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PLAINTIFF'S EXHIBIT

UC-4483

UNION CARBIDE

INTERNAL CORRESPONDENCE

LINDE DIVISION • OIP 270 PARK AVENUE, NEW YORK, NEW YORK 10017

To (Name)	Mr. V. P. Hayes	Date	July 3, 1972
Company	Linde Division		
Location	2801 W. 16th St. Indianapolis, Ind. 46224	Originating Dept.	Gas Products
		Answering letter date	
Copy to	Messrs. L. J. LaFrance R. M. Neary	Subject	OSHA - Asbestos Standards

Attached is a study-analysis of the "Standard for Exposure to Asbestos Dust".

You will note that the new Standard is effective July 7, 1972. The 8-hour exposure to which any employee may be exposed shall not exceed 5 fibers longer than 5 micrometers per cubic centimeter of air. Effective July 1, 1976, this regulation is reduced to 2 fibers, no longer than 5 micrometers per cubic centimeter of air.

Since your facility is handling asbestos, I am forwarding this information to you for compliance where required.

H. E. Fitzgerald

H. E. Fitzgerald

HEF:rc
Attach.

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Organization Resources
Counselors, Inc.
1660 L Street, N. W.
Suite 212
Washington, D. C.
(202) 872-1080
Cable Address: ORESCON

PLS Xerox for ad hoc Committee
J.S.F.
W.T.A.

RECEIVED
JUN 26 1972
R. T. BRADLEY

Memorandum

TO: ORC OCCUPATIONAL SAFETY AND HEALTH STANDARDS GROUP

FROM: Wayne T. Brooks & Leo Teplow

DATE: June 20, 1972

SUBJECT: A STUDY-ANALYSIS OF STANDARD FOR EXPOSURE TO ASBESTOS DUST

The "Standard for Exposure to Asbestos Dust" which was published in the Federal Register of June 7, 1972, is of unique significance to each occupational safety and health professional, whether or not he has direct responsibility with regard to asbestos dust exposure.

This is the first OSHA standard prepared and promulgated by the procedures of Section 6(b). It is based on the first NIOSH criteria document and the recommendations of the first advisory committee.

This new standard reflects some of George Guenther's ideas that a standard should supply recommendations, guidance and other information to aid employers in doing more than just meeting the minimum requirements for a safe and healthful workplace. The extensive explanation which accompanies the formal promulgation of this standard is the first of a kind; it is intended to make the standard more comprehensible and to disclose some of the reasoning which resulted in the judgments of the standard.

The main sub-division headings of the standard, set out here, show the standard to be more than mere levels described by numbers accompanied by mandatory prohibitions:

(a) Definitions
(b) Permissible exposure to airborne concentration of asbestos fibers.
(c) Methods of compliance.
(d) Personal protective equipment.
(e) Method of measurement.

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(f) Monitoring
(g) Caution signs and labels.
(h) Housekeeping
(i) Recordkeeping
(j) Medical examinations

The Definition section applies the word "asbestos" to six different varieties of asbestos. Although there may be different degrees of hazard which by this action are treated as identical, one standard instead of several is a convenient result. The published explanation is ..."Reasons of practical administration preclude a variety of standards for different kinds of asbestos and of workplaces ... the evidence is not sufficient to establish separate standards for varieties of asbestos".

Along with recommendations, explanations, guidance and other details, the explanatory text accompanying the standard makes what almost amounts to an announcement of policy governing the promulgation of a standard vis-a-vis the adequacy of information upon which to base a standard.

Let us look carefully at these statements:

"In view of the undisputed grave consequences from exposure to asbestos fibers, /the text concludes/ "it is essential that the exposure be regulated now..." /with an exposure level effective July 7, 1972 and a tighter exposure level effective July 1, 1976/ "on the basis of the best evidence available now" /the text next expresses a general policy on evidence/ "even though it may not be as good as scientifically desirable" /the statement appears to be of general application, it does not characterize the present evidence base of this standard as not as good as scientifically desirable/ "An asbestos standard /and for that matter any standard/ can be reevaluated in the light of the results of on-going studies and future studies, but cannot wait for them. Lives of employees are at stake".

