

TO	E. L. Beeler	FIELD POINT OR DEPT. & BLDG. NO. Louisville	DATE YOUR LETTER
FROM	T. S. Bialke	FIELD POINT OR DEPT. & BLDG. NO. Akron - D/0020, 5-H	DATE THIS LETTER 5-12-81
SUBJECT <u>INDUSTRIAL HYGIENE SURVEY-1981</u>			

During the period March 30-April 1, an industrial hygiene survey was conducted at the Louisville plant.

The scope of this survey was limited to the review of the acrylonitrile (AN) and vinyl chloride (VCL) monitoring programs, lead control efforts and discussion of company noise policy and impending OSHA noise amendment. The plant's breathing air system was also reviewed.

Recommendations are contained herein to modify the plant's breathing air system which should ensure "pure" air for airline respirator use. Recommendations are offered to improve control of noise in the PVC compounding area; to develop a hazard inventory by department job class; to ensure timely notification of process changes to the Environmental and Safety Departments and to review AN and VCL standard operating procedures as they affect worker exposures.

All items from previous surveys have been acted upon. Lead control efforts have improved worker exposures and action was initiated to comply with the medical department's noise policy and OSHA method for audiotosimetry testing.

I wish to thank P. Mosser and C. Horrell for their time and assistance.

T. S. Bialke
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v

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RECOMMENDATIONS:

1. Compressed Breathing Air
 - A. Move intake for plant breathing air to an area less contaminated with VCL and other organics.
 - B. Install a filtration system to remove organic vapors at the breathing air compressor. Following the bed, install a THA to monitor for breakthrough of organics.
2. Establish a procedure for notifying the Louisville Environmental people of any changes in processes that may have impact upon the work environment so that the potential effect can be evaluated before the change occurs.
3. Check operator exposure to ammonia fumes in refrigeration building at least twice weekly for the next three months and again in the winter months. If levels are found to be consistently at or above 15 ppm (approximately 1/2 of the TLV of 25 ppm), the refrigeration building ventilation system will have to be modified to provide for "fresh" air at the operator's work station.
4. Develop an inventory of chemical and physical hazards to which employees working in each job class would be routinely exposed.
5. Envelop the 9" A line spare cuber strip blow-off in a sound enclosure; ensure that the opening through which the strip passes into the cuber room is properly shielded.
6. Completely enclose the 4" line strip blow-off within a sound barrier.
7. Review standard operating procedures in Bldg. 1 to determine if they are being properly followed as they relate to VCL exposure control.
8. Review standard operating procedures in Bldg. 131 to determine if they are being followed as they relate to the prevention of AN exposure.

DISCUSSION:

The Louisville plant-wide compressed breathing air system's operation was discussed with J. Robben, P. Mosser and C. Horrell. Questions had been raised by employees as to how they can be assured that the air they receive through their airline respirators is "pure" or safe to breathe. The system currently has one air intake near the LPA with one oil free breathing air compressor. Particulates are filtered prior to the compressor. Compressed air is piped to the plant areas/buildings where it passes through charcoal beds to remove organics. The filtered air is maintained in a reservoir in each area to provide for a reserve in case of compressor failure. After the charcoal bed,

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Discussion (con't)

the air is sampled for VCL by gas chromatography (G.C.). In some areas, VCL has been measured downstream of the charcoal beds. No pattern has been apparent in the VCL breakthrough. VCL levels found are occasionally in excess of the 1 ppm standard.

Based on discussions with plant personnel, the concern of employees and lack of an identifiable pattern of VCL breakthrough, the recommendations listed were agreed upon as being possible solutions to allay employee concerns. The breathing air intake, being near the LPA, is occasionally subjected to VCL release. The location of this intake is to be reviewed. It may be better to locate the intake at the plant's perimeter, generally upwind from known VCL or other organic air contaminants. It is understood that due to the nature of the industrial activity surrounding the Louisville facility, no "uncontaminated" source of breathing air is possible. However, it should be kept in mind that charcoal, the most common method of removing organics from breathing air, does not have a great affinity for VCL. It may be possible to locate the breathing air intake away from all possible VCL contamination, but in an area where other organics may be present that would be easier to scrub out than VCL is by the charcoal bed.

