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Alaska

Asbestos Abatement Renewal for Supervisors & Contractors

Training Manual

07/06 - EMI

ASBESTOS SUPERVISOR RENEWAL MANUAL

OUTLINE

ASBESTOS ABATEMENT SUPERVISOR RENEWAL COURSE

I. LAWS AND REGULATIONS

The law is one tool for a safer and healthier job. However, the protection furnished by occupational and environmental safety laws depends extensively on how well people comply with these provisions. When it comes to asbestos and other hazardous materials, substantial compliance is not enough. Everyone must do his or her part. For example, if just one individual fails to comply with the requirements, he/she could create conditions that endanger the entire work crew or could contaminate the environment. Thus, it is extremely important for everyone working with asbestos to know the safety and health requirements. Each person must follow them to the letter and should insist that fellow workers also follow the requirements.

Asbestos project supervisors have an ethical and legal responsibility to ensure that work proceeds in a safe manner. The minimum standards for safe asbestos work are prescribed in regulations set forth by ***OSHA*** (Occupational Safety and Health Administration) and ***EPA*** (Environmental Protection Agency). These regulations were promulgated on statutes enacted by Congress, and carry enforcement penalties for non-compliance. There are also the ***State of Alaska Statutes*** and *Alaska* ***Administrative Code***, which both complement and supplement Federal Regulations.

As stated before, these regulations set the minimum requirements to protect workers and the environment from asbestos hazards. They also serve as a competency standard for supervisors. For example, OSHA's asbestos regulations specifically require supervisors to be a "Competent Person" by definition, a Competent Person is a knowledgeable person able to identify asbestos and associated safety hazards, prescribe control measures to protect workers and the environment. In addition, to be a competent person, the individual must also have the authority to take prompt corrective actions to eliminate hazards that may arise during the project. It is important to note that the supervisor, as a competent person, may be judged by how well he/she protected workers and the environment, not necessarily on the question did he/she just follow the regulations. These competency issues are likely to be decided by a jury during a tort liability trial sometime in the future, with the consequences much more severe than any penalty levied by regulatory enforcement officials.

It is also important for supervisors to realize that there are several serious safety hazards at the worksite besides asbestos. These could include heat stress, electrical hazards, fall hazards, confined spaces, lifting and material handling hazards, among other. As a supervisor, you need to be competent in addressing these other safety concerns. Before any work commences on an asbestos project, you should assess all the potential safety hazards on the job site, and be sure that appropriate control measures are implemented according to established safety practices in the industry. It is recommended that a copy of the OSHA regulation **29 CFR 1926** be checked as part of the project planning process.

ASBESTOS STANDARDS and REGULATIONS

Occupational Safety and Health (OSHA)

29 CFR 1910.12

Construction work

(a) Standards. The standards prescribed in part 1926 of this chapter are adopted as occupational safety and health standards under section 6 of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in construction work. Each employer shall protect the employment and places of employment of each of his employees engaged in construction work by complying with the appropriate standards prescribed in this paragraph.

(b) Definition. For purposes of this section, Construction work means work for construction, alteration, and/or repair, including painting and decorating. See discussion of these terms in §1926.13 of this title.

(c) Construction Safety Act distinguished. This section adopts as occupational safety and health standards under section 6 of the Act the standards which are prescribed in part 1926 of this chapter. Thus, the standards (substantive rules) published in subpart C

and the following subparts of part 1926 of this chapter are applied. This section does not incorporate subparts A and B of part 1926 of this chapter. Subparts A and B have pertinence only to the application of section 107 of the Contract Work Hours and Safety Standards Act (the Construction Safety Act). For example, the interpretation of the term ``subcontractor'' in paragraph (c) of §1926.13 of this chapter is significant in discerning the coverage of the Construction Safety Act and duties thereunder. However, the term ``subcontractor'' has no significance in the application of the Act, which was enacted under the Commerce Clause and which establishes duties for ``employers'' which are not dependent for their application upon any contractual relationship with the Federal Government or upon any form of Federal financial assistance.

(d) For the purposes of this part, to the extent that it may not already be included in paragraph (b) of this section, ``construction work'' includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improve

29 CFR 1910.20

ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS

- Provides employees and their designated representatives a right to relevant exposure and medical records.
- Applies to general industry, maritime, and construction employers who make, maintain, contract for, or have access to employee exposure or medical records, or analyses thereof, pertaining to employees exposed to toxic substances or harmful physical agents.
- "Access" means the right and opportunity to examine and copy.
- "Designated representative" means any individual or organization to whom an employee gives written authorization to exercise a right of access.
- Employer has 15 days to respond to a request.
- No charge for the first copy, and only reasonable administrative cost for copies of the same record thereafter.
- Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform employees exposed to toxic substances or harmful physical agents of the following:
  - (i) the existence, location, and availability of any records covered by this section;
  - (ii) the person responsible for maintaining and providing access to records; and
  - (iii) Each employee's rights of access to these records.