These statements tend to suggest that the greater the gravity of the consequence of exposure the lesser the requirement of scientific quality in the evidence upon which to base a standard. This conclusion is perhaps extreme; and when "Lives of employees are at

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stake" it is difficult to counsel delay, but evidence even though not the best should point to a helpful result from application of a standard or the standard will be deceptive as well as futilely costly.

This standard as well as any other standard can be reevaluated and modified or revoked by a 6(b) procedure initiated by ar[illegible] he several persons identified in 6(b)(1). The inclusion of such statement in this the first standard should be regarded as of significance. Section 6(b) of course clearly provides for this possibility. There have been statements made that there is a lack of knowledge about occupational illness, a number of studies have been started and many more will follow. A procedure will very probably emerge by which standards and exposures are periodically reevaluated according to the then available scientific evidence.

Employers will need to devise methods of identifying and recording relevant information in order that work place experience can be brought to bear upon the periodic reevaluation of a standard. Employers might wish to initiate the steps toward modifying a standard; or to be prepared, if necessary, to present evidence when a movement toward modification has been initiated by one of the other parties so authorized by 6(b).

There is of course a sort of evaluation-reevaluation involved in issuing a standard level of exposure effective July 7, 1972 and a more restrictive level effective July 1, 1976. The suggestion of reevaluation in light of ongoing and future studies seems to be particularily applicable to such later effective dates.

The explanatory text, however, speaks with a sense of finality and permanence about the July 1, 1976 permissible exposure. The intervening time is called "transitional", to permit in some plants "extensive redesign and relocation of equipment".

The methods of compliance are stated simply and without qualification: "Engineering controls ... shall be used to meet exposure limits...". The word feasible is not used here, however, it does condition use of a respirator in (d)(1)(i). In the discussion the statement is made that protection is best obtained by first controlling the generation. In addition to being requirements of an asbestos dust standard, these are concepts which may very likely be found in future standards, as proposed and as adopted. And, a question must arise for NIOSH to ponder, if engineering controls do in fact meet the exposure limit, and are accordingly to be the preferred

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The subjects considered under headings other than and following after Work Practices are none-the-less work practices involving and affecting the work place, labor-management procedure and the quality of labor relations.

Labor agreements are written in light of law and regulations. Do the Work Procedures, Personal protective equipment, Monitoring, Housekeeping and Medical examination provisions of the Asbestos Dust Standard become implicit in all labor agreements? The Act provides that an employee may complain to the Secretary of Labor that his employer is not complying with the standard, can an employee also file a grievance so complaining; can he use the alleged non-compliance as justification for not carrying out some direction of supervision?

The paragraph which is (d)(2)(iv)(c) and which begins with the words - "No employee shall be assigned to tasks requiring the use of respirators if, ..."introduces procedures which are closely related to provisions of labor agreements or to personnel practices where there is no union representation. The use of different words such as task, job, position, and assigned, rotate, transfer leaves open to argument whether in each instance synonymous or different meanings were intended.

Admittedly, in this standard the procedure is to come into effect only as an exception during a transition period, but that use does not so limit the procedures use in other standards. The question which is presented, and which will certainly arise in future standards can be put by paraphrasing the standard. If an employee, because of some individual health condition, is unable to function normally or the safety and health of that employee or other employees may be impaired by his presence, shall such employee be transferred to an equivalent job if available? Note that this question arises in a standard relating to occupational illness, would it not be likely that such concept would be applied also in case of permanent partial disability from traumatic injury?

In basic principle there is nothing peculiarly and exclusively identified with asbestos in the provisions of (f) Monitoring, (g) Caution signs and labels, (i) Recordkeeping (j) Medical examination. There are provisions which will very likely be repeated in most standards on airborne contaminants. It is well to consider these parts of the standard in their broadest implications and not alone as part of an asbestos standard.

