

# IPS ITCS

Industrial Performance Services

Industrial Tubular Catalyst Services



## ASBESTOS OPERATIONS PROCEDURE

V:2023.1

# Asbestos Operations Procedure

January 2023

## A. Background

Asbestos is the generic term for a group of naturally occurring, fibrous minerals with high tensile strength, flexibility, and resistance to thermal, chemical, and electrical conditions.

In the construction industry, asbestos is found in installed products such as shingles, floor tiles, cement pipe and sheet, roofing felts, insulation, ceiling tiles, fire-resistant drywall, and acoustical products. Very few asbestos-containing products are being in-stalled.

Consequently, most worker exposures occur during the removal of asbestos and the renovation and maintenance of buildings and structures containing asbestos. Asbestos fibers enter the body by inhalation or ingestion of air-borne particles that become embedded in the tissues of the respiratory or digestive systems. Exposure to asbestos can cause disabling or fatal diseases such as asbestosis, an emphysema-like condition; lung cancer; mesothelioma, a cancerous tumor that spreads rapidly in the cells of membranes covering the lungs and body organs; and gastrointestinal cancer. The symptoms of these diseases generally do not appear for 20 years or more after exposure.

OSHA began regulating workplace asbestos exposure in 1970, adopting a permissible exposure limit (PEL) to regulate worker exposures. Over the years, more information on the adverse health effects of asbestos exposure has become available, prompting the agency to revise the asbestos standard several times to better protect workers. In 1994, OSHA issued a revised final standard regulating asbestos exposure in all industries. The revised standard for the construction industry lowers the PEL from 0.2 fibers per cubic centimeter (f/cc) of air to 0.1 f/cc.

Approximately 3.2 million workers in new construction, building renovation, and maintenance and custodial workers in buildings and industrial facilities are affected by the new standard. OSHA estimates that at least 42 cancer deaths per year will be avoided in all industries, in addition to lives saved by earlier OSHA standards.



- (i) **Scope and application.**  
This section regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b), including but not limited to the following:
- (1) Demolition or salvage of structures where asbestos is present.
  - (2) Removal or encapsulation of materials containing asbestos.
  - (3) Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos.
  - (4) Installation of products containing asbestos.
  - (5) Asbestos spill/emergency cleanup; and
  - (6) Transportation, disposal, storage, or containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.
  - (7) Coverage under this standard shall be based on the nature of the work operation involving asbestos exposure.

## **B. Definitions**

"Aggressive method" means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

"Amended water" means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

"Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.

"Asbestos-containing material (ACM)" means any material containing more than one percent asbestos.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Authorized person" means any person authorized by IPS★ITCS and required by work duties to be present in regulated areas.

"Building/facility owner" is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

"Certified Industrial Hygienist (CIH)" means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

"Class I asbestos work" means activities involving the removal of TSI and surfacing ACM and PACM. The most potentially hazardous class of asbestos jobs — involves the removal of thermal system insulation and sprayed-on or troweled-on surfacing asbestos-containing materials or presumed asbestos-containing materials. Thermal system insulation includes asbestos-containing materials applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials include decorative plaster on ceilings,

acoustical asbestos-containing materials on decking, or fireproofing on structural embers.

"Class II asbestos work" means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of other types of asbestos-containing materials that are not thermal system insulation, such as resilient flooring and roofing materials containing asbestos. Removing intact incidental roofing materials containing asbestos such as cements, mastics, coatings, and flashings are not regulated as Class II. Class II designation is limited (in roofing operations) to situations in which the main roofing material is being removed. In addition, when a competent person deems the roofing material being removed as intact, the roofing contractor may make a negative exposure assessment and avoid initial monitoring if both the following conditions are met:

1. Employees have been trained.
2. The work practices set forth in the rule are strictly followed.

"Class III asbestos work" means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.

"Class IV asbestos work" means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

"Clean room" means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

"Closely resemble" means that the major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

"Competent person" means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR Part 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2).

"Critical barrier" means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

"Decontamination area" means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment contaminated with asbestos.

"Demolition" means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Disturbance" means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

"Employee exposure" means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

"Equipment room (change room)" means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

"Fiber" means a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

"Glove bag" means not more than a 60 by 60-inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

"High-efficiency particulate air (HEPA) filter" means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

"Homogeneous area" means an area of surfacing material or thermal system insulation that is uniform in color and texture.

"Industrial hygienist" means a professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

"Intact" means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

"Modification for purposes of paragraph (G)(6)(ii)" means a changed or altered procedure, material, or component of a control system, which replaces a procedure, material, or component of a required system. Omitting a procedure or component or reducing or diminishing the stringency or strength of a material or component of the control system is not a "modification" for purposes of paragraph (G)(6) of this section.

"Negative Initial Exposure Assessment" means a demonstration by IPS★ITCS, which complies with the criteria in paragraph (F)(2)(iii) of this section, that employee exposure during an operation is expected to be consistently below the PELs.

"PACM" means "presumed asbestos containing material".

"Presumed Asbestos Containing Material" means thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to paragraph (K)(5) of this section.

"Project Designer" means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. §763.90(g).

"Regulated area" means an area established by IPS★ITCS to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility they may exceed the permissible exposure limit. Requirements for regulated areas are set out in paragraph (e) of this section.

"Removal" means all operations where ACM and/or PACM is taken out or stripping from structures or substrates and includes demolition operations.

"Renovation" means the modifying of any existing structure, or portion thereof.

"Repair" means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulations or other repair of ACM or PACM attached to structures or substrates.

"Surfacing material" means material that is sprayed troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

"Surfacing ACM" means surfacing material which contains more than 1% asbestos.

"Thermal system insulation (TSI)" means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

"Thermal system insulation ACM" is thermal system insulation which contains more than 1% asbestos.

### **C. Permissible Exposure Limits (PEL)**

(1) Time-weighted average limit (TWA). IPS★ITCS shall ensure that no employee is exposed to an airborne concentration of asbestos more than 0.1 fiber per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA),

as determined by the method prescribed in Appendix A to this section, or by an equivalent method.

(2) Excursion limit. IPS★ITCS shall ensure that no employee is exposed to an airborne concentration of asbestos more than 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes, as determined by the method prescribed in Appendix A to this section, or by an equivalent method.

### **D. Multi-Company Worksites**

(1) On multi-Company worksites, IPS★ITCS performing work requiring the establishment of a regulated area shall inform *other* Companies on the

site of the nature of IPS★ITCS' work with asbestos and/or PACM, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such *other* Companies are not exposed to asbestos.

(2) Asbestos hazards at a multi-Company work site shall be abated by the contractor who created or controls the source of asbestos contamination.

For example, if there is a significant breach of an enclosure containing Class I work, IPS★ITCS responsible for erecting the enclosure shall repair the breach immediately.

(3) In addition, all Company of employees exposed to asbestos hazards shall comply with applicable protective provisions to protect their employees. For example, if employees working immediately adjacent to a Class I asbestos job are exposed to asbestos due to the inadequate containment of such job, their Company shall either remove the employees from the area until the enclosure breach is repaired; or perform an initial exposure assessment pursuant to (F) of this section.

(4) All Company of employees working adjacent to regulated areas established by another Company on a multi-Company worksite, shall take steps on a daily basis to ascertain the integrity of the enclosure and/or the effectiveness of the control method relied on by the primary asbestos contractor to assure that asbestos fibers do not migrate to such adjacent areas.

(5) All general contractors on a construction project which includes work covered by this standard shall be deemed to exercise general supervisory authority over the work covered by this standard, even though the general contractor is not qualified to serve as the asbestos "competent person" as defined by paragraph (B) of this section. As supervisor of the entire project, the general contractor shall ascertain whether the asbestos contractor is in compliance with this standard and shall require such contractor to come into compliance with this standard when necessary.

## **E. Regulated areas**

(1) All Class I, II and III asbestos work shall be conducted within regulated areas. All other operations covered by this standard shall be conducted within a regulated area where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed a PEL. Regulated areas shall comply with the requirements of paragraphs (2), (3), (4) and (5) of this section.

(2) Demarcation. The regulated area shall be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Signs shall be provided and displayed pursuant to the requirements of paragraph (K)(7) of this section.



(3) Access. Access to regulated areas shall be limited to authorized persons and to persons authorized by the Act or regulations issued pursuant thereto.

(4) Respirators. All persons entering a regulated area where employees are required pursuant to paragraph (H)(1) of this section to wear respirators shall be supplied with a respirator selected in accordance with paragraph (H)(2) of this section.

(5) Prohibited activities. IPS★ITCS shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated area.

(6) Competent Persons. IPS★ITCS shall ensure that all asbestos work performed within regulated areas is supervised by a competent person, as defined in paragraph (B) of this section. The duties of the competent person are set out in paragraph (O) of this section.

## **F. Exposure Assessments and Monitoring**

(1) General monitoring criteria.

(i) Each Company who has a workplace or work operation where exposure monitoring is required under this section shall perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed.

(ii) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee.

(iii) Representative 8-hour TWA employee exposure shall be determined based on one or more samples representing full-shift exposure for employees in each work area. Representative 30-minute short-term employee exposures shall be determined based on one or more samples representing 30-minute exposures associated with operations that are most likely to produce exposures above the excursion limit for employees in each work area.

(2) Initial Exposure Assessment.

(i) Each Company who has a workplace or work operation covered by this standard shall ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to

provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.

(ii) Basis of Initial Exposure Assessment: Unless a negative exposure assessment has been made pursuant to paragraph (F)(2)(iii) of this section, the initial exposure assessment shall, if

feasible, be based on monitoring conducted pursuant to paragraph (F)(1)(iii) of this section.

The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of IPS★ITCS which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the Company conducts exposure monitoring and documents that employees on that job will not be exposed more than the PELs, or otherwise makes a negative exposure assessment pursuant to paragraph (F)(2)(iii) of this section, IPS★ITCS shall presume that employees are exposed more than the TWA and excursion limit.

(iii) Negative Exposure Assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, IPS★ITCS may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria.

(A) Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or

(B) Where IPS★ITCS has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions "closely resembling"

the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in IPS★ITCS' current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that

employee exposures will not exceed the TWA and excursion limit; or

(C) The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

(3) Periodic monitoring.

(i) Class I and II operations. IPS★ITCS shall conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work, unless IPS★ITCS pursuant to (F)(2)(iii) of this section, has made a negative exposure assessment for the entire operation.

(ii) All operations under the standard other than Class I and II operations. IPS★ITCS shall conduct periodic monitoring of all work where exposures are expected to exceed a PEL, at intervals sufficient to document the validity of the exposure prediction.

(iii) Exception: When all employees required to be monitored daily are equipped with supplied-air respirators operated in the pressure demand mode, or other positive pressure mode respirator, IPS★ITCS may dispense with the daily monitoring required by this paragraph. However, employees performing Class I work using a control method which is not listed in paragraph (G)(4)(i), (ii), or (iii) of this section or using a modification of a listed control method, shall continue to be monitored daily even if they are equipped with supplied-air respirators.

(4) Termination of monitoring.

(i) If the periodic monitoring required by paragraph (F)(3) of this section reveals that employee exposures, as indicated by statistically reliable measurements, are below the permissible exposure limit and excursion

limit IPS★ITCS may discontinue monitoring for those employees whose exposures are represented by such monitoring.

(ii) Additional monitoring. Notwithstanding the provisions of paragraph (F)(2) and (3), and (F)(4) of this section, IPS★ITCS shall institute the exposure monitoring required under paragraph (F)(3) of this section whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the permissible exposure level and/or excursion limit or when IPS★ITCS has any reason to suspect that a change may result in new or additional exposures above the permissible exposure level and/or excursion limit. Such additional monitoring is required regardless of whether a "negative exposure assessment" was previously produced for a specific job.

- (5) Employee notification of monitoring results.
- (i) IPS★ITCS shall notify affected employees of the monitoring results that represent that employee's exposure as soon as possible following receipt of monitoring results.
  - (ii) IPS★ITCS shall notify affected employees of the results of monitoring representing the employee's exposure in writing either individually or by posting at a centrally located place that is accessible to affected employees.
- (6) Observation of monitoring.
- (i) IPS★ITCS shall provide affected employees and their designated representatives an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with this section.
  - (ii) When observation of the monitoring of employee exposure to asbestos requires entry into an area where the use of protective clothing or equipment is required, the observer shall be provided with and be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

## **G. Methods of Compliance**

(1) Engineering controls and work practices for all operations covered by this section. IPS★ITCS shall use the following engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure:

- (i) Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM or PACM, except as provided in paragraph (G)(8)(ii) of this section in the case of roofing material.
- (ii) Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where Company demonstrate that the use of wet methods is infeasible due to for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in paragraph (G)(8)(ii) of this section; and
- (iii) Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers, except in roofing operations, where the procedures specified in paragraph (G)(8)(ii) of this section apply.