29 CFR 1910.134

RESPIRATORY PROTECTION

Employer's primary obligation is to control atmospheric contamination by feasible and accepted engineering control methods (for example, enclosure or confinement of the operation, general and local ventilation, or substitution of less toxic contaminants).

When not feasible or while engineering controls are being implemented, appropriate respirators shall be used under the following requirements:

1) when necessary to protect the health of the employee,
2) applicable and suitable for the purpose intended, and
3) responsible for the establishment and maintenance of a respiratory protection program.

Requirements for a minimal acceptable program:

- Respirators shall be provided by the employer when necessary to protect the health of the employee
- The employer shall develop and implement a written respiratory protection program that is administered by a suitably trained person who will also do the required evaluations of program effectiveness.
- The employer shall evaluate respiratory hazards in the workplace and identify user and workplace factors and base the respirator selection on them.
- The employer may provide respirators at the request of an employee or allow them to use their own if respirators are not otherwise required and will not pose a hazard.)
- The employer shall provide a medical evaluation on an employees fitness to wear a respirator
- The employer shall ensure that each employee receives and passes a fit test.
- The employer shall establish and implement procedures for the proper use of respirators.
- The employer shall provide for the cleaning, disinfection, storage, inspection, and repair of respirators.
- The employer shall provide grade D or better breathing quality air for those employees using supplied air respirators
- All labels must comply with NIOSH and be readable
- The employer must provide training to employees who need to wear respirators on at least an annual basis.
- The employer shall evaluate the workplace to ensure the program is working and that employees are using respirators properly.
- The employer shall establish and retain written information regarding medical exams, fit tests, and the respirator program.

08 AAC 61.1030. Additional Respiratory Protection Standards

In addition to the requirements set out in 29 C.F.R. 1910.134(d)(2)(ii), as amended, the employer shall either:

(1) station a competent employee outside of the work area to monitor and attend the compressor and other equipment that supplies breathing air; this employee must be trained in supplied air systems and must receive instruction in the function and maintenance of the particular supplied air system that is being used at the work site; this employee must be able to demonstrate the ability to respond appropriately to a malfunction of the system; or

(2) employ a compressed air system that includes alarms for compressor failure and overheating; the system must be equipped with a carbon monoxide alarm; all compressed air systems must be equipped with in-line adsorbents and filters to deliver Grade D air; alarms must alert respirator wearers of problems either remotely or by being loud enough to be heard up to 300 feet away; the monitoring equipment, alarms, and filters must be checked before use to ensure they are working properly.

29 CFR 1910.141
Sanitation, Showers, Change Rooms

Whenever showers are required by a particular standard, the showers shall be provided :

- One shower shall be provided for each 10 employees of each sex, or numerical fraction thereof, who are required to shower during the same shift,
- Body soap or other appropriate cleansing agents convenient to the showers,
- Showers shall be provided with hot and cold water feeding a common discharge line,
- Employees who use showers shall be provided with individual clean towels.

Change rooms. Whenever employees are required by a particular standard to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.

29 CFR 1910.1200

HAZARD COMMUNICATION

- Requires employers to develop, implement, and maintain a written **Hazard Communication Program** which describes how the employer will inform employees of this law, its elements, and their rights.

Elements:

Labels and other forms of warning:

Every container, tank, or vessel must have a label identifying the hazardous ingredients and appropriate hazard warnings and manufacturer's name, address, & phone.

NOTE: THERE ARE EXCEPTIONS NOT COVERED HERE

Material Safety Data Sheets:

Must have an appropriate MSDS for every hazardous or toxic chemical on the site and available for employee access.

Employee information and training:

Must be informed of this law and its requirements, what operations where hazardous chemicals are present, MSDSs, and written hazard communication program.

Must be trained on:

* methods and observations that may be used to detect the presence or release of hazardous chemicals (monitoring methods, visual and odor detection),
* physical and health hazards,
* procedures and practices to protect themselves from exposures.

Construction Standards

29 CFR 1926.32
Definitions

(f) **Competent person** means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

********** 29 CFR 1926.1101 **********
ASBESTOS

This section regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b), including but not limited to the following: *[(a)]*

(1) removal or encapsulation of materials containing asbestos;
(2) construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos;
(3) asbestos spill/emergency cleanup;
(4) transportation, disposal, storage, containment of, and housekeeping activities involving asbestos or products containing asbestos on the site or location at which construction activities are performed.

Definitions: *[(b)]*

* Building/facility owner: legal entity, including lessee, which exercises control over management and record keeping functions related to the building or facility.

