PLAINTIFF'S EXHIBIT

UC-3311

RECOMMENDED STANDARD FOR OCCUPATIONAL ASBESTOS EXPOSURE IN CONSTRUCTION AND OTHER NON-FIXED WORK OPERATIONS

The Asbestos Information Association of North America

and

The Association of Asbestos Cement Pipe Producers

February 7, 1980

A18974

UCC 000705

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto… Published by AsbestosClaims.Law
ACL Doc 18102 · Page 1 of 51 asbestosclaims.law/library/18102/1

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
II.	THE NEED FOR A REGULATORY STRATEGY WHICH MORE CLOSELY REFLECTS THE EVERYDAY REALITIES OF CONSTRUCTION AND OTHER NON-FIXED WORKPLACES	4
III.	EXPLANATION AND ADVANTAGES OF THE RECOMMENDED STANDARD	12
	A. Explanation of the Recommended Standard	13
	1. Scope and application	13
	2. Classification of products	14
	3. Validation	17
	4. Regulatory requirements	20
	B. Advantages Over OSHA's Typical Fixed-Site Health Standard	25
	1. Worker protection	25
	2. Incentives for the development and use of safer products and work practices	29
	3. Enforceability	30
IV.	CONCLUSION	31
	RECOMMENDED ASBESTOS STANDARD FOR CONSTRUCTION AND OTHER NON-FIXED WORK OPERATIONS	1a
	APPENDIX: A Preliminary Assessment of How the Recommended Asbestos Standard Can Successfully Be Implemented in Construction and Other Non-Fixed Work Operations	1b
	Introduction: Potential Asbestos Exposure in Construction and Other Non-Fixed Work Operations	3b

A 18975

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 2 of 51 asbestosclaims.law/library/18102/2

		Page
A.	Recommended Work Practice Procedures for Asbestos-Cement Pipe.....	8b
	1. Sampling Methodology and Operations Sampled for Asbestos-Cement Pipe.....	36b
	2. Methods.....	37b
	3. Operations Sampled.....	38b
B.	Recommended Work Practice Procedures for Asbestos-Cement Sheet.....	47b

A 18976

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto… Published by AsbestosClaims.Law
ACL Doc 18102 · Page 3 of 51 **asbestosclaims.law/library/18102/3**

RECOMMENDED STANDARD FOR OCCUPATIONAL ASBESTOS EXPOSURE IN CONSTRUCTION AND OTHER NON-FIXED WORK OPERATIONS

I. INTRODUCTION

There is a growing recognition that many components of the health standards customarily adopted by the Occupational Safety and Health Administration (OSHA) for fixed-worksite jobs in manufacturing industries do not appreciably advance OSHA's worker health goals when applied to construction and other non-fixed work operations. OSHA acknowledged over four years ago "that alternative . . . controls may be more appropriate and feasible for the construction industry" because of "the uniqueness of the construction industry itself (viz., the multiplicity of non-fixed workplaces, and the utilization of highly transient workforces)." 40 Fed. Reg. 47657 (October 9, 1975). More recently, in a July 18, 1979 Memorandum asking the Advisory Committee on Construction Safety and Health to study the problem, Assistant Secretary of Labor Dr. Eula Bingham expressed concern that OSHA's "health standards . . . have been focused primarily on general industry," and, as a result "of the mobile and transient nature of their industry, construction employers and employees have had difficulty in complying with these standards."

A18977

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 4 of 51 asbestosclaims.law/library/18102/4

Accordingly, both government and industry have begun to examine alternative regulatory strategies which achieve good health protection for construction workers without imposing fixed-site requirements such as engineering controls, exposure monitoring, medical surveillance, regulated areas, hygiene facilities, and other provisions which are frequently impracticable in non-fixed operations. In addition to the Construction Advisory Committee study, OSHA recently appointed a Special Assistant for Construction Affairs and, on June 7, 1979, established a Task Force on Construction. All of these steps are designed to provide OSHA with guidance on how to resolve the problems of regulating health hazards in the construction industry.

Industry's efforts have focused on alternative methods for protecting worker health. Attention has been directed toward the development of products and work practices which eliminate the need for the often cumbersome provisions of the customary OSHA health standard. In the asbestos industry, for example, construction materials which are capable of producing excessive exposures increasingly are being withdrawn from the market. In addition, simple work practices which minimize occupational asbestos exposure have been and are being developed and widely disseminated. (See Appendix.)

The Recommended Standard for Occupational Asbestos Exposure in Construction and Other Non-Fixed Work Operations

A 18978

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 5 of 51 asbestosclaims.law/library/18102/5

proposed herein is the logical outgrowth of these efforts. In brief, the Recommended Standard establishes a classification scheme designed to provide a series of economic and regulatory incentives for the development of work practices and product formulations which will provide good health protection for workers without imposing the often impractical features of the typical fixed-site OSHA standard. More specifically, the Recommended Standard classifies products into three categories (called "Category A," "Category B," and "Category C" Products) according to their potential asbestos exposure. See pp. 14-17, below. Different regulatory requirements would apply to each category, with successively more stringent requirements imposed for products presenting increasing levels of risks. See pp. 20-24, below.

The purpose of this product classification program is to encourage the development of safer products and work practices which eliminate the need for the fixed-site requirements of the current standard, such as monitoring and medical surveillance. See pp. 29-30, below. The Recommended Standard includes provisions for validation by fully qualified testing laboratories to ensure that validated work practices and product formulations are effective in protecting workers. See pp. 17-20, below. At the same time, OSHA's enforcement burden would be lightened considerably. In many cases, an inspector's job would be done once he determined that proper products or work practices are being used. In addition,

A 18979

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 6 of 51 asbestosclaims.law/library/18102/6

OSHA could conduct occasional monitoring as an empirical check on the effectiveness of validated products and work practices. See pp. 30-31, below.

In short, the alternative recommended herein will serve OSHA's health protection goals for the construction industry far better than the customary OSHA health standard. In practical effect, the current OSHA approach often leaves construction industry employers no choice except to abandon the use of essential or highly useful construction materials. By contrast, the Recommended Standard encourages the development of cost-effective products and work practices which both protect worker health and meet the practical needs of the construction industry and the economy as a whole.

II. THE NEED FOR A REGULATORY STRATEGY WHICH MORE CLOSELY REFLECTS THE EVERYDAY REALITIES OF CONSTRUCTION AND OTHER NON-FIXED WORKPLACES

The characteristics of employment in the construction industry present unique occupational health and industrial hygiene problems which plainly call for separate regulatory treatment. Employees work in a continuously changing environment, moving from one temporary worksite to another. Each worksite is unique, both because the outdoor nature of much of the work results in exposure patterns that can vary widely with changing weather conditions, and because each temporary worksite involves the use of different materials and processes over differing lengths of time.

