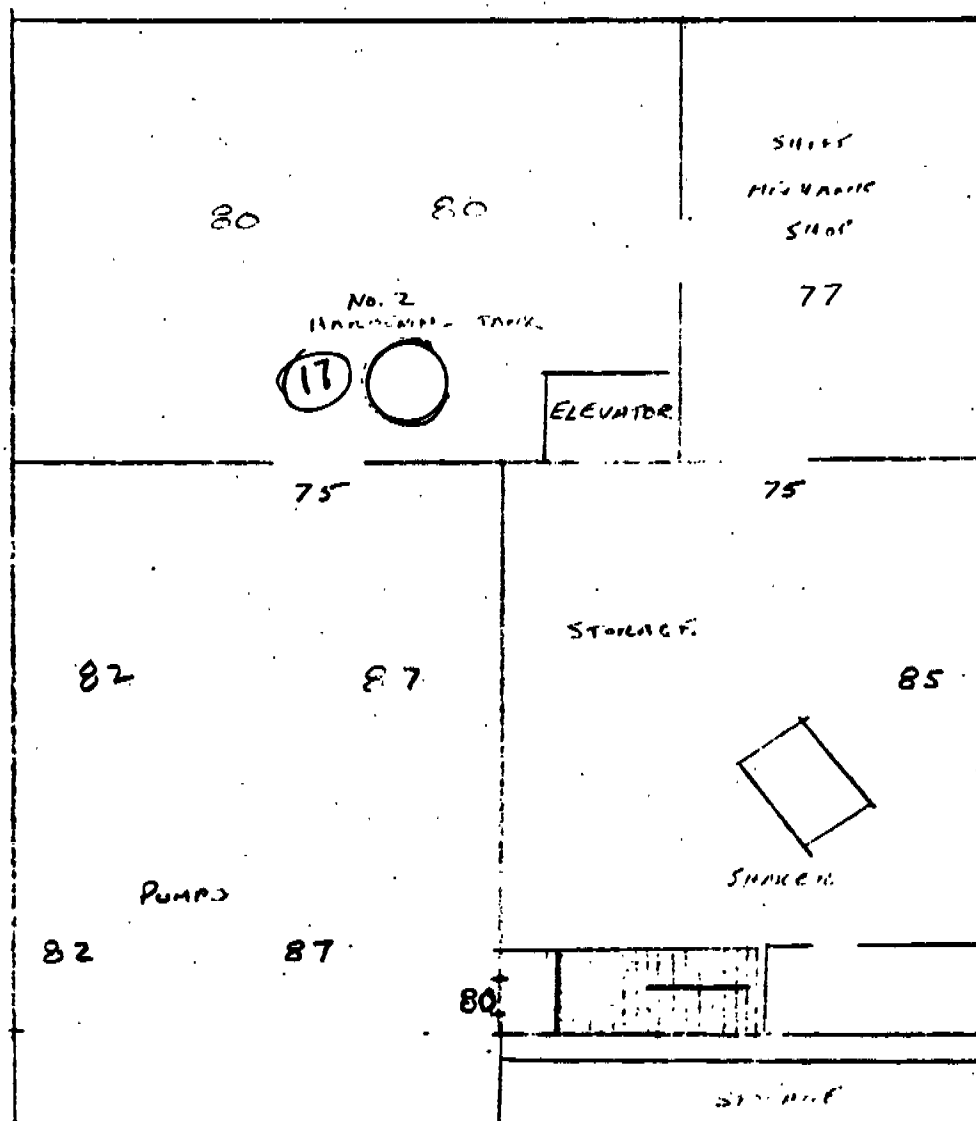
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BY _____ DATE _____
CHKD. BY _____ DATE _____