* Disturbance: a Class III operation where contact with ACM or PACM (either accidental or intentional) is or could be released but amount is no more than what will fill a standard size glove bag or waste bag (60 united inches).
{NOTE: If amount above is exceeded, the operation becomes a Class I or II job, depending on the type of asbestos disturbed (TSI/Surfacing or Misc.)}.

* PACM: Presumed Asbestos Containing Material.

* Competent person training: 29 CFR 1926.32 (f) and

If Class I or II work: Supervisor training (5 day);
If Class III or IV must have O & M course training (2 day).

Permissible Exposure Limits (PELs) of: *[(c)]*
* 0.1 f/cc, for an 8-hour Time-Weighted Average (TWA); and
1.0 f/cc over a 30-minute sampling period called Excursion Limit (EL). No more action limit (AL).

Multi-employer worksites: *[(d)]*
An employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the employer's work with asbestos, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other employers are not exposed to asbestos.

Regulated Area: *[(e)]*
* an area established and demarcated by the employer where Class I, II, III work is being conducted and any adjourning areas where debris and waste accumulate,
* where airborne concentrations are or may exceed the PELs,
* only authorized persons allowed,
* must wear an appropriate respirator,
* have appropriate sign and demarcation tape,
* no eating, drinking, smoking, chewing tobacco or gum, or applying of cosmetics.

NOTE: standard does not address Class IV operations as regulated areas but would be if above PELs.

Competent Person: ***[(o)]***

* Employer must designate such a person and must have the qualifications and authority to ensure worker safety and health under 1926.20 (b)(2) through 1926.32, which includes:
  - accident prevention program, which includes frequent and regular on-site inspections;
  - education and training program in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment; safe handling, personal hygiene, and personal protective practices;
  - confined space entry procedures;
  - housekeeping;
  - illumination;
  - fire protection and prevention;
  - first aid procedures; and

* from the ASBESTOS standard:
  - inspect Class I site at least once per shift or at employee's request,
  - inspect Class II, III, IV at sufficient enough intervals to assess whether conditions have changed and at an employee's request,
  - set up regulated area, enclosure, or other containment,
  - supervise employee exposure monitoring and ensure it is conducted correctly,
  - ensure employees in containment or using glove bags are wearing respirators and protective clothing,
  - ensure through on-site inspections that engineering controls are working properly and employees are using proper work practices,
  - ensure that employees are using the hygiene facilities and decontamination procedures, and
  - ensure notification requirements are met.

Need for **Initial Exposure Assessment** (IEA) (personal sampling): ***[(f)(2)]***
Must be conducted by a "competent person" immediately before ***[(b)]***
or at the initiation of the operation.
*Exception- Class I jobs must assume > TWA or EL until exposure monitoring conducted and shows < TWA/EL.

Negative Exposure Assessment (NEA) ***[(f)(2)(iii)]***
For any one specific job, the employer may demonstrate exposures below PELs from data which is ...

A. Objective data demonstrating that product/material or activity cannot release fibers exceeding PELs; or
B. Previous monitoring (below PELs) within last 12 months and the data obtained closely resembles the process, type of material, control methods, work practices, environmental conditions, and training and experience of employees.
From this data, there must be a high degree of certainty that exposures will be under the TWA and EL; or
C. Results of initial breathing zone monitoring of current job are under the PELs and are representative of entire job.

CLASSES OF WORK:

Class I: activities involving removal of Thermal System Insulation and surfacing ACM or PACM (Presumed Asbestos Containing Material); ***[(g)(4)]***

*** respirator must be provided and required to be used *** ***[(h)]***

...if no negative exposure assessment must provide a full face, supplied-air respirator operated in the pressure demand mode and equipped with an auxiliary, positive-pressure, self-contained breathing apparatus;

***but if exposures are under 1.0 f/cc for an 8-hour TWA, a tight-fitting, full-face piece, powered-air purifying respirator (PAPR) may be used.
DECON unit: > 10 ft^2 or 25 linear feet of TSI or surfacing is being removed, a 3-stage unit (connected equipment, shower, & clean rooms) is required; When < 10/25, or where exposures > PEL or no negative exposure assessment shall establish an equipment room or area adjacent to regulated area.

Protective coveralls and gloves if over TWA/EL or over 10 SF or 25 LF.
NOTE: If the removal is a glove bag operation, there must be two employees present to perform this activity.