A18980

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 7 of 51 asbestosclaims.law/library/18102/7

As a result, occupational exposure to most toxic substances in construction work is highly variable. Moreover, because the duration of most tasks construction workers perform is limited, exposures are intermittent, brief and, for many substances, very low on the average. Asbestos dust is an example of such a substance, as the findings of a draft technological and economic feasibility study recently released by OSHA demonstrate:

> Products containing asbestos are not used consistently [in construction work]. Individual workers may work with a product containing asbestos only very occasionally, although some may do so almost continuously. Thus, the total population exposed over time may be much larger than the population at risk at a moment in time, and average annual and cumulative exposure may be quite low.1/

Apart from the nature of construction work itself, the economic structure of the construction industry suggests that customary occupational health and industrial hygiene measures are not appropriate. The industry is characterized by a predominance of small firms and the absence of stable employer-employee relationships. Over 70 percent of construction industry employers are proprietorships averaging

---

1/ Research Triangle Institute, Asbestos Dust: Technological Feasibility Assessment and Economic Impact Analysis of the Proposed Federal Occupational Standard p. II-35 (dated September 1978 and released December 1979) (hereinafter referred to as the "RTI Report").

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 8 of 51 asbestosclaims.law/library/18102/8

one to four employees.[2] These firms are highly transient. Their number fluctuates widely according to seasonal variations and other short-term shifts in demand. Thus, firms are frequently formed to undertake specific projects and then disbanded.

As might be expected, the workforce is also highly transient and temporary, with turnover rates as high as 300 to 600 percent per year depending on the job or craft involved. Casual hiring and severence practices (i.e., "walk-on, walk-off") are common. Thus, individual workers may, over a working life, be employed by a very large number of firms.[3]

The typical OSHA health standard is simply not designed to accommodate the type of employment involved in the construction industry. Requirements for engineering controls, monitoring, medical surveillance, regulated areas and hygiene facilities can effectively protect worker health only in manufacturing or other "general industry" jobs involving stable employment relationships and regular assignment to fixed-site operations involving repetitive tasks. Yet, nearly every fixed-site health standard thus far promulgated

---

2/ RTI Report p. II-35.

3/ Statement of Fred Graham, National Constructors Association (NCA), OSHA Docket H-90 (Cancer Policy), Ex. 125 at 2; RTI Report p. II-36.

A 18982

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbesto... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 9 of 51 asbestosclaims.law/library/18102/9

by OSHA under Section 6(b) of the Occupational Safety and Health Act applies to construction workplaces. 44 Fed. Reg. 8706-8805 (February 9, 1979). The current asbestos standard provides a good example of why a new regulatory strategy for construction and other non-fixed workplaces is needed.

For example, the current asbestos standard requires construction industry employers to conduct personal and environmental ("area") monitoring which must be "of such frequency and pattern to represent with reasonable accuracy the levels of exposure of employees." 29 C.F.R. § 1910.1001 (f)(2),(3). The nature of construction work makes this requirement for "representative" exposure monitoring a virtually meaningless (albeit very expensive) exercise.

As pointed out above, only a few of the remarkable variety of tasks performed by construction workers involve asbestos-containing products, and a worker's asbestos exposure on any single day will obviously depend on what portion of that day was spent doing asbestos-related-tasks. Moreover, each asbestos-related-task presents a different potential for exposure to asbestos fibers. Exposure levels will vary depending on the duration of the work, the work procedures followed by the particular employee, the tools used, the fiber-release characteristics of the asbestos-containing product, weather conditions, and other factors.[4/] As a

---

4/ See, e.g., Statement of Lt. Col. David Smith on behalf

(Footnote 4 continued on next page.)

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 10 of 51 asbestosclaims.law/library/18102/10

result, a worker's exposure on any given day will not be "representative" of his exposure on any other day, nor will it be "representative" of any other worker's exposure.

Consequently, the current OSHA provision for monitoring at "such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees" imposes a considerable burden. It could be read to require continuous monitoring of all of the millions of workers who may be "exposed" (even though briefly and intermittently) to detectable levels of asbestos fibers.5/ But given the uniqueness of each operation, repetitive monitoring provides information of limited value in determining whether an exposure limitation is being satisfied throughout all operations. And even if the resources were available, the five-to-six week period needed for laboratory analysis exceeds the life of many construction operations involving asbestos.

(Footnote 4 continued from previous page.)

of the Department of Defense, Docket H-004 (Lead), Ex. 130; Statement of C. R. Mattson (NCA), Docket H-004 (Lead), Ex. 98; Statement of Harry Taylor on behalf of the Council of Construction Employers, Docket H-004 (Lead), Ex. 64; Statement of I. J. Meyerson on behalf of Boeing Aerospace Company, Docket H-004 (Lead), Ex. 30.

5/ In 1975, OSHA suggested that three to five million construction and shipbuilding workers may be exposed to asbestos dust. 40 Fed. Reg. 47653 (October 9, 1975). Table II-3 of the RTI Report (p. II-27) estimates the number to be about 2.3 million.

A 18984

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 11 of 51 asbestosclaims.law/library/18102/11

The current asbestos standard also requires construction employers to provide preplacement, annual and termination medical examinations involving a battery of tests, including diagnostic x-rays and pulmonary function tests, to every worker exposed to virtually any detectable level of airborne asbestos dust. 29 C.F.R. § 1910.1001(j); OSHA Program Directive 300-16 (October 11, 1978). Like the monitoring requirement, this medical surveillance provision does little to protect the health of construction industry workers.

Medical surveillance creates health and economic risks to the worker which outweigh any health benefits that might be achieved. The rapid turnover of both employees and employers creates a significant potential for unnecessary repeat examinations and over-exposure to diagnostic x-rays.[6/] As Dr. Irving Selikoff testified before the Subgroup, "doing a chest x-ray on 19 year old kids every year is not only a waste of good x-rays, but I think dangerous for those who are taking them."[7/] In addition, the results of the examination

---

6/ See "Health Standards Pose Big Problems for Industry," Engineering News-Record, October 12, 1978. Excessive x-ray exposure creates an increased risk of leukemia and many other forms of cancer. See, e.g., EPA, Addition of Radionuclides to the List of Hazardous Air Pollutants, 44 Fed. Reg. 76738 (December 27, 1979).

7/ Testimony of Dr. Irving Selikoff before the Subgroup on Health Standards of the Construction Advisory Committee, Tr. 45 (September 24, 1979).

