

Revised

10-24-75
~~7/3/75~~

Methods of Compliance
to the Permissible Exposure Limits
OSHA Regulation 1910.93 q - Standard for Exposure to VCI

BFG Technical Center

OSHA regulation 1910.93q requires that employee exposures to vinyl chloride shall be controlled to 1 ppm or less of VCI averaged over any 8 hour period and that no employee shall be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes. If exposures are above this, feasible engineering and work practice controls shall immediately be used to reduce exposures to at or below the permissible exposure limits.

At the Technical Center we have on going programs in both the engineering and process departments. Written plans for these programs are attached and will be furnished upon request for examination and copying to authorized representatives of the assistant Secretary of Labor and the Director of OSHA. These plans will be updated at least every six months.

These plans will also be shown to employees who are exposed in excess of the permissible exposure limits to show them the steps being taken to reduce their exposure to within the permissible exposure limits.

Lee Bennett

VCM OSHA Administrator

LAB:jj

NGC 22817

October 24,

1975

AVON L. E. TECHNICAL CENTER VCM EMISSIONS CONTROL REPORT
STATUS REPORT

SPECIAL OBJECTIVE	PROJECT	COMP. DATE	PERSONNEL ASSIGNED	ENG	COST TOTAL	REMARKS
<u>A. Engineering Projects</u>						
Divert VCM vapors now vented to room	Spot Ventilation	Complete	Gary Wilson Jim Ego	\$50,000	\$150,000	Extended local exhaust under 1100 gal. polys. Made canvas hoods for containing vapors from leaky valves & gaskets. Installed bench hood for matr. work up. This job is essentially complete.
Disperse exhausted vapors higher in atmosphere	Bldg. 414 exhaust stack	Hold	Gary Wilson Jim Ego	\$33,000	\$120,000	Not needed unless EPA standard dictates.
Insure adequate bldg. ventilation	Building ventilation a) B/414 E Emergency & Normal b) B/414 W " c) B/414 S " d) B/417 "	12/75	Gary Wilson Jim Ego	\$75,000	\$600,000	Design is on HOLD. Working on improving performance of existing heating system at a cost of \$23,000.
Reduce or eliminate environmental emissions	RD & RV discharge control a) small polys b) large polys	1976	Gary Wilson	\$50,000	\$200,000	No action.
Same as above	Design & Construct a VCM recovery system for West process.	1976	Glock Konya	\$40,000	\$160,000	Design started.
Reduce or eliminate environmental emissions	Design & construct a VCM monomer disposal system	1976	Glock Hubbard	\$30,000	\$130,000	No action.
Replace high emission source pilot plant equipment.	Replace present 15 gal. polys with 55 & 110 liter polys.	1977	Gary Wilson Jim Ego	\$150,000	\$600,000	Installation of two new 55 liter polys with blow down tanks and stripping and drying system. 10% complete. Reactors on order. Process engineers are seeking a better definition of the process.
Remove VCI from 15 gal. poly charges prior to filtering or drumming.	Design & install a 15 gal. slurry steam stripper.	7/76	G. Wilson			Will issue EA as soon as possible.
Remove VCI from 30 gal. poly charges prior to filtering or drumming.	Design & install a 30 gal. slurry steam stripper.	5/76	G. Wilson		\$ 16,000	EA approved. Work will start November 1.
Eliminate employee exposure	Install a safe sample anal station in B/414	is 1/76	A. Siverling	\$ 2,000	\$ 12,000	Fume hood installed. Flush bottom valves to be installed 12/75.
Eliminate use of buckets of solvents for poly cleaning.	Design & install a safe solvent cleaning system in B/414	1/77	Smith	\$ 2,400	\$ 24,000	20% complete.
Reduce VCI in air	Leak control	Cont.	Process & Maint.			Continuing
a. Install a Bendix GC monitoring system in B/414 for VCI & ECH. b. Install a Bendix total hydrocarbon monitoring system in B/413 for PVC laboratories.	Monitoring System	12/1/75	Forsythe	\$ 6,400	\$ 44,270	Installing remaining lights & horns by 12/75. System working well. Monitoring air intake in B/417 and plant instrument air.

cc: R.M. Kreager, D.J. Barnicki, F. Ziebe, P. DeChant, J. Alten, G. Wilson, F. Krause, C. Orben, V. Carson, D. Popovich, N. Wearsch, L. Bennett

