PLAINTIFF'S EXHIBIT

DOW-1722

INSULATION SAFETY TASK FORCE

Questions to be answered:

1. What are the health problems caused by some of our present insulating materials?
2. What insulation materials have these characteristics?
3. What precautions must be taken when working with these?
4. What are the added costs for taking these precautions?
5. What alternate insulation materials are available?
6. What are the health problems connected with them and what precautions must be taken?
7. What are the costs involved in relationship to the present materials?
8. What insulations do other plants use and what problems do they have?
9. What is the life expectancy and the performance of the alternate insulations vs. the currently used insulations?
10. What are the net annual Division costs (savings) in changing our insulation practices?
11. What is the best method of communicating this change in practice to, and receive support from, the Division Staff, plant supervision, maintenance supervision, and the Pipecoverers?
12. What has to be done and how long will it take for the proposed change to become a reality?

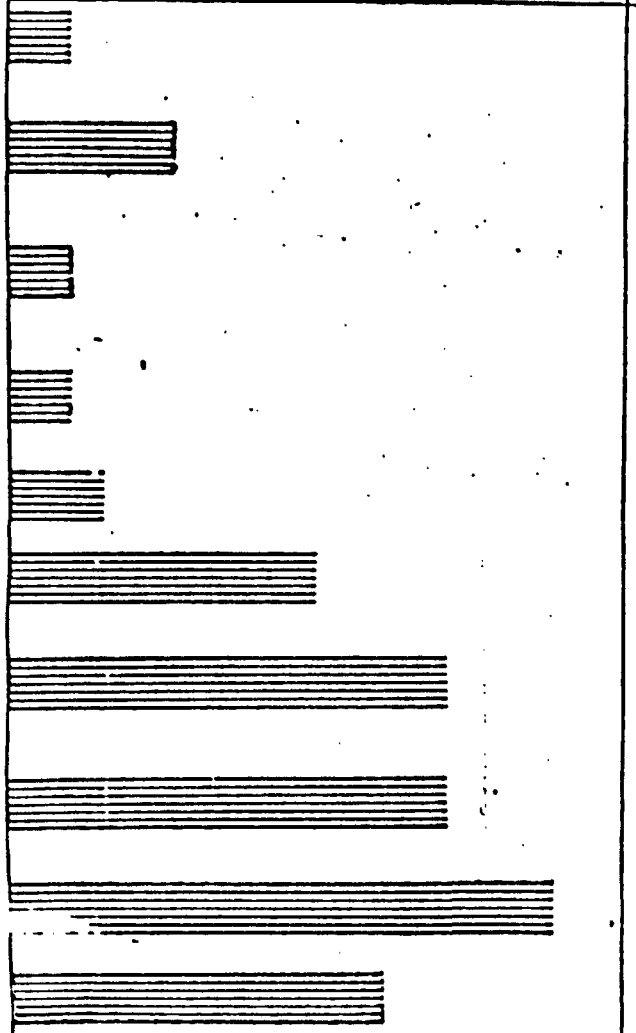
ST0001270

TJM
6-17-69

INSULATION ATA SHEET

FOR ABOVE AMBIENT TEMPERATURES

ST0001271

Temperature Range °F. Ambient 500 1000 1500	Type*	Notes
	Aircell	65% asbestos. Should use respiratory protection. Used on many temperature applications above the recommended limit.
	Fiberglas	Asbestos free. A strong, semi-rigid, resilient material. Used almost exclusively by the trade except by Dow maintenance people for this temperature range.
	Armaflex	A closed cell flexible, rubber type material. Excellent insulation for low temperature applications, particularly refrigeration.
	Thurane	Rigid preformed polyurethane. Excellent low temperature material. More fire retardant than Styrofoam.
	Polyurethane Foam	A sprayed or poured foam. Has good potential for a limited temperature range. Priced very favorably.
	Foamglas	A lightweight, rigid, cellular glass material. Excellent for dual temp. applications. Quite friable and time consuming to apply.
	Kaylo	Calcium-Silicate with 15-20% asbestos fiber. Should use respiratory protection. Is quite dusty and friable. Has good insulating qualities.
	Unibestos	70-80% asbestos fiber. Shock resistant. Not dusty. Not extensively used in maintenance.
	Careytemp 1500	Expanded perlite with 6% asbestos. New from Phillip-Carey. Usage similar to Calcium-Silicate.
	Insulating Cement	10-15% asbestos fiber. Commonly used with Aircell and Calcium-Silicate systems. Should use respiratory protection. Two companies are marketing a cement which is asbestos free.