A 18985

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 12 of 51 asbestosclaims.law/library/18102/12

may discriminate against individual workers by making them unemployable even without any actual disability.8/

In light of these health and economic risks, the wisdom of requiring medical examinations for all workers who may be exposed to any detectable level of asbestos dust is questionable. Although many construction workers may, at one time or another, be exposed to detectable asbestos levels, few are exposed more than intermittently and briefly. Consequently, a reasonable cut-off is needed to screen from the medical surveillance program those workers whose exposure is insufficient to warrant medical surveillance (with its own attendant risks).

Other components of the typical OSHA health standard are equally inappropriate in light of the realities of construction work. For example, the concept of fixed, limited-access "regulated areas" is largely meaningless in construction worksites. As the National Constructors Association points out, "work is performed in a continuously changing environment," and "personnel are constantly being called upon to perform work in irregularly occupied areas on a transitory basis."9/

8/ Testimony of Dr. Clark Cooper before the Subgroup on Health Standards of the Construction Advisory Committee, Tr. 30-31 (November 26, 1979).

9/ Statement of Fred Graham, OSHA Docket H-60 (Cancer Policy), Ex. 125 at 7, 9.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 13 of 51 asbestosclaims.law/library/18102/13

shower rooms, or lunch rooms are impractical for many construction employers. Most construction sites have no supply of water or the buildings necessary to house these facilities. Further, the cost of procuring mobile, self-contained facilities is frequently prohibitive, particularly for small-scale construction projects such as residential dwellings or small office buildings.

There is no reason to believe that many of the small, transitory employers in the construction industry are likely to have the personnel or financial resources to meet any of these fixed-site requirements. Indeed, the National Constructors Association has stressed that the routine adoption of such requirements would "place an intolerable economic and logistical strain on the construction industry -- particularly small contractors." NCA added that "the costs are so extreme as to threaten the continued existence of many small and medium size construction companies throughout the nation, without a clear demonstration of the necessity for such rigid health controls."[10/]

In sum, many provisions of the typical OSHA health standard -- concededly designed for fixed-site employment in "general industry" -- are misplaced when applied to construction and other non-fixed workplaces. The unique

---

10/ Id. at 4, 5.

A 18987

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 14 of 51 asbestosclaims.law/library/18102/14

characteristics of these workplaces require a fresh approach which both provides good health protection for workers and is feasible, cost-effective, enforceable, and likely to encourage the development of safer products and work practices. The next section shows, using asbestos as an example, that such a regulatory strategy can indeed be developed for construction and other non-fixed workplaces.

III. EXPLANATION AND ADVANTAGES OF THE RECOMMENDED STANDARD

Occupational health standards should serve a number of different objectives. First, they should be enforceable regulations which adequately protect workers from occupational health hazards. Second, they should impose practical requirements which promote voluntary compliance, avoid unnecessary burdens on employers and the public, and channel available occupational health resources to areas where those resources will achieve the greatest health gains for workers. And third, they should encourage the private sector to develop safer products and work practices which efficiently satisfy the practical and economic needs of the construction industry and the general economy.

The Recommended Standard would achieve these objectives by establishing a product classification program, based upon qualified laboratory tests, which would rank asbestos-containing products used in construction operations according to their potential for releasing airborne asbestos fibers in

A 18988

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 15 of 51 asbestosclaims.law/library/18102/15

excess of the permissible exposure limits. The Standard would impose regulatory requirements commensurate with the exposure risk presented by each product category, applying more stringent requirements for higher-risk products, including full compliance with the existing standard for products presenting the greatest risk of exposure above permissible levels.

A. Explanation of the Recommended Standard

1. Scope and application

The Recommended Standard would apply to "construction work and other non-fixed places of employment where asbestos or products containing asbestos are processed or used." Rec. Std. ¶ (a). The definition of the term "construction work" in Paragraph (b)(8) is identical to OSHA's definition of the term under its General Industry Standards. 29 C.F.R. § 1910.12.

The Standard defines the term "non-fixed work operation" to refer to "jobs which do not involve regular assignment to a permanent work location or set of locations." Rec. Std. ¶ (b)(9). The purpose of this provision is to include highly mobile non-construction operations such as oil well drilling, where asbestos exposures (from the use of drilling mud additives containing asbestos) may occur under circumstances similar to construction activities.

A18983

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 16 of 51 asbestosclaims.law/library/18102/16

Lastly, the Recommended Standard contains a provision which clearly separates the coverage of the current OSHA asbestos standard from the proposed new construction standard. The current OSHA standard does not contain any specification of scope and application, but the provisions of the standard make clear that it applies to any workplace where there is occupational exposure to asbestos. Accordingly, the Recommended Standard adds to the current standard a new paragraph which excludes construction and other non-fixed workplaces which would be covered by the proposed new standard.

2. Classification of products

The categorization of asbestos-containing products used in construction operations according to their fiber-release potential is the foundation of the recommended approach. The proposal would establish three classifications (called "Category A," "Category B" and "Category C" Products) which are defined according to a product's capacity, under reasonably forseeable conditions of processing or use in construction and other non-fixed operations, for releasing airborne asbestos fibers in excess of the permissible exposure limits. As discussed later, different regulatory requirements would apply to each category, both to reflect the degree of risk associated with each type of operation, and to establish

A18990

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 17 of 51 asbestosclaims.law/library/18102/17

incentives for the development and use of safer products and work practices.

A "Category A Product" is defined in Paragraph (b)(1) as a "product which, based on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, does not result in occupational exposure to airborne concentrations of asbestos fibers in excess of the permissible exposure limits under any reasonably forseeable conditions of processing or use." Category A is the safest product classification and will generally include products in which asbestos fibers are coated, bound or enclosed by other materials in such a way that they will not be released in significant quantities in any reasonably foreseeable construction industry use. As discussed in the Appendix, these products are likely to include mastics, mechanical packings, oil seals, compressed gaskets, sealants and caulks, and electrical insulating paper.

A "Category B Product" is defined in Paragraph (b)(2) as a "product which, based on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, does not, under any reasonably foreseeable conditions of processing or use, result in occupational exposure to airborne concentrations of asbestos fibers in excess of the permissible exposure limits when a specified fabrication, installation or removal method is

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 18 of 51 asbestosclaims.law/library/18102/18

used." In effect, Category B Products are capable of producing airborne asbestos fiber concentrations in excess of the permissible exposure limits under some reasonably foreseeable construction uses, but will not do so if the correct work procedures, tools or other safeguards are employed in those situations.

Obviously, some regulatory controls must be applied to Category B Products to ensure that they are used in a way that prevents the release of excessive concentrations of asbestos fibers. Nevertheless, if properly classified, Category B Products do not require the full panoply of typical fixed-site requirements. So long as the use of proper work practices, tools or other safeguards is ensured, additional requirements are unnecessary or redundant. As discussed in the Appendix, AIA/NA, AACPP and their member companies have developed data showing that work practices for two asbestos-containing products -- asbestos-cement pipe and asbestos-cement sheet can be validated under Category B of the Recommended Standard.

