

TO	Ron Kaminski	FIELD POINT OR DEPT. & BLDG. NO. Plaquemine	DATE YOUR LETTER
FROM	T.S. Bialke	FIELD POINT OR DEPT. & BLDG. NO. Akron - D/0020, 5-H	DATE THIS LETTER 5-19-80

SUBJECT

PLAQUEMINE INDUSTRIAL HYGIENE SURVEY

On April 14-17, 1980 I visited the Plaquemine chemical plant and conducted an industrial hygiene survey.

I had previously visited the plant in June 1979. The plant's housekeeping is much improved, unnecessary environmental monitoring has been discontinued, an asbestos handling procedure has been developed, and an environmental surveillance code developed.

During this visit a breakdown in the administering of the respirator program was found. A hearing conservation program needs to be developed (specific recommendations are contained in the report). You also need to develop and implement an effective vinyl chloride leak detection program to reduce personnel exposures to VCM.

I wish to thank your staff for their cooperation, and Dan Langlois for his assistance in making this survey proceed efficiently.

T. S. Bialke

T. S. Bialke
Sr. Industrial Hygienist

V

- cc: H.W.Dietz/E.B.Katzenmeyer, Jr.
R.A. Guyton
H. Waltemate
S. Aichas
H.Botelho/E.Harrington
W.C. Becker
A.Clements/W.Lodge/B.DiLiddo
W.Horton/E.Osborne
D. Langlois
D. DiRienzo
T. Kessel

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RECOMMENDATIONS:

1. Ensure that the periodic inspection element of the plant's respirator program is properly conducted.
2. Ensure that only approved respirators are used within the plant. Discard the 3M 8500 respirator.
3. Repair breathing air station at the V33 condenser.
4. Provide sandblasting stand-by man with respiratory protection and ensure its use. 3M 8710 disposable respirator will be adequate.
5. Install pressure warning device in the motor control center T3 to warn of room pressurization failure.
6. Initiate a mechanism whereby the plant can compare audiometer results with audiometric examinations to facilitate the counseling of employees regarding hearing conservation.
7. Require hearing protection to be worn around bagging operations in the warehouse.
8. Reduce noise levels from the bagger by muffling compressed air exhausts and using an alternative method to blow-off conveyor belt (see Discussion).
9. Resurvey plant noise areas by taking area sound level readings. Post areas greater than 90 dBA as requiring hearing protection when employees are assigned to work in these areas.
10. Keep this office posted on the progress of the plant's revision of its VCM leak detection program and efforts to eliminate PVC build-up on vessel agitators.
11. Provide a monthly summary of all environmental health monitoring programs. Include explanations of overexposures, type of personal protective equipment worn, efforts to reduce or eliminate future occurrences of exposure and status of engineering programs designed to eliminate exposures (see Discussion and attached reports for suggested formats).

DISCUSSION:

A spot check of a few employee respirators showed stretched out head straps, and misshapen face pieces. These are indications of a breakdown in the inspection element of the plant's respirator program. The respirator program is well written but it must be implemented. Periodic spot checks of employee respirators by plant supervision could be a possible solution.

The 3M 8500 single use respirator was found still being used at the plant. This respirator is not approved by NIOSH or MESA and should not be permitted in the plant. Only approved respiratory protection can be used; approved respirators are those carrying the MESA or NIOSH approvals.

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Discussion (con't)

The breathing air station at the V33 condenser, Train III was in need of repair. As it existed, it could not be used to hook an airline onto. The condition of all breathing air stations should be reviewed. The plant has submitted an AR to separate the breathing air and instrument compressed air systems.

The stand-by man for sandblasting operations must be required to wear a respirator to protect against any associated dust exposure. The 3M 8710 single use respirator will be sufficient. The 3M 8710 should be used to replace the existing stock of 3M 8500 respirators which are to be disposed of.