SUBJECT WATER TANKS
SOLVENT VINYL RESINS - 152-2

SHEET NO. _____ OF _____
JOB NO. _____

4
2
2



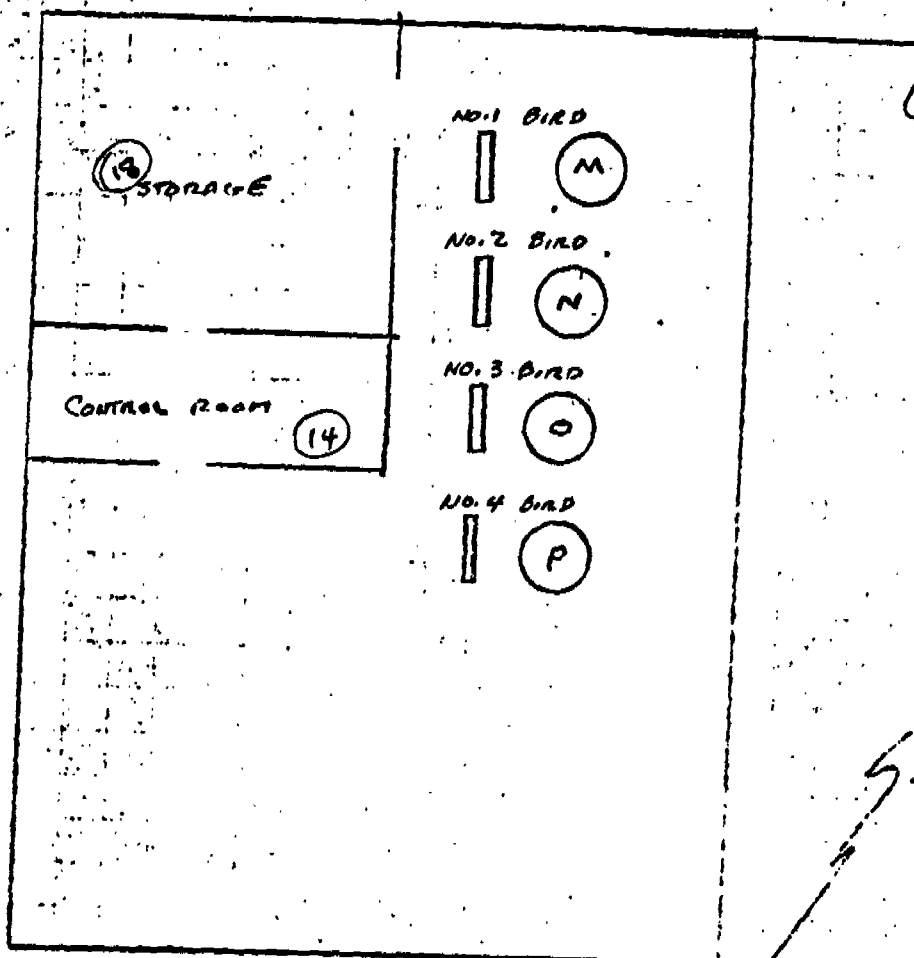
152-2

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CHKD. BY _____ DATE _____

SUBJECT VINYL CHLORIDE VAPOR IN AIR
SOLVENT VINYL RESIN UNIT
BUILDING 152-4

SHEET NO. 2 OF 3
JOB NO. H-3-75



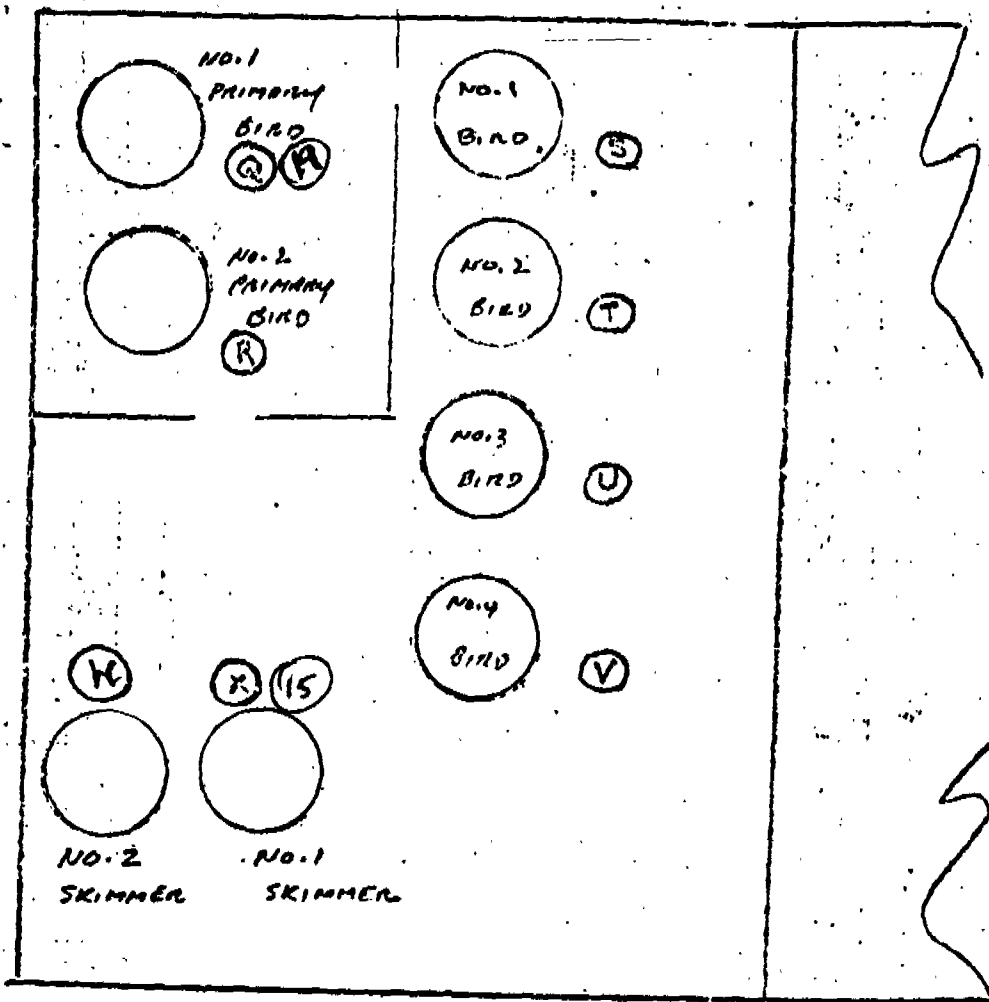
152-4

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CHKD. BY _____ DATE _____

SOLVENT VINYL RESIN UNIT
BUILDING 152-5

SHEET NO. _____
JOB NO. _____



152-5

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VINYL CHLORIDE MONOMER SITUATION

The following things are afoot on VCM exposure levels and personnel health:

1. Doctor Selikoff and crew will be in June 7-10, 1974 for worker health testing. You all have schedules to try to fill to get men in.
2. NIOSH will be here for two full weeks, June 10 thru June 21, for observation and sampling.
3. CBS-TV will be here Monday and Tuesday, June 10 & 11, for filming. They may conduct some interviews. If you're asked anything, tell the truth but try not to speculate into unknown areas.
4. Our vinyl chloride monitoring instrument with 20-point pickup is being installed in 153 with 10 or 12 points there and 8-10 points in 152. We hope to show good progress on this job by June 10 and completion by June 20.
5. Extensive sampling reveals that our points of high (more than 50 ppm) VCM are:
 - a. Sampling an autoclave
 - b. Autoclave agitator packing leaks
 - c. No. 1 Skimmer
 - d. No. 1 Grinding pump plugs - USE FAN
 - e. Sample bench at autoclave
 - f. #14 Compressor Room - sometimes - Keep Door Open

Our concern for worker health (and Federal law as well) dictates that the vinyl chloride concentration in the breathing environment must not exceed 50 ppm without taking means to keep the VCM out of the man's lungs.

We must, therefore, insist on the following action:

1. Use fresh air equipment when sampling an autoclave.
2. Use the auxiliary fan at the No. 1 grinding pump when unplugging must be done. Direct the auxiliary toward the wall-mounted exhaust fan.
3. Keep the No. 14 Compressor Room doors open.
4. Use the Coppus blowers to direct air away from the mechanic every time autoclave packing on a "live" autoclave is tightened.
5. Keep frequent check on autoclave packing- foremen, operators, mechanics.
6. Be sure there is always water on the No. 1 Skimmer seal.
7. "B" autoclave samples should be agitated while the operator has the fresh-air equipment on. Lab bench will then not experience high levels of VCM.

