

William R. Bradley and Associates

ENVIRONMENTAL HEALTH CONSULTANTS

18 GREEN STREET • NEWARK, N. J. 07102

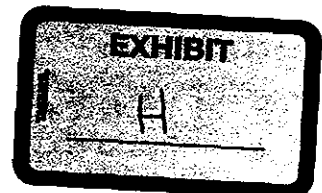
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October 23, 1968

**Mr. S. H. Thomas
Director of Environmental Control
Owens Corning Fiberglas Corporation
P. O. Box 901
Toledo, Ohio 43601**

**Re: Environmental Health Investigation
Owens Corning Fiberglas Corporation
Berlin, N. J. Plant**

Studies on employee work environment were conducted at the Berlin, New Jersey Plant of Owens Corning Fiberglas Corporation September 23 through September 27, 1968. This plant processes installation for flat surfaces and for pipes in various sizes and thicknesses, using asbestos, silica, diatomite and cement as main ingredients. The operation is known as the Kaylo process. Samples of work-room air were collected to determine the concentration of asbestos dusts and measurements were made of noise intensity at various octave band frequencies.



(A dust exposure exists for employees unloading box cars of diatomite shipped in paper bags. The supplier should be urged to use a multi-wall paper bag of heavier strength and one with a dust proof seal. More care should be taken in the loading of box cars to prevent broken bags.

There is a potential dust exposure at the second floor batch mix area during bag dumping. It is recommended that the hopper where bags are dumped be enclosed on three sides and mechanically exhausted to the bag collectors. The handling of empty bags is a source of dust. It is suggested that empty bags be placed in a mechanically exhausted bin.

(Dust counts in the area of the flatware line where the product is boxed or stacked on pallets are higher than desirable. It is suggested that cartons to be loaded, travel on a roller conveyor that passes through a mechanically exhausted booth enclosure.

The design of dust collection hoods on the integrated line sawing stations should be improved in order to provide more complete enclosure. Dust counts are excessive at these stations, and it is recommended that employees wear

expiratory protection until environmental control has been installed.

Dust control at the two band sawing stations for pipe needs improvement. Operators are exposed to high dust concentrations. The two band saw stations should have a separate dust collecting system rather than being "tied in" to one of the existing systems. Hood design for dust control should be improved.

Work environment around the entrance to the Sid Cylinder is bound to be quite warm and to have high humidity due to escaping steam. Engineering studies should be made to enclose an exhaust steam to the outdoors.

An air sample in the Dowtherm boiler room shows that there is no exposure to Dowtherm.

Measurements for noise throughout the plant show a nuisance level of noise being created by the release of compressed air without the benefit of muffles. A high noise level exists in front of the Sid Cylinder due to escaping steam. This noise source adds to the background

noise level of nearby areas of the plant. Noise on the flatware sanding line is borderline and employees here should be monitored periodically with audiometric testing.

Undesirable noise levels exist on the integrated line sawing equipment. Enclosure of the sound source with accoustical paneling is desirable.

The Rotoblast equipment in the Mold Shop is noisy, but the main shop sound pressures exist in the lower octave band frequencies. The problem is mainly one of nuisance sound intensity.

Wm R Bradley
William R. Bradley

DUST SAMPLES

<u>Sample No.</u>	<u>Location</u>	<u>Millions of Particles Per Cubic Foot of Air</u>
1	Breathing zone level of workmen in box car while unloading paper bags of diatomite (Eagle Pitcher "Celatom").	18.0
✓ 2	Batch mix floor while charging asbestos 7B, K3, S33, scrap, lime, iron chromite into west asbestos tank.	6.0 ✓
✓ 3	Batch mix floor while charging into south hydropulper. Charging lime and diatomite by hand, cement and silica being charged by screw conveyor.	5.0 ✓
✓ 4	No. 2 line stripping area.	3.1 ✓
5	No. 2 line pouring end.	2.2 ✓
6	No. 1 line pouring end.	2.3 ✓
✓ 7	No. 1 line stripping end.	3.5 ✓
✓ 8	Discharge area of pre-hardener during fork lift truck unloading.	3.6 ✓
9	In front of No. 9 Sid Condenser.	2.6 ✓
10	Operator's desk at rear of No. 9 Sid Condenser.	1.9 ✓
✓ 11	Flatware sanding at feed operator's station. (K-17)	4.2 ✓
✓ 12	Flatware line at top sander station. (K-17)	5.2 ✓