(2) In addition to the requirements of paragraph (G)(1) of this section, IPS★ITCS shall use the following control methods to achieve compliance with the TWA permissible exposure limit and excursion limit prescribed by paragraph (C) of this section.

- (i) Local exhaust ventilation equipped with HEPA filter dust collection systems.

- (ii) Enclosure or isolation of processes producing asbestos dust.
- (iii) Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter.
- (iv) Use of other work practices and engineering controls that the Assistant Secretary can show to be feasible.
- (v) Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure and/or excursion limit prescribed in paragraph (C), of this section, IPS★ITCS shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (H) of this section.

(3) Prohibitions. The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

- (i) High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- (ii) Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- (iii) Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM.
- (iv) Employee rotation as a means of reducing employee exposure to asbestos.

(4) Class I Requirements. In addition to the provisions of paragraphs (G)(1) and (2) of this section, the following engineering controls and work practices and procedures shall be used.

- (i) For all Class I jobs involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where IPS★ITCS cannot produce a negative exposure assessment pursuant to paragraph (F)(2)(iii) of this section, or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, IPS★ITCS shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

- (A) Critical barriers shall be placed over all the openings to the regulated area, except where activities are performed outdoors; or

(B) IPS★ITCS shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpart E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by Phase Contrast Microscopy (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring shall be made known to IPS★ITCS no later than 24 hours from the end of the work shift represented by such monitoring.

Exception: For work completed out-doors where employees are not working in areas adjacent to the regulated areas, this paragraph (G)(4)(ii) is satisfied when the specific control methods in paragraph (G)(5) of this section are used.

(ii) All Class I work, including the installation and operation of the control system shall be supervised by a competent person as defined in paragraph (B) of this section.

(iii) For all Class I jobs, HVAC systems shall be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent.

(iv) For all Class I jobs, impermeable drop cloths shall be placed on surfaces beneath all removal activity.

(v) For all Class I jobs, all objects within the regulated area shall be covered with impermeable drop cloths or plastic sheeting which is secured by duct tape or an equivalent.

(vi) For all Class I jobs where IPS★ITCS cannot produce a negative exposure assessment, or where exposure monitoring shows that a PEL is exceeded, IPS★ITCS shall ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA filtration or collection device.

(5) Specific control methods for Class I work. In addition, Class I asbestos work shall be performed using one or more of the following control methods pursuant to the limitations stated below:

(i) Negative Pressure Enclosure (NPE) systems: NPE systems may be used where the configuration of the work area does not make the erection of the enclosure infeasible, with the following specifications and work practices.

(A) Specifications:

(1) The negative pressure enclosure (NPE) may be of any configuration,

(2) At least 4 air changes per hour shall be maintained in the NPE,



(3) A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements,

(4) The NPE shall be kept under negative pressure throughout the period of its use, and

(5) Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

(B) Work Practices:

(1) Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed.

(2) Electrical circuits in the enclosure shall be deactivated, unless equipped with ground-fault circuit interrupters.

(ii) Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices:

(A) Specifications:

(1) Glove-bags shall be made of 6 mil thick plastic and shall be seamless at the bottom.

(2) Glove-bags used on elbows and other connections must be de-signed for that purpose and used without modifications.

(B) Work Practices:

(1) Each glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.

(2) Glove-bags shall be smoke-tested for leaks and any leaks sealed prior to use.

(3) Glove-bags may be used only once and may not be moved.

(4) Glove-bags shall not be used on surfaces whose temperature exceeds 150° F.

(5) Prior to disposal, glove-bags shall be collapsed by removing air within them using a HEPA vacuum.

(6) Before beginning the operation, loose and friable material adjacent to the glovebag/box

operation shall be wrapped and sealed in two layers of 6 mil plastic or otherwise rendered intact,

(7) Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity:

(8) Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected:

(9) At least two persons shall perform Class I glovebag removal operations.

(iii) Negative Pressure Glovebag Systems. Negative pressure glovebag systems may be used to remove ACM or PACM from piping.

(A) Specifications: In addition to specifications for glovebag systems above, negative pressure glovebag systems shall attach HEPA vacuum systems or other devices to bag to prevent collapse during removal.

(B) Work Practices:

(1) IPS★ITCS shall comply with the work practices for glove-bag systems in paragraph (G)(5)(ii) (B)(4) of this section.

(2) The HEPA vacuum cleaner or other device used to prevent collapse of bag during removal shall run continually during the operation until it is completed, at which time the bag shall be collapsed prior to removal of the bag from the pipe.

(3) Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

(iv) Negative Pressure Glove Box Systems: Negative pressure glove boxes may be used to remove ACM or PACM from pipe runs with the following specifications and work practices.

(A) Specifications:

(1) Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal:

(2) A negative pressure generator shall be used to create negative pressure in the system:

(3) An air filtration unit shall be attached to the box:

4) The box shall be fitted with gloved apertures:

(5) An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water:

(6) A back-up generator shall be present on site:

(7) Waste bags shall consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.

(B) Work practices:

(1) At least two persons shall perform the removal:

(2) The box shall be smoke tested for leaks and any leaks sealed prior to each use.

(3) Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job.

(4) A HEPA filtration system shall be used to maintain pressure barrier in box.

(v) Water Spray Process System. A water spray process system may be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. The system shall meet the following specifications and shall be performed by employees using the following work practices.

(A) Specifications:

(1) Piping shall be surrounded on 3 sides by rigid framing.

(2) A 360-degree water spray, delivered through nozzles supplied by a high-pressure separate water line, shall be formed around the piping.

(3) The spray shall collide to form a fine aerosol which provides a liquid barrier between workers and the ACM and PACM.

(B) Work Practices:

(1) The system shall be run for at least 10 minutes before removal begins.

(2) All removal shall take place within the water barrier.

(3) The system shall be operated by at least three persons, one of whom shall not perform removal, but shall check equipment, and ensure proper operation of the system.

(4) After removal, the ACM and PACM shall be bagged while still inside the water barrier.

(vi) A small walk-in enclosure which accommodates no more than two persons (mini enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices.

(A) Specifications:

- (1) The fabricated or job-made enclosure shall be constructed of 6 mil plastic or equivalent:
- (2) The enclosure shall be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit:

(B) Work practices:

- (1) Before use, the mini-enclosure shall be inspected for leaks and smoke-tested to detect breaches, and any breaches sealed.
- (2) Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed.
- (3) During use, air movement shall be directed away from the employee's breathing zone within the mini enclosure.

(6) Alternative control methods for Class I work. Class I work may be performed using a control method which is not referenced in paragraph (G)(5) of this section, or which modifies a control method referenced in paragraph (G)(5) of this section, if the following provisions are complied with:

(i) The control method shall enclose, contain, or isolate the processes or source of airborne asbestos dust, or otherwise capture or redirect such dust before it enters the breathing zone of employees.

(ii) A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer as defined in paragraph (B) of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (G)(4)(ii)(B) of this section.

(A) Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the evaluation required in paragraph (G)(6) of this

section may be performed by a "competent person" and may omit consideration of perimeter or clearance monitoring otherwise required.

(B) The evaluation of employee exposure required in paragraph (G)(6) of this section, shall include and be based on sampling and analytical data representing employee exposure during the use of such method under worst case conditions and by employees whose training and experience are equivalent to employees who are to perform the current job.

(iii) Before work which involves the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of a paragraph (G)(6) of this section required evaluation and certification, IPS★ITCS shall send a copy of such evaluation and certification to the national office of OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW, Washington, DC 20210. The submission shall not constitute approval by OSHA.

(7) Work Practices and Engineering Controls for Class II work.

(i) All Class II work shall be supervised by a competent person as defined in paragraph (B) of this section.

(ii) For all indoor Class II jobs, where IPS★ITCS has not produced a negative exposure assessment pursuant to paragraph (F)(2)(iii) of this section, or where during the job, changed conditions indicate there may be exposure above the PEL or where IPS★ITCS does not remove the ACM in a substantially intact state, IPS★ITCS shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area;

(A) Critical barriers shall be placed over all openings to the regulated area; or,

(B) IPS★ITCS shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring which meets the criteria set out in paragraph (G)(4)(ii)(B) of this section.

(C) Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

(iii) All Class II asbestos work shall be performed using the work practices and requirements set out above in paragraph (G)(1)(i) through (g)(1)(iii) of this section.

(8) Additional Controls for Class II work. Class II asbestos work shall also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed, set out in this paragraph. Where more than one control method may be used for a type of asbestos work, IPS★ITCS may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove-bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

(i) For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, IPS★ITCS has not verified the absence of ACM pursuant to paragraph (G)(8)(i)(I) of this section. IPS★ITCS shall ensure that employees comply with the following work practices and that employees are trained in these practices pursuant to paragraph (K)(9):

(A) Flooring or its backing shall not be sanded.

- (B) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors.
  - (C) Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Ripping up of resilient sheet floor material is prohibited.
  - (D) All scraping of residual adhesive and/or backing shall be performed using wet methods.
  - (E) Dry sweeping is prohibited.
  - (F) Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirements of paragraph (G)(5)(i) of this section.
  - (G) Tiles shall be removed intact, unless IPS★ITCS demonstrates that intact removal is not possible.
  - (H) When tiles are heated and can be removed intact, wetting may be omitted.
  - (I) Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.
- (ii) For removing roofing material which contains ACM IPS★ITCS shall ensure that the following work practices are followed:
- (A) Roofing material shall be removed in an intact state to the extent feasible.
  - (B) Wet methods shall be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.
  - (C) Cutting machines shall be continuously misted during use unless a competent person determines that misting substantially decreases worker safety.
  - (D) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation shall be collected by a HEPA dust collector or shall be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation shall be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still-wet dust and debris left along the cut line. The dust and debris shall be immediately bagged or placed in covered containers.
  - (E) Asbestos-containing material that has been removed from a roof shall not be dropped or thrown to the ground.



Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane, or hoist:

(1) Any ACM that is not intact shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

(2) Intact ACM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

(F) Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner to preclude the dispersion of dust.

(G) Roof level heating and ventilation air intake sources shall be isolated, or the ventilation system shall be shut down.

(H) Notwithstanding any other provision of this section, removal, or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming if manual methods which do not render the material non-intact are used to remove the material and no visible dust is created by the removal method used. In determining whether a job involves less than 25 square feet, IPS★ITCS shall include all removal and repair work performed on the same roof on the same day.

(iii) When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs, where paragraph (G)(8)(ii) of this section applies), IPS★ITCS shall ensure that the following work practices are followed:

(A) Cutting, abrading, or breaking siding, shingles, or transite panels, shall be prohibited unless IPS★ITCS can demonstrate that methods less likely to result in asbestos fiber release cannot be used.

(B) Each panel or shingle shall be sprayed with amended water prior to removal.

(C) Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane, or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

(D) Nails shall be cut with flat, sharp instruments.

(iv) When removing gaskets containing ACM, IPS★ITCS shall ensure that the following work practices are followed:

(A) If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag as described in paragraph (G)(5)(ii) of this section.

(B) The gasket shall be placed in a disposal container.

(C) Any scraping to remove residue must be performed wet.

(v) When performing any other Class II removal of asbestos containing material for which specific controls have not been listed in paragraph (G)(8)(iv)(A) through (D) of this section, IPS★ITCS shall ensure that the following work practices are complied with.

(A) The material shall be thoroughly wetted with amended water prior to and during its removal.

(B) The material shall be removed in an intact state unless IPS★ITCS demonstrates that intact removal is not possible.

(C) Cutting, abrading, or breaking the material shall be prohibited unless IPS★ITCS can demonstrate that methods less likely to result in asbestos fiber release are not feasible.

(D) Asbestos-containing material re-moved, shall be immediately bagged, or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the work shift.

(vi) Alternative Work Practices and Controls. Instead of the work practices and controls listed in paragraph (G)(8)(i) through (v) of this section, IPS★ITCS may use different or modified engineering and work practice controls if the following provisions are complied with.

(A) IPS★ITCS shall demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure will not exceed the PEL under any anticipated circumstances.

(B) A competent person shall evaluate the work area, the projected work practices, and the engineering controls, and shall certify in writing, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PEL under all expected conditions of use and that the method meets the requirements of this standard. The evaluation shall include and be based on data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and

experience are equivalent to employees who are to perform the current job.