The last classification -- "Category C Products" -- covers products which do not fall into either of the two preceding categories. Rec. Std. ¶ (b)(3). Because they possess neither the innate physical characteristics nor the validated work practice controls which are needed to ensure that the permissible exposure levels are met, Category C Products present the greatest potential for significant

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 19 of 51 asbestosclaims.law/library/18102/19

asbestos exposures, and accordingly require the most stringent regulatory controls.

3. Validation

For any product classification program to be successful, it is, of course, necessary to provide adequate assurances that products will properly be classified. The Recommended Standard employs two devices for achieving this goal: (i) validation by qualified testing laboratories, and (ii) empirical field confirmation by OSHA in connection with workplace inspections.

In order to classify an asbestos-containing product within Category A or B, there must exist "objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory." Rec. Std. ¶¶ (b)(1) & (2). Paragraph (b)(6) defines a "Certified Testing Laboratory" as "a laboratory accredited by the American Industrial Hygiene Association [AIHA] as qualified to test for airborne concentrations of asbestos fibers" using the method prescribed in the current OSHA asbestos standard. The use of laboratories which are accredited by AIHA provides an important safeguard against invalid or unsupported product classifications.

The term "exposure study" is defined as "a study which shows, with reasonable accuracy, the concentrations of airborne asbestos fibers to which employees may reasonably be

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 20 of 51 asbestosclaims.law/library/18102/20

expected to be exposed under specified conditions of processing or use of an asbestos-containing product." Rec. Std. ¶ (b)(7). The "reasonable accuracy" provision is identical to the current OSHA monitoring requirement (quoted at p. 7, above) and is intended to require that an "exposure study" be designed in a way that provides the same degree of accuracy as under the existing monitoring provisions.

While an "exposure study" must be conducted, it is not necessarily the sole basis for classifying a product. As discussed above (pp. 7-8), exposure testing which identifies exposure levels associated with all "reasonably foreseeable" uses of a product "with reasonable accuracy" might require in some cases a very large number of measurements to take account of the infinite variety of work procedures, product formulations, weather conditions, and other factors which affect exposures. Accordingly, the Recommended Standard permits the use of "objective data" in addition to data from an exposure study to support a classification. Such "objective data" might, for example, identify "worst case" operations which, once tested and found to result in exposures below permissible levels, would provide a sufficient basis for the classification. Thus, the "objective data" provision will permit limited testing which provides a "reasonably accurate" basis for concluding that permissible levels will not be exceeded under any reasonably foreseeable conditions.

A 18994

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 21 of 51 asbestosclaims.law/library/18102/21

For much the same reason, the Recommended Standard would not necessarily require that "exposure studies" be conducted for each individual asbestos-containing product used in construction. Entire categories of products might be validated by a single exposure study if objective data shows a sufficient degree of physical similarity among the products, or if testing is done on the product which presents the greatest exposure capacity. For example, all "asbestos-cement pipe" products might be classified based on a single exposure study of one of the products, if "objective data" shows that the specific product studied has the greatest capacity to release airborne asbestos fibers.

The Recommended Standard makes clear that a construction industry employer can treat a specific product as falling within Category A or B only if the employer "reasonably relies on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory." Rec. Std. ¶¶ (c)(1) & (d)(1). Thus, in order to claim the exemptions provided by the Recommended Standard, a construction employer must have an exposure study and, where appropriate, objective data which support a conclusion that the specific product (together with any associated work practices) the employer plans to use will not result in a violation of the permissible exposure limits.

The Recommended Standard does not give Certified Testing Laboratories the final word on product classification.

A18999

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 22 of 51 **asbestosclaims.law/library/18102/22**

Instead, it requires "reasonable reliance" by employers on the data supplied by the validating laboratory. Rec. Std. ¶¶ (c)(1) & (d)(1). The term "reasonable reliance" is not specifically defined, but rather is left open for case-by-case determination in enforcement proceedings. Certainly the reputation of the validating laboratory, the employer's previous experience with the laboratory, the facial completeness of the data and the laboratory's specific conclusions would be relevant considerations.

Another key factor in specific cases would be any findings from previous OSHA inspections of an operation. For example, if an OSHA inspection showed that the applicable exposure limits were exceeded during an operation involving a Category A Product, or during an operation involving a Category B Product where the proper work practices were followed, an employer's ability to continue to rely "reasonably" on the data supplied by the validating laboratory would be placed in doubt, depending on the accuracy and extent of data provided by OSHA in each case. This feature of the Recommended Standard gives OSHA a vehicle for monitoring and verifying the correctness of classifications.

4. Regulatory requirements

The Recommended Standard imposes different regulatory controls on each product category, and tailors the applicable

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 23 of 51 asbestosclaims.law/library/18102/23

controls to the degree of the exposure hazard presented by each type of product or operation.

Category A Products are effectively exempt from the existing standard by Paragraph (c).[11/] Since Category A Products present little or no risk of excessive exposure, no new regulatory requirements are imposed. Moreover, as discussed in greater detail below, the absence of regulatory controls on Category A Products creates a strong incentive for the development and use of products which will not lead to significant exposure.

For Category B Products, the Recommended Standard requires employers to comply with the "fabrication, installation or removal methods" which qualify the products under Category B. Rec. Std. ¶ (d)(1). The expression "fabrication, installation and removal methods" is defined in Paragraph (b)(4) to include any combination of engineering controls, work practices or administrative controls, housekeeping, and respiratory protection. While work practice controls are expected to be the predominant mode of compliance because of the special features of the construction industry discussed above (pp. 4-6), the purpose of the definition is to permit the use of tools with local exhaust

---

11/ One minor exception is provided in Paragraph (c)(2), which leaves the "emergency" requirements of the existing standard in effect for Category A Products. See also the discussion of Paragraph (f) at p. 24, below.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 24 of 51 asbestosclaims.law/library/18102/24

ventilation or work scheduling as ancillary protective measures. The use of respirators as part of a Category B classification is not permitted under the Recommended Standard unless no other control method is feasible for a given operation.

Employers claiming exemptions for Category B Products must, of course, take all practicable steps to ensure that validated work practices and other protective measures are, in fact, used. Rec. Std. ¶ (d)(1). Several additional requirements are imposed to ensure the use and effectiveness of the validated work practices and other protective measures. First, the requirements of the current OSHA standard governing the use of respirators in emergencies are made applicable to workplaces using Category B Products. Rec. Std. ¶ (d)(2). Second, manufacturers of Category B Products are required to include a product label warning that validated work practices, tools or other measures should be used. Rec. Std. ¶ (d)(3). Third, the employers are required to ensure that employees using Category B Products are "specifically instructed concerning the proper use of [the] fabrication, installation or removal methods" which were validated as part of the Category B classification. Rec. Std. ¶ (d)(4). Because of rapid employee turnover, there is no requirement for annual training. Moreover, it is important to note that many Category B Products will not require the use of a "fabrication, installation or removal

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 25 of 51 asbestosclaims.law/library/18102/25

method" for all operations in which they are used. Thus, the training provisions of Paragraph (d)(4) apply only to those "operations where such fabrication, installation, or removal methods must be used." Rec. Std. ¶ (d)(4).

