PLAINTIFF'S EXHIBIT

UC-4334

"CALIDRIA" ASBESTOS RG-600

HEALTH AND OSHA INFORMATION

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INTRODUCTION

The Williams-Steiger Occupational Safety and Health Act was passed in 1970 with the stated objective of assuring every American worker a safe and healthy workplace. The first health standard promulgated under this act covered exposures to airborne asbestos and went into effect on June 7, 1972. OSHA proposed extensive revisions of the regulations on October 9, 1975. The proposal has been going through a variety of administrative procedures including feasibility and inflationary impact studies. The revised version is expected sometime in the first half of 1978.

Asbestos has received a great deal of attention and publicity in the last several years. Unfortunately, much of the media treatment of the subject has been emotionally oriented and distored and, in some cases, bordering on the sensational and untrue. Many users of asbestos and products containing asbestos have been mislead regarding the safety of asbestos and what is needed to comply with the OSHA requirements.

The information presented in this folder has been collected as a service to "Calidria" asbestos users. It is intended to help put both the health and OSHA compliance questions in a reasonable perspective. Included are:

1. A summary of the main provisions of the OSHA Asbestos Standard and a copy of the regulations.

2. Dust count data obtained by Union Carbide at five industrial locations during the blending of RG-600 into high-density polyethylene, during the compounding, extruding and chopping of the asbestos containing resin.

3. Two pamphlets, "What You Should Know About Asbestos and Health" and "Asbestos and Health" published by the Asbestos Information Association/North America. The first is an employee oriented discussion of both health and OSHA while the second addresses the health question. Additional copies are available on request.

4. A material Safety Data sheet and analytical data on "Calidria" asbestos.

OSHA REGULATIONS

Introduction

After extensive public hearings, a Federal standard for Exposure to Asbestos Dust was published in the Federal Register, Volume 37, No. 110 on Wednesday, June 7, 1972. A copy of this standard (1910.1001) is included with the literature at the back of this booklet.(1)

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(1) Some states have established their own regulations and enforcement programs and have been certified by OSHA. Generally, these regulations are identical to 1910.1001 but occasionally there are important differences. This discussion applies only to the Federal standard. Information on any particular state is available upon request.

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Basically, the standard can be divided into the following five major categories:

1. Standards:

   Defines the allowable airborne asbestos fiber content in the workplace.

2. Monitoring:

   Defines the method of collecting samples and measuring the airborne fiber concentration.

3. Methods of Compliance:

   Defines acceptable procedures to met the allowable limits.

4. Medical:

   Specifies frequency and type of medical examinations required.

5. Warning Signs and Labeling:

   Specifies when warnings are necessary and the wording of such warnings.

The essential features of these categories are discussed in the remainder of this section. Before looking at these, however, it should be made clear that in the most basic sense the regulations require that every place of employment where asbestos is used must be monitored to determine the exposure level of airborne asbestos fibers. If the levels are well within the allowable limits, the only additional requirements are those relating to medical examinations. If the levels are not clearly within compliance, all provisions of the regulations apply. There has been a great deal of confusion on this distinction, occasionally even with OSHA field inspectors.

Standards

The present OSHA standards set a maximum exposure to airborne asbestos fiber of length longer that 5μ of:

1. An 8-hour, time-weighted average (TWA) of 2 fibers/cc.

2. A ceiling concentration of 10 fibers/cc.

Note particularly the use of the time-weighted average over the 8-hour shift. An operator performing one or two short additions of RG-244 per shift, as is typical of polyester producers, would have his exposure during the dumping time averaged with zero (or a very low background level) for the rest of the shift. This, obviously, tends to greatly reduce the 8-hour TWA.

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Monitoring

The regulations require an initial monitoring to determine whether the workplace meets the required levels. Thus:

> "Within six months of publication of the regulations (June 7, 1972), every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine where every employee's exposure to asbestos fibers is below the prescribed limits."

Monitoring usually is done by the membrane filter/personal air sampler, which can be obtained from a number of manufacturers.

The personal air sampler draws workplace air onto a filter which collects the particulates and fibrous dust in the air. This filter is then placed under a microscope and the number of fibers counted. After the count is complete, the actual fiber concentrations, expressed as fibers per cubic centimeter of air, are calculated by formula.

After the initial monitoring, the regulations state:

> "...samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section."

