MONSANTO

FROM C.D. Riggs/D.L. Gendron CC:

DATE June 7, 1974

SUBJECT Status Report-VCM/Medical Issue
Activity in Springfield Manufacturing

REFERENCE

TO R. L. Bourget
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This is to summarize action taken since April 1, 1974, in PVC Manufacturing, Springfield, related to the VCM/Medical issue and to report data on VCM exposure levels.

I. SUMMARY:

Since April 1, 1974, several low cost engineering changes have been made and work procedures have been changed in 88 and 84 Bldgs. with the objective of reducing worker exposure to below 50 ppm VCM. The result of the changes has been to reduce worker exposure on an 8-hour time weighted average from an estimated <100 ppm (88 Bldg.) and <200 ppm (84 Bldg.) to an estimated <15 ppm (88 Bldg.) and <15 ppm (84 Bldg.). Spot sample measurements since the modifications show VCM concentrations in work areas to be below 50 ppm. with few excursions, whereas data collected prior to April 1 showed several excursions above 500 ppm. Data from 10 minute personal sampling (per OSHA emergency standard) show most current worst-case worker exposures at <50 ppm with a few excursions slightly above 50 ppm.

II. ENGINEERING AND EQUIPMENT:

Action since April 1 as follows:

a) Temporary Coppus blower vent systems have been installed on 88 and 84 Bldg. kettle floors as a means of providing negative pressure to the kettle domes, thus reducing vapor evolving from open kettle manholes.

b) 88 Bldg. slurry tank manholes and inspection ports have been closed up and fitted with sight glasses. 84 Bldg. latex tanks have been closed up and fitted with sight glasses.

c) Plastic wall panels have been removed from 88 and 84 Bldg. compressor rooms in order to improve ventilation.

II. ENGINEERING AND EQUIPMENT: (Cont'd.)

d) Permanent local ventilation systems to replace temporary Coppus blower systems have been designed for 88 and 84 Bldgs. and installation initiated 6/4/74.

III. WORK PRACTICES AND PROCEDURES:

a) Work rules have been established for all manufacturing personnel in 88 and 84 Bldgs. with explanation of rules and explanation of VCM test data. Work rules have also been set for PVC maintenance personnel.

b) Additional Scott Air-Pak equipment has been installed in 88 and 84 Bldgs. and additional training conducted to insure compliance with work rules which require use of the Scott Air-Pak.

c) Procedures have been issued and training conducted on the use of the kettle floor Coppus blower vent systems.

d) Procedures for kettle entry have been changed to require "sucking out" with Coppus blower and discharging out-of-doors rather than "blowing in."

IV. VCM SAMPLING:

a) Since 4/2/74, 84 "spot" VCM samples and 69 time weighted samples (most TWA samples taken for 10 min. as specified by OSHA) have been taken in 88 and 84 Bldgs. Summary of data appears in Section V.

b) Four "Sipin" model personnel sampling pump devices have been purchased and used for 10 minute personnel samples.

c) Two "Century" meter devices for instant spot determination of VCM concentration have been purchased. One unit has been delivered and calibrated for use in 88 and 84 Bldgs.

d) Two Monsanto gas chromatographs have been sent to Bendix Corporation for modification leading to two eight-point fixed sampling and analyzing systems for installation in 88 and 84 Bldgs. Delivery is scheduled for August, 1974.

e) Since April 1 approximately 20 TWA samples per week have been taken in 88 and 84 Bldgs. combined. Staffing of two college students for summer work will enable increased sampling to approximately 80-90 TWA samples per week plus required "spot" sampling to control leak sources and provide engineering guidelines.

V. VCM EXPOSURE DATA:

A summary of the VCM data taken since recent modifications appears in Tables 1 and 2.

Table 1 compares spot sampling results in 88 and 84 Bldgs. after the recent engineering efforts and work practice changes with results obtained prior to April 1.

Table 2 shows an estimated 8-hour TWA operator exposure as of June 1, 1974, compared with the estimated 8-hour TWA prior to March 1, 1974. Also included are actual 10 minute TWA personnel sample data (per OSHA standard) taken since recent modifications. Cases a, b, c, e, f were chosen for sampling as they represented potential "worst" cases for operator exposure.