* The trade names listed are typical of several similar materials on the market.

Roy Anderson
AC[illegible] OCP Maint.

THE DOW CHEMICAL COMPANY

MIDLAND, Michigan
June 24, 1969

L. Warren, FSU #6, 189 Building
R. Wood, FSU #11, 49 Building
H. Ahlich, FSU #2, 759 Building
B. Vander Klipp, Distribution Department, 572 Building
T. J. Madden, FSU #10, 222 Building
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B. B. Holder, M.D., Medical Department, 607 Building
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D. B. Morse, Safety Department, 401 Building
S. M. MacCutcheon, Safety and Loss Prevention, 2030 ARC
R. J. House, Division Accounting, 256 Building

REPORT BC T2.1-1-64: "A SURVEY AND EVALUATION OF PIPE COVERERS' EXPOSURES TO DUSTS FROM ASBESTOS CONTAINING INSULATION MATERIALS ENCOUNTERED DURING ROUTINE PIPE COVERING OPERATIONS WITHIN THE MIDLAND LOCATION OF THE DOW CHEMICAL COMPANY"

Please note the following corrections in the above report dated March 21, 1969, by R. A. DeGesero.

Page 6: Line 5, change 4.5 mppcf to 4.2 mppcf.

Page 7: Line 10, erase 0.037 under the last column entitled Time-weight Factor: Asbestos.

Page 8: Line 7, erase 0.176 under the last column entitled Time-weight Factor: Asbestos.

Line 14, erase 0.162 under the last column entitled Time-weight Factor: Asbestos.

Line 22, change the last entry in the last column entitled Time-weight Factor: Asbestos, from 4.5 to 4.2 mppcf.

The above alterations in no way affect the conclusions or recommendations of this report.

Roy A. DeGesero

R. A. DeGesero
Biochemical Research Laboratory
1701 Building
6-4759

RAD:sjl

ST0001272

Biochemical Research Laboratory

The Dow Chemical Company

A SURVEY AND EVALUATION OF PIPE COVERERS' EXPOSURES TO DUSTS FROM ASBESTOS CONTAINING INSULATION MATERIALS ENCOUNTERED DURING ROUTINE PIPE COVERING OPERATIONS WITHIN THE MIDLAND LOCATION OF THE DOW CHEMICAL COMPANY

File: T2.1-1-64
Date: March 21, 1969
By: R. A. DeGesero

Signed Roy A. DeGesero Date March 24, 1969

Checked A R Hoyle Date March 24, 1969

PROBLEM

Supervision requested that the Environmental Research Laboratory survey and evaluate current levels of pipe coverer's exposures to dusts from asbestos-containing insulation materials commonly used within the Midland location.

CONCLUSIONS

1. The present Threshold Limit Value (TLV) for asbestos of 5 mppcf will remain in force until 1971. Barring information to the contrary, the TLV will then be lowered to 2 mppcf (million particles per cubic foot).

2. Men are encountering time-weighted exposures to dusts from insulation materials containing asbestos approaching but not exceeding the present TLV of 5 mppcf.

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ST0001273

3. Men are encountering time-weighted exposures to dusts from insulation materials containing asbestos exceeding the proposed TLV of 2 mppcf.

4. If exposures are to be reduced to within tentatively accepted levels (2 mppcf) either the use of asbestos-containing insulation materials must cease, or pipe coverers must be protected through effective use of approved respiratory devices and/or local ventilation.