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It was because asbestos was first that there was the controversy which is described in "6. Records" - "Most of the controversy in this area has revolved around the question whether an employer should be allowed to have access to the results of the required medical examination. The apprehensions of those who have argued against employer access is based on the expectation that some employers will use the medical examinations as a means of screening employment applicants, and worse, as grounds for discharging current employees, who show signs of being affected by exposure to asbestos"

Although the current standard resolves the controversy in favor of disclosure to the employer it is unlikely that the controversy is finally resolved or that the apprehensions have been put to rest. Medical examinations, and medical recordkeeping will be an important part of most standards. It is probable that each new criteria document, recommendations of an advisory committee and proposed standard will have to face the controversial question. It is most likely that statements filed in relation to proposed standards and oral statements given in standards hearings will express the same apprehensions and maintain the same controversy.

There is a discreet warning and a recognition of the future potentials of this controversy in the Department's statement -- "On the other hand, there is no intention to allow employers to abuse medical information obtained pursuant to the Act, to the detriment of employees. Therefore, the administration of the medical records requirement will be closely watched, and, in cases of abuse, appropriate action will be considered".

Employers should anticipate having to justify access to medical records again and again in relation to standards which may or may not bear directly upon their particular industries.

WTB/LT:cs
Enclosure

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STANDARD FOR EXPOSURE TO ASBESTOS DUST

"STANDARD FOR EXPOSURE TO ASBESTOS DUST"

(Promulgated June 7, 1972, Federal Register Page 11318)

§ 1910.93a Asbestos.

(a) *Definitions.* For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) *Permissible exposure to airborne concentrations of asbestos fibers*—(1) *Standard effective July 7, 1972.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(2) *Standard effective July 1, 1976.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

(3) *Ceiling concentration.* No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (c) of this section.

STUDY-ANALYSIS OF THE STANDARD

The promulgated standard deals with:

(a) Definitions
(b) Permissible exposure to airborne concentrations of asbestos fibers
(c) Methods of compliance
(d) Personal protective equipment
(e) Methods of measurement
(f) Monitoring
(g) Caution signs & labels
(h) Housekeeping
(i) Recordkeeping
(j) Medical examination

One standard for all kinds

↔ Effective 7/7/72 interim level

Finding of fact

↔ Effective 7/1/76 final level. These are the only "effective dates" in the standard; the other parts are immediately effective.

Finding of fact

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SEE (f) MONITORING. IF MONITORING DISCLOSES LIMITS EXCEEDED IMMEDIATELY UNDERTAKE COMPLIANCE PROGRAM.

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EXPLANATION PUBLISHED WITH THE STANDARD

The proposed standard dealt with (1) permissible concentrations of asbestos fibers; (2) methods of control; (3) warning signs; (4) monitoring; (5) medical examinations; and (6) recordkeeping. Each of these major proposals elicited comments, arguments, objections, and counterproposals. They all have been examined and considered.

1. *Acceptable concentrations of asbestos dust.* The proposed standard would limit occupational exposure to 8-hour time-weighted average (TWA) airborne concentrations of asbestos dust not exceeding five fibers longer than five micrometers per milliliter. Concentrations above five fibers but not to exceed 10 fibers (ceiling concentration) would be permitted up to 15 minutes in an hour, but for not more than 3 hours in any one 8-hour day.

NIOSH in effect has recommended that the five-fiber TWA and 10-fiber peak concentrations be permitted only for 2 years; thereafter, TWA concentrations should be not more than 2 fibers per cubic centimeter (cm.³) of air, and peak concentrations should not exceed 10 fibers/cm.³, with no time restriction. Numerous objections and counterproposals have been made, with regard to both the limits of asbestos fiber concentrations and the time periods to comply with them. Some, for example, have recommended return to a 12-fiber standard of an earlier day; i.e., a level adopted under the Walsh-Healey Public Contracts Act in 1969. Others have recommended a two-fiber standard to become effective in 6 months, then a one-fiber standard for 3 years, and finally a zero-fiber standard after 3 years. These recommendations give a fair indication of the wide spread of the counterproposals.