(9) Work Practices and Engineering Controls for Class III asbestos work. Class III asbestos work shall be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.

(i) The work shall be performed using wet methods.

(ii) To the extent feasible, the work shall be performed using local exhaust ventilation.

(iii) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, IPS★ITCS shall use impermeable drop cloths, and shall isolate the operation using mini-enclosures or glovebag systems pursuant to paragraph (G)(5) of this section or another isolation method.

(iv) Where IPS★ITCS does not produce a "negative exposure assessment" for a job, or where monitoring results show the PEL has been exceeded, IPS★ITCS shall contain the area using impermeable drop cloths and plastic barriers or their equivalent or shall isolate the operation using a control system listed in and in compliance with paragraph (G)(5) of this section.

(v) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where IPS★ITCS does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (H) of this section.

(10) Class IV asbestos work. Class IV asbestos jobs shall be conducted by employees trained pursuant to the asbestos awareness training program set out in paragraph (K)(9) of this section. In addition, all Class IV jobs shall be conducted in conformity with the requirements set out in paragraph (G)(1) of this section, mandating wet methods, HEPA vacuums, and prompt cleanup of debris containing ACM or PACM.

(i) Employees cleaning up debris and waste in a regulated area where respirators are required shall wear respirators which are selected, used, and fitted pursuant to provisions of paragraph (H) of this section.

(ii) In areas where friable thermal system insulation or surfacing material is accessible, employees shall assume that such waste and debris contain asbestos.

(11) Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline coating materials. Notwithstanding any other provision of this section, IPS★ITCS shall comply with all provisions of this paragraph (G)(11) when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof cements, mastics, coatings, or flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous compounds shall be deemed to be in compliance with this section. If IPS★ITCS

does not comply with all provisions of this paragraph (G)(11), or if during the course of the job the material does not remain intact, the provisions of paragraph (g)(8) of this section shall apply instead of this paragraph (G)(11).

(i) Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.

(ii) All employees performing work covered by paragraph (G)(11) shall be trained in a training program that meets the requirements of paragraph (K)(9)(viii) of this section.

(iii) The material shall not be sanded, abraded, or ground. Manual methods which do not render the material non-intact shall be used.

(iv) Material that has been removed from a roof shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist. All such material shall be removed from the roof as soon as practicable, but in any event no later than the end of the work shift.

(v) Where roofing products which have been labeled as containing asbestos pursuant to paragraph (K)(8) of this section are installed on non-residential roofs during operations covered by this paragraph (G)(11), IPS★ITCS shall notify the building owner of the presence and location of such materials no later than the end of the job.

(vi) All removal or disturbance of pipeline asphaltic wrap shall be performed using wet methods.

## **H. Respiratory Protection**

(1) General. IPS★ITCS shall provide respirators, and ensure that they are used, where required by this section. Respirators shall be used in the following circumstances:

(i) During all Class I asbestos jobs.

(ii) During all Class II work where the ACM is not removed in a substantially intact state,

(iii) During all Class II and III work which is not performed using wet methods, provided, however, that respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and the ACM is removed in an intact state.

(iv) During all Class II and III asbestos jobs where IPS★ITCS does not produce a "negative exposure assessment".

(v) During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.

(vi) During all Class IV work performed with-in regulated areas where employees performing other work are required to wear respirators.

(vii) During all work covered by this section where employees are exposed above the TWA or excursion limit.

(viii) In emergencies.

(2) Respirator selection.

(i) Where respirators are used, IPS★ITCS shall select and provide, at no cost to the employee, the appropriate respirator as specified in Table 1 or in paragraph (H)(2)(iii) of this section and shall ensure that the employee uses the respirator provided.

(ii) IPS★ITCS shall select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11.

(A) IPS★ITCS shall provide a tight fitting powered, air-purifying respirator in lieu of any negative-pressure respirator specified in Table 1 whenever:

(1) An employee chooses to use this type of respirator; and

(2) This respirator will provide adequate protection to the employee.

(B) IPS★ITCS shall inform any employee required to wear a respirator under this paragraph that the employee may require IPS★ITCS to provide a powered, air-purifying respirator in lieu

of a negative pressure respirator.

**TABLE 1 – RESPIRATORY PROTECTION FOR ASBESTOS FIBERS**

Airborne concentrations of asbestos of conditions of use	Required respirator
Not more than 1 f/cc (10 X PEL), or otherwise as required independent of exposure pursuant to paragraph (h)(2)(iv) of this section.	Half-mask air-purifying respirator, other than a disposable respirator, equipped with high-efficiency filters.
Not more than 5 f/cc (50 X PEL)	Full facepiece air-purifying respirator equipped with high-efficiency filters.
Not more than 10 f/cc (100 X PEL)	Any powered air-purifying respirator equipped with high-efficiency filters, or any supplied air respirator operated in continuous flow mode.
Not more than 100 f/cc (1,000 X PEL)	Full facepiece supplied-air respirator operated in pressure demand mode.
Greater than 100 f/cc (>1,000 X PEL) or unknown concentration.	Full facepiece supplied-air respirator operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus.

**Note:** Respirators assigned for higher environmental concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.

**Note:** A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.

(iv) In addition to the above selection criterion, IPS★ITCS shall provide a half-mask air purifying respirator, other than a disposable respirator, equipped with high efficiency filters whenever the employee performs the following activities: Class II and III asbestos jobs where IPS★ITCS does not produce a negative exposure assessment; and Class III jobs where TSI or surfacing ACM or PACM is being disturbed.

(v) In addition to the selection criteria in paragraphs (H)(2)(i) through (iv), IPS★ITCS shall provide a tight-fitting powered air-purifying respirator equipped with high-efficiency filters or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self-contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time-weighted average. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time-weighted average.

### (3) Respirator program.

(i) Where respiratory protection is used, IPS★ITCS shall institute a respirator program in accordance with 29 CFR 1910.134(b), (d), (e), and (f).



(ii) IPS★ITCS shall permit each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

(iii) Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

(iv) No employee shall be assigned to tasks requiring the use of respirators if, based on their 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 of other employees

will be impaired using a respirator. Such employees shall be assigned to another job or given the opportunity to transfer to a different position, the duties of which he or she is able to perform with the same Company, in the same geographical area, and with the same seniority, status, and rate of pay he or she had just prior to such transfer, if such a different position is available.

(4) Respirator fit testing.

(i) IPS★ITCS shall ensure that the respirator issued to the employee exhibits the least possible facepiece leakage and that the respirator is fitted properly.

(ii) IPS★ITCS shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least every 6 months thereafter for each employee wearing a negative-pressure respirator. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn and shall be conducted in accordance with Appendix B to this section. The tests shall be used to select facepieces that provide the required protection as pre-scribed in Table 1 in paragraph (H)(2)(i) of this section.

## I. Protective Clothing

(1) General.

IPS★ITCS shall provide and require the use of protective clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit prescribed in paragraph (C) of this section, or for which a required negative exposure assessment is not produced, or for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.

(2) Laundering.

(i) IPS★ITCS shall ensure that laundering of contaminated clothing is done as to prevent the release of airborne asbestos more than the TWA and/or excursion limit prescribed in paragraph (C) of this section.

(ii) Any Company who gives contaminated clothing to another person for laundering shall inform such person of the requirement in paragraph (I)(2)(i) of this section to effectively prevent the release of airborne asbestos more than the TWA and excursion limit prescribed in paragraph (C) of this section.

(2) Contaminated clothing.

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

(4) Inspection of protective clothing.

(i) The competent person shall examine worksuits worn by employees at least once per work shift for IPS★ITCS or tears that may occur during performance of work.

(ii) When IPS★ITCS or tears are detected while an employee is working, IPS★ITCS and tears shall be immediately mended, or the worksuit shall be immediately replaced.

## J. Hygiene Facilities and Practices for Employees

(1) Requirements for employees performing Class I asbestos jobs involving over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.

(i) Decontamination areas: IPS★ITCS shall establish a decontamination area that is adjacent and connected to the regulated area for the decontamination of such employees. The decontamination area shall consist of an equipment room, shower area, and clean room in series. IPS★ITCS shall ensure that employees enter and exit the regulated area through the decontamination area.

(A) Equipment room. The equipment room shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment.

(B) Shower area. Shower facilities shall be provided which comply with 29 CFR 1910.141(d)(3), unless IPS★ITCS can demonstrate that they are not feasible. The showers shall be adjacent both to the equipment room and the clean room, unless IPS★ITCS can demonstrate that this location is not feasible. Where IPS★ITCS can demonstrate that it is not feasible to locate the shower between the equipment room and the clean room, or where the work is performed outdoors, IPS★ITCS shall ensure that employees:

(1) Remove asbestos contamination from their worksuits in the equipment room using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or

(2) Remove their contaminated worksuits in the equipment room, then don clean worksuits, and proceed to a shower that is not adjacent to the work area.

(C) Clean change room. The clean room shall be equipped with a locker or appropriate storage container for each employee's use. When IPS★ITCS can demonstrate that it is not feasible to provide a clean change area adjacent to the work area or where the work is performed outdoors, IPS★ITCS may permit employees engaged in Class I asbestos

jobs to clean their protective clothing with a portable HEPA-equipped vacuum before such employees leave the regulated area.

Following showering, such employees however must then change into street clothing in clean change areas provided by IPS★ITCS which otherwise meet the requirements of this section.

(ii) Decontamination area entry procedures. IPS★ITCS shall ensure that employees:

- (A) Enter the decontamination area through the clean room.
- (B) Remove and deposit street clothing within a locker provided for their use; and
- (C) Put on protective clothing and respiratory protection before leaving the clean room.
- (D) Before entering the regulated area, IPS★ITCS shall ensure that employees pass through the equipment room.

(iii) Decontamination area exit procedures. IPS★ITCS shall ensure that:

- (A) Before leaving the regulated area, employees shall remove all gross contamination and debris from their protective clothing.
- (B) Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers.
- (C) Employees shall not remove their respirators in the equipment room.
- (D) Employees shall shower prior to entering the clean room.
- (E) After showering, employees shall enter the clean room before changing into street clothes.

(iv) Lunch Areas. Whenever food or beverages are consumed at the worksite where employees are performing Class I asbestos work, IPS★ITCS shall provide lunch areas in which the airborne concentrations of asbestos are below the permissible exposure limit and/or excursion limit.

(2) Requirements for Class I work involving less than 25 linear or 10 square feet of TSI or surfacing ACM and PACM, and for Class II and Class III asbestos work operations where exposures exceed a PEL or where there is no negative exposure assessment produced before the operation.

(i) IPS★ITCS shall establish an equipment room or area that is adjacent to the regulated area for the decontamination of employees and their equipment which is contaminated with asbestos which shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface.

(ii) The area must be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area (as determined by visible accumulations).

(iii) Work clothing must be cleaned with a HEPA vacuum before it is removed.

(iv) All equipment and surfaces of containers filled with ACM must be cleaned prior to removing them from the equipment room or area.

(v) IPS★ITCS shall ensure that employees enter and exit the regulated area through the equipment room or area.

(3) Requirements for Class IV work. IPS★ITCS shall ensure that employees performing Class IV work within a regulated area comply with the hygiene practice required of employees performing work which has a higher classification within that regulated area. Otherwise, IPS★ITCS shall provide decontamination facilities for such employees which are required by paragraph (J)(2) of this section.

(4) Smoking in work areas. IPS★ITCS shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area.

## **K. Communication Of Hazards**

(1) This section applies to the communication of information concerning asbestos hazards in construction activities to facilitate compliance with this standard. Most asbestos-related construction activities involve previously installed building materials. Building owners often are the only and/or best sources of information concerning them. Therefore, they, along with potentially exposed employees, are assigned specific information conveying and retention duties under this section.

Installed Asbestos Containing Building Material. Company and building owners shall identify TSI and sprayed or troweled on surfacing materials in buildings as asbestos-containing, unless they determine in compliance with paragraph (K)(5) of this section that the material is not asbestos-containing. Asphalt and vinyl flooring material installed no later than 1980 must also be considered as asbestos containing unless IPS★ITCS, pursuant to paragraph (G)(8)(i)(I) of this section determines that it is not asbestos containing. If IPS★ITCS/building owner has actual knowledge or should have known through the exercise of due diligence, that other materials are asbestos-containing, they too must be treated as such. When communicating information to employees pursuant to this standard, owners and IPS★ITCS shall identify "PACM" as ACM. Additional requirements relating to communication of asbestos work on multi-Company worksites are set out in paragraph (D) of this section.

(2) Duties of building and facility owners.