FUTURE PLANS

The situation at the autoclave sampling points and the agitator seals will be resolved this year by:

1. Installation of vent hoods at each autoclave sample point and the Lab bench.
2. Installation of double mechanical seals specially designed for our autoclaves.
3. Modifications to the compressor loading valves.

Longer term- the need for sampling the autoclaves will be removed by the installation of Dynatrol density instruments on each autoclave and the stripping system. This should take place next year.

Finally, the high stripping temperatures at the autoclaves are an important part of our program to remove unreacted vinyl chloride from varnish and, thus, greatly reduce personnel exposure in Building 152 and losses to the environment. Every effort should be made to maintain these temperatures.

CEF/ra
June 6, 1974

C. E. Fry
C. E. Fry

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VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 177, 191, 194

"B" AUTOCLAVE OPERATOR

DATE	EMPLOYEE	NUMBER	JOB TASK PERFORMED	CONCENTRATION, PPM
4-8-74	T.E. Eden	01363		18
4-8-74	T.E. Eden	01363		17
4-9-74	T.E. Eden	01363		47
4-9-74	T.E. Eden	01363		12
4-10-74	H.C. Gibson	01328		31
4-10-74	H.C. Gibson	01328		21
4-11-74	T.E. Eden	01363		7
4-11-74	T.E. Eden	01363		5
4-24-74	B.B. Bowman	01477	sampling A/C's	79
4-26-74	W.R. Gardner	01305	sampling A/C's	<1
4-26-74	W.R. Gardner	01305		<1
4-26-74	T.E. Eden	01363	Sp. Gr. detn.	54
4-29-74	H.C. Gibson	01328	Sp. Gr. detn.	39
4-29-74	H.C. Gibson	01328	B-4 A/C sampling, pH detn.	<1
5-2-74	P.H. Henderson	10161	Transporting samples to lab bench, Sp. Gr. detn.	20
6-15-74	W.R. Gardner	01305		16
6-19-74	W.R. Gardner	01305		1
6-19-74	B.B. Bowman	01477		<1
6-19-74	P.H. Henderson	10161		<1

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233-14-4264

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG. PPM
4-8-74		18		18
4-8-74		17		18
4-9-74		47		27
4-9-74		12		24
4-11-74		5		20
4-26-74	Sp. Gr. detn	5+		26

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233-24-6322

233-24-6322

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PERSONAL MONITORING RECORD - VCM IN WORKPLACE ENVIRONMENTS
CHARCOAL TUBE METHOD

236-24-8967

EMPLOYEE B.B. Bowman				NUMBER 01477				JOB TITLE "B" Autoclave Operator				DEPT. 08300				
DATE	JOB TASK PERFORMED				CONCENTRATION, PPM				REMARKS				ACCUM. AVG., PPM			
4-24-74	Sampling A/C's				79											
6-19-74					< 1								40			
</																

233-28-0212

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG. PPM
4-26-74		< 1		
4-26-74	Sampling A/c's	< 1		< 1
6-15-74		16		5
6-19-74		1		4

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234-76-7021

JOB TITLE "B" Autoclave Operator DEPT. 08300

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VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS, 152, 153, 154, 177, 191, 194

WEIGHMASTER

DATE	EMPLOYEE	NUMBER	JOB TASK PERFORMED	CONCENTRATION, PPM
5-9-74	R.E. Hunter	04170	Bagging resin	<1
5-9-74	D.E. Cross	03778	Bagging resin	<1
5-9-74	R.E. Hunter	04170	Bagging resin	<1
5-9-74	D.E. Cross	03778	Bagging resin	<1
5-9-74	R.E. Hunter	04170	Bagging resin	<1

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034859

232-14-9452

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
5-9-74	Bagging Resin	< 1		
5-9-74	Bagging Resin	< 1		< 1

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PERSONAL MONITORING RECORD - VCM IN WORKPLACE ENVIRONMENTS
CHARCOAL TUBE METHOD.