No one has disputed that exposure to asbestos of high enough intensity and long enough duration is causally related to asbestosis and cancers. The dispute is as to the determination of a specific level below which exposure is safe. Various studies attempting to establish quantitative relations between specific levels of exposure to asbestos fibers and the appearance of adverse biological manifestations, such as asbestosis, lung cancers, and mesothelioma, have given rise to controversy as to the validity of the measuring techniques used and the reliability of the relations attempted to be established. Because of the long lapse of time between onset of exposure and biological manifestations, we have now evidence of the consequences of exposure, but we do not have, in general, accurate measures of the levels of exposure occurring 20 or 30 years ago, which have given rise to these consequences. There are also controversies concerning the relative toxicity of the various kinds of asbestos, and varying hazards in different workplaces.

It is fair to say that the controversy has centered in the area between a two-fiber TWA concentration and five-fiber TWA concentration, with variations on the time needed for compliance. Many employers support a five-fiber TWA. Most medical opinion is divided between

Three concepts of great importance to standards preparation and promulgation

In view of the undisputed grave consequences from exposure to asbestos fibers, it is essential that the exposure be regulated now, on the basi[illegible] of the best evidence available [illegible] though it may not be as go[illegible]ically desirable. An asbestos standard can be re-evaluated in the light of the results of ongoing studies, and future studies, but cannot wait for them. Lives of employees are at stake.

One standard for all kinds.

Reasons of practical administration

It is concluded that there should be one minimum standard of exposure to asbestos applicable to all workplaces exposed to any kind, or mixture of kinds, of asbestos. Reasons of practical administration preclude a variety of standards for different kinds of asbestos and of workplaces. Also, while the evidence tends to show that crocidolite, for instance, is more harmful than chrysotile, the evidence is not sufficient to establish separate standards for varieties of asbestos.

Because there must be one standard governing exposure to all varieties of asbestos, and in workplaces apparently more hazardous than others; because some present employees with regular exposure to asbestos have probably already accumulated great doses of asbestos fibers, due to higher levels of exposure in the past; because it appears that levels of exposure which may be safe with regard to asbestosis are not safe with regard to mesothelioma; because the statute requires the protection of every employee, even of one who may have regular exposure to asbestos during a working life which may reach, or even exceed, 40 years; and because of several other considerations which have been urged and are reflected in the record of the proceeding, the conflict in the medical evidence is resolved in favor of the health of employees. As of July 1, 1976, TWA concentrations of asbestos fibers longer than 5 micrometers will not be allowed to exceed two fibers/cc., with a ceiling value of 10 fibers/cc. The current TWA concentrations of five fibers, and ceiling concentrations of 10 fibers/cc. will be permitted until July 1, 1976, during what will be a transitional period deemed necessary to allow employers to make the needed changes for coming into compliance with the more stringent standard.

Period necessary to make changes

The record shows that the many work operations subject to the single asbestos standard (textile, manufacturing, industrial, and marine installation, etc.) will meet varying degrees of difficulty in complying with the standard. In some plants, extensive redesign and relocation of equipment may be needed. It appears, however, the delay in the effective date of the two-fiber standard will provide all employers a reasonable time to comply. At the same time, so long as the ceiling limit is complied with, no harm is reasonably expected to result from exposures during the transitional period.

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(c) *Methods of compliance*—(1) *Engineering methods.* (i) *Engineering controls.* Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) *Local exhaust ventilation.* (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) *Particular tools.* All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) *Work practices*—(i) *Wet methods.* Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) *Particular products 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.

(iii) *Spraying, demolition, or removal.* Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section

Engineering controls shall be used to meet the exposure limits

ANSI Standards are required by ANSI procedures to be periodically reevaluated and reaffirmed or revised.

From here on to the end Labor/personnel relations are deeply involved

Work practices: methods engineering and industrial engineering procedures. Job content, manning and employee direction.