For Category C Products, which, by definition, pose the greatest potential for exposure, the current OSHA asbestos standard would apply in full. Rec. Std. ¶ (e). As discussed above (pp. 16-17), Category C Products have neither the structural product characteristics nor the validated work practice controls needed to protect workers against excessive exposures. While many components of the typical OSHA fixed-site health standard (such as the current asbestos standard) are generally inappropriate for construction and other non-fixed workplaces, those provisions should nevertheless be applied in the case of Category C Products to provide a strong incentive for developing safer products and work practices.

It is important to note that the regulatory status of Category A and B Products is expressed in the form of exemptions from the current standard. As a result, if a construction employer cannot claim one of the exemptions, the entire existing standard could be enforced against him. The threat of citations and penalties for violating the many individual requirements of the existing standard will provide a powerful incentive for employers to make doubly sure that the criteria for Category A or B classifications are met. In addition,

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 26 of 51 asbestosclaims.law/library/18102/26

in the case of Category B Products, employers are subject to citation for failing to follow the validated work practices and training requirements, even if the classification criteria have been satisfied.

There is one situation where the exemptions provided for Category A and B Products do not fully apply. As discussed in greater detail in the Appendix (pp. 3b-4b), construction employees working (e.g., making repairs) in a facility which manufactures or fabricates asbestos-containing products will generally be protected by the current standard, which applies to the owner of that facility. However, construction workers could be exposed to excessive concentrations of asbestos dust in an emergency or from dust which has accummulated in normally inaccessible places such as on pipes and ductwork. Accordingly, Paragraph (f) makes the "emergency" and "housekeeping" provisions of the current standard applicable in those special circumstances.

Lastly, Paragraph (g) requires construction employers to make available, at the request of OSHA, NIOSH or its employees, any objective data and exposure studies on which it relies, together with materials relating to the training of employees in the use of validated work practices. This provision will not only assist OSHA's enforcement efforts, but in addition it allows for external review of validating studies by NIOSH, workers and others.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 27 of 51 asbestosclaims.law/library/18102/27

B. Advantages Over OSHA's Typical Fixed-Site Health Standard

The Recommended Standard for Asbestos Exposure in Construction and other Non-fixed Work Operations has a number of distinct advantages over the current OSHA regulation. First, it imposes practical requirements which nevertheless provide ample assurances for worker protection. Second, it creates incentives for the development of safer products and work practices without sacrificing the economic and practical advantages of asbestos-containing products for the construction industry and the economy as a whole. And third, the Recommended Standard can more efficiently be enforced than the current OSHA standard.

1. Worker protection

The Recommended Standard, to be sure, departs significantly from the provisions of the traditional OSHA health standard. Nevertheless, as demonstrated above (pp. 4-12), these fixed-site requirements contribute little to worker health and are often impractical in construction and other non-fixed operations. Even if it had unlimited enforcement resources, OSHA could not hope to achieve widespread compliance with these provisions, and construction employers would be left with the "Hobson's choice" of risking noncompliance penalties or abandoning highly useful or, in some instances, essential products.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 28 of 51 asbestosclaims.law/library/18102/28

OSHA itself has, on occasion, limited or modified its traditional regulatory approach in an effort to avoid standards which impose sweeping requirements without any signficant or commensurate health gain. OSHA's current labeling requirement for asbestos-containing products, for example, provides 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 forseeable use, . . . no airborne concentrations of asbestos fibers in excess of the exposure limits . . . will be released." The waste disposal requirement of OSHA's current asbestos standard contains an almost identical exemption. 29 C.F.R. § 1910.1001(g)(2)(i) and (h)(2). In effect, OSHA has recognized that some asbestos-containing materials do not pose an exposure threat which is significant enough to justify full-scale regulatory controls.

Another example of an effort to prevent unduly broad application of monitoring, medical surveillance and other typical OSHA requirements is OSHA's Inorganic Arsenic Standard, which excludes workplaces where inorganic arsenic is present in only small amounts. OSHA justified an exemption in that case as follows: A19002

> [A]rsenic is a naturally occurring material and is present in small amounts in many substances. It is therefore inappropriate to cover situations where very low levels of arsenic may be present in substances or products in the workplace, but where they are handled in such a way that the possibility of airborne exposure is minimal. 43 Fed. Reg. 19612 (May 5, 1978).

UCC 000733

Similarly, OSHA's Cotton Dust Standard contains a series of exemptions where application of the standard would achieve little at great cost. Specifically, the Cotton Dust Standard exempts: (i) maritime workers, because the "limited duration of exposure makes it unlikely that cotton dust exposure is significant for an appreciable number of the workers handling water borne shipments of cotton"; (ii) workers handling "washed cotton," because of the "effectiveness of the washing process in significantly reducing or eliminating the biological effects of cotton dust"; and (iii) harvesting of cotton, because "it is a distinctively farming operation and presents different exposure environments and possibilities of control." 43 Fed. Reg. 27381-82 (June 23, 1978).

OSHA took a similar approach in formulating its Benzene Standard. There, it exempted gasoline stations and other operations where the standard would have a sweeping impact, but where exposures are not likley to exceed permissible limits. 29 C.F.R. § 1910.1028(a)(2); 43 Fed. Reg. 27962 (June 27, 1978).

OSHA's Acrylonitrile (AN) Standard, which more closely resembles the alternative standard recommended for asbestos exposure in the construction industry, also reflects an effort to adapt the traditional regulatory approach to unique circumstances. The AN standard imposes the traditional fixed-site requirements on manufacturers of products

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 30 of 51 asbestosclaims.law/library/18102/30

containing AN, but exempts downstream processors and fabricators of such products where "objective data is reasonably relied upon" to show that a designated action level is not exceeded. 29 C.F.R. § 1910.1045(a)(2)(ii). In adopting this and other exemptions from the overall AN standard, OSHA "recognized that the potential for exposure to AN in the workplace extends to a multitude of workplaces, including many small fabricators, extruders, and other downstream processors of materials containing or made from AN," and that "extending the AN standard that far would be burdensome to both industry and OSHA, and would not be reasonable in light of the degree of exposure involved." 43 Fed. Reg. 45776 (October 3, 1978).