RECOMMENDATIONS

1. Pipe coverers should be educated to the true hazards associated with the several types of insulating materials they presently use.

2. Pipe coverers should be made aware of the several ways of protecting themselves during unavoidable, potential exposures to dusts containing substances known to be highly toxic, such as asbestos.

3. In the future, pipe coverers should be educated to the true hazards associated with any new types of insulation materials to be used, prior to use.

ST0001274

PRESENTATION OF DATA

Indoor pipe covering operations were surveyed from 12/24/68 to 1/22/69. Outdoor pipe covering operations were surveyed from 2/20/69 to 3/5/69. Air samples to account for "miscellaneous" portions of the pipe covering functions were obtained from 3/1/69 to 3/5/69.

Sampling and Analysis

A total of 141 breathing zone samples were collected in midget impingers and analyzed employing standard light field microscopy techniques for determining dust concentrations from insulating materials containing asbestos. Concentrations found in samples were expressed in terms of millions of particles per cubic foot of air (mppcf), according to the following formula.[1]

$$\text{mppcf} = \frac{(\text{mean particles/quarter field}) \times 4 \times 1000 \times \text{sample volume}}{\frac{\text{liters}}{\text{min.}}\ (\text{pump flow}) \times \text{minutes} \times 3.51 \times 10^{-2}\ \frac{\text{ft}^3}{\text{liter}}}$$

[1] Patty, F. A., INDUSTRIAL HYGIENE AND TOXICOLOGY, Vol. I. Second Revised Edition, p. 198.

ST0001275

The means and ranges of concentrations found during sampling are listed in Table 1.

Job Analysis and Description

An environmental job analysis provides an estimate of the frequency and duration of men's exposures to dust concentrations surveyed. The job analysis expresses as per cent of the day (% day) the probable time distribution of pipe covering operations, averaged over several months. On any given day the pipe coverer's routines can be expected to vary from the estimate.

The job analysis reconciled input from discussions with pipe coverers and supervision, observations during sampling, estimates provided by an industrial engineering time study, and a questionnaire filled out by the pipe coverers. A sample questionnaire is found on page i of the Appendix.

The questionnaire requested that men estimate the per cent of time per day they spent working with the most common insulating materials. Men's averages were converted into ratios of time spent (% day) per operation and material, and are listed in Table 1.

Thirty-two per cent (26 men) of the Midland coverers responded. Responses concerning rarely used materials (e.g., cork, styrofoam, some putty adhesives, etc.) were set aside. Other information furnished by the coverers included:

ST0001276

Average age:	40 years
Years covering within Dow:	18
Years covering outside Dow:	0
Wear respirator?	Yes: 17 men; No: 9 men
Which material(s) are the dustiest?	Kaylo: 16 men Fiberglas: 14 men High temp.: 11 men Superpower: 6 men Mag oxide: 2 men Aircell: 2 men

Time-Weighting Exposures

Men's exposures to dusts from asbestos-containing insulation materials were estimated by "time-weighting." The exposure frequency and duration (% day) to each material is multiplied by the mean concentration in air of each material, giving a set of "time-weighted factors." The "factors" (product of % day x mean concentration) are then added up for the eight hour day:

$$\text{Time-Weighted Exposure} = \sum_{i=0}^{100\%} \%\ \text{day} \times \text{concentration}$$

$$\text{or,} \quad \sum_{i=0}^{100\%} = (\text{time-weight factors})$$

ST0001277

Table 1 lists the % day, mean concentrations found, time-weighted factors and ranges for each material encountered in the listed operations. The time-weighted exposures to dusts from asbestos containing materials were 4.9 mppcf (indoor operations) and 4.5 mppcf (outdoor operations).

