

C. Bayard

Shawinigan

T.S. Bialke

Akron - D/0020, 5-H

9-19-83

Industrial Hygiene Survey; August 1983

During the period August 16-19, 1983, an industrial hygiene survey of the BFG Shawinigan Chemical plant was conducted. The plant continues to show improvement in their industrial hygiene program. All previous recommendations have been satisfactorily addressed except for physical examination requirements which are not being met. Housekeeping in all areas was very good. Compliance with hearing protection requirements was observed to be excellent. ?

One area of the plant continues to need attention and that is noise at the compound lines. Alternative approaches to the control of noise from the C-8 cuber are discussed in this report. During the visit, the plant's occupational exposure inventory was initiated and left for the plant to complete. Personnel monitoring for organo-tins, vinyl acetate and asbestos is needed to document worker exposures.

Please respond by November 30, 1983 and every three months thereafter until all recommendations have been satisfactorily addressed.

I wish to thank J.P. Gregoire and R. Forcier for their cooperation in making this survey productive. I also want to extend my regards to Mr. J.A. Brooks and wish him a fruitful and happy retirement. On behalf of the Environmental Health Department, I would like to express our appreciation for the support and cooperation he has provided in our mutual endeavors. We are looking forward to working with Mr. Bayard in the continued development of the Shawinigan plant's health programs and of a mutually rewarding relationship.

T. S. Bialke

T. S. Bialke, CIH

v

cc: ~~E. B. Katzenmeyer, Jr. / H. W. Dietz, MD~~ */ file*
R.A. Guyton, MD / R.A. Kelley
H. Waltemate / G. Lefebvre
H. Botelho
F. Hovey / D.A. Brooks
J.P. Gregoire (w/attach.)
R. Forcier (w/attach.)

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Previous Survey RecommendationsActions Taken1981 Items

- | | |
|--|---|
| 1. Install permanent doors to FCM line cuber room. | 1. A GPO was submitted in 1982 but was not approved. Action incomplete. See current findings. |
| 2. Purchase low-flow pumps for VCM monitoring. | 2. Three low-flow pumps purchased. Action complete. |
| 3. Issue monthly environmental health report. | 3. A monthly Industrial Hygiene/Environmental report is being issued. Action complete. |

1982 Items

- | | |
|---|---|
| 1. Establish effectiveness of new C-9 blender ventilation unit for control of lead by obtaining three samples per exposed employee. | 1. Twenty-one personnel monitorings for lead have been obtained. All results are less than Quebec lead standard of 150 ug/M ³ with an average of 38.2 ug/M ³ . Ventilation system is being periodically checked to ensure optimum flow rates. |
|---|---|

1983 Findings

<u>Findings</u>	<u>Recommendations</u>	<u>Responsi-</u> <u>bility</u>	<u>Exp.Date</u> <u>Comp.</u>
1. No exposure inventory.	1. An occupational exposure inventory was initiated during this survey. All plant jobs have been classified. Four departments were inventoried with remaining departments to be completed by Jan. 1, 1984.		
2. Respirator procedure does not establish requirements for fit testing.	2. Incorporate into the plant's respirator program provisions for yearly fit testing of all respirator wearers, utilizing the Chemical Groups irritant smoke procedure.		
3. Tin, asbestos and vinyl acetate exposures not quantified.	3. Tin in the form of organic tin stabilizers is used in the plants compound operation. Millmen would be expected to have the greatest exposure. Obtain six tin monitorings from employees working in this job class. Sampling procedures and sampling devices are being provided under separate cover. Send collection devices to Brecksville for analysis. Copolymer, utilizing vinyl acetate was not being made during the survey. Three vinyl acetate samples per exposed employee are to be collected to evaluate Shawinigan employee exposures. Vinyl acetate collection tubes		

