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OWENS-CORNING FIBERGLAS CORPORATION
BERLIN, NEW JERSEY

December 8, 1965

PURPOSE:
This Industrial Hygiene Survey was made at the joint request of your Production Manager, Mr. R. Grimmie, and our Philadelphia Engineering Representative, Mr. W. McKinney. Its purpose was to study, measure and evaluate the occupational disease exposures associated with your manufacturing operations.

CONCLUSION:
The Diphenyl vapors measured in your Dowtherm Control Room were not found to be dangerous. The dust concentration in your Flat Ware Department did not exceed the advocated Threshold Limit Value for asbestos but the employee exposures were found to be moderate. A recommendation to improve the housekeeping in this area is being made accordingly.

CONTACTS:
This survey was conducted in company with your Production Manager, Mr. R. Grimmie, and our Philadelphia Engineering Representative, Mr. W. McKinney. Also, contacted during this visit was your Plant Manager, Mr. M Hardwick.

PROCEDURE:
The Diphenyl vapors (Dowtherm A) were absorbed in silica gel at the sampling rate of two liters per minute. In our Hartford Home Office research laboratories the vapors were then extracted with isopropyl alcohol and determined with a DU Spectrophotometer at the 251 millimicron wave length.

The dust samples were collected with midget impingers utilizing distilled water as the collecting medium. Dust counts were made on a light field as outlined in the United States Health Service Method for Dust Counting.

FINDINGS:
The analytical results of the air samples taken during our survey have been listed in the attached Appendices A and B. The Dowtherm A fumes, expressed in part of Diphenyl per liter of air by volume have been listed in Appendix A. The dust counts for the Flat Ware Finishing line and the Billet Finishing Department have been tabulated in Appendix B.

CRITERIA:

In the study of occupational health hazards, the Industrial Hygienist makes use of certain guides or bench marks in his evaluation of the exposures. These are referred to as TLV's or Threshold Limit Values. These values are reviewed on a yearly basis and modified according to industrial experience and additional toxicological studies. For asbestos dust, the TLV for 1965 is listed as 5,000,000 particles per cubic foot of air by volume.

Although there are no TLV's listed for Dowtherm A, we would like to point out that this is a trade name chemical for a eutectic mixture of 26.5% Diphenyl and 73.5% Diphenyl Oxide. The former is listed as being moderately to highly toxic by inhalation, while the latter is only believed to be a slight irritant. Our analysis and results are on the basis of the former; namely, Diphenyl. Fairhall in his book (Industrial Toxicology) feels that prolonged human exposure to Diphenyl can only be speculated upon. However, concentrations of 0.005 mg/liter should be considered dangerous.

DISCUSSION:

As can be depicted from Appendix A, the Dowtherm A vapors in the SID Department were not found to be dangerous. Nonetheless, these could change with varying atmospheric conditions. On that basis, we would recommend that another air sampling survey be made during the summer months when the relative humidity and the ambient temperatures will be higher. In the interim, we would suggest that a study be made to ascertain the feasibility of providing make-up air other than through window and door infiltration, particularly those adjacent to Dowtherm A outside pumps.

The dust concentration measured in the Flat Ware Finishing Department were found to be significantly lower than those noted in previous years. This reduction certainly could be attributed to the newly installed exhaust system (lateral exhaust ventilation) on the Feeding end of the line. Air capture velocity rates of more than 3,000 Linear feet per minute were measured at the lateral exhaust intake while average velocities of 75 linear feet per minute were recorded at the farthest point on the conveyor belt. This, is our opinion, certainly is commendable and could account for the 70% reduction in the dust concentrations to which the Feeding operators have been exposed to in previous years.

It should be pointed out that although Air Sample No. 6 was found to be in excess of the advocated TLV of 5,000,000 particles per cubic foot of air, that the employees are generally rotated on this line and thus are not at this point exposed to average concentration in excess of the TLV.

In addition to the new exhaust system at the feed end of the line, it is our understanding that the canopy hood over the packaging stations will be modified and thus, exhaust the dust away rather than through

the packagers' breathing zones. With this change, there should be another reduction in the amount of airborne asbestos dust in this department.

The housekeeping was found to be better than in previous years, but there is still room for improvement. We would recommend that the overhead ledges and machine surfaces be vacuumed on a more frequent basis. This was discussed with your Mr. Grimmie.

RECOMMENDATIONS:

A. To prevent the entering and build-up of Diphenyl vapors in your Dowtherm Control Room, it is recommended that a study be made to determine whether the make-up air in the department can be provided by other means than through door and window infiltration.

B. To further reduce the asbestos airborne dust in your Flat Ware Finishing Department, we are recommending that overhead ledges and machine surfaces be vacuumed on a more frequent basis.

B. R. Roy

B. R. Roy
Industrial Hygienist

brr/l

→ Present changes in bldg. will allow more natural ventilation.

→ Investigation on other alternatives.

APPENDIX A

OWENS-CORNING FIBERGLAS CORPORATION
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December 8, 1965

No.	Location	Time	Results
1.	Average Breathing Height near Control Panel - Dowtherm Control Room	10:15 AM	0.001 mg/liter
2.	Average Breathing Height - Desk Area Dowtherm Control Room	10:30 AM	0.00093 mg/liter
3.	Average Breathing Height - Top of Stairway Autoclave Platform - Dowtherm Room	10:45 AM	0.0003 mg/liter
4.	Average Breathing Height - Outside Dowtherm Room near pumps	11:00 AM	0.00043 mg/liter

NOTE: Mg/liter denotes milligrams of Diphenyl per liters of air by volume.

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Industrial Hygienist

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APPENDIX B

OWENS-CORNING FIBERGLAS CORPORATION
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December 8, 1965

No.	Location	Time	Results	Remarks
5.	Operator Breathing Zone - Feeding End Flat Ware Line (Kaylo Heat Insulation)	11:20 AM	3.8 mppcf	$4\frac{1}{4}$" x 18" x 36"
6.	Same as No. 5	11:35 AM	6.7 mppcf	$2\frac{1}{32}$" x 18" x 36"
7.	Average Breathing Height - Between Bottom and Top Sanders - Flat Ware Line	11:50 AM	3.0 mppcf	" " "
8.	Average Breathing Height - Near Side Trimmer - Flat Ware Line	1:30 PM	0.97 mppcf	" " "
9.	Employee's Breathing Zone Packaging - Flat Ware Line	1:20 PM	3.3 mppcf	" " "
10.	General Background - Stenciling and Stapling Area	1:50 PM	1.0 mppcf	" " "
11.	Operator's Breathing Zone - Billet Finishing Machine	2:15 PM	1.6 mppcf	$3\frac{1}{4}$" OD
12.	Employee's Breathing Zone - Billet Packaging	2:25 PM	3.0 mppcf	$3\frac{1}{4}$" OD

NOTE: mppcf denotes million particles 10 microns or less in size per cubic foot of air.

B. R. Roy

B. R. Roy
Industrial Hygienist

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