PLAINTIFF'S EXHIBIT

DOW-1392

HEH2.1-1-64

1105

7-15-69

1967 Usage of Aircell		1969 Prices on aircell	Fibreglas	Cat Lib
1/2"	400'	$.18 per ft	$.29 per ft	$.36 per ft
3/4"	1500'	$.19 "	$.31 "	—
1"	4000'	$.22 "	$.34 "	—
1 1/4"	6000'	$.24 "	—	$.40 "
1 1/2"	9000'	.26 "	$.40 "	$.44 "
2"	11,000'	.29 "	$.43 "	$.48 "
2 1/2"	20 000'	.32 "	$.46 "	$.53 "
3"	6000'	.36 "	$.50 "	$.59 "
3 1/2"	3500'	.40 "	$.55 "	$.66 "
4"	3000'	.48 "	$.65 "	$.80 "
5"	2500'	.56 "	—	$.93 "
6"	7000'	.64 "	—	$1.06 "
8"	4000'	.88 "	$1.46 "	—
4 1/2"	3000'	.52 "	$.69 "	$.86 "
12"	1500'	$1.48 "	—	—
7"			$1.18	

82,400' of aircell used in 1967

ST0030796

397635

Table 3

Average Diameter Of Glass Fibers Found In The Atmosphere, And The Frequency Of The Occurrence Of Certain Lengths Of Fibers

Sample Number	Location and Description	PM* Mg/M³	Diameter Of Fiber (Average and Range, μ)	Length In Microns (Per Cent Of Fibers)										
				>100	90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	5-10
	Wool Plant													
15.	In basement under machine D-2 where "trim" is recovered from penthouse.	6.1	6(3-14)	72.0	3.5	0	0	2.0	10.0	7.0	3.5	0	3.5	0
17	At cutters of machine D-2.	-	4(2-10)	58.5	6.4	2.1	1.1	1.1	7.4	4.3	2.1	8.5	8.5	0
18	At saws and edgers of machine D-2.	70.0	14(7-30)	62.8	6.1	1.5	3.0	1.5	4.5	1.5	3.0	9.1	6.1	0
19	In packing area in center of room.	2.6	8(3-13)	45.0	4.0	2.6	5.3	6.6	9.2	9.2	5.3	7.9	5.3	0
	Aerocore Plant													
25	Between edgers and saws of machine #16.	6.2	7(3-14)	88.0	0.9	0	0.9	0	4.6	2.7	1.8	0.9	0	0
27	Near the cutter of machine #16.	6.5	6(3-10)	38.5	4.7	4.7	1.1	1.1	11.7	10.4	8.2	10.4	8.2	1.1
	Near the forming area of the rotary machine.	3.4	15(6-41)	75.0	3.0	3.0	4.0	4.0	0	0	2.0	4.0	4.0	1.0
	Near the bushings of the rotary machine.	1.6	9(3-25)	73.0	5.0	4.0	2.0	1.0	5.0	4.0	4.0	1.0	1.0	0

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Table 3 (Page 2)

Sample Number	Location and Description	PM* Mg/M³	Diameter Of Fiber (Average and Range, μ)	Length In Microns (Per Cent Of Fibers)										
				>100	90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	5-10
	Aerocore Plant													
35	Before curing oven of fiber matte machine.	10.0	10(3-20)	74.6	4.7	2.8	0	1.9	2.8	3.7	4.7	2.8	1.9	0
45	Center of area.	5.0	5(1-8)	71.0	1.0	0	3.0	2.0	5.0	6.0	5.0	5.0	2.0	0
47	Near the alpha chopper.	23.6	6(2-13)	39.0	5.0	8.0	5.0	7.0	6.0	6.0	7.0	10.0	8.0	1.0
48	At the edgers of the rotary machine.	3.7	8(2-14)	53.0	1.0	0	2.0	6.0	5.0	8.0	6.0	11.0	8.0	0
50	At the end of the rotary machine where men congregate.	-	5(2-7)	46.0	4.0	1.0	2.0	3.0	9.0	9.0	14.0	5.0	7.0	0
	Acoustical Plant.													
30	Between Unitile lines A and B at the Richardson machine.	36.3	12(8-20)	77.0	5.0	3.0	1.0	2.0	2.0	1.0	1.0	4.0	3.0	1.0
31	Near side trimmer following the Ross oven.	7.2	9(3-14)	72.0	3.0	4.0	3.0	1.0	4.0	6.0	3.0	2.0	2.0	0
43	At the sander on the Ross oven line.	5.9	6(3-10)	46.3	4.6	1.9	2.8	4.6	5.6	9.3	9.3	8.3	7.4	0