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/m

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TABLE 1

VCM SPOT SAMPLING

SUMMARY OF 88 AND 84 BLDG. DATA

I. 88 BUILDING	Prior to 4/1/74 Range ppm	After Recent Modifications Range ppm	No. of Data Points	Average ppm
A. Air inlet to kettle area	10-22	Trace	2	Trace
B. Air exhaust from kettle area	3-12	No data		
C. Kettle area				
2nd floor kettles closed	7-60	0-26	6	9.4
1st floor kettles closed	7-51	No data		
2nd floor kettles opened	10-1730	0-14.6	5	9.9
1st floor kettles opened	52-500	No data		
D. Slurry tank area				
Top - during dumping	9-6500	0-3.0	5	1
Bottom - during dumping	2-116	No data		
E. Compressor Room - compressor on	112-113	22-62	4	49
F. Dryer Panel - inside	39-67	No data		
Desk - inside	10	No data		
G. Packout Area	5-7	No data		
H. Smoking Room	0.75	No data		
I. Locker Room	14	No data		

TABLE 1 (Cont'd)

VCM SPOT SAMPLING

II. 84 BUILDING	Prior to 4/1/74 Range ppm	After Recent Modifications Range ppm	No. of Data Points	Average ppm
A. Kettle floor - kettles closed	21-60	10-75	12	35
B. Kettle floor - kettles open	65-950	9-48	3	26
C. Latex tank area - covers closed	36-113	1-2	2	2
D. Latex tank area - covers open*	No data	356-628	2	462
E. Packout and Dryer area	6-8	No data		
F. Lower kettle floor	100-400	No data		
G. Kettle room roof air inlets	No data	0	1	0
H. BDT room	0-2	6	1	6

*Work practice requires use of Scott Air-Pak when opening latex tanks.

TABLE 2

VCM TWA SAMPLING

SUMMARY OF 88 AND 84 BLDG. DATA

Estimated 8 hour TWA Operator Exposure prior to March 1, 1974 $<$100 ppm (est.)

Estimated 8 hour TWA Operator Exposure as of June 1, 1974 $<$15 ppm (est.)

Actual 10 minute TWA exposure data since recent modifications	No. of Samples	Range ppm	Average ppm
88 Bldg.			
a) Inside kettle while kettle chipping	4	0-22	9
b) Working in front of open kettle manhole and around slurry tanks	20	0-75(1)	22
c) Working in compressor room	12	3-83(2)	39
d) Working in packout area	8	0-4	1.7
84 Bldg.			
e) Working in front of open kettle manhole	8	9-46	27.6
f) Working around latex tanks and BDT room	5	0-37	16.7
g) Working around dryer and packout equipment	7	0-9	3.3

(1) Two samples out of 20 showed concentrations >50 ppm as a result of incorrect use of Coppus blower ventilation system.

(2) Six samples out of 12 showed concentrations >50 ppm. Compressor room data reveals that initial control efforts are inadequate. Additional changes are to be incorporated by 6/12/74. Compressor room is low frequency work area with habitation estimated at $<$10 min./trip and $<$1 trip/shift.

	Opera.	7/1 1st — 7/5 week	Opera.	
84	EKO	9ppm	LAB	
84	LO		(84) BO	6ppm 4ppm
88	AKO	23ppm 10ppm	(84) PO	3 ppm
88	CKO	1 ppm	T&M Orange House	
84	EPO	9 ppm	(84) EPA	
88	OH	5ppm	88 MPE	Trace
	Mech.	14ppm 22ppm 8ppm	88 PSA	
	T&M Tank farm	9ppm	Office	
84	DO	Trace	88 KO	2ppm 15ppm 9ppm

Operation	7/5 — 7/12 2nd week	Operation	
EKO	29 EPM 6 EPM 33 PPM 6 PPM 23 PPM	LPB	
LO	21 PPM 34 PPM 4 PPM	BO	16 PPM
AKO	20 PPM 21 PPM	PO	7 PPM
CKO	30 PPM	TM	4 PPM
EPO	69 PPM	EPM	
OH	31 PPM 40 PPM	MPE	0 PPM
Neck		PSA	Trace
TM	25 PPM	OPB	0 PPM Trace
SDO	19 PPM 3 PPM Trace	KO	

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	7/15 – 7/19 3rd Week			
EKO	11 ppm 0 ppm 1 ppm 10 ppm 2 ppm 50 ppm 1 ppm 6 ppm	LAB	0 ppm	
LO	3 ppm	BD	1 ppm 2 ppm	
AKO	0 ppm	PO		
CKO	8 ppm 14 ppm 1 ppm	Tet M Wire House		
EFO	0 ppm 5 ppm 0 ppm	EPA	2 ppm 16 ppm 4 ppm 6 ppm	
OH	4 ppm 123 ppm	MPE		
Mech.	0 ppm	PSA	4 ppm	
T+M Tank Farm	1 ppm 0 ppm 0 ppm 0 ppm	Office	0 ppm 9 ppm 1 ppm 3 ppm 0 ppm 0 ppm	
SCD	1 ppm 0 ppm 6 ppm 0 ppm	KO	4 ppm 14 ppm 19 ppm	

Operation	7/11	Operator	Day of ([illegible]) Test	
EKO	7ppm 12ppm 52ppm 4ppm 4ppm	LFB		
LO		BJ		
AKO	19ppm 1ppm 2ppm 8ppm 3ppm 15ppm	RO		
CKO		TH [illegible]		
EPO		EPP		
OY		MPE		
Mech		BSP		
T.F. Tank Farm		[illegible]		
SDO		[illegible]	[illegible]	