AVON L E TECHNICAL CENTER V MISSIONS CONTROL REPORT
STATUS REPORT

SPECIAL OBJECTIVE	PROJECT	COMP. DATE	PERSONNEL ASSIGNED	COST ENG. TOTAL	REMARKS REMARKS
<u>A. Process Projects</u>					
Eliminate VCM exposure while sampling a reactor & subsequent weighing of sample.	1. Take sample in closed containers. 2. Wear respirators & rubber gloves. 3. Weigh sample in well ventilated hood.	Cont.	F. Zieber	0	No longer a problem. New hood for running T.S. works very well.
Eliminate VCM exposure while transferring a charge from poly to wash tank.	1. New stainless steel line with sweeping bends have been installed to eliminate plugs & leaks.	Done	F. Zieber	0	Procedure working fine. Have also installed a larger valve under 3000 gal. wash tank. This eliminated a lot of the plugging.
"	2. If line plugs, will use impervious suits, air masks, rubber gloves & rubber footwear while unplugging line.	Cont.	F. Zieber	0	Procedure working fine.
Eliminate VCM exposure while removing manhead from reactor.	After blowing down charge, boil out reactor with water and use a suction hose at manhead while loosening bolts. In addition, atmosphere near manhead will be tested with an OVA meter while loosening bolts. If test shows VCM present, boil out reactor again.	6/75	F. Zieber	0	A new system does an excellent job of removing residual VCl. It consists of evacuating the polymerizer with steam on the jacket. An SOP has been written.
Eliminate VCM exposure while centrifuging and trayng resin from wash tank.	Properly strip charge in wash tank to eliminate residual VCM	1/76	F. Zieber	0	We have not been centrifuging.
Eliminate VCM exposure while cleaning reactors.	1. Before entering a poly take OVA readings of the interior. If above 25 ppb, boil out again. 2. When entering a poly, wear an impervious suit and a line mask, head covers, rubber gloves & rubber footwear.	10/1/75	F. Zieber	0	No problem since using new method of boiling out reactor. Doing personnel monitoring while operator is in poly to establish effectiveness of procedure.
Prepare SOP's for PVC processes in B/414		1/76	F. Zieber	0	A number have been written and are ready for approval.

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AVON LAKE TECHNICAL CENTER VCM EMISSIONS CONTROL REPORT
STATUS REPORT

SPECIAL OBJECTIVE	PROJECT	COMP. DATE	PERSONNEL ASSIGNED	COST ENG	TOTAL	REMARKS
<u>A. Engineering Projects</u>						
Divert VCM vapors now vented to room	Spot Ventilation	3-1-76	Gary Wilson Jim Ego	\$50,000	\$150,000	Integral part of general building vent & exhaust stack. Estimate covers design & installation of spot ventilation hoods & drops. 75% completed.
Disperse exhausted vapors higher in atmosphere	Bldg. 414 exhaust stack	Hold	Gary Wilson Jim Ego	\$33,000	\$120,000	A general exhaust system is being designed. We plan to pipe fresh air to point of need and exhaust air from point of contamination. We may or may not use a large stack. May use several smaller ones.
Insure adequate bldg. ventilation	Building ventilation a) B/414 E Emergency Normal b) B/414 W " " " " c) B/414 S " " " d) B/417 " " "	? 12-75 12-75 ?	Gary Wilson Jim Ego	\$75,000	\$600,000	Replace present heating-ventilation equipment with new heaters & emergency exhauster. Use spot ventilation where practical. Eliminate windows & repair all major air leaks in building. Emphasize good air distribution. Temporary is completed. Permanent is started. Detail estimate almost complete. Hope to submit EA in July, 1975.
Replace high emission source pilot plant equipment.	Replace present 15 g polys with 55 & 110 liter polys.	1977	Gary Wilson Jim Ego	\$150,000	\$600,000	Installation of two new 55 liter polys with blow down tanks and stripping and drying system. 10% complete. Reactors on order. Process engineers are seeking a better definition of the process.
Minimize regulated areas.	Consolidate VCM using laboratories a) construct analytical lab b) Move 3.1 liter polys to B/414 c) Move general lab	HOLD	R. Cahill E. Webber	\$50,000	\$500,000	a) Detailed design put on hold by top management. b) Detailed design put on hold by top management. c) Hold. Thus far this area does not require regulating.
Reduce or eliminate environmental emissions	RD & RV discharge control a) small polys b) large polys	1976	Smith	\$50,000	\$200,000	No action.
Same as above	Design & construct a recovery system for process.	1976	Glock Hubbard	\$40,000	\$160,000	No action.