Class II: activities involving removal of ACM other than TSI or surfacing material if not done in an intact state. ***[(g)(7)]***

Examples- removal of wallboard, floor tile and sheeting, roofing, siding shingles, mastics, cutting into fire doors or privy doors.
-respirator must be provided and required usage if asbestos is not removed in a substantially intact state, or not using wet methods, or no negative exposure assessment. ***[(h)(1)]***

Vinyl and asphalt flooring - no sanding, must use HEPAvac, resilient sheeting cutting with wetting at the snip point and wetting during de-lamination. Rip-ups prohibited. Scraping of adhesive residue and/or backing using wet methods.

Removal of intact tiles only unless can show not possible. If can be removed intact by heating, wet method can be omitted. ***[(g)(8)(i)]***

Siding shingles or panels - no breaking, cutting, or abrading unless can demonstrate other methods can not be used. Wetting with amended water. Immediately wrapped or bagged. Disposed at end of each workday. ***[(g)(8)(iii)]***

Gaskets - Removed within glove-bag if visibly deteriorated or unlikely to be removed intact. Thoroughly wetted with amended water including residue. Immediately placed in disposal container. ***[(g)(8)(iv)]***

Class III: repair and maintenance operations where ACM including TSI or surfacing is likely to be disturbed (either accidentally or intentionally) and contact can releases fibers. ***[(g)(9)]***

-disturbance is an amount that does not exceed amount contained in one standard-sized glove bag or waste bag (1/3 to 1/2 full) and in no event shall exceed 60 inches in length and width.
-required to use wet methods and to extent feasible, local exhaust ventilation.
-if no sampling data or over PEL's or no negative exposure assessment, must use impermeable dropcloths and plastic barriers or equivalent and isolate by using mini-enclosures or glovebags.

Class IV: Housekeeping (not cleanup) that takes place in an area after a Class I, II, or III job has been completed. Does not include picking up and bagging of asbestos debris/dust during Class I, II, or III operations. ***[(g)(10)]***

"Competent person" must evaluate work before being done to assure the work is not another class of work.
-mandated to use wet methods, HEPA vacs, and promptly clean up debris containing ACM or PACM.
-if TSI or surfacing is accessible during housekeeping operations, other waste and debris is to be considered asbestos containing (contaminated).

Requirements when exposures over the PEL or EL or without a Negative Exposure Assessment:

-regulated area with appropriate signs and demarcation.
-respiratory protection with specific Class and emergency use requirements.
-protective clothing with immediate repairs to rips and tears, and competent person to examine once per work shift.
-training, medical surveillance, record keeping.
-competent person: designated by employer with qualifications and authority to ensure worker safety and health and perform inspections of the site.
NOTE: If specific control measures not given, then must use ...

A. Use of HEPA vacuums,
B. Wet methods unless infeasible due to hazards of electricity or slips, or equipment malfunction,
C. Prompt clean-up and disposal of debris in leak-tight containers,
D. Local exhaust systems with HEPA filtration,
E. Enclosure or isolation.

Labels:

affixed to all products containing asbestos and to containers containing asbestos. If feasible, installed asbestos products shall contain a visible label unless has been modified by a bonding agent, coating, binder, or other material and manufacturer can demonstrate that thru use, handling, storage, processing, or disposal no release at PEL or EL will occur or < 1%. ***[(k)(7)]***

Previously installed PACM/ACM shall be clearly labeled or signs to notify employees of what materials containing PACM/ACM there are in their building and to entrances of mechanical rooms containing ACM/PACM.

Signs may be used in lieu of labels if contain required label information.

Training: Variable amounts according to Class of work. ***[(k)(9)]***

Class I & II training equivalent to EPA's 4-day asbestos abatement worker or 5-day for asbestos supervisor and both include 16 hours of "hands-on".
Class III training equivalent to 16-hour Operations and Maintenance course for EPA.
Class IV training equivalent to 2-hour awareness training course for EPA.

NOTE: Every employee who works with a category of ACM material (roofing, flooring, siding, or Transite) containing asbestos shall receive additional training.

Housekeeping: ***[(l)]***

If using a vacuum, must be HEPA filtered. NO compressed air blow downs of area or tools.

Medical Surveillance: ***[(m)]***

Program for employees for 30 or more days per year engaged in Class I, II, III work or exposed at or above TWA or EL and wear negative-pressure respirators.

Initial examination conducted prior to assignment and at least annually thereafter.

Building and Facility Owners must before work subject to this standard is begun: *[(k)]*

* identify presence, location, and quantity of ACM or PACM at site.
* notify in writing or personal communication:
    (A) prospective employers,
    (B) employees of employers,
    (C) tenants who occupy areas containing such materials.
* post signs on mechanical room doors which identify type, location, and appropriate work practices to ensure will not disturb ACM/PACM.
* affix labels or signs to notify employees of what materials contain ACM/PACM.