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<u>Findings</u>	<u>Recommendations</u>	<u>Responsi-</u> <u>bility</u>	<u>Exp.Date</u> <u>Comp.</u>
3. (con't)	previously supplied to the plant are to be modified by cutting off the pre-dried sections and using the remaining charcoal section alone to collect vinyl acetate vapors. No other changes to the procedure are required. Asbestos containing pipe insulation is present in the plant. All asbestos containing insulation should be identified; if there are any doubts if the insulation contains asbestos, the material must be treated as asbestos. The plant is developing asbestos handling procedures which will include isolating the area, wetting material down, wearing of protective equipment, proper bagging, removal and disposal. To establish that the procedure is adequate in controlling asbestos exposure, employees removing asbestos must be monitored. Obtain at least three asbestos exposure measurements using the collection devices and procedure left during the audit. Send collection devices to me in Akron for analysis.		
4. Environmental laboratory hood where VCM standards are made has an airflow of less than 25-50 fpm; QL lab hoods 50-110 fpm with an average greater than 85 fpm.	4. Upgrade environmental lab hood to provide for 85 fpm across face fixed in usable position. Attached are drawings of a lab hood retrofit developed by Brecksville R&D laboratory that will increase lab hood face velocity from 25-35 fpm to over 85 fpm without changing a room's heating or airconditioning requirements.		
5. Monthly IH program report list total number of IH samples collected with an average.	5. Expand data reporting on monthly report to include reasons for over-exposure and wearing of protective devices. Attachments I and II are examples of other plants data reporting that show yearly and monthly trends and details of current monitoring results. Tables such as these should be kept for all agents the plant monitors for.		
6. Previous years recommendations have been directed toward installing a more efficient noise barrier between the C-8 cuber room and the mill area. Previous noise dosimeter monitoring on the C-8 millman have recorded readings of 146% of the standard over an 8-hr. shift. One dosimeter result obtained during this survey had a reading of 90.7% of the standard.	6. Efforts must be extended toward containing the noise coming from the cuber room. Various approaches have been discussed. Installing a floor to ceiling sound barrier across the opening to the cuber room and restricting the entrance to the worker via the steps was one alternative. Floor to ceiling vinyl curtains have been tried, but this is not effective because curtains are too easy to move out of the way and are not good sound barriers. Enclosing the cubers inside		

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FindingsRecommendationsResponsi-
bilityExp. Date Comp.

6. (con't)

(The current lower reading is a result of a different compound and slower cubing speed, not because of noise control efforts. See Table II.)

another enclosure was another solution discussed. In effect, a room-within-a-room would be produced. This would be an effective approach at reducing cuber noise, but may result in operational problems. Enclosing only the cubers inside the room would also not address the other noise sources in the room, i.e. the shaker screen. (See Table III, item B2 a & b). It could seem the best solution would be to install a permanent floor to ceiling wall across the opening with a self-closing door and small openings through which the PVC strip would be passed into the room.

Discussion

Two workers in the suspension resin unit (SRU) were monitored for vinyl chloride (VCM): a poly operator and a drier operator (Samples 1 and 2, Table I). Both results were low (0.1 ppm and <0.1 ppm). The tank farm operator was also monitored for VCM; his exposure (#3, Table I) of 0.1 ppm is also low. The compound bagger was monitored for N-hexane and toluene which are components of the bag cement he uses. The compound bagger's exposure to both substances was very low, 0.5 ppm for N-hexane and <0.2 ppm for toluene (Sample #4, Table I).

The plants physical examination requirements were reviewed and found in order. Wearing of hearing protection by employees in noise hazardous areas is excellent. During the entire visit I did not find an employee without hearing protection in a posted area.

Housekeeping throughout the plant was very good, even the compounding department looked good.

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TABLE I.
PERSONNEL AIR MONITORING RESULTS¹
Shawinigan - August 1983

<u>Employee/Date</u>	<u>Job/Location</u>	<u>Sample Time (min.)</u>	<u>Resp.</u>	<u>Concentration² (ppm)</u>
1. B. Broden 8/17/83	Poly oper., SRU	381	No	0.1 VCM
2. C. Martel 8/17/83	Drier Oper., SRU	364	No	<0.1 VCM
3. E. LaPlant 8/18/83	Tank farm oper.	361	Yes	0.1 VCM
4. M. DuMaine	Compound bagger, C-8 line	385	No	0.5 N-hexane 0.2 toluene

¹All samples collected on standard size charcoal tubes; GC analysis by Brecksville Environmental Health Lab.