✓(✓) June 17, 1969

DUST SAMPLES (continued)

<u>Sample No.</u>	<u>Location</u>	<u>Millions of Particles Per Cubic Foot of Air</u>
✓ 13	Boxing flatware and packing on skids. (K-17)	6.0 ✓
✓ 14	Feeder's station on billet line.	3.3 (
✓ 15	Packer's station on billet line.	3.1 ✓
✓ 16	Integrated line sawing station on pipe halves. "B" Saw	12.9 ✓
✓ 17	Flatware finishing line, packing station. K-10 product sizes 2 x 6 x 36 and 2 x 12 x 36.	7.7 ✓
✓ 18	Flatware finishing line, packing station. K-10 product size 3 x 6 x 36.	6.8 ✓
19	Shipping area at end of flatware line. K-10 product size 3 x 6 x 36. Carton closing and gluing.	1.4 ✓
✓ 20	Integrated line, sawing K-10 product size 12 x 3 x 36 and 10 x 1.5 x 36. "B" Saw	13.8 .
✓ 21	Integrated line wrapping and packing station.	3.9
22	Integrated line carton sealing area.	2.2
23	Special assembly laminating jigs. Pipe area.	2.3
✓ 24	Band sawing, pipe area 3/8 x 2 1/2.	8.7

DUST SAMPLES (continued)

<u>Sample No.</u>	<u>Location</u>	<u>Millions of Particles Per Cubic Foot of Air</u>
25	Center of warehouse.	1.3
✓ 26	Outdoors 20 feet west of No. 3 and No. 4 bag collectors.	3.0
✓ 27	Mold shop at discharge end of Rotoblast.	3.5 ✓
28	Mold shop entrance to Rotoblast unit.	2.9 ✓
29	Mold shop repair area, disc sanding and arc welding.	2.4 ✓
30	Maintenance Shop, center of area.	1.6
31	Dowtherm boiler room.	0.9
32	Box car loading 2 x 6 x 36 pipe covering.	2.3
✓ 33	Entrance to No. 2-B drier. Fork lift truck unloading in drier, flatware and pipe.	3.0
34	Outdoor sample collected in salary staff parking lot.	1.1
✓ 35.	"A" Saw.	

NOISE MEASUREMENTS

<u>Sample No.</u>	<u>Overall Level</u>	<u>A Scale</u>	<u>31</u>	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
1	90	86	81	80	80	81	78	77	78	86	72
2	91	89	80	82	82	82	80	80	80	86	70
3	95	89	85	84	86	90	91	82	79	73	73
4	92	83	83	84	82	87	81	78	74	72	76
5	93	90✓	85	81	83	81	89	77	75	74	76.
6	90	85	82	82	86	82	80	78	75	74	76
7	100	99✓	82	82	82	84	84	90	88	88	97
8	96	92✓	84	84	84	82	81	82	86	85	92
9	101	100✓	83	82	83	83	82	86	92	98	96
10	93	91✓	80	80	79	77	78	80	84	84	89
11	97	94✓	80	81	80	93	84	84	88	88	87
12	95	93✓	80	86	82	86	85	85	91	87	92
13	91	86	81	80	77	87	77	78	80	76	78
14	89	87	80	86	79	78	78	76	76	74	82
15	88	85	78	81	77	77	74	73	73	72	85
16	99	95✓	86	86	85	85	87	87	89	96	89
17	91	89	80	82	78	82	80	87	84	77	75
18	91	89	80	82	78	82	80	87	84	77	75

