ACL - Selection 6/11

UNION CARBIDE

May 21, 1975

Mr. Roy J. Steinfurth, Administrator
Insulators Health Hazard Program
511 Machinist Building
1300 Connecticut Avenue, N.W.
Washington, D. C. 20036

Dear Mr. Steinfurth:

Your letter of May 14, 1975, raised several questions regarding proposed amendments to legislation initiated in California by Senator Milton Marks. I believe that we have developed sufficient technical information to answer the questions which you posed. The following paragraphs cover in the same sequence your four questions.

1. Amendments have been requested to exempt four general categories of sprayable materials containing asbestos. In only one of these, "Water-Based Systems with Water-Soluble Binders," is dry asbestos-containing material handled at the work site. In the other three categories, the asbestos is incorporated into the binder by the manufacturer.

   The systems that are dry-mixed are interior wall and ceiling texture sprays. We too are concerned over the handling of these while dry. However, the precautions and safety equipment which must be used are described very specifically in the Federal and California OSHA regulations.

   OSHA Regulations § 1910.93a

   (2) [redacted]

   (ii) [redacted] and Operations.

   "No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section."

PLAINTIFF'S EXHIBIT
UC-4206

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We know of work in progress to develop equipment to mix dry materials within the limits set by the regulations and also to provide the texture paints already mixed. If the mixing cannot be done in compliance with existing regulations, it is prohibited and no suggestion is made that this be changed. It does seem inappropriate, however, to prohibit the spraying of such paints when they have been properly mixed in complaince with existing regulations.

This is also the only one of the four categories where overspray that must be removed is a regular occurrence. In this operation, the ceiling is normally sprayed first. Any overspray on the walls is removed immediately while wet with a scraper. The walls are then sprayed. During both of these steps a moderate amount of overspray in the form of large drops collect on the floor. This dries and is very difficult to remove by sweeping. It is normally removed by moistening and scraping. Data are presented in Table I from a test sequence where dry sweeping, sweeping with an industrial dust control compound and wet scraping are compared. The preferred wet scraping gave a ceiling concentration of 0.3 fibers/cc. Here again work practices are available to insure compliance with OSHA regulations.

The other three categories are largely industrial applications where FRP articles are fabricated or heavy-duty coatings are applied. Where adjacent surfaces are contaminated with overspray, it is normally removed immediately with an appropriate solvent or is covered with subsequent coatings. Where it is not removed, the binder sets and holds the asbestos. There are no clumps of unbound asbestos as would occur in the typical spraying of asbestos insulation which is now prohibited by Federal regulations.

2. The highest content of asbestos in any of the sprays considered is 15% in the automotive undercoating. This asbestos is mixed with 45%, i.e. three times its weight, of permanent asphaltic binder and 40% of solvent which evaporates as the coating cures.

In our [redacted] we reported duplicate fiber counts in the breathing zone of the [redacted] material were 1.5 and 0.2 fibers/cc > 5μ. Area samples [redacted].7 and 0.0 fiber respectively. The high count was the only one in [redacted] tests where any appreciable number of fibers that were clearly [redacted] were found. The duplicate sample, at 0.2 fibers/cc was typical of the remainder of the data for this type of system and we should emphasize that the 1.5 f/cc count was a ceiling value well within present ~~sic~~ programmed limits.

The next highest asbestos content is 12% in the alkyd based exterior paint. Here, too, the formulation contained 36% resin binder, again exceeding the asbestos content by a factor of 3.

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The duplicate fiber counts during spraying for this material gave results of 0.0 and 0.06 fibers/cc > 5μ. Area samples four feet away before, during and after spraying were all zero.

The range and the mean of the observed airborne asbestos fiber counts in the breathing zone of the operator during spraying for each of the four categories of binder system are summarized in the following table. The number of samples obtained in each category is also noted.

AIRBORNE ASBESTOS FIBER CEILING CONCENTRATION
Fibers/cc > 5μ

Category	Range	Mean	No. of Tests Made
Water-Based System with Water-Soluble Binders	0-1.6	0.5	14
Water-Based System with Latex Binders	0-0.2	0.06	4
Resin Based System	0-0.6	0.2	19
Asphaltic and Coal-Tar Based System	0.02-1.5	0.3	8
		0.3	45

It should also be noted that in most of these counts all particles longer than 5μ with L/D > 3 that in the judgment of an experienced operator could possibly be asbestos were counted as such. This resulted in the inclusion of a proportion of particles that are not really asbestos.