These are all work procedures which are for employee compliance, the employer must require the employees' compliance.

This is a normal work practice requirement. It is not transitional, but is application permitted by (d)(1)(ii)

Mandatory use is implicit "providing" alone is not enough.

2. *Methods of compliance.* It has bee pointed out by many persons, that pr tection against asbestos fibers is b obtained by controlling: the generation fibers first, and secondly, by controll the dispersion of released fibers into ambient air of the workplaces. Therefo the standard requires feasible techn logical controls and appropriate wo practices as the primary means of co pliance.

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(d) *Personal protective equipment*—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (e) of this section;

(ii) In work situations in which the methods prescribed in paragraph (e) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (a) The employer shall establish a respirator program in accordance with

Engineering controls shall be used, compliance may not be achieved by use of respirators or shift rotation, except

a recognition of time required for engineering controls, and as well for work practices

Respirators or shift rotations exceptions because rotation would be difficult to implement, and respirators cannot be relied upon because they are uncomfortable.

Rotation of employees as a way of meeting the TWA concentration requirement is allowed only in stated exceptional circumstances, because, as a general rule, it would be difficult to implement. Personal protective equipment, such as respirators, cannot be relied upon because, among other reasons, they may be so uncomfortable as to be burdensome, except for short periods of time. Therefore, it is expected that respirators and shift rotation will be used during the period necessary to install engineering controls and to train employees in sound work practices, but, after technological compliance has been achieved, their use must be limited to special work situations and emergencies. Where both are practicable, shift rotation is required.

Mandatory requirements are implicit throughout; it would have been helpful if the draftsman had made a more frequent use of the expression which appears in (3) Special clothing: "The employer shall provide, and require the use of, special clothing,..."

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Now and as may be later revised.
Any suggesting, advising or "should" language is to be read as mandatory.

Note confusing use of words -"task","job", "position", and "assign", "rotated" and "transferred".

"his"-"most recent"-"an examining physician"-"function normally", are all indefinite and will need careful application. Note "comprehensive medical examination" in (j)(2)&(3), very specific.

"tasks requiring the use of respirators" means-incumbent employee is to be required to wear.

Note expression "and require the use of" this admonition to the employer is implicit throughout.

If "and require the use of" is implicit in (4)(i)&(ii) is the change within or after end of the shift? If change required can this be construed as work time, hence compensable, and if after shift-overtime?

This is to protect those who do the laundering, might be out of the plant contractor. Does this suggest a possibile liability to this outside contractor?

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(c) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400–450 × (magnification) (4 millimeter objective) with phase contrast illumination.

Only one approved method
No alternatives

(f) *Monitoring*—(1) *Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

← Place to be monitored

← "In such a way as to"

Monitor where asbestos fibers are released-in any concentration-if limits are exceeded then comply

(2) *Personal monitoring*—(i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, 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.

(3) *Environmental monitoring*—(i) Samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) *Employee observation of monitoring.* Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have

4. *Monitoring.* The proposed standa... would have required personal monito... ing and environmental monitori... Many issues have been raised concerni... the availability and reliability of mea... uring instruments, frequency of moni... toring, and conditions in which monito... ing should be required. The adopt... standard takes the objections into co... sideration. It requires periodic monito... ing at intervals no longer than 6 monti... thus allowing considerable time and f... erection, and prescribes the use of t... membrane filter method, which is an ac... ceptable method for determining ... asbestos fibers.

It has also been recommended t... employees or their representatives sho... have an opportunity to observe ... monitoring. The recommendation h... been accepted.

These issues will be raised in almost all standards where monitoring is required. Recent information is that ASTM is considering preparing standards on sampling testing and instrumentation.

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(g) *Caution signs and labels.* (1) *Caution signs.* (i) *Posting.* 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. Signs shall be posted at such a distance from such a location that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) *Sign specifications.* The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 20" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	*Notation*
Caution	1" Sans Serif, Gothic or Block.
Dust Hazard	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust	¼" Gothic.
Wear Assigned Protective Equipment.	¼" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	¼" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) *Caution labels*—(i) *Labeling.* 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.