Significantly, the Recommended Standard goes beyond the AN standard in protecting worker health. First, it requires that product and work practice testing be performed only by fully qualified testing laboratories. Second, it requires objective data, including exposure studies, which provide a "reasonable assurance" that the permissible exposure limits will not be exceeded. This latter point is especially important in the case of asbestos, where the OSHA technique for measuring airborne asbestos concentrations is subject to a margin of uncertainty so great that "[a]n actual airborne fiber concentration of 0.5 fibers/cc will routinely produce sample counts of 2.0 fibers/cc or more."[12/] Consequently,

A19004

12/ Comments of Johns-Manville, OSHA Docket H-033 (Asbestos), Ex. 3-185 at ex. D, p. 42.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 31 of 51 asbestosclaims.law/library/18102/31

the "reasonable accuracy" requirement will, in practice, not be met unless the products and work practices being tested routinely produce measurements far below the permissible exposure limits, adding a significant extra margin of worker safety.

2. Incentives for the development and use of safer products and work practices

Apart from providing superior health protection for workers without the cumbersome fixed-site features of the current standard, the Recommended Standard creates strong incentives for the development of safer products and work practices. Under the current standard, construction employers cannot legally avoid fixed-site requirements no matter how safe the asbestos-containing products or work practices which they employ. Thus, they must either ignore the standard to the detriment of employees, or they must stop using extremely valuable construction materials, to the detriment of the economy.

Under the Recommended Standard, the threat that the current standard might be enforced in full provides a powerful incentive for the development and use of products or work practices which qualify for Category A or B classification. As a result, two critical objectives would be advanced. First, worker health would be protected through the use of products and work practices which present no serious risk of excessive asbestos exposure. Second, the

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 32 of 51 asbestosclaims.law/library/18102/32

current incentive for across-the-board substitution of inferior non-asbestos-containing products of unknown potential hazard would be eliminated and replaced with a scheme which encourages the use of the best construction materials which do not threaten the health of workers.

3. Enforceability

The third principal advantage of the recommended approach is that it will ease the tremendous enforcement burden OSHA faces in policing the millions of workers potentially exposed to asbestos dust in hundreds of thousands of construction sites throughout the nation. Under the Recommended Standard, in a large majority of cases, OSHA inspectors may have to do nothing more than determine whether the proper products and work practices are being used. This task is much simpler and less time-consuming and expensive than under the current standard, where exposure monitoring may have to be conducted for each operation and employer medical, industrial hygiene and other files may have to be searched and reviewed.

Instead of endlessly monitoring individual construction operations to determine whether the permissible exposure limits are being met in each unique case, the Recommended Standard allows OSHA to focus its enforcement activities on identifying improper product classifications. As discussed above, once sampling results from OSHA inspections indicate that a product may be improperly classified, construction

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 33 of 51 asbestosclaims.law/library/18102/33

employers and upstream manufacturers of asbestos-containing products throughout the nation will have a powerful incentive to develop substitute products or work practices which ensure that exposure limitations are met.

IV. CONCLUSION

There is a clear need for a new strategy to control health hazards in construction and other non-fixed work operations. The current OSHA approach, which imposes on these operations provisions for endless, repeated monitoring and medical surveillance as well as other requirements designed for fixed-site jobs in manufacturing industries, is simply not feasible. Nor do many of the requirements of the customary OSHA standard contribute appreciably to the health of construction workers.

The better approach is to substitute a regulatory scheme that strongly encourages the use of products and work practices which protect workers against excessive exposures without imposing infeasible fixed-site requirements such as monitoring and medical surveillance. As this paper has illustrated in the particular case of asbestos, such an approach provides fully adequate health protection for workers, establishes continuing incentives for the development and use of safer products and work practices, and considerably eases OSHA's enormous enforcement burden. The

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 34 of 51 asbestosclaims.law/library/18102/34

proposed standard recommended herein plainly meets these objectives and should therefore be carefully considered by OSHA and the Construction Advisory Committee in connection with their efforts to develop an effective occupational health strategy for construction and other non-fixed work operations.

The Asbestos Information Association of North America

and

The Association of Asbestos Cement Pipe Producers

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest...
ACL Doc 18102 · Page 35 of 51
Published by AsbestosClaims.Law
asbestosclaims.law/library/18102/35

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest...
ACL Doc 18102 · Page 36 of 51
Published by AsbestosClaims.Law
asbestosclaims.law/library/18102/36

UCC 000740

- 7 A 19009

by OSHA under Section 6(b) of the Occupational Safety and Health Act applies to construction workplaces. 44 Fed. Reg. 8706-8805 (February 9, 1979). The current asbestos standard provides a good example of why a new regulatory strategy for construction and other non-fixed workplaces is needed.

For example, the current asbestos standard requires construction industry employers to conduct personal and environmental ("area") monitoring which must be "of such frequency and pattern to represent with reasonable accuracy the levels of exposure of employees." 29 C.F.R. § 1910.1001 (f)(2),(3). The nature of construction work makes this requirement for "representative" exposure monitoring a virtually meaningless (albeit very expensive) exercise.

As pointed out above, only a few of the remarkable variety of tasks performed by construction workers involve asbestos-containing products, and a worker's asbestos exposure on any single day will obviously depend on what portion of that day was spent doing asbestos-related-tasks. Moreover, each asbestos-related-task presents a different potential for exposure to asbestos fibers. Exposure levels will vary depending on the duration of the work, the work procedures followed by the particular employee, the tools used, the fiber-release characteristics of the asbestos-containing product, weather conditions, and other factors.[4/] As a

---

4/ See, e.g., Statement of Lt. Col. David Smith on behalf

(Footnote 4 continued on next page.)

RECOMMENDED STANDARD FOR OCCUPATIONAL ASBESTOS EXPOSURE IN CONSTRUCTION AND OTHER NON-FIXED WORK OPERATIONS

Part 1910 of Title 29 of the Code of Federal Regulations is amended as follows:

1. Section 1910.1001 of Title 29 of the Code of Federal Regulations is amended by adding after Paragraph (j) thereof the following new Paragraph:

"(k) Scope and application. This Section applies to all places of employment where asbestos or products containing asbestos are handled, processed, used, transported, packaged, repackaged, or released. However, this section does not apply to construction work or other non-fixed work operations within the scope of § 1910.1001a, or to working conditions of employees with respect to which other Federal agencies exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health."

* * *

2. A new Section 1910.1001a is added as follows:

"1910.1001a Asbestos Exposure in Construction Work and Other Non-Fixed Work Operations

"(a) Scope and application. This Section applies to every place of employment in construction work and other non-fixed work operations where asbestos or products containing asbestos are processed or used.

A1901C

UCC 000741

"(b) Definitions.