In addition to moving the air intake, it is recommended that a primary charcoal bed be placed at the main breathing air compressor to act as a primary scrubber. The smaller charcoal beds in the areas would then function as secondary scrubbers. The air leaving the main bed would be sampled by a THA. Initially it is impossible, based on THA detection, to establish a timetable or breakthrough level at which the main charcoal bed must be changed. Once the system has been redesigned and functions for a period of time, it will be possible to establish a timetable on levels. This must be done, based on the performance of the system. During this performance check, employees will be receiving breathing air at least of the quality they are now getting and most likely better, because of an additional filtration step. If VCL levels are detected above the TLV by the area G.C.'s, post secondary filters, breathing air use will have to stop, the secondary charcoal filter beds will have to be changed, and the contaminated air bled out of the reservoir. Bottles of breathing air may have to be kept on hand to allow for work to continue while the beds are changed and area systems bled off.

On one occasion that was described to me, the Hycar operation modified its ventilation system to conserve energy. The resulting modification increased the ambient levels of AN. Before any process changes or modifications, the Louisville Environmental and Safety departments must be notified so that the potential impact on the environment and the worker can be weighed. Process change or modification must be loosely defined to include any change, whether it be to the actual manufacturing process, the building in which it is housed, or operating procedure change. This is the only way to avoid problems due to conflicting requirements of protecting a worker's health and safety and conserving energy and dollars.

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Discussion (con't)

During a brief tour I had an opportunity to walk through the refrigeration building. As in the past, organoleptically detectable levels of ammonia were present throughout the building and in the operator's enclosure. The enclosure was constructed of Koroclear to reduce exposure to noise; however, ammonia fumes can still enter. The actual levels of ammonia must be determined, as the operator can become easily accustomed to its presence. Ammonia levels must be checked randomly at least twice weekly for the next three months; spot checking with indicator tubes will suffice. Also the levels must be checked during the winter months. If ammonia levels are routinely found above 15 ppm (approximately one-half the 25 ppm TLV), the enclosure in which the operator resides must be tightened up and air free of ammonia ventilated to it.

During my last years survey, with the plants assistance I was able to complete a hazard inventory for departments 5797, 5796, 5756, 5798 and 5763. Prior to the next survey it will be necessary for the Louisville plant to develop a hazard inventory for the remaining departments, listing chemical and physical hazard exposures by job class. Once this inventory is completed, we will be able to assign a degree of hazard code to each job class per exposure and computerize it. This is part of the BFGoodrich medical departments company-wide medical surveillance system which is just beginning to come on line.

The BFGoodrich medical policy on hearing conservation was discussed. Methods of complying with the policy and its impact on the Louisville facility were reviewed. Initially the plant will have to review its noise hazardous areas and post those areas over 85 dBA as being "noise hazardous" and requiring hearing protection. Employees must be told of the changes and alerted to the fact that hearing protection is mandatory in noise hazardous areas and that the requirement will be enforced. The method for measuring an employee's noise exposure by the audiodosimeter is also being changed to bring it in line with the impending OSHA noise standard hearing conservation amendment. The Louisville Environmental Department has already modified its instrumentation and is conducting dosimetry testing based on the 80 dBA instrument threshold.

During a review of the compounding lines compliance with noise, it was discovered that the 9" A line spare cuber strip blow-off needs to be better enclosed to reduce ambient levels of noise. Currently it is partially enclosed, but needs to be improved. Also, the opening into the cuber room through which the strip passes needs attention.

The 4" line strip blow-off was also found to need additional enclosing for noise control.

Improvements have been made in handling lead with a reduction in employee exposure levels. The air pallet system for 9" hopper bulk loading is performing well. The pallet system for hand weighing was just completed during my visit and needs to be evaluated by conducting personnel monitoring. Observing its operation and reviewing its design it would appear that it should significantly reduce the weighman's exposure to lead.