Environmental Protection Agency (EPA)

NATIONAL EMISSIONS STANDARD FOR HAZARDOUS AIR POLLUTANTS

NESHAP

(CAA) (40 CFR 61 Part M) (1990)

- Banned asbestos spray-applied insulation, pre-molded insulation (if friable), spray-applied decorative material.
- No visible emissions to the outside.
- Required notification 10 days prior to any demolition, and any removals, or renovations when asbestos amounts larger than 160 square feet or 260 linear feet or 35 cubic feet.
- Removal and stripping of asbestos made adequately wet and no dropping, throwing, sliding, or otherwise disturbing.
- Use of local exhaust and collection systems (negative air machines).
- Only approved variances for nonwetted renovations and removals when there are safety and equipment damage concerns.
- Defined Category I and II nonfriable RACM (regulated asbestos-containing material) in relation to demolition and renovation operations.

    Category I nonfriable ACM includes asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products.

    Category II nonfriable ACM includes any asbestos-containing material, not included in Category I nonfriable ACM, that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure but mechanical forces during the course of demolition or renovation make them friable. Examples are: cement siding shingles and Transite products.

- Established standards for waste disposal for manufacturing, fabricating, demolition, renovation, and spraying operations.
- Training requirements for onsite representatives.

ASBESTOS HAZARD EMERGENCY RESPONSE ACT

AHERA

(40 CFR Part 763, TSCA-- published October 30, 1987;

- Applicable to private and public schools K to 12 (including non-profit nurseries and pre-schools) required to inspect buildings for asbestos presence and condition.
- Local Education Agency (LEA)- Designates a person to ensure implementation of the management plan for the school.
- Must develop and implement updated asbestos management plans.
- Operations/Maintenance Plan and implementation.
- Abatement project planning/supervision. Abatement work done by certified persons who have attended 3-5 day training courses with EPA approval.
- Notification to parents and occupants.
- Specific training requirements for accredited persons.
- Required periodic surveillance (every 6 months) and re-inspection (every 3 years) to monitor ACM left in schools.
- EPA was to recommend to Congress to extend this regulation to public buildings.

ASBESTOS MANUFACTURING, PROCESSING, IMPORTATION AND DISTRIBUTION PROHIBITIONS

(TSCA)
40 CFR Part 763

EPA issued a final rule under section 6 of the Toxic Substances Control Act (TSCA) prohibiting, at staged intervals, the future manufacture, importation, processing, and distribution in commerce of almost all asbestos-containing products, and required labeling of such products in the interim.

On October 18, 1991, the United States Court of Appeals vacated and remanded most of the rule but left intact the portion that regulates products that were not being manufactured, produced, or imported when the rule was published on July 12, 1989.

The six asbestos-containing product categories that are still subject to the prohibition are corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, and new uses of asbestos.

The asbestos-containing product categories that are no longer subject to the rule are: asbestos-cement corrugated sheet, asbestos-cement flat sheet, asbestos clothing, pipeline wrap, roofing felt, vinyl-asbestos floor tile, asbestos-cement shingle, millboard, asbestos-cement pipe, automatic transmission components, clutch facings, friction materials, disc brake pads, drum brake linings, brake blocks, gaskets, non-roofing coatings, and roof coatings.

ASBESTOS SCHOOL HAZARD ABATEMENT REAUTHORIZATION ACT

ASHARA

Passed by Congress as an interim final rule and amended AHERA's Model Accreditation Plan

- Clarifies the types of persons who must be accredited to work with asbestos in schools and expanded coverage to public and commercial buildings, i.e., individuals working in public and commercial buildings, must have AHERA accredited training as either a worker, supervisor, project designer, or building inspector, as applicable.
- Increased the minimum number of hours of training, including additional hours of hands-on health & safety training for abatement workers and contractor/supervisors.
- Congress expanded accreditation for inspectors, project designers, workers, contractors/supervisors working in schools, public and private building but did not enact accreditation requirements to management planners working in public and commercial buildings.
- Exempted residential properties and dwellings with <10 units.
- Defined "small-scale, short-duration activities," where under 3 square or linear feet did not have to use accredited workers and over 3 square or linear feet would have to use accredited workers.
- Certificates for accreditation required issuing provider's name, address, and telephone number.
- Civil penalty of $5000 per day per violation provisions.

ALASKA STATUTES

Title 18. Health, Safety, and Housing
Chapter 31. Asbestos
AS 18.31.020. Duties of the Department of Labor and Workforce Development.