During my initial walk-through of the entire plant, the T3 motor control center was entered. All control centers are supposed to have a slight internal positive pressure. On the day I visited the plant, the system providing the positive pressure was inoperative; a belt had slipped off the fan. No one knew how long it had operated in this manner. If a low pressure alarm had been installed, the control room personnel would immediately have known that the system had failed.

Arrangements should be made with your plant physician to obtain the audiometric results for each employee so that audiograms can be compared with audiodosimeter results from that employee and his job class. Such a comparison will aid in determining if an employee's hearing loss could possibly be due to an on or off the job noise exposure. If dosimetry representing a job class is below the allowable limit and an employee from that job class has a hearing loss and few or no other employees from the same job class show threshold shifts, it is a good bet that the employee received his noise induced hearing loss from an off the job noise exposure. He therefore should be counseled to take care of his hearing off the job. But if noise dosimetry from a job class are high and audiometric exams show shifts, the plant should take action to determine sources of exposure within the plant and initiate steps to eliminate or reduce exposure. In the interim, ear protection should be mandatory.

Table I shows results of my audiodosimetry monitoring. Job classes 340, 160 and 360 had exposures that were high on one day. Additional monitoring is required before a determination can be made as to whether these jobs present a noise hazard. However, two sources of noise exposure for these jobs were identified; one, a noisy 1K1 vacuum pump was immediately corrected by the operator. The other, the bagging operation, needs more attention. Until the blowing off of the belt by compressed air can be eliminated (suggestion - try a mechanical brush to scrape resin off or reduce air pressure) and actuator exhaust muffled, hearing protection is mandatory for all employees involved in the bagging operation.

Approximately two years ago a plant-wide area noise survey was conducted. Mr. Langlois and I repeated a portion of the survey during my recent visit and discovered the noisy 1K1 vacuum pump. The plant-wide survey should be repeated on a biannual basis to ensure that noise levels do not "creep up" unnoticed. Areas identified as having noise greater than 90 dBA should be considered for posting as requiring hearing protection if employees are

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Discussion (con't)

assigned to work in those areas, and dosimetry shows exposures to be greater than 75%. Also, the plant should consider hearing conservation as a topic for a couple of safety meetings. The meetings could cover noise, its causes and effects on an employee's hearing, proper fitting and wearing of ear protection, the audiogram and what it means, how noise dosimeters work and the plant's efforts to reduce noise exposure.

A review of the plant's VCM monitoring results showed some job exposures to be higher than expected when compared to other plants with similar processes. Exposures can be partially explained by the frequent vessel entry caused by build-up of material on the agitators. I have no specific recommendations addressing this problem, but wish to be kept informed of the plant's efforts to reduce the build-up. Other significant causes of overexposure are due to the age of the plant and frequent leaks. The plant's leak detection program has come to a virtual stand still. During my visit two proposals addressing the leak detection program were discussed. They involved who was to be charged with the responsibility of detecting the leaks. Should production be responsible, or should an independent organization such as Safety or the Lab assign a person to do the task of detecting leaks? Also, what mechanism should be developed to follow-up to ensure leaks found are eliminated? I cannot specify what will work best for Plaquemine; I have seen successful programs based on both principles. However, I think the detection and elimination of leaks to be an essential step in reducing VCM exposures at Plaquemine and would like to be kept informed of your progress in this area.

Attached are copies of examples of the Henry and Louisville plant monthly environmental health reports. Plaquemine is encouraged to initiate, in a similar manner, monthly reports of all environmental related efforts. Routing should include this department, Chemical Group safety, product group management and Chemical Group environmental departments. The report as a minimum should include summaries of all exposure monitoring results, explanation of excessive exposures, protective equipment worn, what will be done to prevent future occurrences of similar exposures and status of engineering programs to eliminate exposures.

The plant's asbestos program looks in good shape. All unnecessary monitoring has been eliminated per previous recommendations. All in all, the plant housekeeping is much improved over the previous visit.

I would like to thank Dan Langlois, Ron Kaminski and the rest of plant management for their assistance and hospitality during my visit and am looking forward to working with them in the future.

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TABLE I.