ST0001278

Table 1. TIME-WEIGHTED EXPOSURES OF PIPE COVERERS TO DUSTS FROM ASBESTOS CONTAINING MATERIALS

Operations	Materials	% Day	Concentrations (mppcf) Mean	Range	Time-weight Factor: Asbestos
Remove	Air cell	1.2	11.4	0.3-24.9	0.137
	Kaylo	1.6	11.2	3.7-20.5	0.179
	Mag oxide	0.2	2.8	1.8-4.6	0.006
	Fiberglas	2.0	13.7	1.2-33.7	---
Mix	No. 1 Plus	1.6	13.4	2.2-30.5	0.219
	Armentite	0.1	9.6	2.7-13.5	0.010
	Superpower	.8	34.9	19.6-6.14	---
Cut	Air cell	5.	3.0	0.6-6.2	0.177
	Kaylo	8.8	11.7	4.9-23.1	1.030
	Fiberglas	2.2	1.7	0.8-2.6	0.037
	Others	0.6	--	---	---
Apply	Air cell	15.8	5.7	0.2-16.4	0.901
	Kaylo	19.9	5.7	0.4-22.3	1.123
	Fiberglas	4.5	2.4	1.2-3.8	---
	Others	2.6	--	---	---
	No. 1 Plus	4.8	9.6	1.1-39.5	0.461
	Armentite/ Superpower	2.4	2.1	0.9-3.9	0.050
Clean up removed covers		3.0	8.5	2.4-24.6	0.255
Stocking; get new covers		2.0	1.0	0.1-2.3	0.020
Move to job, set up		5.0	2.0	1.4-2.9	0.100
Breaks, lavatory		15.0	1.4	0.1-3.9	0.201
Time-weighted exposure to asbestos containing dusts (indoor) in mppcf					= 4.9

ST0001279

Table 1. CONTINUED

Operations	Materials	Day	Concentrations (mppcf) Mean	Range	Time-weight Factor: Asbestos
Remove	Air cell	1.2	5.2	5.1-5.2	0.062
	Kaylo	1.6	9.0	3.6-14.0	0.144
	Fiberglas	2.0	10.0	5.5-20.2	---
	Others	0.2	--	---	---
Mix	No. 1 Plus	1.6	9.6	5.9-12.5	0.154
	Armentite	0.1	17.0	14.1-21.6	0.017
	Superpower	0.8	21.3	13.1-25.4	0.176
Cut	Air cell	5.9	2.5	0.9-3.4	0.148
	Kaylo	8.8	9.4	6.3-7.4	0.827
	Fiberglas	2.2	2.5	1.4-3.8	---
	Others	0.6	--	---	---
Apply	Air cell	15.8	1.5	0.3-3.5	0.237
	Kaylo	19.9	9.2	1.9-17.9	1.831
	Fiberglas	4.5	3.6	1.6-6.7	0.162
	Others	2.6	--	---	---
	No. 1 Plus	4.8	1.4	0.3-2.3	0.067
	Armentite/ Superpower	2.4	5.2	3.5-7.9	0.125
Clean up removed covers		3.0	8.5	2.4-24.6	0.255
Stocking; get new covers		2.0	1.0	0.1-2.3	0.020
Move to job, set up		5.0	2.0	1.4-2.9	0.100
Breaks, lavatory		15.0	1.4	0.1-3.9	0.210

Time-weighted exposure to asbestos containing dusts (outdoor) in mppcf = 4.5

ST0001280

ST0001281

Threshold Limit Values (TLV)

A TLV describes that time-weighted concentration of a material to which men can be repeatedly exposed for eight hours with no adverse effects on th. A TLV indicates a mean concentration which can be exceeded, provided there are corresponding exposures lower than the TLV.

At present the TLV for dust containing asbestos is 5 mppcf using standard light microscopy techniques. Based on best current information, the proposed TLV of 2 mppcf would provide better protection. A two year trial per preceeds acceptance of proposed TLV's. In 1971, 2 mppcf will be the TLV for asbestos, unless better information during the interim casts doubt upon the proposed figure.

This report evaluated current exposures using the proposed standard of 2 mppcf if the material in question had even trace (<5%) asbestos content. Manufacturers were consulted regarding the composition of the insulating product(s) found in common usage. The following table lists these materials and the per cent asbestos plus the appropriate TLV for th material.