In order to abate asbestos health hazards from public schools and from the University of Alaska, the Department of Labor and Workforce Development shall

(1) in a school district or regional educational attendance area that has not complied with Environmental Protection Agency asbestos regulations (40 C.F.R. Part 763), inspect school buildings to determine the presence of asbestos, take samples as needed, answer inquiries on the subject, ensure quality control of asbestos sampling, or enter into contracts for these purposes;

(2) distribute, retrieve, and store training materials concerning inspection and sampling for asbestos;

(3) establish guidelines, in conformity with Environmental Protection Agency asbestos regulations (40 C.F.R. Part 763), for abating asbestos health hazards, for inspecting and collecting samples of suspected asbestos, and for analyzing the samples;

(4) evaluate analysis results and distribute the results to affected schools;

(5) coordinate efforts by state departments and agencies and by school officials to identify and abate asbestos health hazards;

(6) cooperate with the Department of Education and Early Development to administer state money appropriated for the asbestos health hazard abatement program;

(7) establish classifications of asbestos health hazards according to the severity of the hazard and determine on the basis of those classifications the order in which abatement projects should proceed;

(8) review and approve all asbestos health hazard abatement projects relating to respirator use and employee training, including training materials;

(9) oversee an employee certification program;

(10) establish guidelines and procedures to prevent damage to asbestos products in daily operations;

(11) whenever the department is informed of scheduled work to abate an asbestos health hazard, inform the contractors and other concerned persons of the health hazards of asbestos;

(12) assist the University of Alaska in its efforts to abate asbestos health hazards; and

(13) adopt regulations necessary to implement the provisions of this chapter.

AS 18.31.200. Certification Programs.

(a) The Department of Labor and Workforce Development shall

(1) establish guidelines for employee training certification programs, including respiratory and competency tests to be completed successfully, to ensure that a person who is employed to abate asbestos health hazards is trained to do the work safely and is informed about the danger of working with asbestos;

(2) review certification programs proposed by contractors, labor organizations, public and private vocational training programs, and others for persons who will be employed to abate asbestos health hazards;

(3) approve proposed certification programs that meet the department's guidelines under this subsection;

(4) assist in meeting the certification guidelines those whose certification program proposals have been found unacceptable.

(b) Before a contractor may undertake work to abate an asbestos related health hazard, the contractor shall

(1) propose to the Department of Labor and Workforce Development a plan for the certification of its employees as adequately trained to handle asbestos in a safe and knowledgeable way;

(2) receive approval from the department of that plan; and

(3) certify that each person who will work on the abatement of an asbestos health hazard is adequately trained to handle asbestos in a safe and knowledgeable way.

(c) A person may not be employed to abate an asbestos health hazard unless the person has been certified in a program approved by the Department of Labor and Workforce Development under (a) of this section.

(d) A contractor who violates (b) or (c) of this section is subject to a civil penalty not to exceed $1,000, as determined by the commissioner of labor and workforce development.

(e) A contractor who violates (b) of this section is guilty of a class A misdemeanor.

(f) A contractor who violates (c) of this section is guilty of a class B misdemeanor.

(g) The Department of Labor and Workforce Development shall adopt by regulation a fee schedule for

(1) review, approval, and certification of asbestos training certification programs and plans under this section; and

(2) certification of a person employed to abate an asbestos health hazard.

Alaska Administrative Code
Title 8. Labor and Workforce Development
Chapter 61. Occupational Safety and Health

600. Certification Required

A person performing, directly supervising, or monitoring asbestos abatement work must have a certificate issued under 8 AAC 61.720. The certificate must be in the person's possession when performing work subject to AS 18.31.200 , and must be shown to a representative of the department upon request.

610. Training

An employer must assure that an employee who performs, designs, directly supervises, or monitors asbestos abatement work has a current certification, as specified in 8 AAC 61.600, through a department-approved asbestos abatement training program.

620. Training Program and Contractor Plan Approval Required

(a) Before a person, association, union, corporation, contractor, or other entity may undertake a program to train and certify persons under AS 18.31.200 , the person, association, union, corporation, contractor, or other entity must submit to the department an application, as described in 8 AAC 61.630, and obtain approval of the program from the department.

(b) Before a contractor may undertake work to abate an asbestos health hazard, the contractor must submit to the department, and receive approval of, a plan that assures that its employees are certified as required under 8 AAC 61.600. The plan must include

(1) the names and certificate numbers of the employees who will be employed to abate the asbestos health hazard;

(2) the starting and ending dates of the abatement project; and

(3) the location of the abatement project.

(c) The plan required under (b) of this section, as approved by the department, must be available at the asbestos abatement worksite.

740. Renewal Course Requirements and Renewal of Certificate

(a) A renewal course must

(1) be conducted in the state;

(2) provide an instructor that meets the requirements of 8 AAC 61.680; and

(3) must provide at least eight hours of instruction.

