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RECORDKEEPING REQUIREMENTS UNDER
THE OCCUPATIONAL SAFETY AND HEALTH ACT

by

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Introduction

With increased emphasis on the promulgation of occupational health standards and the increased burden such standards will have on both industry and government, it is imperative that every effort be devoted to ensure that maximum benefit for protection be provided to the American worker with a minimum of impact on those affected. One particular area in which a major impact is occurring is the development and retention of records required under the Occupational Safety and Health Act.

As governmental industrial hygienists, it is imperative that we work closely with other occupational health personnel to carefully consider our responsibilities under the OSH Act and evaluate the reasons why certain information must be developed and recorded. It is beyond the scope of this presentation to review specific rationale for the development of current or proposed recordkeeping requirements under OSHA health standards. However, a careful review of the current and proposed requirements for toxic substance control has been made, and the most significant observation is the need for greater consistency among these requirements.

The purpose of this paper is to summarize the OSHA toxic substance health standards recordkeeping requirements as they now exist and to point out the need for consistency among these standards.

Concern for Recordkeeping Requirements

Both OSHA and NIOSH recognize the complexity and potential burden these recordkeeping requirements may have on both industry and government. As stated in the preamble to the recently proposed occupational safety and health standards for alkyl benzenes, cyclohexane, ketones, and ozone, OSHA is aware that certain provisions of this proposal, such as medical surveillance and the extended retention periods for medical monitoring records, may pose special problems to some employers. Especially affected are those who have small numbers of employees, operate with non-fixed places of employment, or use workforces which are highly transient in nature.

This awareness has been expressed by the Department of Labor in a statement submitted to the House Subcommittee on Environmental Problems Affecting Small Business on 26 June 1975 in which OSHA observed that it is evident that the combined body of Federal regulations may impose a substantial and, to some extent, unnecessary burden upon employers, particularly those who run small businesses. While most of these requirements serve a necessary and useful purpose, a definite potential exists for duplication, conflicting standards, and inappropriate recordkeeping requirements. In an effort to eliminate existing problems, OSHA will assess the small business impact of the laws they administer and determine what can be done to ease a potential burden on the small employer, while still assuring compliance with the law.

Although it is clear that OSHA's first and prime responsibility is to assure the employee safe and healthful places of employment,

the Act and its legislative history recognize that economic and technological feasibility are legitimate factors to be considered in the setting of occupational safety and health standards. In addition, the Act explicitly takes cognizance of its impact upon small businesses, specifically with respect to any recordkeeping requirements which are imposed. OSHA is exploring methods of reducing, to the maximum extent possible, the administrative and economic burdens of recordkeeping requirements.

NIOSH, for its part, is aware of the need to recommend realistic requirements for the maintenance of adequate records. Of particular concern is the record retention requirements in standards for carcinogens and suspected carcinogens, as well as current requirements for transfer of records to NIOSH when a worker terminates employment or an employer ceases to do business.

NIOSH is studying any inconsistency with respect to recordkeeping recommendations among criteria documents prepared to date and plans to carefully review the overall problem relating to recordkeeping. Specifically, NIOSH has established a formal Task Force of senior personnel to consider and review this area of concern. This Task Force is now reviewing NIOSH responsibilities for records presently being forwarded to the Institute from employers and will be submitting its specific recommendations for Institute policy in January 1976.

Existing Recordkeeping Requirements

As of November 15, 1975, health standards for 15 toxic substances have been promulgated by OSHA. In addition, proposed health standards for 23 other substances have been published in the FEDERAL REGISTER, including many developed under the Joint NIOSH/OSHA Standards Completion Program. These are listed in Table I.

The following is a brief description of the types of records which must be maintained for the proposed health standards of the Standards Completion Program and the rationale for maintaining such records.

1) Exposure Determination. Requires a record of all exposure determinations as to whether or not an exposure in excess of the action level is likely. Documenting this determination ensures that the employer has in fact examined his work environment and considered whether or not a potentially hazardous situation exists. In the absence of such a record, there would be no way to determine whether an employer had taken the first step in evaluating health hazards in his work environment.