397637

100307 98

Table 3 (Page 3)

ample umber	Location and Description	PM* Mg/M³	Diameter Of Fiber (Average and Range, μ)	Length In Microns (Per Cent Of Fibers)										
				>100	90-100	80-90	70-80	60-70	50-60	40-50	30-40	20-30	10-20	5-10
	Filter Plant													
37	Near forming area of the fiber machine.	1.4	12(6-28)	78.0	5.6	0	5.6	0	0	0	0	5.6	5.6	0
39	At the edgers of the fiber machine.	0.5	8(2-14)	56.0	0	5.7	4.3	1.4	7.2	7.2	7.2	7.2	4.3	0
41	At the cutters of the fiber machine.	1.9	11(3-25)	75.0	3.5	5.8	3.5	2.3	5.8	1.2	1.2	2.3	0	0
42	At the cutters of the assembly line.	0.7	9(3-20)	71.5	3.0	3.0	0	3.0	13.5	0	3.0	0	3.0	0

Particulate Matter.

397638

ST00307799

Midland Daily News

Asbestos - cancer study being made

MONTREAL (AP) — Canadian asbestos mining companies are sponsoring a project to gather factual information about any relationship of asbestos to lung cancer and other diseases.

The project is under the Institute of Occupational and Environmental Health, set up by the industry in 1966. Findings would be used to establish methods of avoiding diseases or reducing their dangers.

It is known that inhalation of asbestos fibres can cause some persons to develop asbestosis, in which fibres gradually replace living tissue, says Dr. Premysl Pelnar of the Institute.

Some physicians believe exposure to asbestos fibres can cause lung cancer. Dr. Irving Selikoff of Mount Sinai Hospital, New York City, reports that 40 per cent of 36,000 U.S. asbestos insulation installers could eventually die of lung cancer as a result of their occupational exposure.

"So far it is not proved to our satisfaction that there is a link between asbestos and mesothelioma," a rare form of cancer occurring in the upper chest wall or stomach lining, says Dr. Pelnar. "But findings in various parts of the world in recent years that persons suffering from mesothelioma had in some cases been occupationally exposed to asbestos make careful research necessary.

"It could be," he adds, "that materials coming into contact with asbestos during the mining or milling processes are health hazards." If such causes were determined they could be eliminated from the manufacturing process.

The institute's most important offshoot at the moment is a three-year epidemiological survey being carried out by a McGill University research team. Part of the team's job is to examine the health history of thousands of asbestos workers and draw statistical conclusions.

In addition to supervising the epidemiological survey, the Institute acts as a center where information from research teams all over the world studying asbestos-related diseases is filed and analyzed.

Paul Filteau, general manager of the Quebec Asbestos Mining Association, whose member companies set up the institute, said in an interview the institute's annual $250,000 budget is meant to keep the companies in touch with relevant research everywhere.

"No actual research is done by the institute. We make grants to scientists who are working in a particular field connected with asbestos diseases and ask only that they tell us first of their findings," he commented.

"Afterwards we are happy when they publish their findings because it helps to spread general knowledge and avoids duplication of research."