232-32-0179

EMPLOYEE D. E. Cross					NUMBER 03778					JOB TITLE Weighmaster					DEPT. 23300				
DATE	JOB TASK PERFORMED				CONCENTRATION, PPM					REMARKS					ACCUM. AVG. PPM				
5-9-74	Bagging Resin				<1														
5-9-74	Bagging Resin				<1										<1				

VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 191, 194

DISPERSATOR OPERATOR

[illegible]

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234-01-3069

[illegible]

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233-07-4898

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
-17-74		2		
-17-74		2	See other job titles for additional data.	2

514-0573

234-20-0423

[illegible]

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233 - 07 - 4898

[illegible]

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402-05-2724

402-05-2724

402-05-2724

402-05-2724

43-26361-1

[illegible]

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402-05-2724

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
4-22-74		< 1		
6-15-74		3		2

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VARNISH BLENDING OPERATOR

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PERSONAL MONITORING RECORD - VCM IN WORKPLACE ENVIRONMENTS
CHARCOAL TUBE METHOD

284-01-5347

EMPLOYEE J. E. O'Neal				NUMBER 00304				JOB TITLE Varnish Blending Operator												DEPT. 08300			
DATE		JOB TASK PERFORMED				CONCENTRATION, PPM				REMARKS								ACCUM. AVG. PPM					
4-19-74		Cleaning No. 1 Skimmer				4												4					

PERSONAL MONITORING RECORD - VCM IN WORKPLACE ENVIRONMENTS
CHARCOAL TUBE METHOD

233-07-4898

EMPLOYEE C.L. Freeman NUMBER 01292 JOB TITLE Varnish Blending Operator DEPT. 08300

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
4-22-74	Cleaning No. 1 Skimmer	12	See other job titles for additional data	12

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233-24-6322

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
5-3-74	Cleaning No. 1 Skimmer	13	See other job titles for additional data	9
6-19-74		5		

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VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 191, 194

OPERATIONS MECHANIC

DATE	EMPLOYEE	NUMBER	JOB TASK PERFORMED	CONCENTRATION, PPM
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4-22-74

A. R. Mulling

02608

Unplugging No. 1 grinder pump and resin hopper.

		78	
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6-20-74

B.R. Mullins

02608

Tightening A/C agitator packing glands

5

5

152

235-18-3760

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG. PPM
4-22-74	Unplugging No. 1 Grinder Pump and resin hopper	78		
6-20-74	Tightening A/C agitator packing glands.	5		+2

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VCM MONITORING - WORKPLACE ENVIRONMENTS
SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 191, 194
RELIEF OPERATOR

[illegible]

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235-28-6275

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
5-2-74	Making catalyst, Bldg. 194	<1	See other job titles for additional data.	13
5-6-74	Knocking out gel	25		11
5-6-74	Knocking out gel	8		9
5-7-74	Making catalyst, Bldg. 194	3		

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233 - 14 - 7110

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PERSONAL MONITORING RECORD - VCM IN WORKPLACE ENVIRONMENTS
CHARCOAL TUBE METHOD

233-07-4898

EMPLOYEE C.L. Freeman				NUMBER 01292				JOB TITLE Relict Operator				DEPT. 08300				
DATE	JOB TASK PERFORMED				CONCENTRATION, PPM				REMARKS				ACCUM. AVG., PPM			
5-9-74	Knocking out gel				9				See other job titles for additional data							
5-9-74	Knocking out gel				19								14			

VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 191, 194

TRUCK DRIVER

[illegible]

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034891

234-30-2932

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
6-15-74	Transporting catalyst, charging B-3 A/C.	4		4

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VCN MONITORING - WORKPLACE ENVIRONMENTS
SOLVENT VINYL RESIN UNIT - BLDGS. 152, 153, 154, 191, 194
STILL OPERATOR

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234-28-8552

234-28-8552

234-28-8552

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234-24-1920

[illegible]

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VCM MONITORING - WORKPLACE ENVIRONMENTS

SOLVENT VINYL RESIN UNIT - BLDGS, 152, 153, 154, 191, 194

PUMPER

[illegible]

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235-03-5030

DATE	JOB TASK PERFORMED	CONCENTRATION, PPM	REMARKS	ACCUM. AVG., PPM
6-19-74	Readings @ Bldg 152, 154, 191	< 1		< 1

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