(i) Before work subject to this standard is begun, building and facility owners shall determine the presence, location, and quantity of ACM and/or PACM at the work site pursuant to paragraph (K)(1) of this section.

(ii) Building and/or facility owners shall notify the following persons of the presence, location, and quantity of ACM or PACM, at the work sites in their buildings and facilities. Notification either shall be in writing, or shall consist of a personal communication between the owner and the person to whom notification must be given or their authorized representatives:

(A) Prospective Company applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material.

(B) Employees of the owner who will work in or adjacent to areas containing such material:

- (C) On multi-Company worksites, all Company employees who will be performing work within or adjacent to areas containing such materials.
  - (D) Tenants who will occupy areas containing such material.
- (3) Duties of Company whose employees perform work subject to this standard in or adjacent to areas containing ACM and PACM. Building/facility owners whose employees perform such work shall comply with these provisions to the extent applicable.
- (i) Before work in areas containing ACM and PACM is begun; IPS★ITCS shall identify the presence, location, and quantity of ACM, and/or PACM therein pursuant to paragraph (k)(1) of this section.
  - (ii) Before work under this standard is performed, IPS★ITCS who will perform such work shall inform the following persons of the location and quantity of ACM and/or PACM present in the area and the precautions to be taken to ensure that airborne asbestos is confined to the area.
    - (A) Owners of the building/facility.
    - (B) Employees who will perform such work and employees who work and/or will be working in adjacent areas.
    - (iii) Within 10 days of the completion of such work, IPS★ITCS whose employees have performed work subject to this standard, shall inform the building/facility owner and employers of employees who will be working around the current location and quantity of PACM and/or ACM remaining in the area and final monitoring results, if any.
- (4) In addition to the above requirements, all employees who discover ACM and/or PACM on a worksite shall convey information concerning the presence, location, and quantity of such newly discovered ACM and/or PACM to the owner and to other Company employees working at the work site, within 24 hours of the discovery.
- (5) Criteria to rebut the designation of installed material as PACM.
- (i) At any time, IPS★ITCS and/or building owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building owners and/or IPS★ITCS are not required to communicate information about the presence of building material for which such a demonstration pursuant to the requirements of paragraph (K)(5)(ii) of this section has been made. However, in all such cases, the information, data, and analysis supporting the determination that PACM does not contain asbestos, shall be retained pursuant to paragraph (N) of this section.
  - (ii) IPS★ITCS or owner may demonstrate that PACM does not contain more than 1% asbestos by the following:
    - (A) Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM; or
    - (B) Performing tests of the material containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner de-scribed in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such

as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally recognized round robin testing program.

(iii) IPS★ITCS and/or building owner may demonstrate that flooring material including associated mastic and backing does not contain asbestos, by a determination of an industrial hygienist based upon recognized analytical techniques showing that the material is not ACM.

(6) At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM and/or PACM, the building owner shall post signs which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. IPS★ITCS shall ensure, to the extent feasible, that employees who encounter these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

(7) Signs.

(i) Warning signs that demarcate the regulated area shall be provided and displayed at each location where a regulated area is required to be established by paragraph (e) 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.

(A) The warning signs required by paragraph (K)(7) of this section shall bear the following information:

**DANGER**  
**ASBESTOS**  
**CANCER AND LUNG DISEASE HAZARD**  
**AUTHORIZED PERSONNEL ONLY**

(B) In addition, where the use of respirators and protective clothing is required in the regulated area under this section, the warning signs shall include the following:

**RESPIRATORS AND PROTECTIVE**  
**CLOTHING ARE REQUIRED**  
**IN THIS AREA**

(iii) IPS★ITCS shall ensure that employees working in and contiguous to regulated areas comprehend the warning signs required to be posted by paragraph (K)(7)(i) of this section. Means to ensure employee comprehension may include the use of foreign languages, pictographs, and graphics.

(8) Labels.

(i) Labels shall be affixed to all products containing asbestos and to all containers containing such products, including waste containers. Where feasible, installed asbestos products shall contain a visible label.

- (ii) Labels shall be printed in large, bold letters on a contrasting background.
- (iii) Labels shall be used in accordance with the requirements of 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard, and shall contain the following information:

**DANGER**  
**CONTAINS ASBESTOS FIBERS**  
**AVOID CREATING DUST**  
**CANCER AND LUNG DISEASE HAZARD**

- (iv) Labels shall contain a warning statement against breathing airborne asbestos fibers.
- (v) The provisions for labels required by paragraphs (K)(8)(i) through (K)(8)(iii) do not apply where:
- (A) Asbestos fibers have been modified by a bonding agent, coating, binder, or other material, provided that the manufacturer can demonstrate that, during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers more than the permissible exposure limit and/or excursion limit will be released, or
  - (B) Asbestos is present in a product in concentrations less than 1.0 percent.
- (vi) When a building owner or IPS★ITCS identifies previously installed PACM and/or ACM, labels or signs shall be affixed or posted so that employees will be notified of what materials contain PACM and/or ACM. IPS★ITCS shall attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/ areas. Signs required by paragraph (K)(6) of this section may be posted in lieu of labels so long as they contain information required for labeling.
- (vii) Training for employees who are likely to be exposed more than the PEL and who are not otherwise required to be trained under paragraph (K)(9)(iii) through (vi) of this section, shall meet the requirements of paragraph (K)(9)(viii) of this section.
- (viii) The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraph (K)(9)(iii) through (vi) of this section, IPS★ITCS shall ensure that each such employee is informed of the following:
- (A) Methods of recognizing asbestos, including the requirement in paragraph (K)(1) of this section to presume that certain building materials contain asbestos.
  - (B) The health effects associated with asbestos exposure.
  - (C) The relationship between smoking and asbestos in producing lung cancer.
  - (D) The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing,

decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures; where Class III and IV work will be or is performed, the contents of EPA 20T-2003, "Managing Asbestos In-Place" July 1990 or its equivalent in content;

(E) The purpose, proper use, fitting instructions, and limitations of respirators as required by 29 CFR 1910.134.

(F) The appropriate work practices for performing the asbestos job.

(G) Medical surveillance program requirements.

(H) The content of this standard including appendices.

(I) The names, addresses and phone numbers of public health organizations which provide information, materials and/or conduct programs concerning smoking cessation. IPS★ITCS may distribute the list of such organizations to comply with this requirement; and

(J) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.

(10) Access to training materials.

(i) IPS★ITCS shall make readily available to affected employees without cost, written materials relating to the employee training program, including a copy of this regulation.

(ii) IPS★ITCS shall provide to the Assistant Secretary and the Director, upon request, all information and training materials relating to the employee information and training program.

(iii) IPS★ITCS shall inform all employees concerning the availability of self-help smoking cessation program material. Upon employee request, IPS★ITCS shall distribute such material, consisting of NIH Publication No. 89-1647, or equivalent self-help material, which is approved or published by a public health organization.

## L. Housekeeping

(1) Vacuuming. Where vacuuming methods are selected, HEPA filtered vacuuming equipment must be used. The equipment shall be used and emptied in a manner that minimizes the reentry of asbestos into the workplace.

(2) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing consigned for disposal shall be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled, impermeable containers except in roofing operations, where the procedures specified in paragraph (G)(8)(ii) of this section apply.

(3) Care of asbestos-containing flooring material.

(i) All vinyl and asphalt flooring material shall be maintained in accordance with this paragraph unless the building/facility owner demonstrates, pursuant to paragraph (G)(8)(i)(I) of this section that the flooring does not contain asbestos.

(ii) Sanding of flooring material is prohibited.



- (iii) Stripping of finishes shall be conducted using low abrasion pads at speeds lower than 300 rpm and wet methods.
  - (iv) Burnishing or dry buffing may be performed only on flooring which has sufficient finish so that the pad cannot contact the flooring material.
- (4) Waste and debris and accompanying dust in an area containing accessible thermal system insulation or surfacing ACM/PACM or visibly deteriorated ACM:
- (i) Shall not be dusted or swept dry or vacuumed without using a HEPA filter.
  - (ii) Shall be promptly cleaned up and disposed of in leak tight containers.

## M. Medical Surveillance

### (1) General.

#### (i) Employees covered.

(A) IPS★ITCS shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit. For purposes of this paragraph, any day in which a worker engages in Class II or Class III operations or a combination thereof on intact material for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in this standard, shall not be counted.

(B) For employees otherwise required by this standard to wear a negative pressure respirator, IPS★ITCS shall ensure employees are physically able to perform the work and use the equipment. This determination shall be made under the supervision of a physician.

#### (ii) Examination.

(A) IPS★ITCS shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided at no cost to the employee and at a reasonable time and place.

(B) Persons other than such licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate academic or professional institution.

### (2) Medical examinations and consultations.

(i) Frequency. IPS★ITCS shall make available medical examinations and consultations to each employee covered under paragraph (M)(1)(i) of this section on the following schedules:

(A) Prior to assignment of the employee to an area where negative-pressure respirators are worn.

(B) When the employee is assigned to an area where exposure to asbestos may be at or above the permissible exposure limit for 30 or more days per year, or engage in Class I, II, or III work for a combined total of

30 or more days per year, a medical examination must be given within 10 working days following the thirtieth day of exposure.

(C) And at least annually thereafter.

(D) If the examining physician determines that any of the examinations should be provided more frequently than specified, IPS★ITCS shall provide such examinations to affected employees at the frequencies specified by the physician.

(E) Exception: 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.

(ii) Content. Medical examinations made available pursuant to paragraphs (M)(2)(i)(A) through (M)(2)(i)(C) of this section shall include:

(A) A medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems.

(B) On initial examination, the standardized questionnaire contained in Part 1 of Appendix C to this section, and, on annual examination, the abbreviated standardized questionnaire contained in Part 2 of Appendix C to this section.

(C) A physical examination directed to the pulmonary and gastrointestinal systems, including a chest roentgenogram to be administered at the discretion of the physician, and pulmonary function tests of forced vital capacity (FVC) and forced expiratory volume at one second (FEV1). Interpretation and classification of chest roentgenograms shall be conducted in accordance with Appendix D to this section.

(D) Any other examinations or tests deemed necessary by the examining physician.

(3) Information provided to the physician. IPS★ITCS shall provide the following information to the examining physician:

(i) A copy of this standard and Appendices D and E to this section.

(ii) A description of the affected employee's duties as they relate to the employee's exposure.

(iii) The employee's representative exposure level or anticipated exposure level.

(iv) A description of any personal protective and respiratory equipment used or to be used; and

(v) Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

(4) Physician's written opinion.

(i) IPS★ITCS shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall include:

(A) The physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos.

- (B) Any recommended limitations on the employee or on the use of personal protective equipment such as respirators; and
  - (C) A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
  - (D) A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.
  - (E) If the examining physician determines that any of the examinations should be provided more frequently than specified, IPS★ITCS shall provide such examinations to affected employees at the frequencies specified by the physician.
  - (F) Exception: 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.
- (ii) Content. Medical examinations made available pursuant to paragraphs (M)(2)(i)(A) through (M)(2)(i)(C) of this section shall include:
- (A) A medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems.
  - (B) On initial examination, the standardized questionnaire contained in Part 1 of Appendix C to this section, and, on annual examination, the abbreviated standardized questionnaire contained in Part 2 of Appendix C to this section.
  - (C) A physical examination directed to the pulmonary and gastrointestinal systems, including a chest roentgenogram to be administered at the discretion of the physician, and pulmonary function tests of forced vital capacity (FVC) and forced expiratory volume at one second (FEV1). Interpretation and classification of chest roentgenograms shall be conducted in accordance with Appendix D to this section.
  - (D) Any other examinations or tests deemed necessary by the examining physician.
- (iii) IPS★ITCS shall instruct the physician not to reveal in the written opinion given to IPS★ITCS specific findings or diagnoses unrelated to occupational exposure to asbestos.
- (iv) IPS★ITCS shall provide a copy of the physician's written opinion to the affected employee within 30 days from its receipt.

## **N. Recordkeeping**

(1) Objective data relied on pursuant to paragraph (F) of this section.

- (i) Where IPS★ITCS has relied on objective data that demonstrates that products made from or containing asbestos or the activity involving such products or material are not capable of releasing fibers or asbestos in concentrations at or

above the permissible exposure limit and/or excursion limit under the expected conditions of processing, use, or handling to satisfy the requirements of paragraph (F), IPS★ITCS shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(ii) The record shall include at least the following information:

- (A) The product qualifying for exemption.
- (B) The source of the objective data.
- (C) The testing protocol, results of testing, and/or analysis of the material for the release of asbestos.
- (D) A description of the operation exempted and how the data support the exemption; and
- (E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(iii) IPS★ITCS shall maintain this record for the duration of IPS★ITCS' reliance upon such objective data.