A trade magazine

ASBESTOS MENACE—Three important government agencies are refusing comment after receiving warnings from medical researchers that the nation's 350,000 shipyard workers may be threatened with mesothelioma, the rarest and fastest-killing of all incurable cancers. Author of one of the reports is Dr. Irving Selikoff of New York's Mount Sinai School of Medicine. Two years' study at Mount Sinai involving 1,000 autopsies has left Dr. Selikoff in no doubt that shipyard workers, by inhaling heavy concentrations of asbestos dust, are uniquely prone to crippling lung diseases. That's bad enough. But mesothelioma is something infinitely grimmer. Spoken of with dread even by hardened cancer specialists, the malignancy rapidly smothers lungs and heart.

Earlier findings by Dr. Selikoff, plus latest reports from British health authorities, provide harrowing evidence that boilermakers, fitters, welders, and others working in close confines with asbestos during ship overhaul run a high risk of contracting mesothelioma. All the evidence has been rushed to the Navy Department, Labor Department, and the Public Health Service. What, if anything, will be done with the data hasn't been announced.

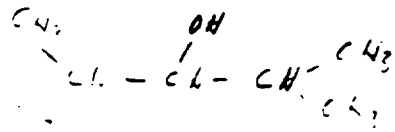
ST0030800.A

ST0030800

Ray:
I got this sheet thru the plant mail from a FSU superintendent.
Larry

397639

4-9-69



diisopropylmethanol

Kepple out of town on 4.9.69

talked to Chas. Low - Ventil. Engineer for ~~Ind.~~ Dept. of Health Indiana

a. Fiberglass dust is an irritant (skin)

b. Dep. on nature of operation

State Labor Laws - all Ind. Hygiene laws covered by State Laws - Labor Div. - Low et al.,

* 2. Low knows of [illegible] on fiberglass

3. Call J. Ford Kepple on 4.10.69

4. 4.15.69 Emma Cook - no regulation against Fiberglass (Dow Indianapolis)

ST0030801

397640

61436 - R. Sherwood (Spr[illegible] is his boss)
(Union Steward)

Dr Andrew C. Offyth (6335490)
Indiana State Health Comm of State
1330 W. Mich St. tel: 6334000
Indianapolis 46207

Fiberglass

J. F. Keppler / Chas. Low
Dir Ind Hyg.
Ind State Health Comm

Mich State Dept.

H. [illegible] - [illegible] (St [illegible])
Mensch [illegible]

([illegible])
[illegible]
Lansing

P. Jervis - Chief factory Inspector
State Labor Div.
6334473

ST0030802

397641

Roy ANDERSON ... 4456
Tom Madden ... 2225 -
Larry Warren ... 1347
Lynn Weimer, Plant Eng 3160
Dages ...

6.25.69

7.9.69

INSULATION SAFETY TASK FORCE

Questions to be answered:

M.D. 1. What are the health problems caused by some of our present insulating materials?

me 2. What insulation materials have these characteristics?
aircell, Kaylo, Bell No 1 PIUS (webbed) Armentite, mag Oxide "CalSi"

me → 3. What precautions must be taken when working with these?
Larry
RESPIRATORY Protection or MAINTAIN (tw) exposure below 2 mppcf

Larry 4. What are the added costs for taking these precautions? 9.30

R.A. 5. What alternate insulation materials are available?

me 6. What are the health problems connected with them and what precautions must be taken? Showers?
R.A

Larry 7. What are the costs involved in relationship to the present materials?

Tom? 8. What insulations do other plants use and what problems do they have?

Lynn 9. What is the life expectancy and the performance of the alternate insulations vs. the currently used insulations?

Lynn 10. What are the net annual Division costs (savings) in changing our insulation practices?

Tom 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?

→ (1) prep a history of Standards development for asbestos.
(2) Get overhead of dust (Kaylo aircell) prepd for Wednesday.
(3) prep a handout for work w/ asbestos-containing materials

TJM
6-17-69

397642

ST0030803

J-M experiences;

asbestos records from 1899

7 cases of pulmonary malig. in 200,000 (lack of detection).