We [redacted] demonstrate that the spraying of asbestos wetted by a binder [redacted] ibed does not present a hazard to the worker or his family.

3. The question of sanding and grinding has been addressed in the data presented in Table II. It is important to recognize that a wide variety of professional applications are covered here and the sanding and/or grinding operation is rarely encountered except for certain of the resin-based systems.

For the Water-Based System with Water-Soluble Binders, the ceiling spray contains expanded polystyrene or other aggregate and is finished as sprayed. It is not

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sanded, at some future date it may be spray painted. As an interior coating it is not subject to weathering.

The wall texture is water soluble and must be covered with one or more coats of protective paint. It too, by nature is not sanded and doesn't weather appreciably. While it is not a matter of common practice to subject textured paints and coatings to sanding, grinding and similar manipulations, one could speculate that such manipulation could be conducted in extraordinary circumstances. To allay concern over such a possibility, tests were recently conducted in a building where the coating had been in place for nine years. Results were as follows:

Grinding and sanding -	0.02 f/cc > 5μ	
Wire brushing -	0.02 "	"
Simulated demolition -	0.01 "	"

These results clearly indicate that dust counts during manipulation are at the same low levels as during deposition.

The Water-Based System with Latex Binders are professional coatings applied to industrial roofing and mobile homes. Spray on adjacent surfaces is not a problem and sanding is not a normal operation.

In the Resin-Based System, the polyester resins are used to fabricate various articles usually in combination with fiber glass. Sanding and grinding is a common operation here and the data shown in Table II have been collected in a variety of industrial situations to ascertain the kind of airborne fiber levels encountered.

The concentrations in the breathing zone of the operator range from 0.0 to 0.4 fibers/cc > 5μ. The mean of the 15 tests run is 0.14 fibers/cc. These also are well [redacted] it.

The [redacted] this group are professional specialty coatings and are ordinarily [redacted]

The last category considered is the Asphaltic and Coal-Tar Based System. Typical uses here are automotive undercoatings and industrial roof coatings. These too are ordinarily not sanded or ground.

The question is also raised about the effects of erosion and weathering. As the sanding and grinding data show, it is difficult to generate appreciable concentrations of free airborne asbestos fiber from these binder-rich materials even when a substantial

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amount of abrasion is done in a period of a few minutes. In all of the systems considered in the proposed amendments, the binder is a critical ingredient and must last for a period of years. In fact, the primary function of many of these coatings is weathering resistance. Under these circumstances, it is reasonable to expect that any airborne asbestos fiber concentrations that result from erosion and weathering will be so low that they are indistinguishable from the background.

4. Your concern here is apparently with the commonly used 85% magnesia insulation. The following quotations from "ASBESTOS, Its Industrial Applications" by D. V. Roesto, Reinhold Publishing Corporation, N.Y., are pertinent:

"Magnesia-Asbestos Insulation

Magnesia-asbestos insulation is a very well known and popular product used for fire proofing and heat insulating. This type of insulation is generally identified by the name of 85 per cent magnesia. Eighty-five per cent magnesia derives its name from the fact it contains not less than 85 per cent of magnesia carbonate. Asbestos fiber is incorporated to act as a binding and reinforcing agent. The fiber principally used is chrysotile; crocidolite and amosite are used also.

The manufacturing process involves thorough mixing of the constituents with sufficient water to permit easy handling in a filter press. The products can be pressed into different shapes. Generally, three days in steam-heated kilns will dry out the product."

It is evident that the 85% magnesia insulation does not contain any binder in the finished product. Assuming that this is the type of product referred to in the comment, it is obviously quite different from any of the sprayable systems considered in the proposed amendments.