NOISE MEASUREMENTS (continued)

<u>Sample No.</u>	<u>Overall Level</u>	<u>A Scale</u>	<u>31</u>	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
19	93	92 ⁺	81	83	80	82	82	85	90	82	82
20	86	94 ⁺	81	84	84	87	86	87	87	89	93
21	84	75	76	76	74	81	78	84	72	70	70
22	82	78	74	73	70	79	74	70	70	68	68
23	82	76	73	71	69	68	66	76	68	66	68
24	90	88	75	74	70	68	71	82	76	74	87
25	98	90 ⁺	84	95	89	85	90	86	86	87	79
26	98	91 ⁺	79	94	92	90	88	87	88	84	80
27	95	85	79	92	84	83	83	80	76	76	70
28	84	75	72	81	76	70	72	70	66	68	70
29	94	89	86	90	84	86	83	81	81	81	82
30	92	84	88	80	82	83	74	74	74	75	77

LOCATION OF NOISE MEASUREMENTS

<u>Sample No.</u>	<u>Location</u>
1	Batch mix floor while charging asbestos 7B, K3, S33, scrap, lime, iron chromite into west asbestos tank.
2	Batch mix floor while charging into south hydropulper. Charging lime and diatomite by hand, cement and silica being charged by screw conveyor.
3	No. 2 line stripping area.
4	No. 2 line pouring end.
5	No. 1 line pouring end.
6	No. 1 line stripping end.
7	No. 1 line stripping end, use of compressed air.
8	Discharge area of pre-hardener during fork lift truck unloading.
9	In front of No. 9 Sid Condenser.
10	Operator's desk at rear of No. 9 Sid Condenser.
11	Flatware sanding at feed operator's station. (K-17)
12	Flatware line at top sander station. (K-17)
13	Boxing flatware and packing on skids. (K-17)

LOCATION OF NOISE MEASUREMENTS (continued)

<u>Sample No.</u>	<u>Location</u>
14	Feeder's station on billet line.
15	Packer's station on billet line.
16	Integrated line sawing station on pipe halves.
17	Flatware finishing line, packing station. K-10 product sizes 2 x 6 x 36 and 2 x 12 x 36.
18	Flatware finishing line, packing station. K-10 product size 3 x 6 x 36.
19	Shipping area at end of flatware line. K-10 product size 3 x 6 x 36. Carton closing and gluing.
20	Integrated line, sawing K-10 product size 12 x 3 x 36 and 10 x 1.5 x 36.
21	Integrated line wrapping and packing station.
22	Integrated line carton sealing area.
23	Special assembly laminating jigs. Pipe area.
24	Band sawing, pipe area 3/8 x 2 1/2.
25	Mold shop at discharge end of Rotoblast.
26	Mold shop entrance to Rotoblast unit.

LOCATION OF NOISE MEASUREMENTS (continued)

<u>Sample No.</u>	<u>Location</u>
27	Mold shop repair area, disc sanding and arc welding.
28	Maintenance Shop, center of area.
29	Dowtherm boiler room.
30	Box car loading 2 x 6 x 36 pipe covering.

TEMPERATURE AND RELATIVE HUMIDITY

<u>Test No.</u>	<u>Location</u>	<u>Temperature Degrees Fahrenheit</u>	<u>% Relative Humidity</u>
1	No. 2 line stripping area.	79	60
2	No. 2 line pouring end.	80	60
3	No. 1 line pouring end.	81	59
4	No. 1 line stripping end.	85	58
5	Batch mix floor while charging into south hydropulper. Charging lime and diatomite by hand, cement and silica being charged by screw conveyor.	85	42
6	Discharge area of pre-hardener during fork lift truck unloading.	90	52
7	In front of No. 9 Sid Condenser.	97	50
8	Operator's desk at rear of No. 9 Sid Condenser.	86	44