Mining & Milling;

G.W. Skeepers - found tumors in Africa

Chrysotile -

Crocidolite - English experience from this bad actor, now prompts adoptation to "zero"

Asbestos bodies: asbestos
graphite
whiskers
fiberglass

ST0030804

6.25.69
Degesero / Duconn

Encouraged to Showers (but not paid)

Brushes to scrub skin

primary irritation - itching, redness;

wear loose high neck shirts,

caps

gloves w/ cuffs

wear coveralls or leave shirts out (if safety rules permit

→ Barrier creams useless

100% of men work ; 95% will recover ;

maculopapular (red raised rash)

pipe covering 30-90 / 100,000" 0.000030 →

imbedded fiberglass - sub emery board

ST0030805

Skovic – Service Mrg. on Div. Staff w/. House

Larry W.
Roy A. } went to Div. Staff w/. sheet on
diff kinds of insulation:

aircell – we wear respirators
*argued "should"
"shall"

397645

T2.1-1-64 Degesero 6.25.69

Discussion with Brush Berryhium's { Dr. Smith
H. Donaldson

R.D. Soule
G. Sparchu
R.A. DeGesero

Greenburg Smith impinger method gave std 5 mppcf

JM made std 1 million fibers per cubic foot
5 mppcf total dust

10μ max length

Chrysotile: rel. free of implication w/ pulmonary malig.

Crocidolite: mesothel. & broncho-carcinoma

amosite: some carcinogenisis, (?) mesothelioma - unsure

Crocidolite: not used in insulation materials

MagOx - had amosite

S10030807

397646

A. Staff meetings; talk Supervision (House, Bo

B. Run thru the Union Committee. ca. 3 wks fr
4.16.69

1. either use respirator w/ asbestos

use fiber glas (or)

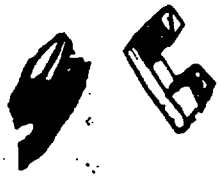
until some replacement for asbestos comes out.

2. Clothing ?

3. 20 men/meeting.

C. Present to men (4 meetings / shortly after comm. meeting

1. Report → 1 hr / meeting
2. med
3. management.



397647

12.15.68

Interview w/. Mr. Warren.

Objective: Sample b.z. of workers in "real use" conditions.

Methods. Using sample numbers data, compared to TLV data - count particles wrt. "safe" limits. A good cross-section of all employees for job evaluation necessary. A time-study necessary; broad range sampling on jobs involving asbestos. Conc. in fiber-packing evaluation. a mppcf = TLV.

Control: Dust reduction &/or protective equipment.

Means: Inform Stewards: (2)
Men - (81) - total pipe coving.
overall exposures to all jobs.
Sawing - band saws; hand saws.
Major jobs - few; mostly repair jobs.

Cutting, mixing (webbers).

1) tear off old covering.
2) cutting for replacement
3) installing replacement.

Obtain lists of compounds.