The section that has been underlined shows that if the initial monitoring give levels that are well below the allowable limits and no change is made in the method of operation which would increase dust levels, no further monitoring is required. It is a good and recommended practice, however, to monitor at regular intervals to make sure that the limits are being met.

It should also be understood that you cannot be cited legally for exceeding the allowable limits on the basis of your own monitoring. OSHA must base any citations issued on their own tests.

Methods of Compliance

If monitoring shows a plant or operation to be in excess of the limits, a number of ways are prescribed to bring it into compliance. These include, but are not limited to, engineering controls such as isolation, enclosure, exhaust ventilation, and dust collection. Certain work and housekeeping practices and waste disposal procedures are specified. Respirators, special clothing, and change rooms are also required under certain conditions.

It is most important to understand that these compliance procedures are required only if the allowable airborne asbestos fiber limits are being exceeded or can be expected to be exceeded under reasonably foreseeable circumstances. They are not automatic requirements that apply wherever asbestos is present.

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Medical Examinations

Preplacement, annual, and termination medical examinations must be provided or offered by the employer for any employee "... engaged in occupations exposed to airborne concentrations of asbestos fibers." These medical records must be kept for 20 years and are available to the employee's physician.

This section has proved to be one of the most confusing in the regulations since it does not define any cutoff level below which examinations are not required. Finally, after five years of urging, OSHA issued a clarification. "Exposure to asbestos" is specified as any exposure which exceeds 0.1 fiber/cc >5μ in an 8-hour time-weighted average or a peak level greater than 0.5 fiber/cc >5μ based on a 15-minute sample period.

Caution Signs and Labeling

The regulations require that:

> "Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section."

Wording for the signs is also specified.

There have been some cases where the OSHA inspectors have taken this to mean signs are required at any location where asbestos is present, regardless of whether or not the exposure limits are exceeded. Although this is clearly incorrect, there has been a tendency to post the signs and not contest the citation.

The regulations also require that:

> "Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released."

Wording for these labels is also specified.

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AIRBORNE ASBESTOS FIBER COUNTS

…ion presents airborne asbestos fiber count data obtained at five …cations. The specific operations preformed at each location

…onsisted of dry mixing a 12-pound batch of HDPE/ …ixing it in a Banbury, rolling on a two-roll …nical chopper.

…y tumbling 125-pound batches of HDPE/ …er's unit, chopping the strands

…s of HDPE/RG-600 on a …on "B" and regrinding

… assembly line fixture …heet with band saw.

…G-600 (25%) to a twin-

… zone of personnel operating …portions of the equipment where …cing were carried out in accordance …ummalde and Brown method for …scopy (Bureau of Occupational Safety

…icker's phase contrast microscope at …and field definition. Particles which … the judgement of an experienced counter …ncluded in the count.

…r counts obtained are shown in Table I grouped …d. Thus:

…00 - Resin Dry Mix.

…sin Operations (except cutting).

…opping and Grinding Operations.

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"Calidria" asbestos RG-600 is in the form of extruded pellets which reduces …ial to generate dust. Part I of the table shows that levels up to about … cubic centimeter were common in the processing equipment but operator …generally well below this, i.e. from <0.1 to 0.5. The only exception …mpounding in a Banbury mixer. Unfortunately this particular mixer had …as the asbestos pellets were broken up visible puffs of dust were …measured level of 4.5 fibers/cc is reasonable but is probably not …peration.

…nded Resin Operations data shown in Part II of the table gave … of 0.1 fibers/cc or less. Since the asbestos is well wetted … ground there is very little potential for dust of any kind.

…he cutting, grinding, or chopping of the resin are given … The highest count observed was 0.4 fiber/cc with values …cc. It is evident that the asbestos compounded in this …ncy to occur as free airborne fiber at the levels of …erations.

…strate the kind of dust levels which may be expected …stos RG-600 pellets into thermoplastic resin. … that similar operations in other plants would …tions require that each location must be

Union Carbide trial exhibit UC-4334: Union Carbide Metals Division, "Calidria" Asbestos RG-600 Health and OSHA I… Published by AsbestosClaims.Law
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"Calidria" asbestos RG-600 is in the form of extruded pellets which reduces its potential to generate dust. Part I of the table shows that levels up to about 2 fibers per cubic centimeter were common in the processing equipment but operator exposure was generally well below this, i.e. from <0.1 to 0.5. The only exception to this was compounding in a Banbury mixer. Unfortunately this particular mixer had a bad seal and as the asbestos pellets were broken up visible puffs of dust were generated. The measured level of 4.5 fibers/cc is reasonable but is probably not typical of good operation.