Table 2. MATERIALS MOST COMMONLY USED FOR FIRST TEN MONTHS OF 1968

Tradename (and Manufacturer)	Use	% Composition Asbestos	% Composition Inerts	Threshold Limit Value (mppcf)
No. 1 Plus (BEH Company)	Adhesive	<5-7%	95% mineral wool	2.0
Superpowerhouse (BEH Company)	Adhesive	0%	100% mineral wool	50.0
Armentite (Johns-Manville Corporation)	Adhesive	100%	0%	2.0
Air cell (Carey Company)	Covers	80%	20% (?)	2.0
Mag Oxide (85%) (Carey Company)	Covers	15%	85% MgO	2.0
Fiberglas (Owens-Corning)	Covers	0%	100% amorphous silicates	50.0
Kaylo (Owens-Corning)	Covers	~5%	95% diatomaceous calcium silicates	2.0

DISCUSSION

Men were found to be working almost exclusively with asbestos-containing mater. Their time-weighted exposures to dusts from the asbestos-cont. ing materials were in excess of the proposed TLV of 2.0 mppcf and barely under the present TLV of 5 mppcf. Steps should be taken to lower the time-weighted exposures to within proposed acceptable limits.

Several means of reducing the time-weighted exposures are apparent:

1. Cease using asbestos-containing materials. If use of asbestos-containing materials was stopped, exposures would be reduced to acceptable levels, even though some low-level exposure would be experienced until presently installed coverings have been replaced due to natural attrition.

2. Effective use of approved respiratory devices. Respiratory protection is practical for jobs which are of short duration and infrequent occurrence. It can be seen from Table 1 that jobs requiring respiratory protection are neither infrequent nor of short duration. Men encounter greatest exposures during the cutting and applying of Air cell and Kaylo. These two operations are done for 50% of the day -- sometimes 100% of the day. Many other operations listed in Table 1 could require

ST0001283

use of respiratory devices. Attempts to lower exposures to 2 mppcf by using respirators seem futile.

3. Use local ventilation. This method would be effective if the ventilation could be kept close to the dust source. Pipe coverers' work routines make this difficult; e.g., working aloft, or in cramped areas.

In the event new types of covering materials are used, men should be instructed regarding the toxic properties of the materials and the hazards associated with using the material. Protective measures to prevent or lower undesirable but unavoidable exposures to the material should be well understood. Any education effort must precede or be concurrent with first usage of new materials.

During this survey, most men voiced strong objection to fiberglas, asserting that fiberglas insulation materials were far more hazardous than asbestos insulation materials. This contention is not supported by 25 years available field experience and independent laboratory testing on fiberglas.

The Environmental Research Laboratory will survey and evaluate upon request any proposed types of insulating materials and relate their usage to the health hazards associated with these materials.

ST0001284

UNIT INDEX

Pipe covering operations were surveyed and evaluated. Men received time-weighted exposures to asbestos near the present Threshold Limit Value of 5 mppcf and in excess of the tentatively proposed Threshold Limit Value of 2 mppcf. Steps should be taken to reduce exposures to the proposed new standard.

DISTRIBUTION

L. Warren, Field Service Unit #6, 189 Building
R. Wood, Field Service Unit #11, 49 Building
H. Ahlich, Field Service Unit #2, 759 Building
B. VanderKlipp, Distribution, 572 Building
T. J. Madden, Field Service Unit #10, 222 Building
J. Bradley, Plastic Prod. Maintenance, 433A Building
B. B. Holder, M.D., Medical Department, 607 Building
H. L. Gordon, M.D., Corporate Medical Department, 2030 ARC
D. B. Morse, Safety Department, 401 Building
S. M. MacCutcheon, Safety and Loss Prevention, 2030 ARC
R. J. House, Division Accounting Staff, 256 Building

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ST0001285

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Biochemical Research Laboratory