Dow Experience - good experience

397648

Meet Larry Warren (189 Bldg) Wed. at 8:00 AM

ST0030809

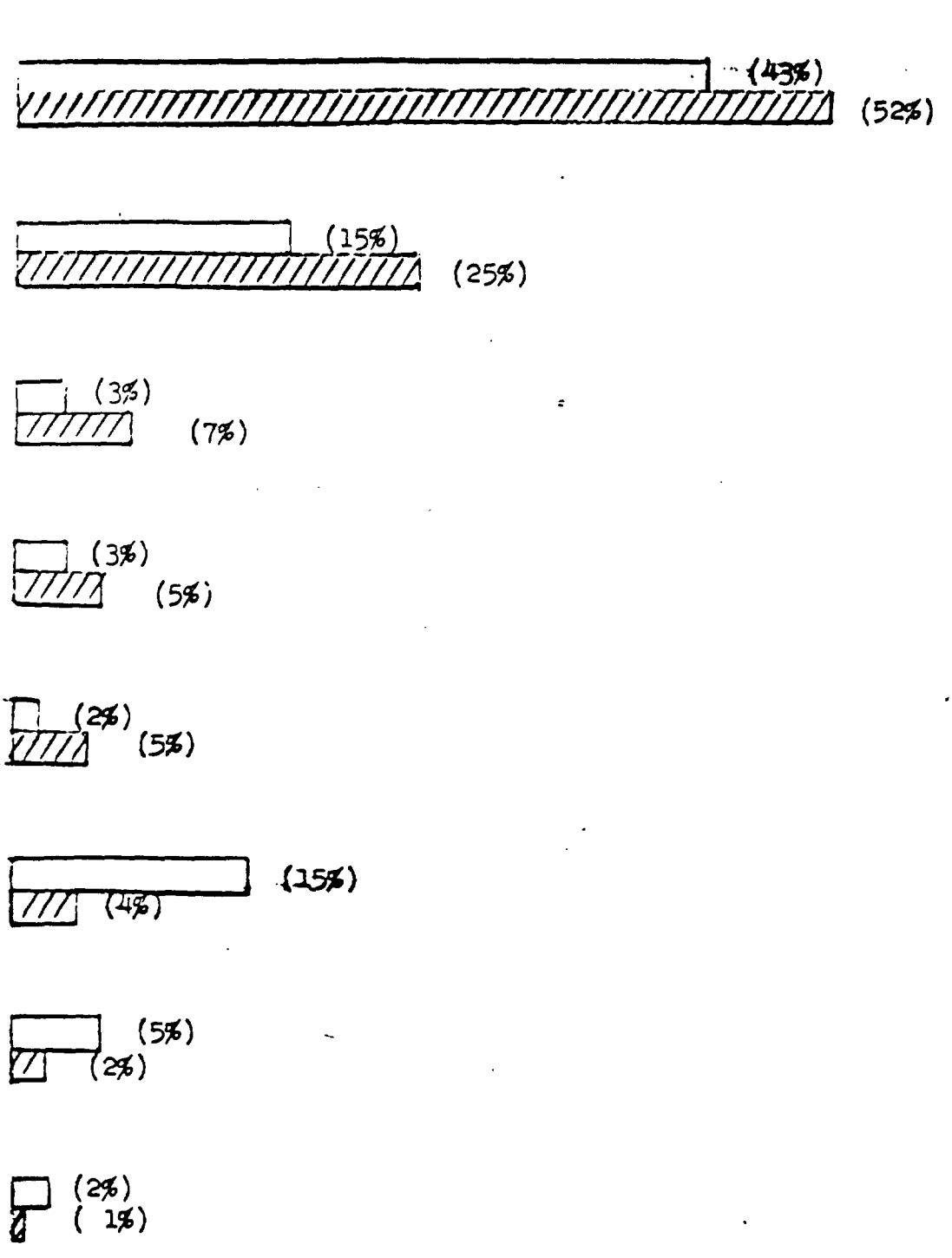
60.6% of Day

MATERIAL	Exposure		Std
Fiberglas.	0.05 x 13.7	= 0.685	
	0.175 x 1.7	= 0.298	(15)
	0.428 x 24	= 1.020	
	0.608 7.8	2.003	
Kaylo	0.05 x 11.2	= 0.560	
	0.175 x 11.7	= 2.050	(2)
	0.428 x 5.7	= 2.44	
		5.05	
Aircell	0.05 x 11.4	= 0.570	
	0.175 x 3.0	= 0.525	(2)
	0.428 x 5.7	= 2.440	
		3.535	
Careytemp	0.05 x 8.6	= 0.430	(2)
	0.175 x 2.6	= 0.455	
	0.428 x 5.9	= 2.311	
		3.196	: 5.2