The Compounded Resin Operations data shown in Part II of the table gave very low fiber counts of 0.1 fibers/cc or less. Since the asbestos is well wetted here and is not cut or ground there is very little potential for dust of any kind.

The data for the cutting, grinding, or chopping of the resin are given in Part III of the table. The highest count observed was 0.4 fiber/cc with values generally below 0.1 fiber/cc. It is evident that the asbestos compounded in this resin has very little tendency to occur as free airborne fiber at the levels of shear encountered in these operations.

Conclusions

The data presented illustrate the kind of dust levels which may be expected in the blending of "Calidria" asbestos RG-600 pellets into thermoplastic resin. Although it is reasonable to expect that similar operations in other plants would give similar levels, the OSHA regulations require that each location must be monitored.

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TABLE I

AIRBORNE ASBESTOS FIBER COUNTS

BLENDING AND PROCESSING OF CALIDRIA ASBESTOS RG-600 IN HIGH-DENSITY POLYETHYLENE

Sample Designation	Plant Identification	Operation	Sample Information Type[1]	Sample Information Time (Min.)	Airborne Asbestos Fiber Concentration (Fibers/cc >5μ)
I. HANDLING RG-600 - RESIN DRY MIX					
C-811	A	Operator blending 8 lbs. PE and 4 lbs. RG-600 in Hobart mixer.	P	8	0.5
Z-232	A	Operator mixing 4 lbs. PE and 2 lbs. RG-600 in Banbury. (Poor seal on Banbury, visible puffs of dust.)	P	10	4.5
C-855	A	Operator blending on roll mill	P	13	0.3
K-24	B	Area sample - 2' off floor, 1' from tumbler mixer, 100 lbs. PE, 25 lbs. RG-600.	A	18	<0.1
K-20	B	Area sample from inner edge of extruder feed hopper. (Dry blend from K-24 in hopper.)	A	33	1.9
J-11	B	"	A	38	1.2
I-42	B	"	A	53	1.9
I-38	B	"	A	116	2.2
G-11	B	"	A	47	1.1
K-17	B	Operator running tumble mixer and extruder. Includes adding 25 lbs. of dry mix to hopper.	P	43	0.4
N-15	B	"	P	18	0.3
I-11	B	"	P	30	<0.1
N-51	C	Operator adding RG-600 and PE to extruder hopper and monitoring overall process.	P	36	0.1
N-16	E	Area sample at exit of auger feeder adding RG-600 to twin-screw vented extruder.	A	84	1.1
N-23	E	"	A	24	0.3
II. COMPOUNDED RESIN OPERATIONS					
I-33	B	Area sample from inner edge of extruder feed hopper.	A	29	<0.1
N-55	C	Area sample. Between hot die and sizing rolls.	A	39	0.1
M-33	C	"	A	61	<0.1
M-35	C	"	A	23	<0.1
J-15	D	Operator running vacuum former.	P	15	0.1
III. CUTTING, CHOPPING, OR GRINDING OPERATIONS					
C-635	A	Operation running finished product through granulator.	P	5	0.4
K-15	B	At exit of chopper. Directly over bags.	A	20	0.2
M-2	B	"	A	49	<0.1
K-21	B	"	A	88	<0.1
K-16	B	"	A	133	<0.1
J-6	B	"	A	115	<0.1
M-14	B	"	A	29	<0.1
M-34	C	Adjacent to blades of sheet cutter.	A	26	0.1
L-19	C	"	A	8	0.3
N-42	C	"	A	51	<0.1
M-26	C	Operator monitoring process and grinding sheets.	P	52	<0.1
M-2	C	Operator monitoring process and adding reground pellets to extruder.	P	34	0.3
M-6	D	Operator running vacuum former and cutting sheet.	P	15	0.2
N-21	E	Area sample at chopper exit.	A	75	<0.1
N-17	E	"	A	10	0.3

(1) "P" = Personal sample collected in breathing zone.

"A" = Area sample collected immediately adjacent to the designated processing step.

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