NOISE DOSIMETER RESULTS
Plaquemine - 4/16-17, 1980

<u>Date</u>	<u>Name/SS No.</u>	<u>Job Code Description</u>	<u>Sample Time (min.)</u>	<u>115 dBA</u>	<u>12 Hr. TWA - %</u>
4/17	J. Schaff 435-72-3588	130, I & II Poly OT	440	Yes	26
4/16	C. Schofield 439-60-6052	ditto	455	No	17
4/16	D. Hoyt 43-762-6411	111, I & II Superv.	450	No	9.6
4/17	M. Comeaux 437-76-1798	ditto	436	No	39.6
4/16	E. Vaughn 435-90-4103	160, I & II OT	455	No	0
4/16	A. Washington 438-88-3312	ditto	445	Yes	71
4/17	H. Vaughn 439-76-7070	ditto	438	Yes	0
4/17	C. Simoneux 435-94-4794	ditto	451	Yes	169
4/16	A. Smith 428-66-7989	140, I & II Fin. OT	450	Yes	70
4/17	L. Lyke 437-66-4044	ditto	445	No	61
4/16	J. Knapps 433-70-1674	330, III OT	450	Yes	65.6
4/17	J. Besson 435-90-5344	ditto	451	Yes	65.5
4/17	R. Rivere 433-92-1524	410, Loading OT	440	Yes	62
4/16	N. Allen 437-88-5031	ditto	427	Yes	0
4/16	M. Carter 433-74-8148	340, III Outside OS	424	Yes	27
4/16	J. Noto 433-82-3309	ditto	444	Yes	120
4/16	D. Lilly 436-04-2545	360, III JOT	435	Yes	0

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TABLE I (2)

NOISE DOSIMETER RESULTS
Plaquemine - 4/16-17, 1980

<u>Date</u>	<u>Name/SS No.</u>	<u>Job Code</u>	<u>Sample Time</u>	<u>115 dBA</u>	<u>12 Hr. TWA - %</u>
4/16	J. Ernis 437-66-6580	360, III JOT	435	Yes	41
4/16	E. Carr 436-68-8579	ditto	450	Yes	116.8
4/16	C. Lorio 435-63-3972	ditto	458	Yes	103.8

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TO T. S. Bialke FIELD POINT OR DEPT. & BLDG. NO. D/0020 5-H AKRON DATE YOUR LETTER
FROM Dan Langlois FIELD POINT OR DEPT. & BLDG. NO. Safety Plaquemine DATE THIS LETTER 3-25-83
SUBJECT STATUS OF RECOMMENDATIONS FROM INDUSTRIAL HYGIENE SURVEY OF DECEMBER 6-10, 1982

1. Monthly Environmental Report Incomplete

Recommendation: (a) Include in industrial hygiene section of monthly report the total number of VCM samples taken, the total checked for breakthrough, and number of breakthroughs found, (b) report noise monitoring results by job class, (c) on the front include an executive summary of efforts being extended to solve reactor parking leaks, hammer blind ventilation status, and results of reactor coating to prevent build-up.

Status: Starting with the December, 1982 report, all recommendations are included in the monthly report.

2. Three GC probe filters found needing replacement

Recommendation: Establish a program to periodically check and replace GC probe ends as needed.

Status: A check sheet has been initiated to check all probe filters quarterly by J. Hillyard, the Safety and Health Coordinator.

3. Compressed air for breathing purposes checked for VCM by GC probe at intake to air compressor

Recommendation: Check breathing air at point of use in process areas; establish a procedure to warn users in process areas when 1 ppm VCM is exceeded in breathing air so that respirators can be removed or uncontaminated air substituted until VCM levels in compressed breathing air at point of use drop to safe levels, i.e. below 1 ppm.

Status: Have monitored breathing air samples in manufacturing areas, vinyl chloride was not present. Breathing air will be monitored once Plant breathing air system is installed. Installation is expected to be complete by the end of the fourth quarter 1983.