(b) A certificate issued under 8 AAC 61.720 may be renewed if the certificate holder pays the required fee under (c) of this section and an instructor of a training program approved under 8 AAC 61.660(a) certifies that the certificate holder has completed at least eight hours of instruction in an approved renewal course under (a) of this section that includes instruction in

(1) changes in state or federal regulations pertaining to asbestos abatement, if any;

(2) changes in the state-of-the-art of asbestos abatement practices and procedures, if any; [AND]

(3) the personal protective, decontamination, and disposal procedures set out in 8 AAC 61.700(a) (4) - (6); and

(4) a review of the key aspects of the initial training course that includes appropriate work practices, potential health effects related to asbestos exposure, respiratory protection programs and medical surveillance programs, additional safety hazards and medical monitoring.

(c) A certificate renewed under this section is valid until the expiration date indicated on the issued certificate. The fee for a certificate renewal is the same as for an initial certificate under 8 AAC 61.730.

(d) Renewal of a certificate under this section may be accomplished by attending a department-approved renewal course in accordance with this section.

(e) The qualified instructor of a training provider shall submit a class roster to the department listing the names of those attendants that have successfully completed the renewal training specified under this section. The roster shall be submitted in accordance with 8 AAC 61.745.

750. Suspension or Revocation of Certificate

(a) The department will, in its discretion, suspend or revoke a certificate issued under 8 AAC 61.720 if a certificate holder

(1) provides false information to the employer or the department;

(2) shows evidence of a mental or physical impairment, which the department determines may interfere with the certificate holder's safe performance of asbestos abatement work;

(3) knowingly or recklessly disregards safe work practices while performing asbestos abatement work;

(4) permits the duplication or use of one's own certificate by another;

(5) performs work for which certification has not been received;

(6) obtains certification from a training provider that does not have approval to offer training for the particular discipline from either the EPA or AKOSH, provided AKOSH has a contractor certification plan at least as stringent as the EPA MAP;

(7) performs work requiring certification required under 8 AAC 61.600 at a job site without being in physical possession of a valid certificate; or

(8) is civilly fined or criminally convicted under Section 16 of TSCA, 15 U.S.C. 2615 or 2647, for violations of 40 C.F.R. Part 763, or Section 113 of the Clean Air Act, 42 U.S.C. 7413, for violations of 40 C.F.R. Part 61, Subpart M.

(b) If the department suspends or revokes a certificate, the department will promptly notify the certificate holder in writing of the reason for the suspension or revocation, and that the suspension or revocation may be appealed to the commissioner within 30 days after receipt of notice of the suspension or revocation.

(c) A person whose certificate is suspended or revoked under this section shall surrender the certificate to the department. A person is ineligible to obtain a new certificate for a period of at least 90 days, but not exceeding one year, after the date of suspension or revocation, as determined by the department. A certificate obtained by a person during a period of ineligibility is not valid.

(d) In determining the period of ineligibility under (c) of this section, the department will consider the circumstances upon which the suspension or revocation is based.

765. Citation and Penalties

(a) As provided in AS 18.31.200 (d), the department will issue a citation to, and assess a civil penalty on, a contractor who employs a person to perform, directly supervise, or monitor asbestos abatement work if the person does not have the certificate required by 8 AAC 61.600. The department will also issue a citation to, and assess a civil penalty on, a contractor who fails to submit a contractor plan as required by 8 AAC 61.620. The department will consider the severity of the violations in determining the amount of the penalty.

(b) For purposes of (a) of this section, a separate citation will be issued for each person who is not certified as required by AS 18.31.200 (c) and 8 AAC 61.600. Each citation will, in the department's discretion, include a separate penalty.

770. Appeals

(a) A suspension or revocation under 8 AAC 61.750, a withdrawal under 8 AAC 61.760, or a citation and penalty under 8 AAC 61.765 is final unless the person affected files an appeal with the commissioner within 30 calendar days after receipt of the notice of suspension or revocation, notice of withdrawal, or citation and penalty. The appeal must be in writing and must include

(1) a specification of objections to the department's findings, and a concise summary of facts in support of each objection; and

(2) a description of the relief sought.

(b) The commissioner's decision will be based upon the departmental record and will state the facts relied upon by the commissioner in deciding the matter.

(c) The commissioner will, in his or her discretion, hold a hearing on the appeal to supplement the departmental record if clarification or additional facts are necessary for a proper resolution of the appeal.

(d) A copy of the commissioner's decision will be sent to the appellant by certified mail. The decision will include a statement of the appellant's right to further appeal.