(2) Exposure measurements.

(i) IPS★ITCS shall keep an accurate record of all measurements taken to monitor employee exposure to asbestos as prescribed in paragraph (F) of this section.

**Note:** IPS★ITCS may utilize the services of competent organizations such as industry trade associations and employee associations to maintain the records required by this section.

(ii) This record shall include at least the following information:

- (A) The date of measurement.
- (B) The operation involving exposure to asbestos that is being monitored.
- (C) Sampling and analytical methods used and evidence of their accuracy.
- (D) Number, duration, and results of samples taken.
- (E) Type of protective devices worn, if any; and
- (F) Name, social security number, and exposure of the employees whose exposures are represented.

(iii) IPS★ITCS shall maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.20.

(3) Medical surveillance.

(i) IPS★ITCS shall establish and maintain an accurate record for each employee subject to medical surveillance by paragraph (M) of this section, in accordance with 29 CFR 1910.20.

(ii) The record shall include at least the following information:

- (A) The name and social security number of the employee.
- (B) A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physician's recommendations.

- (C) Physician's written opinions.
  - (D) Any employee medical complaints related to exposure to asbestos; and
  - (E) A copy of the information provided to the physician as required by paragraph (M) of this section.
- (iii) IPS★ITCS shall ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.20.
- (4) Training records. IPS★ITCS shall maintain all employee training records for one (1) year beyond the last date of employment by that Company.
- (5) Data to Rebut PACM. Where the building owner and Company have relied on data to demonstrate that PACM is not asbestos containing, such data shall be maintained for as long as they are relied upon to rebut the presumption.
- (6) Records of Required Notifications. Where the building owner has communicated and received information concerning the identification, location, and quantity of ACM and PACM, written records of such notifications and their content shall be maintained by the building owner for the duration of ownership and shall be transferred to successive owners of such buildings/facilities.
- (7) Availability.
- (i) IPS★ITCS, upon written request, shall make all records required to be maintained by this section available to the Assistant Secretary and the Director for examination and copying.
  - (ii) IPS★ITCS, upon request, shall make any exposure records required by paragraphs (F) and (n) of this section available for examination and copying to affected employees, former employees, designated representatives, and the Assistant Secretary, in accordance with 29 CFR 1910.20(a) through (e) and (g) through (i).
  - (iii) IPS★ITCS, upon request, shall make employee medical records required by paragraphs (m) and (n) of this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1910.20.
- (8) Transfer of records.
- (i) IPS★ITCS shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.20(h).
  - (ii) Whenever IPS★ITCS ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, IPS★ITCS shall notify the Director at least 90 days prior to disposal and, upon request, transmit them to the Director.

## **O. Competent Person**

- (1) General. On all construction worksites covered by this standard, IPS★ITCS shall designate a competent person, having the qualifications and authorities for ensuring

worker safety and health required by Subpart C, General Safety and Health Provisions for Construction (29 CFR 1926.20 through 1926.32).

(2) Required Inspections by the Competent Person. Section 1926.20(b)(2) which requires health and safety prevention programs to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.

(3) Additional Inspections. In addition, the competent person shall make frequent and regular inspections of the job sites, to perform the duties, set out below in paragraph (O)(3)(i) of this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and at any time at employee request. For Class II, III and IV jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.

(i) On all worksites where employees are engaged in Class I or II asbestos work, the competent person designated in accordance with paragraph (E)(6) of this section shall perform or supervise the following duties, as applicable:

(A) Set up the regulated area, enclosure, or other containment.

(B) Ensure (by on-site inspection) the integrity of the enclosure or containment.

(C) Set up procedures to control entry to and exit from the enclosure and/or area.

(D) Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required by paragraph (F) of this section.

(E) Ensure that employees working within the enclosure and/or using glove-bags wear respirators and protective clothing as required by paragraphs (H) and (I) of this section.

(F) Ensure through on-site supervision, that employees set up, use, and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements.

(G) Ensure that employees use the hygiene facilities and observe the decontamination procedures specified in paragraph (J) of this section.

(H) Ensure that through on-site inspection, engineering controls are functioning properly, and employees are using proper work practices; and,

(I) Ensure that notification requirement in paragraph (K) of this section are met.

(4) Training for the competent person.

(i) For Class I and II asbestos work the competent person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal, and handling; the contents of this standard; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of EPA's Model Accreditation Plan (40 CFR Part 763, Subpart E, Appendix B), such as a course conducted by an EPA-approved or state-approved training provider, certified by EPA or a state, or a course equivalent in stringency, content, and length.

(ii) For Class III and IV asbestos work, the competent person shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove-bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this standard, and the identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content, and length. Competent persons for Class III and IV work, may also be trained pursuant to the requirements of paragraph (O)(4)(i) of this section.

## **P. Appendices**

(1) Appendices A, B, C, and D to this section are incorporated as part of this section and the contents of these appendices are mandatory.

### ***APPENDIX A TO §1926.1101***

#### **OSHA REFERENCE METHOD – MANDATORY**

This mandatory appendix specifies the procedure for analyzing air samples for asbestos and specifies quality control procedures that must be implemented by laboratories performing the analysis. The sampling and analytical methods described below represent the elements of the available monitoring methods (such as the most current version of the OSHA method ID-160, or the most current version of the NIOSH 7400 method) which OSHA considers to be essential to achieve adequate employee exposure monitoring while allowing IPS★ITCS to use methods that are already established within their organizations. All Companies who are required to conduct air monitoring under paragraph (F) of the standard are required to utilize analytical laboratories that use this procedure, or an equivalent method, for collecting and analyzing samples.

#### Sampling and Analytical Procedure

1. The sampling medium for air samples shall be mixed cellulose ester filter membranes. These shall be designated by the manufacturer as suitable for asbestos counting. See below for rejection of blanks.
2. The preferred collection device shall be the 25-mm diameter cassette with an open-faced 50-mm electrically conductive extension cowl. The 37-mm cassette may be used if necessary but only if written justification for the need to use the 37-mm filter cassette accompanies the sample results in the employee's exposure monitoring record. Do not reuse or reload cassettes for asbestos sample collection.
3. An air flow rate between 0.5 liter/min and 2.5 liters/min shall be selected for the 5/mm cassette. If the 37-mm cassette is used, an air flow rate between 1 liter/min and 2.5 liters/min shall be selected. 4. Where possible, a sufficient air volume for each air sample shall be collected to yield between 100 and 1,300 fibers per square millimeter on the

membrane filter. If a filter darkens in appearance or if loose dust is seen on the filter, a second sample shall be started.

4. Where possible, a sufficient air volume for each air sample shall be collected to yield between 100 and 1,300 fibers per square millimeter on the membrane filter. If a filter darkens in appearance or if loose dust is seen on the filter, a second sample shall be started.

5. Ship the samples in a rigid container with sufficient packing material to prevent dislodging the collected fibers. Packing material that has a high electrostatic charge on its surface (e.g., expanded polystyrene) cannot be used because such material can cause loss of fibers to the sides of the cassette.

6. Calibrate each personal sampling pump before and after use with a representative filter cassette installed between the pump and the calibration devices.

7. Personal samples shall be taken in the "breathing zone" of the employee (i.e., attached to or near the collar or lapel near the worker's face).

8. Fiber counts shall be made by positive phase contrast using a microscope with an 8 to 10 X eyepiece and a 40 to 45 X objective for a total magnification of approximately 400 X and a numerical aperture of 0.65 to 0.75. The microscope shall also be fitted with a green or blue filter.

9. The microscope shall be fitted with a Walton-Beckett eyepiece graticule calibrated for a field diameter of 100 micrometers ( $\pm 2$  micrometers).

10. The phase-shift detection limit of the micro-scope shall be about 3 degrees measured using the HSE phase shift test slide as outlined below.

a. Place the test slide on the microscope stage and center it under the phase objective.

b. Bring the blocks of grooved lines into focus.

**Note:** The slide consists of seven sets of grooved lines (ca. 20 grooves to each block) in descending order of visibility from sets 1 to 7, seven being the least visible. The requirements for asbestos counting are that the microscope optics must resolve the grooved lines in set 3 completely, although they may appear somewhat faint, and that the grooved lines in sets 6 and 7 must be invisible. Sets 4 and 5 must be at least partially visible but may vary slightly in visibility between microscopes. A microscope that fails to meet these requirements has either too low or too high a resolution to be used for asbestos counting.

c. If the image deteriorates, clean and adjust the microscope optics. If the problem persists, consult the micro-scope manufacturer.

11. Each set of samples taken will include 10% field blanks or a minimum of 2 field blanks. These blanks must come from the same lot as the filters used for sample collection. The field blank results shall be averaged and subtracted from the analytical results before reporting. A set consists of any sample or group of samples for which an evaluation for this standard must be made. Any samples represented by a field blank having a fiber count more than the detection limit of the method being used shall be rejected.

12. The samples shall be mounted by the acetone/triacetin method or a method with an equivalent index of refraction and similar clarity.

13. Observe the following counting rules.

a. Count only fibers equal to or longer than 5 micrometers. Measure the length of curved fibers along the curve.



- b. In the absence of other information, count all particles as asbestos that have a length-to-width ratio (aspect ratio) of 3:1 or greater.
- c. Fibers lying entirely within the boundary of the Walton-Beckett graticule Field shall receive a count of 1. Fibers crossing the boundary once, having one end within the circle, shall receive the count of one half (1/2). Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area.
- d. Count bundles of fibers as one fiber unless individual fibers can be identified by observing both ends of an individual fiber.
- e. Count enough graticule fields to yield 100 fibers. Count a minimum of 20 fields; stop counting at 100 fields regardless of fiber count.

14. Blind recounts shall be conducted at the rate of 10 percent.

#### Quality Control Procedures

1. Intralaboratory program. Each laboratory and/or each company with more than one microscopist counting slides shall establish a statistically designed quality assurance program involving blind recounts and comparisons between microscopists to monitor the variability of counting by each microscopist and between microscopists.

In a company with more than one laboratory, the program shall include all laboratories, and shall also evaluate the laboratory-to-laboratory variability.

a. Intralaboratory program. Each laboratory analyzing asbestos samples for compliance determination shall implement an Intralaboratory quality assurance program that, as a minimum, includes participation of at least two other independent laboratories. Each laboratory shall participate in round robin testing at least once every 6 months with at least all the other laboratories in its Intralaboratory quality assurance group. Each laboratory shall submit slides typical of its own workload for use in this program. The round robin shall be designed, and results analyzed using appropriate statistical methodology.

b. All laboratories should also participate in a national sample testing scheme such as the Proficiency Analytical Testing Program (PAT), or the Asbestos Registry sponsored by the American Industrial Hygiene Association (AIHA).

2. All individuals performing asbestos analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos dust or an equivalent course.

3. When the use of different microscopes contributes to differences between counters and laboratories, the effect of the different microscope shall be evaluated and the microscope shall be replaced, as necessary.

4. Current results of these quality assurance programs shall be posted in each laboratory to keep the microscopists informed.

**APPENDIX B TO §1926.1101****QUALITATIVE AND QUANTITATIVE FIT TESTING PROCEDURES – MANDATORY**

## Qualitative Fit Test Protocols

## I. Isoamyl Acetate Protocol

## A. Odor threshold screening.

1. Three 1-liter glass jars with metal lids (e.g., Mason or Bell jars) are required.
2. Odor-free water (e.g., distilled or spring water) at approximately 25° C shall be used for the solutions.
3. The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 cc of pure IAA to 800 cc of odor free water in a 1-liter jar and shaking for 30 seconds. This solution shall be prepared new at least weekly.
4. The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated but shall not be connected to the same recirculating ventilation system.
5. The odor test solution is prepared in a second jar by placing 0.4 cc of the stock solution into 500 cc of odor free water using a clean dropper or pipette. Shake for 30 seconds and allow to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution may be used for only one day.
6. A test blank is prepared in a third jar by adding 500 cc of odor free water.
7. The odor test and test blank jars shall be labelled 1 and 2 for jar identification. If the labels are put on the lids they can be periodically peeled, dried off and switched to maintain the integrity of the test.
8. The following instructions shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two cylinders in front of you contain water. One of these cylinders also contains a small amount of banana oil. Be sure the covers are on tight, then shake each cylinder for two seconds. Unscrew the lid of each cylinder, one at a time, and sniff at the mouth of the cylinder. Indicate to the test conductor which cylinder contains banana oil."
9. The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.
10. If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test may not be used.
11. If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

## B. Respirator Selection.

1. The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. The selection shall include at least five sizes of elastomeric half facepieces, from at least two manufacturers.
2. The selection process shall be conducted in a room separate from the fit-test chamber to prevent odor fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, as it is only a review.
3. The test subject should understand that the employee is being asked to select the respirator which provides the most comfortable fit. Each respirator represents a different size and shape and, if fit properly and used properly will provide adequate protection.
4. The test subject holds each facepiece up to the face and eliminates those which obviously do not give a comfortable fit. Normally, selection will begin with a half-mask and if a good fit cannot be found, the subject will be asked to test the full facepiece respirators. (A small percentage of users will not be able to wear any half-mask.)
5. The more comfortable facepieces are noted; the most comfortable mask is donned and worn at least five minutes to assess comfort. All donning and adjustments of the facepiece shall be performed by the test subject without assistance from the test conductor or other person. Assistance in assessing comfort can be given by discussing the points in (1B6) below. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include reviewing the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
  - Positioning of mask on nose.
  - Room for eye protection.
  - Room to talk.
  - Positioning mask on face and cheeks.
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
  - Chin properly placed.
  - Strap tension.
  - Fit across nose bridge.
  - Distance from nose to chin.
  - Tendency to slip.