The Dow Chemical Company

1070

A SURVEY AND EVALUATION OF PIPE COVERERS' EXPOSURES TO DUSTS FROM ASBESTOS CONTAINING INSULATION MATERIALS ENCOUNTERED DURING ROUTINE PIPE COVERING OPERATIONS WITHIN THE MIDLAND LOCATION OF THE DOW CHEMICAL COMPANY

File: T2.1-1-64(H)
Date: March 21, 1969
By: R. A. DeGesero

Signed Roy A. DeGesero Date March 24, 1969

Checked J R Hoyle Date March 24, 1969

PROBLEM

Supervision requested that the Environmental Research Laboratory survey and evaluate current levels of pipe coverer's exposures to dusts from asbestos-containing insulation materials commonly used within the Midland location.

ST0000617

CONCLUSIONS

1. The present Threshold Limit Value (TLV) for asbestos of 5 mppcf will remain in force until 1971. Barring information to the contrary, the TLV will then be lowered to 2 mppcf (million particles per cubic foot).

2. Men are encountering time-weighted exposures to dusts from insulation materials containing asbestos approaching but not exceeding the present TLV of 5 mppcf.

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3. Men are encountering time-weighted exposures to dusts from insulation materials containing asbestos exceeding the proposed TLV of 2 mppcf.

4. If exposures are to be reduced to within tentatively accepted levels (2 mppcf) either the use of asbestos-containing insulation materials must cease, or pipe coverers must be protected through effective use of approved respiratory devices and/or local ventilation.

RECOMMENDATIONS

1. Pipe coverers should be educated to the true hazards associated with the several types of insulating materials they presently use.

2. Pipe coverers should be made aware of the several ways of protecting themselves during unavoidable, potential exposures to dusts containing substances known to be highly toxic, such as asbestos.

3. In the future, pipe coverers should be educated to the true hazards associated with any new types of insulation materials to be used, prior to use.

ST0000618

PRESENTATION OF DATA

Indoor pipe covering operations were surveyed from 12/24/68 to 1/22/69. Outdoor pipe covering operations were surveyed from 2/20/69 to 3/5/69. Air samples to account for "miscellaneous" portions of the pipe covering functions were obtained from 3/1/69 to 3/5/69.

Sampling and Analysis

A total of 141 breathing zone samples were collected in midget impingers and analyzed employing standard light field microscopy techniques for determining dust concentrations from insulating materials containing asbestos. Concentrations found in samples were expressed in terms of millions of particles per cubic foot of air (mppcf), according to the following formula.[1]

$$\text{mppcf} = \frac{(\text{mean particles/quarter field}) \times 4 \times 1000 \times \text{sample volume}}{\frac{\text{liters}}{\text{min.}} \text{ (pump flow)} \times \text{minutes} \times 3.51 \times 10^{-2} \ \frac{\text{ft}^3}{\text{liter}}}$$

[1] Patty, F. A., INDUSTRIAL HYGIENE AND TOXICOLOGY, Vol. I. Second Revised Edition, p. 198.

ST0000619

The means and ranges of concentrations found during sampling are listed in Table 1.

Job Analysis and Description

An environmental-job analysis provides an estimate of the frequency and duration of men's exposures to dust concentrations surveyed. The job analysis expresses as per cent of the day (% day) the probable time distribution of pipe covering operations, averaged over several months. On any given day the pipe coverer's routines can be expected to vary from the estimate.

The job analysis reconciled input from discussions with pipe coverers and supervision, observations during sampling, estimates provided by an industrial engineering time study, and a questionnaire filled out by the pipe coverers. A sample questionnaire is found on page 1 of the Appendix.

ST0000620

The questionnaire requested that men estimate the per cent of time per day they spent working with the most common insulating materials. Men's averages were converted into ratios of time spent (% day) per operation and material, and are listed in Table 1.