2) Exposure Measurements. Requires the keeping of a record of all exposure measurements and any other measurements of an employee's exposure. This record is needed since the Act specifies that employers maintain accurate records of employee exposure to potentially harmful materials and physical agents which are required to be monitored under the Act.

3) Mechanical Ventilation. Requires maintaining a record of the tests made of mechanical ventilation to ensure that the employer has been conducting the tests that are required. The record is useful to the employer since the evaluation of data obtained in any individual test is needed to compare the most recent test with previous tests to detect trends. Such a record may also be used to determine which control system may be inoperative or defective and thus devise a more efficient employee exposure measurement sampling scheme.

4) Employee Training and Information. Requires a record indicating that employees have been informed of any potentially hazardous substances to which they may be exposed. This ensures that every employee has been informed as required including new employees or employees who have changed jobs or have changed exposure status.

5) Medical Surveillance. Requires maintaining an accurate medical surveillance record for each employee. The record must include medical opinions and other medical documents. This is necessary to help ensure that the employer observes the recommendations given in a physician's medical opinion with respect to future exposure of an employee.

Information to be Recorded

The following is a brief outline of the specific information which should be maintained for specific types of records:

1) Exposure Determination.

- a) Any information, observations, or calculations which may indicate employee exposure;

- b) Any measurements taken;
 - c) Any employee complaints of symptoms which may be attributable to exposure;
 - d) Date of determination, work being performed at the time, location within the work site, name and social security number of each employee considered.
- 2) Exposure Measurements
- a) The date of measurement;
 - b) Operations involving exposures which are being monitored;
 - c) Sampling and analytical methods used with evidence of their accuracy including the method, results and date of calibration of sampling equipment;
 - d) The number, duration and results of samples taken;
 - e) Name, social security number and exposure of the employee monitored.
- 3) Mechanical Ventilator
- a) Date of measurement;
 - b) Type of measurement taken;
 - c) Results of measurement.
- 4) Employee Training and Information
- a) Date of training;
 - b) Name and social security number of employee trained;
 - c) Content or scope of training provided.
- 5) Medical Surveillance
- a) Any employee medical complaints relative to exposure;
 - b) A copy of information provided to the physician;
 - c) Results of tests required and results of other tests conducted;

- d) Physicians written opinion;
- e) A signed statement of employee refusal to be examined.

Retention and Transfer of Records

Most inconsistencies occur in this area and therefore a major effort is needed to provide consistency and uniformity for recordkeeping requirements.

Table II presents a summary of the recordkeeping requirements relating to length of retention. From this Table, it is apparent that much additional thought must be given to evaluate recordkeeping requirements to assure that such records contribute to worker protection as required under the Occupational Safety and Health Act. Note that in the case of the present asbestos standard, medical records must be retained for at least 20 years and employee exposure records retained for at least three years.

A review of the 14 carcinogen substance standards published several years ago indicates that only medical records need to be retained and that such records be maintained for the duration of the employee's employment. These standards further state that upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records or notarized true copies thereof must be forwarded to the Director, NIOSH. These 14 carcinogenic substance standards do not require retention of records other than medical.

Regarding the current standards proposed under the Joint NIOSH/OSHA Standards Completion Program (SCP), records must be maintained for exposure determination, exposure measurements, mechanical ventilation measurements, employee training, and medical surveillance. All SCP standards published to date are consistent with regard to record retention and state generally that such records should be maintained until replaced by a more recent record, maintained for the duration of an employee's employment, or maintained at least one year. There is no provision for transfer of records.

A review of the most recently proposed standards for lead, toluene, asbestos, beryllium, trichloroethylene, and inorganic arsenic indicate a great deal of variability and inconsistency regarding retention of required records. In most cases the types of records maintained are similar or identical to those previously described for standards proposed under the Standards Completion Program. However, a review of each individual standard indicates for some substances a record retention requirement of up to 40 years or employee termination plus 20 years whichever is greater. Regarding transfer of records, these proposed standards state that in the event the employer ceases to do business and there is no successor to receive and retain the records, all records (not just medical) must be transmitted to the Director, NIOSH, and all employees and former employees must be individually notified in writing of this transfer.