(ii) *Label specifications.* The caution labels required by subdivision (i) of this subparagraph shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May Cause Serious Bodily Harm

3. *Labeling.* The proposed standard stopped short of requiring labeling of asbestos and asbestos-containing products. The proposed standard would have required only warning signs at locations where asbestos hazards are present. However, labeling, rather than warning signs, has proved to be a point of controversy. Both NIOSH and the Advisory Committee on Asbestos Dust recommended labels for asbestos products and containers, and these recommendations became very controversial in the course of the proceeding. Many counterproposals have been made as to the language of the warning as well as to the products to be subject to the labeling requirements. Employers, in general, strongly contend that (1) finished products which effectively entrap asbestos fibers, so that these would not be released in the normal use of the products, should not be required to be labeled; and (2) words such as "danger" and "cancer" are unwarrantedly alarming.

Both contentions have merit, and the standard has been changed accordingly.

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(h) *Housekeeping*—(1) *Cleaning.* All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) *Waste disposal.* Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

This could be considered along with "work practices". This includes outside of the plant, and protects others in addition to employees.

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These provisions:

(i) Recordkeeping and
(j) Medical examinations as well as the discussion are of highest importance as bases for predicting provisions of future standards regarding other substances

(i) *Recordkeeping*—(1) *Exposure records.* Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 5 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Employee access.* Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) *Medical examinations*—(1) *General.* The employer shall provide or make available, at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following the first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second

Warning

Examine employee who works an occupation exposed "to airborne concentrations". Relate this to monitoring requirements (f)(1)

A comprehensive medical examination shall include.

Relate these specifics to the vagueness of - "his most recent examination" in (d)(2)(iv)(c)

Employee engaged in an occupation exposed to —

This is likely subject to the same above warning.

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6. *Records.* The standard, as proposed and as adopted, requires maintenance of records of monitoring and of medical examinations. Most of the controversy in this area has revolved around the question whether an employer should be allowed to have access to the results of the required medical examinations. The apprehension of those who have argued against employer access is based on the expectation that some employers will use the medical examinations as a means of screening employment applicants, and worse, as grounds for [illegible] current employees, who show signs of being affected by exposure to asbestos. Since the purpose of the medical examinations is to monitor the health of employees exposed to the hazards of asbestos, employees cannot in reason be granted the privilege of refusing to disclose to their employers results of occupational exposure. It does not make sense to require employers to provide medical examinations if they cannot know and use the results of the examinations. For these reasons the standard provides that employers may have a restricted access to some medical information.

On the other hand, there is no intention to allow employers to abuse medical information obtained pursuant to the Act, to the detriment of employees. Therefore, the administration of the medical records requirements will be closely watched, and, in cases of abuse, appropriate action will be considered.

5. *Medical examinations.* The proposed standard would only require an appropriate medical examination on a periodic basis. The generality of the proposal has attracted many objections and also many helpful comments. The recommendations of NIOSH and of the Advisory Committee on Asbestos Dust were much more specific with respect to both frequency and type of medical examinations to be required. The comments vary as to the class of employees to be examined and as to the frequency of the examinations.

The adopted standard requires medical examinations both at the beginning and the termination of employments exposed to concentrations of asbestos fibers, and also requires annual medical examinations of every employee exposed to airborne concentrations of asbestos. It has been pointed out that in certain industries, such as construction, an employee may work for several employers during the same year. Accordingly, the standard does not require either preemployment, or termination, or periodic examinaton of any employee who has been examined in accordance with the standard within the past year.

One question which has been raised goes to whether the employer or the employee should be allowed to choose the examining physician. The standard gives the option to the employer. Since some employers already have a medical examination program in operation, and also, have medical departments with some expertise in the diagnosis of asbestos-related diseases, it seems more reasonable to permit them to utilize the present programs and expertise, than to permit an employee to choose a private general practitioner.

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records*—(i) *Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(ii) *Access.* The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

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