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4. VCM residual checks prior to vessel entry are being made inside vessels within 6 inches of manhead opening

Recommendation: Since vapors of VCM are heavier than air, any VCM that may remain in vessel after purging may accumulate at the bottom of the vessel. To ensure that VCM concentrations are low enough for vessel entry, the entire cross-section of the vessel should be sampled. If the HNu probe will not reach to the bottom of the vessel, another device such as the Century OVA should be tried.

Status: Longer HNu meter cords have been ordered, delivery is expected in mid-April - K. Recko.

5. Local exhaust ventilation system for evacuation of vessels not checked periodically for operating efficiency

Recommendation: All ventilation systems designed for control of health hazards should be operating at design or peak efficiency to ensure control of hazards. All systems should be initially cleaned and maintenance performed periodically to ensure peak performance. The systems then are to be evaluated by obtaining manometer or airflow readings to establish a baseline to which future performance checks can be compared. Then, on a quarterly basis, all systems should be checked and, if necessary, brought back up to specification.

Status: Installation of a permanent manometer will be completed by second quarter, 1983. The system will be checked and evaluated at that time. A check sheet will be added to the monthly safety inspection conducted by the Safety Department.

6. Warehouse resin bagging area. Gaylord box resin loading results in much fugitive dust emissions. Employees observed not wearing dust-respirators during operation.

Recommendation: Employees engaged in loading boxes with resin must wear a dust respirator. The 3M 8710 would offer sufficient protection. Upon being informed by D. Langlois, the foreman in charge put the men in proper respirator protection. The Gaylord box filling operation must have local exhaust ventilation. An enclosure such as provided to the scrap collection boxes off of the resin dryer would be sufficient to contain the PVC dust generated from box filling.

Status: Current frequency of box loading does not justify installation of a ventilation system at this time.

7. Sheets of asbestos material are marked and cut to make gaskets

Recommendation: Obtain three personnel monitoring samples on employees engaged in setting up, marking and cutting of asbestos gasket material. Also, obtain three samples for asbestos on employees engaged in replacement of the large asbestos gaskets on vessels. Sampling devices and sampling methods are being sent under separate cover.

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7. Continued

Status: Three personnel monitoring samples were obtained on employees engaged in setting up, marking and cutting of gasket material. These samples were routed to T.S. Bialke for analysis. Sampling of employees engaged in replacement of large asbestos gaskets on vessels will be done whenever the occasion arises that a gasket has to be changed.
M. J. Thompson

8. One hundred fifty VCM task monitorings obtained in 1982, name entered into Chemical Group personnel monitoring system

Recommendation: All personnel and area monitoring data, regardless of length, must be entered into the computer within two weeks of analysis. The personnel monitoring system is the permanent record of all Chemical Group plants monitoring results, kept to satisfy OSHA and BFG medical department requirements.

Status: Due to the secretarial work distribution, at the present time there is some delay in entering data into the computer. We will continue to enter the past task monitoring into the system as time permits.

9. VCM Sampling and analytical procedures outdated

Recommendation: Rewrite the sampling and analytical procedures for VCM to include (1) sampling pumps to be calibrated before and after shift; samples with flow rates that drop off more than 20% are to be discarded, (2) VCM sample tubes are to be kept in the freezer if not analyzed immediately after collection, (3) update lab form to reflect changes in sampling procedure.

Status: The analytical procedure has been developed and is in for typing. Monitoring procedure will be completed by M. J. Thompson 4-30-83. Sampling pumps are being calibrated before and after each shift. VCM sample tubes are being kept in the freezer when not analyzed immediately. The lab form has been updated to reflect changes in sampling procedure.

10. VCM analysis using large charcoal tubes with solvent desorption and GC analysis; Plaquemine is the only plant in the company using this method

Recommendation: As soon as practical, switch to the flasher method of analyzing for VCM. The change to flasher method will (1) bring the plant in line with other BFG facilities method of VCM analysis, (2) it will allow for direct comparison between Plaquemine VCM monitoring results and other facilities and allow the data to be evaluated with some confidence that it was obtained by a method that meets the precision and accuracy requirements established by OSHA. Dr. P. Zakriski and I will provide the plant with sources of flasher equipment that meets our specifications.