In conclusion, while there are significant benefits derived from recordkeeping, it must be kept in mind that these requirements could also create a significant burden on business and industry. I have

attempted to summarize these requirements as they relate to current and proposed toxic substance standards. The requirements are often inconsistent and appear to need careful reconsideration and reappraisal. It is the responsibility of governmental industrial hygienists and others involved with preparing such regulations to evaluate with care the benefits, needs and burdens of such recordkeeping requirements upon all concerned.

Table I

OCCUPATIONAL HEALTH STANDARDS PUBLISHED FOR TOXIC SUBSTANCES

As of November 15, 1975

Final Rules

asbestos
4- nitrobiphenyl
alpha- naphthylamine
4,4' methylene bis (2 chloroaniline)
methyl chloromethyl ether
3,3' dichlorobenzidine (and salts)
bis chloromethyl ether
beta- naphthylamine
benzidine
4- aminodiphenyl
ethylencimine
beta- propiolactone
2- acetylaminofluorene
4- dimethylaminoazobenzene
n- nitrosodimethylamino
vinyl chloride

Proposed Rules

lead
toluene
asbestos (revision to previous rule)
beryllium
trichloroethylene
inorganic arsenic

(Standards Completion Program)

2- butanone
2- pentanone
cyclohexanone
hexone
methyl (n-amyl) ketone
ethyl butyl ketone
p-tert- butyltoluene
cumene
ethyl benzene
alpha- methyl styrene
styrene
vinyl toluene
cyclohexane
camphor
mesityl oxide
5- methyl-3-heptanone
ozone

Table II
RECORDKEEPING REQUIREMENTS FOR TOXIC SUBSTANCE OCCUPATIONAL HEALTH STANDARDS
FINAL RULEMAKING AS OF NOVEMBER 15, 1975

SUBSTANCE	TYPE OF RECORDS	RETENTION	TRANSFER OF RECORD
Asbestos	Medical Employee exposure	20 years 3 years	No requirement No requirement
4-Nitrobiphenyl	Medical	During employment	To NIOSH when employer ceases business with no successor or employee termination.
Alpha-naphthylamine	"	"	"
4,4' Methylene bis (2 chloroaniline)	"	"	"
Methyl chloromethyl ether	"	"	"
3,3' Dichlorobenzidine (and salts)	"	"	"
Bis chloromethyl ether	"	"	"
Beta-naphthylamine	"	"	"
Benzidine	"	"	"
4-Aminodiphenyl	"	"	"
Ethyleneimine	"	"	"
Beta-propiolactone	"	"	"

Table II
RECORDKEEPING REQUIREMENTS FOR TOXIC SUBSTANCE OCCUPATIONAL HEALTH STANDARDS
FINAL RULEMAKING AS OF NOVEMBER 15, 1975 (Continued)

SUBSTANCE	TYPE OF RECORDS	RETENTION	TRANSFER OF RECORD
2-Acetylaminofluorene	Medical	During employment	To NIOSH when employer ceases business with no successor or employee termination.
4-Dimethylaminoazobenzene	"	"	"
N-nitrosodimethylamino	"	"	"
Vinyl chloride	Monitoring and measuring Medical	30 years 30 years or employee termination + 20 yrs.; whichever is greater	" "