Thirty-two per cent (26 men) of the Midland coverers responded. Responses concerning rarely used materials (e.g., cork, styrofoam, some putty adhesives, etc.) were set aside. Other information furnished by the coverers included:

Average age:	40 years
Years covering within Dow:	18
Years covering outside Dow:	0
Wear respirator?	Yes: 17 men; No: 9 men
Which material(s) are the dustiest?	Kaylo: 16 men Fiberglas: 14 men High temp.: 11 men Superpower: 6 men Mag oxide: 2 men Aircell: 2 men

Time-Weighting Exposures

Men's exposures to dusts from asbestos-containing insulation materials were estimated by "time-weighting." The exposure frequency and duration (% day) to each material is multiplied by the mean concentration in air of each material, giving a set of "time-weighted factors." The "factors" (product of % day x mean concentration) are then added up for the eight hour day:

$$\text{Time-Weighted Exposure} = \sum_{i=0}^{100\%} \%\ \text{day} \times \text{concentration}$$

$$\text{or,} \quad \sum_{i=0}^{100\%} = \text{(time-weight factors)}$$

LIBBY_ST0000621

Table 1 lists the % day, mean concentrations found, time-weighted factors and ranges for each material encountered in the listed operations. The time-weighted exposures to dusts from asbestos containing materials were 4.9 mppcf (indoor operations) and 4.2 mppcf (outdoor operations).

0100027

Table 1. TIME-WEIGHTED EXPOSURES OF PIPE COVERERS TO DUSTS FROM ASBESTOS CONTAINING MATERIALS

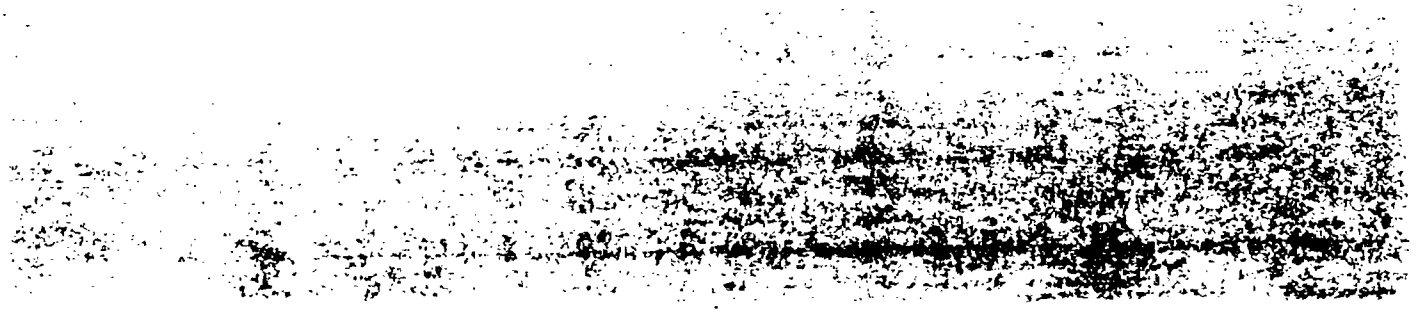
Operations	Materials	% Day	Concentrations (mppcf) Mean	Range	Time-weight Factor: Asbestos
Remove	Air cell	1.2	11.4	0.3-24.9	0.137
	Kaylo	1.6	11.2	3.7-20.5	0.179
	Mag oxide	0.2	2.8	1.8-4.6	0.006
	Fiberglas	2.0	13.7	1.2-33.7	---
Mix	No. 1 Plus	1.6	13.4	2.2-30.5	0.219
	Armentite	0.1	9.6	2.7-13.5	0.010
	Superpower	0.8	34.9	19.6-6.14	---
Cut	Air cell	5.9	3.0	0.6-6.2	0.177
	Kaylo	8.8	11.7	4.9-23.1	1.030
	Fiberglas	2.2	1.7	0.8-2.6	---
	Others	0.6	--	---	---
Apply	Air cell	15.8	5.7	0.2-16.4	0.901
	Kaylo	19.9	5.7	0.4-22.3	1.123
	Fiberglas	4.5	2.4	1.2-3.8	---
	Others	2.6	--	---	---
	No. 1 Plus	4.8	9.6	1.1-39.5	0.461
	Armentite/ Superpower	2.4	2.1	0.9-3.9	0.050
Clean up removed covers		3.0	8.5	2.4-24.6	0.255
Stocking; get new covers		2.0	1.0	0.1-2.3	0.020
Move to job, set up		5.0	2.0	1.4-2.9	0.100
Breaks, lavatory		15.0	1.4	0.1-3.9	0.201
Time-weighted exposure to asbestos containing dusts (indoor) in mppcf					= 4.9