AV. LAKE TECHNICAL CENTER VCM EMISSIONS CONTROL REPORT
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SPECIAL OBJECTIVE	PROJECT	COMP. DATE	PERSONNEL ASSIGNED	ENG	COST TOTAL	REMARKS
Reduce or eliminate environmental emissions	Design & construct a VCM monomer disposal system	1976	Glock Hubbard	\$30,000	\$130,000	No action.
Same as above	Spot ventilation exhaust	1976	Wilson Ego	\$25,000	\$100,000	Small improvements being made.
Eliminate employee exposure	Install a safe sample analysis station in B/414	10-1-75	Smith	\$ 2,000	\$ 12,000	Awaiting flush bottom valves for 15 & 30 gal. reactors. Will need ventilation for fume hood installed on 3rd floor west side. Need EA or GPO to cover labor costs. 20% complete.
Eliminate use of buckets of solvents for poly cleaning.	Design & install a solvent cleaning syst. in B/414	12-75	Smith	\$ 2,400	\$ 24,000	20% complete.
Reduce VCI in air	Leak control	Cont.	Process & Maint.			Continuing
a. Install a Bendix GC monitoring system in B/414 for VCI & ECH. b. Install a Bendix total hydrocarbon monitoring system in B/413 for PVC laboratories	Monitoring System	7-1-75	Forsythe	\$6,400	\$44,270	a. Installed & operating. Will not measure ECH. Personnel monitoring has shown level of ECH is very low. Three horns & lights are missing. Computer program is operational. b. Installed and operating. Computer program & warning system are also operational.
Space for analytical groups	Coordinate B/412 West lab modifications	1976	R. Cahill E. Webber	\$9,800	\$98,241	Complete
B. Process Projects						
Eliminate VCM exposure while sampling a reactor & subsequent weighing of sample.	1. Take sample in closed containers 2. Wear respirators & rubber gloves. 3. Weight sample in well ventilated hood	Contin.	F. Zieber		0	Procedure is working satisfactorily.

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AVO. LAKE TECHNICAL CENTER VCM EMISSIONS CONTROL REPORT
STATUS REPORT

SPECIAL OBJECTIVE	PROJECT	COMP. DATE	PERSONNEL ASSIGNED	ENG	COST TOTAL	REMARKS
Eliminate VCM exposure while transferring a charge from poly to wash tank.	1) New stainless steel lines with sweeping bends have been installed to eliminate plubs & leaks.	Done	F. Zieber		0	Procedure working fine.
"	2) If line plugs, will use impervious suit air masks, rubber gloves & rubber footwear while unplugging line.	Contin.	F. Zieber		0	Procedure working fine.
Eliminate VCM exposure while transferring resin from wash tank to filter box and transfer of wet cake to containers.	Strip charge in wash tank to eliminate residual VCM	Small Polymerizers 9-1-75	F. Zieber			Must design & install stripping unit. Also trying to correct with procedures. Some progress made.
Prepare SOP's for PVC processes in B/414		9-1-75	F. Zieber			A number have been written and are ready for approval.
Eliminate VCM exposure while removing manhead from reactor.	After blowing down charge, boil out reactor with water and use a suction hose at manhead while loosening bolts. In addition, atmosphere near manhead will be tested with an OVA meter while loosening bolts. Test shows VCM present boil out reactor again.	6/7/75	F. Zieber		0	Reactors are being completely filled with water and boiled out. Working very well.
Eliminate VCM exposure while centrifuging and trayng resin from wash tank.	Properly strip charge wash tank to eliminate residual VCM	6/1/75	F. Zieber		0	We have not been centrifuging.
Eliminate VCM exposure while cleaning reactors.	1. Before entering a pot take OVA readings of the interior. If above 1 ppm, boil out again. 2. When entering a pot wear an impervious suit and air line mask, head covers, rubber gloves & rubber footwear.	4/1/75	F. Zieber		0	If we get any "OVA" reading above the background, we boil out again. Protective clothing is being worn.

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