MAIN BATCHES AS ASBESTOS

K-10 Batch

K-3 or W-3	6%
S-33	6.2%
7-D	<u>3%</u>
	15%

K-10 Batch

W-3 or K-3	9%
S-33	3%
7-D	<u>3%</u>
	15%

Core Batch

S-33	9.1%
4-T	<u>3.9%</u>
	13%

K-20 Batch

W-3	2%
S-33	10%
4-T	<u>8.3%</u>
	20%

Silica minus 325 mesh - 99% SiO₂

Diatomaceous Earth Nevada minus 325 mesh -
85% SiO₂

JUN 30 1969

William R. Bradley and Associates

ENVIRONMENTAL HEALTH CONSULTANTS
18 GREEN STREET - NEWARK, N.J. 07102

201-621-1211

June 27, 1969

Mr. S. H. Thomas
Director of Environmental Control
Owens Corning Fiberglas Corporation
P.O. Box 901
Toledo, Ohio 43601

**Re: Environmental Health Study
Berlin, New Jersey Plant**

Environmental Health Studies on work environment were conducted June 17 and 18, 1969 at the Berlin, New Jersey plant of Owens-Corning Fiberglas Corporation. The current study was a follow up investigation of a study made in September 1968 to determine whether improvements have been made in lessening employee exposure to the inhalation of dusts including asbestos fibers. The plant processes insulation for flat surfaces and for pipes in various sizes and thicknesses using asbestos, silica, diatomite and a cement as main ingredients.

Measurements were made of in-plant noise intensity at several locations, which include overall noise pressure energy measurements as well as octave band frequencies. Noise measurements were made at those locations where previous measurements indicated noise exposures of employees exceeded "A" scale intensities above 90 decibels.

The dust samples collected by the impingement technique using triple distilled water were counted under 100 x light field microscopy. The membrane filter samples were evaluated in accordance with the method for the enumeration of asbestos dust on membrane filters as proved by Edwards & Lynch of the U.S. Public Health Service. It is recognised that membrane filter technique is only an indication of the presence of asbestos fibers in air developed for the asbestos fabric industry. It is further recognised with the impinger technique that an estimation of the presence or absence of Asbestos fibers of respirable size gives answers that are relatable to the toxicology and to the instances of asbestosis in industry.

Most of the batches prepared for production of insulation products in the Berlin Plant contained between 13 and 20% asbestos or diatomaceous earth and represent an even smaller percentage of raw product by weight involving respirable size asbestos in the form of fibers.

SUMMARY

Generally speaking airborne dust in the work environment has lessened in concentration. The exhaust hood at the flatware finishing line loading station should be extended in accordance with prior design.

Hood enclosures about the batch mix dumping stations that are mechanically exhausted also should be installed. Improvements in exhaust ventilation hood enclosure should be made at the finishing line station. The "B" saw and the "C" saw should be provided with mechanically exhausted hood enclosures on the integrated line similar to those installed on the "A" saw. Where dust exposures exceed five million particles per cubic foot of air, control of the work environment is recommended. In cases where the dust count is less than five million particles the quantity of asbestos fibers in the breathing zone is of such a limited quantity that occupational illness from asbestosis is unlikely. Where dust control by hood enclosure of the process with mechanically exhausted ventilation does not reduce operator exposure to dust concentrations less than five million particles per cubic foot of air, then respiratory protection in the form of approved type masks should be worn. These masks are classified as toxic dust respirators, approved by the U.S. Bureau of Mines in Schedule 21. These respirators are similar to MSA Dustee type number 25, or similar respirators issued by Willson Company, or American Optical Company.

There are a few locations in the plant where noise measurements exceed 90 decibels on the "A" scale. Consideration should be given to noise reduction by control of the noise source. If this is not feasible then the wearing of ear muffs on the part of employees is recommended. A new noise source was evaluated in the plant. This involves disc grinding on metal forms in the Mold Shop.