²Exposure Standards: VCM 1.0 ppm (BFG/OSHA)
N-hexane 50 ppm (ACGIH)
toluene 100 ppm (ACGIH)

* * * * *

TABLE II.
NOISE DOSIMETER RESULTS¹
Shawinigan - Aug. 1983

<u>Name/Date</u>	<u>Job/Location</u>	<u>Sample Time (min.)</u>	<u>Hearing Protection</u>	<u>% 8-Hr. TWA 90 dBA Base</u>
1. S. Beaulac 8/18/83	C-8 (rigid) millman, compound building	360	Yes	90.7
2. C. Perron 8/18/83	C-9 (flexible) millman	338	Yes	41.3

¹DuPont Mark I instrments set on 90/80-5.

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TABLE III.

AREA SOUND LEVEL READINGS¹
Shawinigan - Aug. 1983

<u>Area</u>	<u>dBA</u>
<u>C-9 Flexible Line</u>	
bagging area	83
cuber enclosure: discharge end	91
feed end	90-91
inside cuber enclosure	106
strip blow-off	90-91
calender strip-off	87
operator's station between mill and calender	86.5
extruder room	85.5
<u>C-8 Rigid Line</u>	
packaging area	82.7
dicer room: shaker screen discharge	93.0
shaker screen feed	97.0
dicer discharge	97.0
dicer feed - normal run	97.0
- start-up	100
operator's desk outside dicer room	83
between calender and strip tank	84
calender gear box	89
front of calender	88
extruder room	90-92

All areas posted as "noise hazardous"; hearing protection worn by all employees in all areas.

¹DuPont Mark I noise dosimeter operations in the sound level meter mode.

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Month of December

AREA	NUMBER SAMPLED	NO. > 1 PPM	% > 1 PPM	RANGE	AVERAGE READING
WIN I & II	14	2	14%	0.04 - 1.37	0.40
WIN III	34	7	21%	0.00 - 10.89	1.00
Int I/E	12	1	8%	0.00 - 1.80	0.23
AB	6	1	17%	0.04 - 1.16	0.27
TOTAL	66	11	17%	0.00 - 10.89	0.67

PERSONNEL EXCEEDING 1 PPM -

[illegible]

ATTACH, I

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ATTACH. II

NG

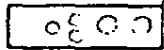
	NO.	NO. > 1PPM			RANGE	DATE			
		$\leq .5$	.5 to 1.0	> 1.0		MONTH	YEAR	TO	NO
						RESP.	RESP.	RESP.	RESP.
1980	147	126 / .09	9 / .73	12 / 3.92	.00-12.85	-	-	12	0
1981	(155)	121 / .13	18 / .65	16 / 2.81	.00-12.58	-	-	12	4
JAN.	7	2 / .46	1 / .98	4 / 2.29	.45- 2.80	3.	1	3	1
FEB.	3	3 / .15	0	0	.12-.18	0	0	3	1
MARCH	5	3 / .20	2 / .61	0	.02-.64	0	0	3	1
APRIL	5	4 / .29	1 / .90	0	.14-.90	0	0	3	1
MAY	6	6 / .21	0	0	.01-.48	0	0	3	1
JUNE	3	3 / .05	0	0	.01-.11	0	0	3	1
JULY	3	3 / .06	0	0	.03-.09	0	0	3	1
AUGUST	0	-	-	-	-	0	0	3	1
SEPT.	4	2 / .14	1 / .53	1 / 1.19	.10-1.19	1	0	4	1
OCT.	4	3 / .14	0	1 / 1.75	.04-1.75	0	1	4	2
NOV.	10	8 / .13	0	2 / 2.91	.02-3.94	2	0	6	2
DEC.	1	0	0	1 / 3.82	3.82	1	0	7	2
1982	(51)	37 / .17	5 / .73	(9 / 2.42)	.01-3.94	-	-	7	(2)

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PROPOSED MODIFICATIONS

ALARM: VISUAL
& AUDIBLE,
(FACE VEL. BELOW
80 FPM)