- Self-observation in mirror.

8. The test subject shall conduct the conventional negative and positive-pressure fit checks before conducting the negative- or positive-pressure test the subject shall be told to "seat" the mask by rapidly moving the head from side-to-side and up and down, while taking a few deep breaths.
9. The test subject is now ready for fit testing.
10. After passing the fit test, the test subject shall be questioned again regarding the comfort of the respirator. If it has become uncomfortable, another model of respirator shall be tried.
11. The employee shall be given the opportunity to select a different face-piece and be retested if the chosen facepiece becomes increasingly uncomfortable at any time.

### C. Fit test.

1. The fit test chamber shall be similar to a clear 55-gal drum liner suspended inverted over a 2-foot diameter frame, so that the top of the chamber is about 6 inches above the test subject's head. The inside top center of the chamber shall have a small hook attached.
2. Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors. The cartridges or masks shall be changed at least weekly.
3. After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.
4. A copy of the following test exercises and rainbow passage shall be taped to the inside of the test chamber:

#### Test Exercises

- i. Breathe normally.
- ii. Breathe deeply. Be certain breaths are deep and regular.
- iii. Turn head all the way from one side to the other. Inhale on each side. Be certain movement is complete. Do not bump the respirator against the shoulders.
- iv. Nod head up-and-down. Inhale when head is in the full up position (looking toward ceiling). Be certain motions are complete and made about every second. Do not bump the respirator on the chest.
- v. Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.
- vi. Jogging in place.
- vii. Breathe normally.

## Rainbow Passage

*When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond each, his friends say he is looking for the pot of gold at the end of the rainbow.*

5. Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.
6. Upon entering the test chamber, the test subject shall be given a 6 inch by 5-inch piece of paper towel or other porous absorbent single ply material, folded in half and wetted with three-quarters of one cc of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber.
7. Allow two minutes for the IAA test concentration to be reached before starting the fit test exercises. This would be an appropriate time to talk with the test subject, to explain the fit test, the importance of cooperation, the purpose for the head exercises, or to demonstrate some of the exercises.
8. Each exercise described in 1B4 above shall be performed for at least one minute.
9. If at any time during the test, the subject detects the banana-like odor of IAA, the test has failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.
10. If the test is failed, the subject shall return to the selection room and remove the respirator, repeat the odor sensitivity test, select and put on another respirator, return to the test chamber, and again begin the procedure de-scribed in the c(4) through c(8) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about 5 minutes before re-testing. Odor sensitivity will usually have returned by this time.
11. If a person cannot pass the fit test described above wearing a half-mask respirator from the available selection, full facepiece models must be used.
12. When a respirator is found that passes the test, the subject breaks the face seal and takes a breath before exiting the chamber. This is to assure that the reason the test subject is not smelling the IAA is the good fit of the respirator facepiece seal and not olfactory fatigue.
13. When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test. To keep the area from becoming contaminated, the used towels shall be kept in a self-sealing bag so there is no significant IAA concentration buildup in the test chamber during subsequent tests.
14. At least two facepieces shall be selected for the IAA test protocol. The test subject shall be given the opportunity to wear them for one week to choose the one which is more comfortable to wear.

15. Persons who have successfully passed this fit test with a half-mask respirator may be assigned the use of the test respirator in atmospheres with up to 10-times the PEL of airborne asbestos.

16. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

17. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

18. If a test subject exhibits difficulty in breathing during the tests, they shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing their duties.

19. Qualitative fit testing shall be repeated at least every six months.

20. In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

- (1) Weight change of 20-pounds or more,
- (2) Significant facial scarring in the area of the facepiece seal,
- (3) Significant dental changes, i.e., multiple extractions with-out prothesis, or acquiring dentures,
- (4) Reconstructive or cosmetic surgery, or
- (5) Any other condition that may interfere with facepiece sealing.

D. Recordkeeping. A summary of all test results shall be maintained in each office for 3 years. The summary shall include:

1. Name of test subject.
2. Date of testing.
3. Name of the test conductor.
4. Respirators selected (indicate manufacturer, model, size, and approval number).
5. Testing agent.

## II. Saccharin Solution Aerosol Protocol

A. Respirator Selection. Respirators shall be selected as described in section IB (respirator selection) above, except that each respirator shall be equipped with a particulate filter.

### B. Taste Threshold Screening.

1. An enclosure about head and shoulders shall be used for threshold screening (to determine if the individual can taste saccharin) and for fit testing. The enclosure shall be approximately 12 inches in diameter by 14 inches tall with at least the front clear to allow free movement of the head when a respirator is worn.

2. The test enclosure shall have a three-quarter inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.
3. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.
4. During the threshold screening test, the test subject shall don the test enclosure and breathe with open mouth with tongue extended.
5. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
6. The threshold check solution consists of 0.83 grams of sodium saccharin, USP in water. It can be prepared by putting 1 cc of the test solution (see C 7 below) in 100 cc of water.
7. To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then is released and allowed to fully expand.
8. Ten squeezes of the nebulizer bulb are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.
9. If the first response is negative, ten more squeezes of the nebulizer bulb are repeated rapidly, and the test subject is again asked whether the saccharin can be tasted.
10. If the second response is negative ten more squeezes are repeated rapidly, and the test subject is again asked whether the saccharin can be tasted.
11. The test conductor will take note of the number of squeezes required to elicit a taste response.
12. If the saccharin is not tasted after 30 squeezes (Step 10), the saccharin fit test cannot be performed on the test subject.
13. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
14. Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.
15. The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least every four hours.

#### C. Fit test.

1. The test subject shall don and adjust the respirator without the assistance from any person.
2. The fit test uses the same enclosure described in IIB above.
3. Each test subject shall wear the respirator for at least 10 minutes before starting the fit test.
4. The test subject shall don the enclosure while wearing the respirator selected in section IB above. This respirator shall be properly adjusted and equipped with a particulate filter.
5. The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

6. A second DeVilbiss Model-40 Inhalation Medication Nebulizer is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.
7. The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 cc of warm water.
8. As before, the test subject shall breathe with mouth open, and tongue extended.
9. The nebulizer is inserted into the hole in the front of the enclosure and the fit test solution is sprayed into the enclosure using the same technique as for the taste threshold screening and the same number of squeezes required to elicit a taste response in the screening. (See B8 through B10 above.)
10. After generation of the aerosol read the following instructions to the test subject. The test subject shall perform the exercises for one minute each.
  - i. Breathe normally.
  - ii. Breathe deeply. Be certain breaths are deep and regular.
  - iii. Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.
  - iv. Nod head up-and-down. Be certain motions are complete. Inhale when head is in the full up position (when looking toward the ceiling). Do not bump the respirator on the chest.
  - v. Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may also be used.
  - vi. Jogging in place.
  - vii. Breathe normally.

#### Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

11. At the beginning of each exercise, the aerosol concentration shall be replenished using one-half the number of squeezes as initially described in (C9).
12. The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.



13. If the saccharin is detected the fit is deemed unsatisfactory and a different respirator shall be tried.

14. At least two facepieces shall be selected by the saccharin solution aerosol test protocol. The test subject shall be given the opportunity to wear them for one week to choose the one which is more comfortable to wear.

15. Successful completion of the test protocol shall allow the use of the half mask tested respirator in contaminated atmospheres up to 10 times the PEL of asbestos. In other words, this protocol may be used to assign protection factors no higher than ten.

16. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

17. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

18. If a test subject exhibits difficulty in breathing during the tests, they shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing their duties.

19. Qualitative fit testing shall be repeated at least every six months.

20. In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

- (1) Weight change of 20 pounds or more,
- (2) Significant facial scarring in the area of the facepiece seal,
- (3) Significant dental changes, i.e., multiple extractions with-out prothesis, or acquiring dentures,
- (4) Reconstructive or cosmetic surgery, or
- (5) Any other condition that may interfere with facepiece sealing.

D. Recordkeeping. A summary of all test results shall be maintained in each office for 3 years. The summary shall include:

1. Name of test subject.
2. Date of testing.
3. Name of test conductor.
4. Respirators selected (indicate manufacturer, model, size and approval number).
5. Testing agent.

### III. Irritant Fume Protocol

A. Respirator selection. Respirators shall be selected as described in section IB above, except that each respirator shall be equipped with a high efficiency cartridge.

**B. Fit test.**

1. The test subject shall be allowed to smell a weak concentration of the irritant smoke to familiarize the subject with the characteristic odor.
2. The test subject shall properly don the respirator selected as above and wear it for at least 10 minutes before starting the fit test.
3. The test conductor shall review this protocol with the test subject before testing.
4. The test subject shall perform the conventional positive pressure and negative pressure fit checks (see ANSI Z88.2 1980). Failure of either check shall be cause to select an alternate respirator.
5. Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part #5645, or equivalent. Attach a short length of tubing to one end of the smoke tube. Attach the other end of the smoke tube to a low-pressure air pump set to deliver 200-milliliters per minute.
6. Advise the test subject that the smoke can be irritating to the eyes and instruct the subject to keep the eyes closed while the test is performed.
7. The test conductor shall direct the stream of irritant smoke from the tube towards the face seal area of the test subject. The person conducting the test shall begin with the tube at least 12 inches from the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.
8. The test subject shall be instructed to do the following exercises while the respirator is being challenged by the smoke. Each exercise shall be performed for one minute.
  - i. Breathe normally.
  - ii. Breathe deeply. Be certain breaths are deep and regular.
  - iii. Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.
  - iv. Nod head up-and-down. Be certain motions are complete and made every second. Inhale when head is in the full up position (looking toward ceiling). Do not bump the respirator against the chest.
  - v. Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Repeating it after the test conductor (keeping eyes closed) will result in a wide range of facial movements, and thus be useful to satisfy this requirement. Alternative passages which serve the same purpose may be used.

**Rainbow Passage**

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two end apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

- vi. Jogging in place.

vii. Breathe normally.

9. The test subject shall indicate to the test conductor if the irritant smoke is detected. If smoke is detected, the test conductor shall stop the test. In this case, the tested respirator is rejected, and another respirator shall be selected.

10. Each test subject passing the smoke test (i.e., without detecting the smoke) shall be given a sensitivity check of smoke from the same tube to determine if the test subject reacts to the smoke. Failure to evoke a response shall void the fit test.

11. Steps B4, B9, B10 of this fit test protocol shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agents.

12. At least two facepieces shall be selected by the irritant fume test protocol. The test subject shall be given the opportunity to wear them for one week to choose the one which is more comfortable to wear.

13. Respirators successfully tested by the protocol may be used in contaminated atmospheres up to ten times the PEL of asbestos.

14. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

15. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed to eliminate interference and allow a satisfactory fit.

If a satisfactory fit is still not attained, the test subject must use a positive pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

16. If a test subject exhibits difficulty in breathing during the tests, they shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing their duties.

17. Qualitative fit testing shall be repeated at least every six months.

18. In addition, because the sealing of the respirator may be affected, qualitative fit testing shall be repeated immediately when the test subject has a:

- (1) Weight change of 20 pounds or more.
- (2) Significant facial scarring in the facepiece seal.
- (3) Significant dental changes, i.e., multiple extractions with-out prothesis or acquiring dentures.
- (4) Reconstructive or cosmetic surgery, or
- (5) Any other condition that may interfere with facepiece seal-ing.

C. Recordkeeping. A summary of all test results shall be maintained in each office for 3 years. The summary shall include:

1. Name of test subject.
2. Date of testing.
3. Name of test conductor.
4. Respirators selected (indicate manufacturer, model, size and approval number).