ST0030810

397649

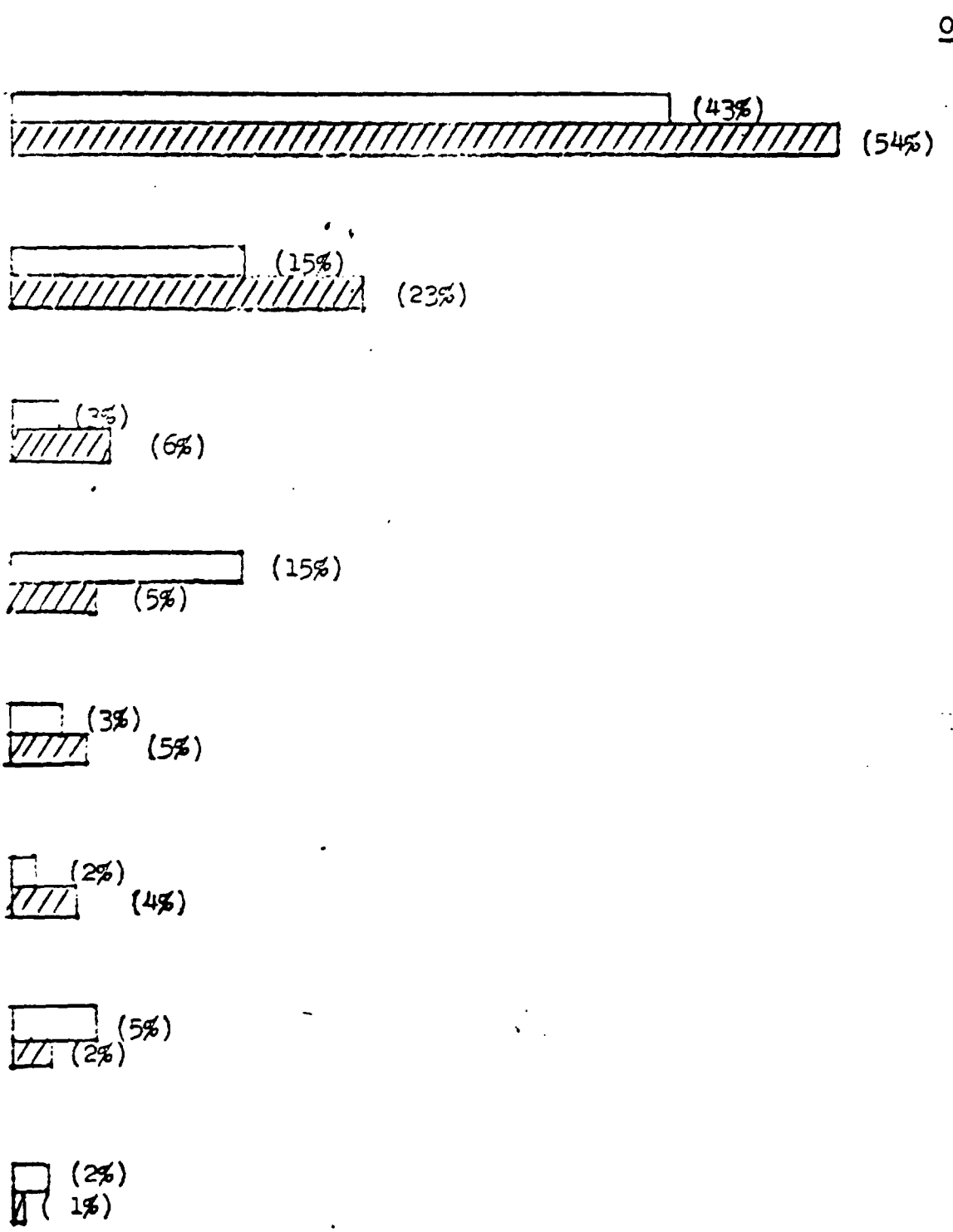
Graph I. Relationship between %Day spent handling insulation materials containing asbestos and %Dose (indoors).



ST0030811

397650

Graph II. Relationship between %Day spent handling insulation materials containing asbestos and %Dose (outdoors).



ST0030812

397651

MINIMAL RESPIRATORY PROTECTION REQUIREMENTS

Material	Remove	Mix	Cut	Apply
Air Cell	X			X
Kaylo (Cal sil)	X		X	X
High Temp	X			
Mag Oxide	X			
No. 1 Plus (Webbers)		X		
Armentite (Asbestos Shorts 352)		X		
Super Power				
Thermobestos				
Fiberglass				

1. You shall wear a respirator* when doing the above operations marked X.

2. You should wear a respirator* whenever a dusty situation exists.

*MSA Dustfoe or Sure Guard (R-2090) are the only allowed types.

397652

ST0030813