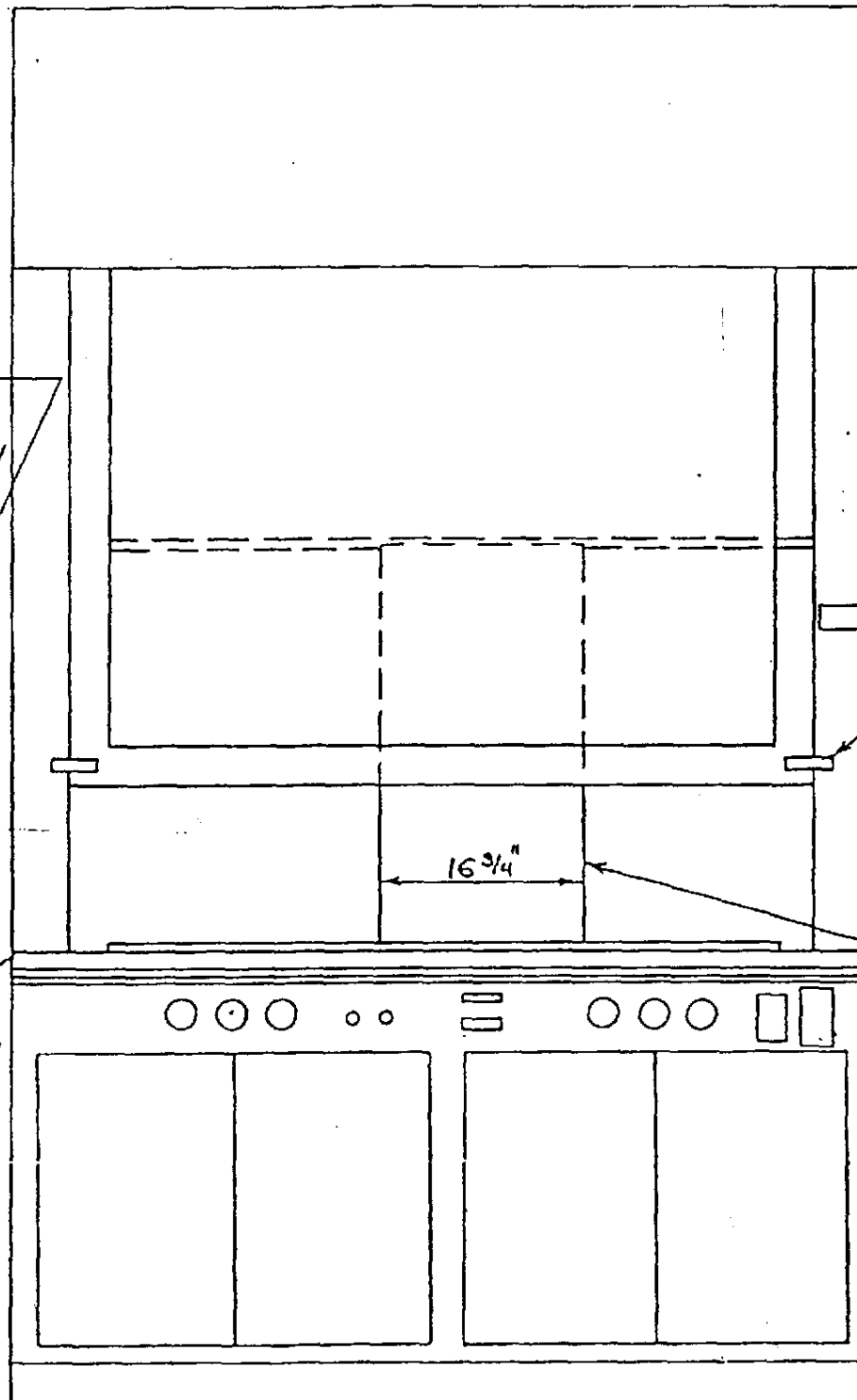


HOOD PERFORMANCE
RECORD

SASH POSITION
LOCK ASM.:
MAXIMUM OPEN
TO PROVIDE FC
80 FPM

SAFETY SHIELD:
THICK LAMINATE
SAFETY GLASS

AIRFOIL:
CREATES LAMINAR
FLOW & INCR.
LOW LEVEL CAPT.



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ATTACHMENT IV

HOOD PERFORMANCE
RECORD

DESIGN VEL.: 80 FPM

TESTED VEL.: _____ FPM

DATE TESTED: _____

CERTIFIED BY: _____

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