## 5. Testing agent.

### Quantitative Fit Test Procedures

#### 1. General.

- a. The method applies to the negative- pressure non-powered air-purifying respirators only.
- b. IPS★ITCS shall assign one individual who shall assume the full responsibility for implementing the respirator quantitative fit test pro-gram.

#### 2. Definition.

- a. "Quantitative Fit Test" means the measurement of the effectiveness of a respirator seal in excluding the ambient atmosphere. The test is performed by dividing the measured concentration of challenge agent in a test chamber by the measured concentration of the challenge agent inside the respirator facepiece when the normal air purifying element has been replaced by an essentially perfect purifying element.
- b. "Challenge Agent" means the air contaminant introduced into a test chamber so that its concentration inside and outside the respirator may be compared.
- c. "Test Subject" means the person wearing the respirator for quantitative fit testing.
- d. "Normal Standing Position" means standing erect and straight with arms down along the sides and looking straight ahead.
- e. "Fit Factor" means the ratio of challenge agent concentration outside with respect to the inside of a respirator inlet covering (facepiece or enclosure).

#### 3. Apparatus.

- a. Instrumentation. Corn oil, sodium chloride or other appropriate aerosol generation, dilution, and measurement systems shall be used for quantitative fit test.
- b. Test chamber. The test chamber shall be large enough to permit all test subjects to freely perform all required exercises without distributing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air yet uniform in concentration throughout the chamber.
- c. When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particulate filter supplied by the same manufacturer.
- d. The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of challenge agent concentration with each inspiration and expiration at fit factors of at least 2,000.
- e. The combination of substitute air-purifying elements (if any), challenge agent, and challenge agent concentration in the test chamber shall be such that the test subject is not exposed more than PEL to the challenge agent at any time during the testing process.
- f. The sampling port on the test specimen respirator shall be placed and constructed so that there is no detectable leak around the port, a free air flow is always allowed into the sampling line and so there is no interference with the fit or performance of the respirator.
- g. The test chamber and test set-up shall permit the person administering the test to observe one test subject inside the chamber during the test.
- h. The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent constant within a 10 percent variation for the duration of the test.

i. The time lag (interval between an event and its being recorded on the strip chart) of the instrumentation may not exceed 2 seconds.

j. The tubing for the test chamber atmosphere and for the respirator sampling port shall be the same diameter, length, and material. It shall be kept as short as possible.

The smallest diameter tubing recommended by the manufacturer shall be used.

k. The exhaust flow from the test chamber shall pass through a high-efficiency filter before release to the room.

l. When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

#### 4. Procedural requirements.

a. The fitting of half-mask respirators should be started with those having multiple sizes and a variety of interchangeable cartridges and canisters such as the MSA Comfo II-M, North M, Survivair M, A-O M, or Scott-M. Use either of the tests outlined below to assure that the facepiece is properly adjusted.

(1) Positive pressure test. With the exhaust port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds.

(2) Negative pressure test. With the intake port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds.

b. After a facepiece is adjusted, the test subject shall wear the facepiece for at least 5 minutes before conducting a qualitative test by using either of the methods described below and using the exercise regime described in 5.a., b., c., d. and e.

(1) Isoamyl acetate test. When using organic vapor cartridges, the test subject who can smell the odor should be unable to detect the odor of isoamyl acetate squirted into the air near the most vulnerable portions of the facepiece seal. In a location which is separated from the test area, the test subject shall be instructed to close their eyes during the test period. A combination cartridge or canister with organic vapor and high-efficiency filters shall be used when available for the mask being tested. The test subject shall be given an opportunity to smell the odor of isoamyl acetate before the test is conducted.

(2) Irritant fume test. When using high-efficiency filters, the test subject should be unable to detect the odor of irritant fume (stannic chloride or titanium tetrachloride ventilation smoke tubes) squirted into the air near the most vulnerable portions of the facepiece seal. The test subject shall be instructed to close their eyes during the test period.

c. The test subject may enter the quantitative testing chamber only if she or he has obtained a satisfactory fit as stated in 4.b. of this Appendix.

d. Before the subject enters the test chamber, a reasonably stable challenge agent concentration shall be measured in the test chamber.

e. Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half-mask and 1 percent for a full facepiece.

f. A stable challenge agent concentration shall be obtained prior to the actual start of testing.

(1) Respirator restraining straps may not be over-tightened for testing. The straps

shall be adjusted by the wearer to give a reasonably comfortable fit typical of normal use.

5. Exercise Regime. Prior to entering the test chamber, the test subject shall be given complete instructions as to their part in the test procedures. The test subject shall perform the following exercises, in the order given, for each independent test.

- a. Normal Breathing (NB). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.
- b. Deep Breathing (DB). In the normal standing position, the subject shall do deep breathing for at least one minute pausing so as not to hyper-ventilate.
- c. Turning head side to side (SS). Standing in place the subject shall slowly turn their head from side between the extreme positions to each side. The head shall be held at each extreme position for at least 5 seconds. Perform for at least three complete cycles.
- d. Moving head up and down (UD). Standing in place, the subject shall slowly move their head up and down between the extreme position straight up and the extreme position straight down. The head shall be held at each extreme position for at least 5 seconds. Perform for at least three complete cycles.
- e. Reading (R). The test subject (keeping eyes closed) shall repeat after the test conductor the "rainbow passage" at the end of this section. The subject shall talk slowly and aloud to be heard clearly by the test conductor or monitor.
- f. Grimace (G). The test subject shall grimace, smile, frown, and generally contort the face using the facial muscles. Continue for at least 15 seconds.
- g. Bend over and touch toes (B). The test subject shall bend at the waist and touch toes and return to upright position. Repeat for at least 30 seconds.
- h. Jogging in place (J). The test subject shall perform jog in place for at least 30 seconds.
- i. Normal Breathing (NB). Same as exercise A.

### **Rainbow Passage**

*When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.*

6. The test shall be terminated whenever any single peak penetration exceeds 5-percent for half-masks and 1 percent for full facepieces. The test subject may be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.

7. Calculation of Fit Factors.

- a. The fit factor determined by the quantitative fit test equals the average concentration inside the respirator.
- b. The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and of the end of the test.
- c. The average peak concentration of the challenge agent inside the respirator shall be the arithmetic average peak concentrations for each of the nine exercises of the test which are computed as the arithmetic average of the peak concentrations found for each breath during the exercise.

d. The average peak concentration for an exercise may be determined graphically if there is not a great variation in the peak concentrations during a single exercise.

8. Interpretation of Test Results. The fit factor measured by the quantitative fit testing shall be the lowest of the three protection factors resulting from three independent tests.

9. Other Requirements.

a. The test subject shall not be permitted to wear a half-mask or full facepiece mask if the minimum fit factor of 100 or 1,000, respectively, cannot be obtained. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatuses.

b. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.

c. If a test subject exhibits difficulty in breathing during the tests, they shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing their duties.

d. The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another QNFT which shall be performed immediately.

e. A respirator fit factor card shall be issued to the test subject with the following information:

(1) Name.

(2) Date of fit test.

(3) Protection factors obtained through each manufacturer, model and approval number of respirator tested.

(4) Name and signature of the person that conducted the test.

f. Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/ canisters shall be replaced daily or sooner if there is any indication of breakthrough by the test agent.

10. In addition, because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a:

(1) Weight change of 20 pounds or more,

(2) Significant facial scarring in the area of the facepiece seal,

(3) Significant dental changes, i.e., multiple extractions without prosthesis, or acquiring dentures,

(4) Reconstructive or cosmetic surgery, or

(5) Any other condition that may interfere with facepiece sealing.

11. Recordkeeping. A summary of all test results shall be maintained for 3 years. The summary shall include:

- (1) Name of test subject.
- (2) Date of testing.
- (3) Name of the test conductor.
- (4) Fit factors obtained from every respirator tested (indicate manufacturer, model, size, and approval number).

### ***APPENDIX C TO §1926.1101***

#### **MEDICAL QUESTIONNAIRES – MANDATORY**

This mandatory appendix contains the medical questionnaires that must be administered to all employees who are exposed to asbestos above the permissible exposure limit, and who will therefore be included in IPS★ITCS' medical surveillance program.

Part 1 of the appendix contains the Initial Medical Questionnaire, which must be obtained for all new hires who will be covered by the medical surveillance requirements. Part 2 includes the abbreviated Periodical Medical Questionnaire, which must be administered to all employees who are provided periodic medical examinations under the medical surveillance provisions of the standard.

**SEE ATTACHED – MEQ (Medical Evaluation Questionnaire)**



**APPENDIX D TO §1926.1101****INTERPRETATION AND CLASSIFICATION OF CHEST ROENTGENOGRAMS – MANDATORY**

(a) Chest roentgenograms shall be interpreted and classified in accordance with a professionally accepted classification system and recorded on an interpretation form following the format of the CDC/NIOSH (M) 2.8 form. As a minimum, the content within the bold lines of this form (items 1 through 4) shall be included. This form is not to be submitted to NIOSH.

(b) Roentgenograms shall be interpreted and classified only by a B-reader, a board eligible/certified radiologist, or an experienced physician with known expertise in pneumoconiosis.

(c) All interpreters, whenever interpreting chest roentgenograms made under this section, shall have immediately available for reference a complete set of the ILO-U/C International Classification of Radiographs for Pneumoconiosis, 1980.

**Work Classification:**

OSHA's standard establishes a new classification system for asbestos construction work that clearly spells out work practices that reduce worker exposures. Four classes of construction activity are matched with control requirements.

- Class I Asbestos Work - the most potentially hazardous class of asbestos jobs — involves the removal of thermal system insulation and sprayed-on or troweled-on surfacing asbestos-containing materials or presumed asbestos-containing materials. Thermal system insulation includes asbestos-containing materials applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials include decorative plaster on ceilings, acoustical asbestos-containing materials on decking, or fireproofing on structural embers.
- Class II Asbestos Work includes the removal of other types of asbestos-containing materials that are not thermal system insulation, such as resilient flooring and roofing materials containing asbestos. Removing intact incidental roofing materials containing asbestos such as cements, mastics, coatings, and flashings are not regulated as Class II. Class II designation is limited (in roofing operations) to situations in which the main roofing material is being removed. In addition, when a competent person deems the roofing material being removed as intact, the roofing contractor may make a negative exposure assessment and avoid initial monitoring if both the following conditions are met:
  1. Employees have been trained.
  2. The work practices set forth in the rule are strictly followed.

Examples of Class II work include removal of floor or ceiling tiles, siding, roofing, or transite panels.

- Class III Asbestos Work- includes repair and maintenance operations where asbestos-containing or presumed asbestos-containing materials are disturbed.
- Class IV Asbestos Work Operations- include maintenance and custodial activities in which employees contact but do not disturb asbestos-containing materials. These activities must be related to the actual construction project, usually resulting from Class I, II, or III activities.

#### Scope & Application:

The OSHA Asbestos Standard for the construction industry regulates asbestos exposure for the following activities:

- demolishing or salvaging structures where asbestos is present
- removing or encapsulating asbestos-containing materials
- constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates
- installing asbestos-containing products
- cleaning up asbestos spills/emergencies
- transporting, disposing of, storing, containing, and housekeeping involving asbestos or asbestos-containing products on a construction site

#### Provisions of the Standard:

OSHA sets out several provisions IPS★ITCS must follow to comply with the asbestos standard. The agency has established strict exposure limits and requirements for exposure assessment, medical surveillance, recordkeeping, “competent persons,” regulated areas, and hazard communication.

#### Permissible Exposure Limit (PEL):

IPS★ITCS must ensure that no employee is exposed to an air-borne concentration of asbestos in excess of 0.1 f/cc as an 8-hour time-weighted average (TWA).

Excursion Limit- Also, IPS★ITCS must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1 f/cc as averaged over a sampling period of 30 minutes.

#### Threshold-Limit Value — Short-term Exposure Limit (TLV-STEL):

Threshold-limit value—short-term exposure limit (TLV-STEL) is the maximum concentration workers can be continuously exposed for a period of up to 15 minutes without suffering: (a) irritation, (b) chronic or irreversible tissue change, or (c) narcosis of sufficient degree to increase accident proneness, impair self-rescue, or materially reduce work efficiency, provided that no more than four excursions per day are permitted, with at least 60 minutes between exposure periods, and provided that the daily TLV-TWA also isn't exceeded.

The STEL is a maximum allowable concentration, or ceiling, not to be exceeded during the 15-minute excursion. Exposure Assessments & Monitoring IPS★ITCS must assess all asbestos operations for their potential to generate airborne fibers. IPS★ITCS must use exposure monitoring data to assess employee exposures.