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Discussion (con't)

The 9" A line millman and Henschel operator were monitored for plasticizer fume exposure. The Henschel operator's exposure was below the lower detection limit of the analysis (0.054 mg/M^3 for diisodecylphthalate). The millman had an 0.061 mg/M^3 exposure to diisodecylphthalate. No TLV exists for DIDP, but this low exposure is considered to be of no hygienic significance.

The area monitoring system for acrylonitrile (AN) in the Hycar and Abson processes was reviewed. The Hycar department is able to use this system for more than a general area alarm. They use it for leak detection, reducing employee exposures and comparison between shifts to see when problems occur. It would be beneficial if the Abson process could utilize the system with the same degree of effectiveness.

The frequency of VCL monitoring was reviewed. Table I contains the results of personnel air monitoring for VCL obtained during the survey. Also listed, for comparison, are summary data based on the plant's results obtained from 1/1/80 - 4/30/81. During the transport of tubes from Louisville to the lab, the VCL may have migrated throughout the charcoal tubes. For this reason, the values obtained are shown as "greater than" because it is not known for certain that the breakthrough was indeed due to migration or whether ambient levels of VCL overloaded the tube and were swept through. The data can tell us that the employees were exposed to at least the levels listed. What the data does show are that on 3/31/80 all employees monitored were exposed to VCL above the allowable OSHA limits. However, respirators were worn by all employees, sometimes during the day thus protecting them, but not the sampling train. It is permitted by OSHA to wear respirators for hazardous tasks such as opening polys, cleaning strainers, opening lines, etc.

To ensure that respirator protection is proper, the standard operating procedure for Bldg. 1 should be reviewed to assure that protection is properly worn when necessary. The HRC operator should be monitored monthly since this job's exposure is averaging above 1 ppm. Other job classes having yearly averages above 0.5 ppm should be monitored on a quarterly basis.

Three samples for AN were obtained in Hycar polymerization, Bldg. 131. Results are contained in Table II. No respirators were worn that day. The levels I obtained on 4/1/81, when compared to plant data from the past 16 months are higher than the average, but lower than the maximums obtained by the plant. No specific recommendations can be made due to the short period of time spent in the plant. However, Hycar operating procedures, the AN control program and respirator usage should be reviewed to ensure future compliance with the standard.

The plant has taken appropriate action on all items from the previous survey; the respirator program and physical exams were in order. Time was spent with the Safety Department discussing approaches to counseling employees regarding hearing threshold shifts and interpretation of computer generated reports.

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TABLE I.

PERSONNEL AIR MONITORING
Louisville, Bldg 1

(VCL - ppm)

<u>Name/SS#</u>	<u>Job Code/ Name</u>	<u>Sample Time (min.)</u>	<u>Survey Result 3/31/81</u>	<u>Plant Results 1/1/80 - 4/30/81</u>			
				<u>No.Samples</u>	<u>Ave.</u>	<u>High</u>	<u>Low</u>
R.Austin 406-42-6243	154 HRC/HRP oper.	410	>1.6*	90	1.22	10.14	0
N. Snider 314-38-9393	132 Charge oper.	410	>1.1	106	0.61	6.48	0
W.Shabe 402-48-1999	196 HRC helper	410	>1.2	45	0.99	9.18	0
N.Noel 235-56-3954	137 Bd. oper	410	>3.0	23	0.57	2.77	0

*All charcoal tubes from sampling during survey had breakthrough greater than 25%. Results, therefore, are reported as "greater than" values since amount lost through tubes cannot be estimated.

(Airline respirators worn at times by all employees).

TABLE II.

PERSONNEL AIR MONITORING
Louisville, Bldg. 131

(AN - ppm)

A.Combs 403-46-4420	131 Charge oper.	377	2.4	129	0.51	4.52	0
L.G.Schell 400-48-4177	139 Pro.Cont. oper.	376	2.2	38	0.6	3.45	0.0
C.M.Spencer 305-32-8591	232 Trans. oper.B	371	1.9	39	0.74	3.93	0.0

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