"(1) "Category A Product" refers to an asbestos-containing product which, based on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, does not result in occupational exposure to airborne concentrations of asbestos fibers in excess of the permissible exposure limits under any reasonably foreseeable conditions of processing or use.

"(2) "Category B Product" refers to an asbestos-containing product which, based on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, does not, under any reasonably foreseeable conditions of processing or use, result in occupational exposure to airborne concentrations of asbestos fibers in excess of the permissible exposure limits when a specified fabrication, installation or removal method is used.

"(3) "Category C Product" refers to an asbestos-containing product which is neither a Category A Product nor a Category B Product.

"(4) "Fabrication, Installation or Removal Method" means any combination of methods for controlling occupational exposure to airborne concentrations of asbestos fibers, including engineering controls, tools, equipment, work practices, housekeeping, task assignment

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 38 of 51 asbestosclaims.law/library/18102/38

strategies, and respiratory protection; provided, however, that a fabrication, installation or removal method may not include respiratory protection unless no other method for controlling occupational exposure to airborne concentrations of asbestos fibers is feasible.

"(5) "The Permissible Exposure Limits" means (i) an eight-hour time-weighted average concentration of two fibers, longer than five micrometers, per cubic centimeter of air, and (ii) a ceiling concentration of ten fibers, longer than five micrometers, per cubic centimeter of air.

"(6) "Certified Testing Laboratory" means a laboratory accredited by the American Industrial Hygiene Association as qualified to test for airborne concentrations of asbestos fibers using the membrane filter method specified in Paragraph (e) of Section 1910.1001.

"(7) "Exposure Study" means a study which shows, with reasonable accuracy, the concentrations of airborne asbestos fibers to which employees may reasonably be expected to be exposed under specified conditions of processing or use of an asbestos-containing product.

"(8) "Construction work" means work for construction, alteration, and/or repair, including painting and decoration.

"(9) "Non-fixed work operation" means non-fixed as to the location where an employee performs his duties

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 39 of 51 asbestosclaims.law/library/18102/39

and refers to jobs which do not involve regular assignment to a permanent work location or set of locations.

"(10) All other terms used in this Section shall have the meanings prescribed in Section 1910.1001 and in Section 3(8) of the Act, 29 U.S.C. § 652(8).

"(c) Category A Products.

"(1) Any employer who reasonably relies on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, which shows that an asbestos-containing product is a Category A Product, is exempt from the provisions of Section 1910.1001 as they apply to operations where such product is processed or used, except as provided in Subparagraph (2) of this Paragraph.

"(2) Notwithstanding the provisions of Subparagraph (1) of this Paragraph, employers whose operations involve the use of Category A Products shall comply with Paragraph (d)(1)(iii) of Section 1910.1001, relating to the use of respirators during emergencies.

"(d) Category B Products.

"(1) Any employer who reasonably relies on objective data, including but not necessarily limited to an exposure study conducted by a Certified Testing Laboratory, which shows that an asbestos-containing product is a Category B Product, is exempt from the requirements of Section 1910.1001 as they apply to operations

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 40 of 51 **asbestosclaims.law/library/18102/40**

where such product is processed or used, provided that the employer takes all practicable measures to ensure the use of the fabrication, installation or removal methods which qualify the product as a Category B Product.

"(2) Notwithstanding the provisions of Subparagraph (1) of this Paragraph, employers who use fabrication, installation or removal methods validated under Subparagraph (1) of this Paragraph shall comply with Paragraph (d)(1)(iii) of Section 1910.1001, relating to the use of respirators during emergencies.

"(3) Any manufacturer of a Category B Product who has actual knowledge of the validation of such product as a Category B Product shall include a product label that states:

"Follow Recommended Fabrication, Installation or Removal Methods."

"(4) Any employer whose operations involve the processing or use of Category B Products, and who intends to use fabrication, installation, or removal methods pursuant to this Paragraph, shall insure that, prior to the commencement of an operation where such fabrication, installation or removal method must be used, all employees involved in such operation are specifically instructed concerning the proper use of such fabrication, installation or removal method.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 41 of 51 **asbestosclaims.law/library/18102/41**

"(e) Category C Products. The requirements of Section 1910.1001, as promulgated on June 7, 1972 (37 F.R. 11318) and amended on March 19, 1976 (41 F.R. 11504), shall apply to any operation within the scope of this Section which involves the processing or use of Category C Products.

"(f) Where an operation involving the processing or use of Category A or Category B Products is located in a facility which manufactures, processes or fabricates products containing asbestos, Paragraphs (d)(1)(iii) and (h) of Section 1910.1001, relating to the use of respirators during emergencies and housekeeping, shall apply.

"(g) Upon request, any employer shall make available to employees, the Assistant Secretary or the Director, any objective data and exposure studies on which the employer relies pursuant to Paragraphs (c) and (d) of this Section, and any materials (such as instruction manuals) relating to the training program instituted pursuant to Subparagraph (4) of Paragraph (d) of this Section.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 42 of 51 asbestosclaims.law/library/18102/42

APPENDIX

A Preliminary Assessment of How the Recommended Asbestos Standard Can Successfully Be Implemented in Construction and Other Non-Fixed Work Operations

A 19016

UCC 000747

TABLE OF CONTENTS

		Page
Appendix:	A Preliminary Assessment of How the Recommended Asbestos Standard Can Successfully Be Implemented in Construction and Other Non-Fixed Work Operations	1b
Introduction:	Potential Asbestos Exposure in Construction and Other Non-Fixed Work Operations	3b
A.	Recommended Work Practice Procedures for Asbestos-Cement Pipe	8b
1.	Sampling Methodology and Operations Sampled for Asbestos-Cement Pipe	36b
2.	Methods	37b
3.	Operations Sampled	38b
B.	Recommended Work Practice Procedures for Asbestos-Cement Sheet	47b

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law

ACL Doc 18102 · Page 44 of 51 **asbestosclaims.law/library/18102/44**

APPENDIX

A Preliminary Assessment of How the Recommended Asbestos Standard Can Successfully Be Implemented in Construction and Other Non-Fixed Work Operations

As discussed in the body of this paper, the Recommended Standard for Asbestos Exposure in Construction and Other Non-Fixed Work Operations is intended to replace the impractical requirements of the current OSHA asbestos standard with an enforceable, cost-effective regulation which will both ensure that worker health is adequately protected and provide incentives for the development of even safer products and work practices, all without sacrificing the important economic and practical benefits of asbestos-containing construction materials.

The purpose of this Appendix is to present technical data which show that the Recommended Standard is more than just an appealing theoretical construct -- rather, it is a workable regulation which will impose requirements which are both acceptable and cost-effective.