Table II

RECORDKEEPING REQUIREMENTS FOR TOXIC SUBSTANCE OCCUPATIONAL HEALTH STANDARDS
PROPOSED RULEMAKING AS OF NOVEMBER 15, 1975

SUBSTANCE	TYPE OF RECORDS	RETENTION	TRANSFER OF RECORD
Lead	Employee exposure determinations	1 year	To NIOSH when employer ceases business with no successor or employee termination "
	Employee exposure measurements	40 years	"
	Mechanical ventilation measurements	2 years	"
	Employee training	1 year	"
	Medical	40 years	"
Toluene	Exposure determination	2 years	"
	Employee exposure measurements	10 years	"
	Mechanical ventilation measurements	2 years	"
	Employee training	2 years	"
	Medical	10 years	"
Asbestos	Employee exposure records	40 years or employee termination + 20 yrs. whichever is greater	"
	Medical	"	"
	Mechanical ventilation measurements	3 years	"
	Employee training	3 years	"
Beryllium	Employee exposure measurements	40 years or employee termination + 20 yrs. whichever is greater	"
	Medical	"	"
	Mechanical ventilation	2 years	"
	Employee training	2 years	"
Trichloroethylene	Employee exposure determinations	2 years	"
	Employee exposure measurements	10 years	"
	Mechanical ventilation measurements	2 years	"
	Employee training	1 year	"
	Medical	10 years	"

Table II

RECORDKEEPING REQUIREMENTS FOR TOXIC SUBSTANCE OCCUPATIONAL HEALTH STANDARDS

PROPOSED RULEMAKING AS OF NOVEMBER 15, 1975 (Continued)

SUBSTANCE	TYPE OF RECORDS	RETENTION	TRANSFER OF RECORD
inorganic arsenic	Employee exposure determinations	5 years	To NIOSH when employer ceases business with no successor or employee termination "
	Employee exposure measurements	40 years	"
	Mechanical ventilation measurements	2 years	"
	Respirator usage	5 years	"
	Employee information and training	2 years	"
	Medical	40 years or employee termination + 20 yrs., whichever is greater	"
CP Standards*	Exposure determination	Until released by a more recent record	No requirement
	Exposure measurements	Until released by a more recent record but no less than 1 yr.	No requirement
	Mechanical ventilation measurements	1 year	No requirement
	Employee training	Until replaced by a more recent record	No requirement
	Medical	Duration of employment	"
SCP Standards: 2- butanone, 2- pentanone, cyclohexanone, hexone, methyl (n-amyl) ketone, ethyl butyl ketone, p-tert- butyltoluene, cumene, ethyl benzene, alpha- methyl styrene, styrene, vinyl toluene, cyclohexane, camphor, mesityl oxide, 5- methyl-3-heptanone, ozone			

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Sample No. _____

Facility

Department

Date

Sample Type:

Pers.

☐

Area

☐

Employee's Name

Job

Description of Operation

Air Contaminant

Type of Contaminant Control

Sampler Used

Serial No.

Date of Last Calib.

Sampling Accessories Used

Sampling Time

Begin _____

End _____

Total Minutes _____

Sampling Rate

Begin _____

End _____

Average _____

Results

HNA 27441

Person Conducting Survey
(Signed) _____

Interoffice Memorandum

MAY 5 1978

OPTIONAL FORM NO. 10

(Name and Location)	DATE
See Below	5-3-78
FROM (Name and Location)	REFERENCE NO.
Mr. C. S. Laubly - New York	CSL:78-38

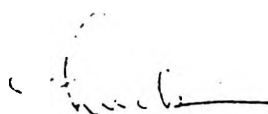
Mr. V. Eackles - Charlotte
Dr. G. Halek - Chatham
Mr. W. Hamman - Hilliard
Dr. H. Kolodner - Charlotte
Mr. S. Krivan - Louisville
Mr. V. Parrillo - Summit
Mr. J. Pullen - Charlotte
Mr. J. Ramey - New York
Mr. P. Paliyenko - Charlotte

Subject: Asbestos

The attached information on asbestos is the result of recent conversations with various plant safety personnel.

Would you please distribute the attached to those plants in your group.

Thank you.



C. S. Laubly

CSL:rd
Att.

cc: Dr. E. M. Dixon - N.Y.
Dr. L. Starr - N.Y.

HNA 27442

ASBESTOS

In previous communications from the Medical Department, we have acquainted you with the requirements of the OSHA Asbestos Standard, 1910.1001. From time to time as our staff visits plants, we note that while asbestos is no longer used for insulation, there are occasions when workers are exposed to asbestos fibers from demolition, re-work of equipment and removal from surfaces.