ST0000623

Table 1. CONTINUED

Operations	Materials	% Day	Concentrations (mppcf) Mean	Concentrations (mppcf) Range	Time-weight Factor: Asbestos
Remove	Air cell	1.2	5.2	5.1-5.2	0.062
	Kaylo	1.6	9.0	3.6-14.0	0.144
	Fiberglas	2.0	10.0	5.5-20.2	---
	Others	0.2	--	---	---
Mix	No. 1 Plus	1.6	9.6	5.9-12.5	0.154
	Armentite	0.1	17.0	14.1-21.6	0.017
	Superpower	0.8	21.3	13.1-25.4	---
Cut	Air cell	5.9	2.5	0.9-3.4	0.148
	Kaylo	8.8	9.4	6.3-7.4	0.827
	Fiberglas	2.2	2.5	1.4-3.8	---
	Others	0.6	--	---	---
Apply	Air cell	15.8	1.5	0.3-3.5	0.237
	Kaylo	19.9	9.2	1.9-17.9	1.831
	Fiberglas	4.5	3.6	1.6-6.7	---
	Others	2.6	--	---	---
	No. 1 Plus	4.8	1.4	0.3-2.3	0.067
	Armentite/ Superpower	2.4	5.2	3.5-7.9	0.125
Clean up removed covers		3.0	8.5	2.4-24.6	0.255
Stocking; get new covers		2.0	1.0	0.1-2.3	0.020
Move to job, set up		5.0	2.0	1.4-2.9	0.100
Breaks, lavatory		15.0	1.4	0.1-3.9	0.210

Time-weighted exposure to asbestos containing dusts (outdoor) in mppcf = 4.2



Threshold Limit Values (TLV)

A TLV describes that time-weighted concentration of a material to which men can be repeatedly exposed for eight hours with no adverse effects on health. A TLV indicates a mean concentration which can be exceeded, provided there are corresponding exposures lower than the TLV.

At present the TLV for dust containing asbestos is 5 mppcf using standard light microscopy techniques. Based on best current information, the proposed TLV of 2 mppcf would provide better protection. A two year trial period preceeds acceptance of proposed TLV's. In 1971, 2 mppcf will be the TLV for asbestos, unless better information during the interim casts doubt upon the proposed figure.

This report evaluated current exposures using the proposed standard of 2 mppcf if the material in question had even trace (<5%) asbestos content. Manufacturers were consulted regarding the composition of the insulating product(s) found in common usage. The following table lists these materials and the per cent asbestos plus the appropriate TLV for that material.

ST0000625

Table 2. MATERIALS MOST COMMONLY USED FOR FIRST TEN MONTHS OF 1968

Tradename (and Manufacturer)	Use	% Composition Asbestos	% Composition Inerts	Threshold Limit Value (mppcf)
No. 1 Plus (BEH Company)	Adhesive	<5-7%	95% mineral wool	2.0
Superpowerhouse (BEH Company)	Adhesive	0%	100% mineral wool	50.0
Armentite (Johns-Manville Corporation)	Adhesive	100%	0%	2.0
Air cell (Carey Company)	Covers	80%	20% (?)	2.0
Mag Oxide (85%) (Carey Company)	Covers	15%	85% MgO	2.0
Fiberglas (Owens-Corning)	Covers	0%	100% amorphous silicates	50.0
Kaylo (Owens-Corning)	Covers	~5%	95% diatomaceous calcium silicates	2.0

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