This Appendix begins with an Introduction which presents background information and data on the situations where exposure to airborne asbestos fibers may occur in construction and other non-fixed work operations. The Introduction also assesses preliminarily, based on the asbestos industry's experience with its products and its knowledge of their

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 45 of 51 asbestosclaims.law/library/18102/45

physical properties, the classifications (Categories A, B or C) of the Recommended Standard under which the materials now in use are likely to fall.

Following this preliminary qualitative assessment, the two succeeding sections of this Appendix contain detailed quantitative documentation showing that work practices for two asbestos-containing products commonly used in construction and other non-fixed jobs -- asbestos-cement pipe and asbestos-cement sheet -- can in fact qualify under Category B of the Recommended Standard. More specifically, simple work practices which have been developed by the manufacturers of these products (and which, in some instances, are already widely used) have been carefully field-tested by qualified laboratories, and the resulting data demonstrate that both products can be validated under Category B of the Recommended Standard. 1/

1/ The exposure data presented in the succeeding two sections of this Appendix must be interpreted cautiously. As discussed in the body of this Paper (p. 28 above), the best available technique for measuring airborne concentrations of asbestos fibers is subject to a considerable degree of uncertainty, the magnitude of which (when expressed as a percentage of the actual concentration) increases sharply as concentrations are reduced below 2.0 fibers per cubic centimeter of air.

These statistical monitoring variations would, of course, be taken into account in any formal validation of the products and associated work practices involved. Nevertheless, while the exact range of the uncertainty is not now known (and is currently under study by AIA/NA), the data reported below are so uniformly low that the products and work practices discussed can surely meet the classification criteria for Category B.

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 46 of 51 asbestosclaims.law/library/18102/46

Exposure in Construction and Other Non-Fixed Work Operations

There are three distinct situations in which construction industry employees may be exposed to airborne asbestos fibers: (i) when they perform construction, maintenance, alteration or removal services in environments where asbestos fibers routinely may be present; (ii) when they demolish or remove construction materials which contain asbestos; and (iii) when they install or use construction materials which contain asbestos.

The first type of situation will arise when a construction employee performs his services in an existing asbestos products plant. Such a facility is already subject to the current OSHA asbestos standard, and, as a result, construction workers will be protected by the controls installed by the owner of the facility pursuant to the current standard. Two special circumstances deserve attention, however. First, if an emergency arises requiring the use of respirators by the regular employees of the facility, the contractor must either remove his employees from the site or equip them with appropriate respirators. Second, if the work of the contractor disturbs asbestos-containing dust which has accumulated in inaccessible places (for example, on suspended piping, ducts or wiring or on structural surfaces), special precautions (such as spraying with water or vacuuming) may have to be taken to avoid creating

A 1902C

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 47 of 51 asbestosclaims.law/library/18102/47

airborne fiber concentrations in excess of mandated levels. As detailed above (p. 24), the housekeeping and emergency provisions of Paragraph (f) of the Recommended Standard are intended to deal with these special circumstances.

The second health hazard situation will arise when a contractor performing maintenance, alteration or demolition work must remove construction materials containing asbestos. This is perhaps the most serious asbestos-related health hazard presented in the workplace today. It is serious first, because removal, and particularly demolition, by its nature is destructive and dust generating; second, because the presence of asbestos materials in old structures may be difficult to establish; and third, because friable, dust-producing asbestos products which no longer are marketed may nevertheless be present in older facilities.

As in other construction operations where asbestos health hazards are present, work practices are the only effective means of worker protection in demolition or removal operations. Mandating changes in asbestos construction materials, or even banning their manufacture or sale, will not eliminate the hazard. Nor can permanently installed engineering controls be used to control asbestos dust created by demolition or removal. AIA/NA and AACPP have been studying these operations, and expect to be able to publish in the near future effective work practices which would qualify under Category B of the Recommended Standard.

A19021

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 48 of 51 asbestosclaims.law/library/18102/48

The third health hazard situation, of course, involves the fabrication and installation of asbestos-containing construction materials currently offered in the marketplace. Fortunately, the products which are being used today generate little dust. Sprayed asbestos insulations no longer are used. Spackling compounds and joint tapes contain little, if any asbestos. Air cell thermal insulations have been replaced by cheaper, more efficient glass fiber materials. The asbestos fibers in asbestos-cement products, asbestos-roofing and pipeline felts, drilling muds, paints, and roofing mastics are bonded into or encapsulated by a matrix material, saturant, impregnant or coating. The fibers seldom are released; and the operations which may cause their release are well-defined. Thus, this third asbestos-health hazard situation clearly lends itself to the development and implementation of work practice controls.

As the following table indicates, a variety of asbestos-containing products are presently consumed in the United States, with asbestos-cement products, friction materials, and asbestos-paper products comprising approximately one-half of the total consumption:

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 49 of 51 **asbestosclaims.law/library/18102/49**

U.S. Consumption of Asbestos by End Use - 1977

	Short Tons	Percent
Asbestos Cement:		
Pipe	97,000	15.0
Sheets and Shingles	35,000	5.5
Flooring Products:		
Floor Tile	63,000	10.0
Sheet Vinyl	110,000	17.0
Friction Materials	75,000	12.0
Asbestos Paper:		
Roofing Felt	90,000	14.0
Pipeline Felt	10,000	1.5
Other	12,000	2.0
Gaskets and Packings	40,000	6.0
Paints and Coatings	55,000	9.0
Textiles	7,000	1.0
Others	46,000	7.0
TOTAL	640,000	100.0

Source: Johns-Manville Corporation, 1979

Most of the annual production of these materials -- approximately 77% -- is consumed in the construction industry today. 40 Fed. Reg. 47652, 47653 (October 9, 1975). Moreover, based on industry's considerable experience with the use of these products in construction operations, its familiarity

A 19023

UCC 000754

with their physical properties, and the results of preliminary testing, there is little doubt that all of these products could be validated under Categories A or B of the Recommended Standard. Because of the efforts of manufacturers of asbestos-containing construction materials to eliminate dangerous products from the marketplace, a large number of products could qualify under Category A for most or, in some cases, all operations in which they are used including the following products:[2/]

Mastics and Black Line Products Roofing Felt

Roofing Felts

Mechanical Packings

Oil Seals

Compressed Gaskets

Sealants and Caulks

Electrical Insulating Paper

In the two suceeding sections of this Appendix, detailed exposure monitoring data are presented showing that effective work practices, which in some cases are already widely used, will ensure that the permissible exposure limits are met for two other products: asbestos-cement pipe and asbestos-cement sheet.

2/ Source: Johns-Manville Corporation

Union Carbide trial exhibit UC-3311: Asbestos Information Association of North America and Association of Asbest... Published by AsbestosClaims.Law
ACL Doc 18102 · Page 51 of 51 **asbestosclaims.law/library/18102/51**