[redacted] of the materials proposed for exemption from the spraying [redacted] is as high as 15%, it is always utilized with a binder [redacted] substantially exceeds the amount of asbestos. By way of [redacted] floor tile may contain 20 to 25% asbestos but here again the [redacted] binding emission of significant quantities of fiber. Further, it should be noted that in most of the areas proposed for exemption, the asbestos content is only a few percent.

I hope that this answers your questions and that we can arrive at a commonality of interests wherein the health of the worker and the public are protected while, at the same

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time, important uses of asbestos are not inadvertently banned, especially when safe work practices exist.

Please feel free to contact me if you require further information.

Very truly yours,

W. C. Thurber
Product Manager - Asbestos

WCT/es
Attachments - Tables I and II

cc: Senator Milton Marks
Dr. I. J. Selikoff
Mr. Ed Story

bcc: Messrs. S. Blumenfeld
S. M. Haines
P. McAmis
H. B. Rhodes



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TABLE I

AIRBORNE ASBESTOS DUST LEVEL COMPARISONS -

CLEANUP AFTER APPLICATION OF TJC AND TEXTURE SPRAY

Identification	Date	Operation	Sample Time (Min.)	Ceiling[1] Concentration (Fibers/cc > 5μ)
Florida Condominium, O.T.	5/15/74	Background environmental, 4' x 5' shower area in center of apt. down hall.	34	<0.1
		Operator dry sweeping 5 rooms totaling approx. 230 ft.^{2}	3	5.5
		Environmental - In center room directly following sweeping noted above.	37	0.6
		Operator sweeping room (200 ft.^{2}) with sweeping compound.	5	1.8
		Environmental - In room noted above. Directly following sweeping.	29	0.8
		Operator cleaning 430 ft. apt. as follows:	37	0.3
		1. Wet floor lightly with fine water spray.		
		2. Pass large scraper over floor.		
		Environmental - In central room. Directly following sweeping noted above.	23	0.2

(1) All counts by standard OSHA procedure. Samples collected in operator's breathing zone unless otherwise noted.

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Table II

AIRBORNE ASBESTOS FIBER COUNTS -

GRINDING AND SANDING OF RESIN-BASED SYSTEMS CONTAINING

Sample Designation	Commercial Application	Date	Resin	Asbestos Type	Asbestos Approx. Wt. %	Operation	Sample Time (Min.)	Airborne Asbestos Fiber Concentration (Fibers/cc >5 μ)
I. THERMOSET RESIN (Polyester)								
—	Molding furniture parts	3/15/72	Polyester	RG-244	0.05	Operator hand sanding small parts.	45	0.002
—	"	"	"	"	0.05	Operator running power sander with integral hood.	45	0.002
1929-40-4	"	12/6/72	"	"	0.3	Operator sanding and grinding molded parts. Good hood & ventilating system on grinder.	23	0.3
1929-82-3	Fabrication of reinforced fiber glass pipe.	2/27/73	Polyester	RG-144	2-3	Operator pulls pipe along line. Saws off end with circular saw.	19	0.1
1929-82-4	"	"	"	"	2-3	Same operation as 1929-82-3.	49	0.1
1929-82-5	"	"	"	"	2-3	Operator removing end of pipe with scarfing machine.	45	0.04
I-13	"	8/13/74	"	RG-244	1.4	Operator shaping end of pipe with bell & spigot machine.	16	0.3
I-6	"	"	"	"	1.4	Operator cutting off pipe end and light grinding on exterior surface.	17	0.2
I-26	Fabrication of FRP tanks and pipe.	8/13/74	Polyester	RG-244	1.5	Operator grinding inside of 13' I.D. x 26' tank.	16	0.4
I-8	"	"	"	"	1.5	Continuation of same operation as I-25.	5	0.3
I-39	"	"	"	"	1.5	Operator grinding edges of miscellaneous small parts.	25	0.3
1929-84-4	Production of artificial bricks.	3/8/73	Polyester	RG-244	2.0	Operator cutting with sabre saw.	44	0.1
1929-84-5	"	"	"	"	2.0	Operator trimming with sabre saw.	39	0.2
I-20	Production of fiber glass boats.	11/26/74	Polyester	RG-244	0.5	Operator grinding inside of boat hull.	11	0.0
I-25	"	"	"	"	0.5	Operator grinding.	4	0.0

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