William R. Bradley
William R. Bradley

IMPINGER DUST SAMPLES

<u>Sample No.</u>	<u>Location</u>	<u>Millions of Particles Per Cubic Foot of Air</u>
1	Number 2 line stripping	1.9
2	Flatware line, Feed Operator's Station K-10, 2 x 18 x 36	3.9
3	Flatware line, Top Sander Station K-20, 1½ x 18 x 36	2.9
4	Batch mix floor while charging Asbestos tanks	4.2
5	Batch mix floor, south hydropulper	4.0
6	Flatware finishing line Packing station K-10 1½ x 18 x 36	5.1
7	Flatware finishing line packing station K-10 product: 1½ x 18 x 36	5.0
8	Integrated line - "B" saw K-10 product, 2 x 1 x 36	12.9
9	"A" saw 16 x 1½ x 36 Trisect, product K-10	2.7
10	Number 3 line pouring	1.6
11	Number 3 line stripping	1.7
12	Number 2 line pouring	1.8
13	Number 1 line pouring	1.7

IMPINGER DUST SAMPLES (cont'd)

<u>Sample No.</u>	<u>Location</u>	<u>Millions of Particles Per Cubic Foot of Air</u>
14	Batch mix floor, loading East-West tanks	3.9
15	Batch mix floor, South Hydropulper	3.7
16	Band saw, no. 1204 no. 1547	2.0
17	"A" saw - feed end 16 x 2 x 36: Tri cut K-10 product	2.2
18	"B" saw operator's station K-10 product 10 x 2 x 36	12.6
19	Flatware finishing product stacking 16 x 18 x 36: Core product	4.9
20	Flatware finishing stacking station	4.8
21	Billet line feeder station	2.3
22	Billet line packing station	2.1
23	Flatware line top sanding area	2.7
24	Flatware line feed operator area	4.1
25	Integrated line and wrap deck	1.7
26	Weld Shop, metal shot blast area	2.5
27	Outdoors 20' west of no. 3 and no. 4 bag collectors	1.6

MEMBRANE FILTER SAMPLES

<u>Sample No.</u>	<u>Location</u>	<u>Asbestos Fibers/cc.</u>	
		<u>Total Fibers</u>	<u>Fibers greater than 10 microns</u>
1	Batch mix floor while charging Asbestos tank	.05	.04
2	Batch mix floor while charging hydropulper	.04	.03
3	Flatware line feed operator's station	.02	.01
4	Flatware line top sanding	.01	.008
5	Boxing flatware and packing on skids	.02	.015
6	Flatware line packing station	.02	.015
7	Flatware line packing station	.02	.015
8	Integrated line "B" saw	.11	.05
9	Band saw operation	.01	.008
10	"A" saw	.02	.016

NOISE MEASUREMENTS

<u>Sample No.</u>	<u>Overall Level</u>	<u>'A' Scale</u>	<u>31</u>	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>	<u>16000</u>
1	100	99	86	84	90	83	83	85	93	97	82	80
2	104	103	84	81	85	85	85	87	91	94	101	93
3	97	96	82	82	84	85	83	85	87	88	94	83
4	94	89	82	82	90	84	83	80	79	80	91	70
5	97	94	80	82	84	80	83	83	86	94	90	82
6	96	93	76	80	78	84	83	83	88	93	83	77
7	93	90	84	80	82	82	79	80	86	90	71	68
8	93	91	81	84	84	83	82	83	90	83	86	76
9	89	87	78	80	77	76	78	77	82	86	76	68
10	94	92	80	81	81	87	86	86	86	90	76	66
11	112	110	74	80	78	82	82	86	92	94	108	90

LOCATION OF NOISE MEASUREMENTS

<u>Sample No.</u>	<u>Location</u>
1	Operator's desk at rear of No. 9 Sid Condenser
2	In front of No. 9 Sid Condenser
3	Discharge area of pre- hardener during fork lift truck unloading
4	Line 1, stripping end
5	Integrated line, B saw
6	Integrated line, A saw
7	Flatware finishing line operator's feed station
8	Flatware finishing line top sander area
9	Shipping area end of flatware line
10	Mold Shop - metal shot blast area
11	Mold Shop - disc grinding on metal forms