Status: Flasher equipment located at ALTC. Plaquemine Lab has received part of this equipment. We are waiting on the rest of the equipment to be shipped. T. E. Neff

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11. Some compressed gas cylinders on loading dock were not secured

Recommendations: Make certain that cylinders of compressed gases are securely fastened at all times to prevent their accidentally being tipped over.

Status: This item was corrected the same day. Additional racks will be installed during 1983 to avoid overflow of cylinders. This item is part of our monthly safety inspections.

12. (a) Noise monitoring results for Tr III reactor operator and Train III J.O.T. above OSHA limit. Tr I O.T., rover and finish bldg. operator noise exposures 68 to 100%. (b) Two maintenance workers observed not wearing hearing protection in posted areas.

Recommendations: (a) Noise sources in Tr III need to be addressed. The hydraulic agitator has been identified as a major noise source. Plant proposal of moving and isolating agitator outside of Tr III building would be best solution to problem. The steam meters to vessels need to be insulated or modified to reduce noise. Agitator drives also are a significant source of noise that may be controlled by soundproof enclosures. (b) Continue to obtain noise dosimeter readings on employees working in posted areas to build a large noise dosimeter data base to direct and evaluate noise control efforts. Make certain that all employees wear hearing protection in designated noise hazardous areas.

Status: Requests for capital to minimize Train III Prepo agitator and steam mixers noise sources will be submitted the second quarter of 1983. The Safety Department will continue obtaining noise dosimeter readings on employees. K. Recko

13. Train I & II JOT VCM exposure 13.3 ppm, Train I & II OT VCM exposure 7.2 ppm. Respirator worn by both workers during vessel entry

Recommendation: The Plaquemine facility has reduced its employees' average VCM exposure in 1982 when compared to 1981. Regulated area 011 went from 2.5 ppm average in 1981 to 1.21 pp average in 1982. Regulated area 014 went from a 4.4 average in 1981 to 2.48 average in 1982. These reductions indicate that the plant's actions to address its VCM exposures as described in this report have been partially successful. More work is needed. Personnel monitoring results noted in this report with averages above 1.0 ppm are too high. Priority must be given to reducing frequency of poly entry as this is by far the most significant source of an employee's VCM exposure.

Status: This item was discussed at the Plant Managers Safety Committee Meeting. Management is aware of VCM exposure problem and this item has been and will continue to be addressed. Continued task monitoring will be done to isolate our problem. Engineering, such as reactor packing, reducing frequency of vessel entry, removal of degassing compressors from the area will continue to be addressed to reduce the source.

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14. Respirator procedure incomplete

Recommendation: Incorporate into the plant's respirator procedure the types of respirators used within the plant, limitations of their uses, instructions on how to properly clean and store respirators, and procedures used to fit test employees.

Status: A respiratory procedure has been written effective 3-4-83, reviewed by all employees and placed into our safety procedure books throughout the Plant. Attached is SA.40, Respiratory Protection which covers the items addressed.

Item from previous survey:

5. Install local exhaust ventilation for all hamer blinds

Recommendation: Proposal to modify local exhaust ventilation system in Train III to exhaust hammer blinds was received and it is recommended that the plant proceed. Train I and II are being studied for a cost effective method of providing spot ventilation.

Status: No progress has been made on the ventilation system due to engineering manpower restraints. An AR has been submitted which will make line valves failsafe and reduce the possibility of VCM exposure. Additional task monitoring will be continued. Can not estimate at this time when design will be complete.


Dan Langlois

DL/col
attachment

cc: Plant Manager	w/attach
Department Managers	w/attach
H. Waltemate/ E. C. Martinelli	w/attach
R. C. Kaminski/ J. F. Malone	w/attach
E. B. Katzenmeyer/ H. W. Dietz	w/attach
R. A. Guyton/ R. A. Kelley	w/attach

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