In many instances asbestos exposures may occur because the work order is given and the job completed before responsible plant staff persons are even notified. Any removal of asbestos, no matter how small, should conform to the OSHA standard. Of particular concern are the inadvertent exposures of workers not directly concerned with the asbestos removal.

Common insulation materials manufactured and installed before 1972 generally contained asbestos. The removal of these asbestos-containing insulations from piping, vessels, furnaces, dryers, etc., present definite hazards of exposure to asbestos, not only to the people removing the insulation, but to other people who may be working in or passing through the area, or those collecting the removed material for disposal. By adopting the following precautionary measures and using sound judgment, each employee can perform his/her work in a perfectly safe and healthful manner.

Work Area Precautions

The work area should be roped off during the removal of asbestos-containing insulation and warning signs (See Fig.1) posted to inform anyone anticipating entering the area, to take the necessary protective steps.

If work is being performed above open grating, the grating area under the work should be covered with drop cloths, tarpaulins or polyethylene film to contain insulation that might fall or filter down to work areas below.

Working Wet

Insofar as practicable, insulation should be wet down before it is removed. If not before removal, it should be wet down as soon after removal as possible, to prevent the emission of airborne fibers. Wet sweeping and wash down should be practiced in all feasible situations.

When wet cleanup is impractical for any reason, sweeping compound at a minimum must be applied to the work area during cleanup.

Respirators

A National Institute of Occupational Safety and Health (NIOSH) approved respirator should be worn while removing and cleaning up all insulation.

When the job can be worked wet, ventilation is good and it is an unconfined area, a disposable cartridge type air purifying respirator (dust mask) may be used.

In all other situations: dry work, poor ventilation or a relatively enclosed area, an air-supplied Type "C" continuous flow or pressure demand respirator should be used.

Disposal

All removed insulation containing asbestos should be disposed of in dustproof containers such as polyethylene bags or covered fiber drums. These containers are to be securely wired closed. A caution tag (See Fig.2) must be attached to each container.

Care should be taken during all phases of handling and disposal to see that these containers are not broken open. Final disposal should be in a landfill approved for disposal of asbestos wastes where the containers are covered as quickly as possible.

Clothing

On jobs where asbestos containing dust can be expected to accumulate on clothing, the use of disposable coveralls is recommended. These coveralls can be removed following completion of the job and placed in one of the disposal containers before sealing.

Other types of protective clothing must be stored apart from street clothing and placed in dustproof polyethylene bags when sent out for laundering. A caution tag must be placed on these bags to alert laundry employees of possible asbestos contamination. A letter must also be sent to the laundry outlining proper procedure for handling asbestos contaminated clothing and indicating the precautions taken to protect all employees from possible asbestos hazards.

Caution: At no time is compressed air to be used for dusting off skin or clothing.

Training

All persons involved with the removal, clean-up, and disposal of asbestos-containing insulation should be informed of the health hazards associated with the handling of these materials.

Persons responsible for implementation of asbestos work practices should refer to the OSHA Standard 1910.1001 to assure that his plant is consistent with the applicable provisions of the standard.

§ 1910.1001 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 (e) 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 (e) 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 (e) of this section.

(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.

(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 (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) 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 the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

b. See § 1910.6 concerning the availability of ANSI Z88.2-1969 and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) *Special clothing.* The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) *Change rooms.* (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) *Clothes lockers.* The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) *Laundrying.* (a) Laundrying of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

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

(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.

(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 access to the records thereof.

(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 so 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 (1) 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
Asbestos.....	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.

Legend	Notation
Do Not Remain In Area Unless Your Work Requires It.	¾" 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 (1) 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

(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.

(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 20 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.
[1910.1001(i)(1) amended at 41 FR 11505, March 19, 1976]

(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 his 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 (FEV₁).

(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 (FEV₁).

(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 (FEV₁).

(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 a designated public health and medical consultant of either of them, and to the representative of any 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.

[Sec. 1910.93a added at 36 FR 23207, December 7, 1971, as emergency temporary standard; issued as permanent standard at 37 FR 11318, June 7, 1972, effective July 7, 1972; redesignated Sec. 1910.1001 at 40 FR 23072, May 28, 1975]