#### Initial Exposure Assessments:

The designated “competent person” must assess exposures immediately before or as the operation begins to determine expected exposures. The assessment must be done in time to comply with all standard requirements triggered by exposure data or the lack of a negative exposure assessment and to provide information ensuring control systems are appropriate and work properly.

The initial exposure assessment must be based on the following:

- the results of employee exposure monitoring
- all observations, information, or calculations indicating employee exposure to asbestos, including any previous monitoring
- the presumption that employees performing Class I asbestos work are exposed more than the PEL and STEL until exposure monitoring proves they are not
- defined by the standard as one who can identify existing asbestos hazards in the workplace and who has the authority to correct these hazards.
- A negative exposure assessment demonstrates that employee exposure during an operation is consistently below the PEL. unless there has been a negative exposure assessment. In certain less hazardous operations, IPS★ITCS may be exempt from monitoring.

#### Negative Exposure Assessments:

For any specific asbestos job that trained employees perform, IPS★ITCS may show that exposure will be below the PEL by performing an assessment and confirming it by the following:

- “Objective data” demonstrating an asbestos-containing material or activities involving it cannot release airborne fibers more than the PEL and STEL
- “Historical data” from prior monitoring for similar asbestos jobs performed within 12 months of the current job and obtained during work operations conducted under similar conditions
- employees’ training and experience were no more extensive for previous jobs than training for current employees
- data show a high degree of certainty that employee exposures will not exceed the PEL and STEL under current conditions
- current initial exposure monitoring used breathing zone air samples representing the 8-hour TWA and 30-minute short-term exposures for each employee in those operations most likely to result in exposures over the PEL for the entire asbestos job

#### Exposure Monitoring:

Employee exposure measurements must be made from breathing zone air samples representing the 8-hour TWA and 30-minute short-term exposures for each employee.

IPS★ITCS must take one or more samples representing full-shift exposure to determine the 8-hour TWA exposure in each work area. To determine short-term employee exposures, IPS★ITCS must take one or more samples representing 30-minute exposures for the operations most likely to expose employees above the excursion limit in each work area.

IPS★ITCS must allow affected employees and their designated representatives to observe any employee exposure monitoring. When observation requires entry into a regulated area, IPS★ITCS must provide and require the use of protective clothing and equipment.

#### Periodic Monitoring:

For Class I and II jobs, IPS★ITCS must monitor daily each employee working in a regulated area, unless a negative exposure assessment for the entire operation already exists and nothing has changed. When all employees use supplied-air respirators operated

in positive-pressure mode, however, IPS★ITCS may discontinue daily monitoring. If employees are performing Class I work using control methods not recommended in the standard, IPS★ITCS must continue daily monitoring, even when employees use supplied air respirators.

For operations other than Class I and II, IPS★ITCS must monitor all work in which exposures can exceed the PEL often enough to validate the exposure prediction. If periodic monitoring shows employee exposures below the PEL and STEL, IPS★ITCS may discontinue monitoring for the represented employees.

#### Additional Monitoring:

Changes in processes, control equipment, level of personnel experience, or work practices that could result in exposures above the PEL or STEL — regardless of a previous negative exposure assessment for a specific job — require additional monitoring.

#### Medical Surveillance:

IPS★ITCS must provide a medical surveillance program for all employees:

- who are or will be exposed to asbestos at or above the PEL or STEL for a combined total of 30 or more days per year and engage in Class I, II, or III work. (Note: The 30-day requirement excludes days in which less than one hour is spent in Class II or III work when work practices specified by the code are followed.)
- who wear negative-pressure respirators

A licensed physician must perform or supervise all medical exams and procedures, which are to be provided at no cost to employees and at a reasonable time of day and week.

IPS★ITCS must make medical exams and consultations available to employees:

- prior to employee assignment to an area where negative-pressure respirators are worn

- within 10 working days after the 30th day of exposure for employees assigned to an area where exposure is at or above the PEL for 30 or more days per year
- at least annually thereafter
- when the examining physician suggests them more frequently

If, however, the employee was examined within the past 12 months and that exam meets the criteria of the standard, another medical exam is not required.

Medical exams must include the following:

- a medical and work history
- completion of a standardized questionnaire with the initial exam and an abbreviated standardized questionnaire with annual exams
- a physical exam focusing on the pulmonary and gastrointestinal systems
- any other exams or tests suggested by the examining physician

IPS★ITCS must provide the examining physician:

- a copy of OSHA's asbestos standard and its appendices
- a description of the affected employee's duties relating to exposure
- the employee's representative exposure level or anticipated exposure level
- a description of any personal protective equipment and respiratory equipment used
- information from previous medical exams not otherwise available
- It is IPS★ITCS' responsibility to obtain the physician's written opinion containing results of the medical exam and the following:
  - any medical conditions of the employee that increase health risks from asbestos exposure
  - any recommended limitations on the employee or protective equipment used
  - a statement that the employee has been informed of the results of the medical exam and any medical conditions resulting from asbestos exposure
  - a statement that the employee has been informed of the increased risk of lung cancer from the combined effect of smoking and asbestos exposure
  - The physician must not reveal specific findings or diagnoses unrelated to occupational exposure to asbestos in the written opinion. IPS★ITCS must provide a copy of the physician's written opinion to the affected employee within 30 days of receipt.

## Recordkeeping

Objective Data Records- If IPS★ITCS use objective data to demonstrate that products made from or containing asbestos cannot release fibers in concentrations

at or above the PEL or STEL, they must keep an accurate record for as long as it is relied on and include all of the following information:

- the exempt product
- the source of the objective data
- the testing protocol, test results, and analysis of the material for release of asbestos
- a description of the exempt operation and support data
- other data relevant to operations, materials, processes, or employee exposures

### Monitoring Records:

IPS★ITCS must keep records of all employee exposure monitoring for at least 30-years, including all of the following:

- date of measurement
- the operation involving asbestos exposure that was monitored
- sampling and analytical methods used and evidence of their accuracy
- number, duration, and results of samples taken
- type of protective devices worn
- names, social security numbers, and exposures of the employees

IPS★ITCS must make exposure records available to affected employees and former employees, their designated representatives, and governmental OSHA officials, when requested.

### Medical Surveillance Records:

IPS★ITCS must keep all medical surveillance records for the duration of the employee's employment plus 30-years, including:

- employee's name and social security number
- the employee's medical exam results, including the medical history, questionnaires, responses, test results, and physician's recommendations
- the physician's written opinions
- any employee medical complaints related to asbestos exposure
- a copy of the information provided to the examining physician

Employee medical surveillance records must be available to the subject employee, to anyone having specific written consent of that employee, and governmental OSHA officials.

### Other Recordkeeping Requirements:

IPS★ITCS must maintain all employee training records for one year beyond the last date of employment for each employee. Where data demonstrates presumed asbestos-containing materials do not contain asbestos, building owners or IPS★ITCS must keep the records for as long as they rely on them. Building owners must maintain written notifications on the identification, location, and quantity of any asbestos-containing or presumed asbestos-containing materials for the duration of ownership and transfer the records to successive owners. When IPS★ITCS ceases to do business without a successor to keep the records, IPS★ITCS must notify the director of the National Institute for Occupational Safety and Health (NIOSH) at least 90 days prior to their disposal and transmit them as requested.

**“Competent Person” Requirements:**

On all construction sites with asbestos operations, IPS★ITCS must name a “competent person,” qualified and authorized to ensure worker safety and health. The competent person must frequently inspect job sites, materials, and equipment. In addition, for Class I jobs the competent person must inspect onsite at least once during each work shift and upon employee request. For Class II and III jobs, the competent person must inspect often enough to assess changing conditions and upon employee request.

At worksites where employees perform Class I or II asbestos work, the competent person must supervise:

- the setup, and must ensure the integrity of regulated areas, enclosures, or other containments by onsite inspection
- setup procedures to control entry to and exit from the enclosure or area
- all employee exposure monitoring, ensuring it is properly conducted
- use of required protective clothing and equipment by employees working within the enclosure and/or using glove bags
- proper setup, removal, and performance of engineering controls, work practices, and personal protective equipment through onsite inspections
- employee use of hygiene facilities and required decontamination procedures
- notification requirements

The competent person must attend a comprehensive training course for contractors and supervisors certified by the U.S. Environmental Protection Agency (EPA) or a state-approved training provider or a course that is equivalent in length and content. For Class III and IV asbestos work, training must include a course equivalent in length and content to the 16-hour “Operations and Maintenance” course developed by EPA for maintenance and custodial workers.





# Competency Assessment

No.	Questionnaire	C/NYC
Q1		
A1		
Q2		
A2		
Q3		
A3		
Q4		
A4		
Q5		
A5		

Enclosed Attachments	
Risk Assessment	<input checked="" type="checkbox"/>
Environmental Aspect and Impact	<input checked="" type="checkbox"/>
Training and Competency	<input checked="" type="checkbox"/>
Measure and Evaluation Tools	<input checked="" type="checkbox"/>

# Competency Checklist

To be filled out by Trainer and signed by Employee, Assessor and Supervisor before being returned to the HSEQT Manager for recording purposes.

Procedure	Competency	Date	Competent YES / NO	Employee Signature

(Please tick appropriate box)

This employee is competent in performing the job.


This employee has not attained the competency level.

\*

\* *If the employee has not attained all competency levels, the General Manager must assess the action to be taken, provide an extension of training or alternative action as listed below.*

Alternate action to be taken: \_\_\_\_\_

Signed By	Employee:	_____	Date:	_____
	Trainer:	_____	Date:	_____
	Assessor:	_____	Date:	_____
	Regional Manager:	_____	Date:	_____

# Environmental Aspects and Impacts

## Identified Environmental Aspects and Impacts

The following table is a summary of the likely environmental aspects and impacts that may be identified during site inspections. The significance of each impact needs to be assessed using the Risk Assessment Model.

Activity	Aspect	Impact
<b>Purchasing &amp; Administrative Work</b>	Consumption of goods	Conservation of natural resources
	Consumption of energy (eg. Electrical equipment and facilities)	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of waste (eg. Paper)	Consumption of space for waste disposal; Habitat loss
<b>Climate Control</b>	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of noise	Disturbance to community; Habitat loss
<b>Cleaning of – offices / vehicles</b>	Storage, use and release of chemicals	Contamination of air, water or soil; Risk to human health
<b>Transport (Fleet vehicles / staff travel)</b>	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Loss of habitat at all stages of generation; Light pollution
	Consumption of goods (eg. Oil)	Consumption of natural resources; Generation of waste; Habitat loss; Biodiversity impacts
	Generation of waste (eg. Oil)	Consumption of space for waste disposal; Potential contamination of water or soil; Habitat loss
	Exhaust emission	Release of greenhouse gases and atmospheric pollution
	Use of dangerous goods (eg. Batteries)	Potential contamination of air, water or soil; Risk to human health
	Generation of noise	Disturbance to community; Habitat degradation
<b>Operations</b>		

Sample only.  
To be filled in

# Risk Assessment



Risk Assessment // insert name here

<p><b>Step No:</b> Logical sequence</p>	<p><b>Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps.</b></p> <p>Each step should be logical and accomplish a major task.</p>	<p><b>Potential Safety &amp; Environmental Hazards/Impacts at the site of the Job</b></p> <p>Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.</p>	<p><b>Risk Rating</b></p> <p>Refer to the risk matrix or HSEQT.PRO. Risk Mgt</p>	<p><b>Recommended Corrective Action or Procedure</b></p> <p><i>Determine the corrective actions necessary to reduce the risk to as low as reasonably practical (ALARP) refer to HSEQ.PRO.Risk Mgt. The risk must be reduced or controlled to ALARP before work commences.</i></p> <p>Document who is responsible for implementing the controls to manage each hazard identified.</p>	<p><b>Risk Rating</b> refer to the risk matrix or HSEQT.PRO.Risk Mgt</p>
1.					
2.					
3.					
4.					
5.					

# Audit



<b>Process:</b> insert// <b>Procedure:</b> Insert //		Date:	Audited by:	
		Location of Audit:	Area Mgr/Supervisor:	
Item	Question	Evidence Sited	Comments	Conformance Score 0,3,5
1.				
2.				
3.				
4.				
5.				
6.				
7.				
AUDITOR'S SIGNATURE:		CONFORMANCE SCORE:     / 25		0 – Non-Conformance 3 – Continuous Improvement Opportunity 5 – Total Conformance
SAFETY REP'S SIGNATURE:		CONFORMANCE %:		