790. Definitions

"asbestos abatement work" means all activities involved in

Class I or Class II asbestos work under 29 C.F.R. 1915.1001 or 29 C.F.R. 1926.1101 revised as of July 1, 1998; and

responding to a major fiber release episode;

"asbestos-containing material" means any material containing more than one percent asbestos that has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, as determined using the method specified in 40 C.F.R. Part 763, Subpart E, Appendix E, Section 1 (Polarized Light Microscopy), revised as of July 1, 1998;

"HEPA" means a high efficiency particulate air filter, with an efficiency of not less than 99.97 percent when challenged with 0.3 micron diameter particles;

"maintenance work" as applied to small-scale, short-duration maintenance work means any activity which disturbs asbestos in which the disturbance is incidental to the work being performed;

"major fiber release episode" means any uncontrolled or unintentional disturbance of asbestos-containing building material (ACBM), resulting in a visible emission, which involves the falling or dislodging of more than three square or linear feet of ACBM;

II. ASBESTOS BASICS

Characteristics and Uses of Asbestos

Asbestos is a **naturally occurring** fibrous mineral, mined worldwide with major commercial sources of this mineral from mines in South Africa, India and Canada. Because it is a rock, asbestos has many properties that make it a useful component of many building systems. Its **properties** include: **high tensile strength, high heat resistance, and chemical resistance.** It is extremely aerodynamic and the **fibers may float in the air several days** after they are released.

The **three major types** of asbestos are **chrysotile (white asbestos), amosite (brown asbestos), and crocidolite (blue asbestos),** with chrysotile being the one most commonly used.

AHERA has divided asbestos containing building materials (ACBM) into three categories. These categories are:

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).

Thermal System Insulation (TSI) means material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

Miscellaneous Materials means interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation

Certain considerations must be taken into account when determining if these materials present a hazard. These considerations include:

- The location and the amount of the material both in quantity and as a percentage of the area;
- The condition of the material including: type of damage, severity of damage, and extent of damage;
- The accessibility of the material;
- The material's potential for disturbance;
- Known or suspected causes of damage and
- Preventive measures which might eliminate the likelihood of the material from becoming damaged

Definitions:

Asbestos means the asbestiform varieties of: Chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonitegrunerite); anthophyllite; tremolite; and actinolite.

Friable - The ability of a material to be crumbled to a powder by hand pressure when dry.

Asbestos Containing Material (ACM) -any material, according to the EPA and OSHA, that contains > 1% asbestos by weight. **NOTE:** OSHA does have letters of interpretation regarding materials that have any amount of asbestos in them, because even material with a trace amount of asbestos could present an inhalation hazard when the material is disturbed.

III. ASBESTOS RELATED DISEASES

Factors Affecting Disease

There are several factors that may affect a person's getting an asbestos related disease. These include:

Smoking (Asbestos workers who smoke are 50 to 90 times more likely to get lung cancer than non-smoking non-asbestos working persons) **"Synergistic Effect"**

Individual Susceptibility (Individual response to asbestos fibers cannot be predicted.)

Group Susceptibility (Maintenance workers who fail to follow safe work practices are more likely to get an asbestos related disease than office workers, primarily because maintenance workers are more likely to come into direct contact with asbestos than office workers.)

Age (The older you are when you start working with asbestos, the less likely you are to get an asbestos related disease)

Amount of Exposure to Asbestos (In general the more asbestos you are exposed to the greater your chance of getting an asbestos related disease**) "Dose"**

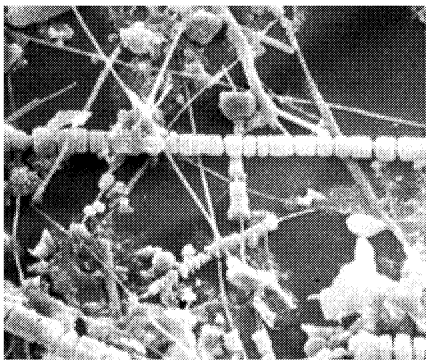
Length of Time Exposed to Asbestos (Same as above)

General Health (The better health you are in, the more resistance to disease you have) **Note:** There is no safe level of asbestos exposure. Any exposure poses some risk. The more your exposure the greater your risk. Thus, it is important to take appropriate safety measures whenever working with or around friable asbestos containing materials.

Asbestos enters the body in two main ways: **Inhalation** (breathing it in) and **Ingestion** (swallowing it), such as when it is swallowed with mucus from the respiratory tract.

Defense Mechanisms Against Asbestos

The body has defensive mechanisms against asbestos that include: **nose hairs, the Muco-ciliary escalator,** and **white blood cells (Phagocytes).** While these help, they are not entirely effective against asbestos).



Non - Harmful Symptoms of Asbestos Exposure

Non - harmful symptoms of asbestos exposure include: **asbestos warts, asbestos bodies, pleural plaques, pleural effusion,** and **pleural thickening.**

Major Asbestos Related Diseases

Asbestosis

This disease is a scarring of the lungs caused by the body's response to the asbestos fibers lodged there. It is generally associated with exposure to large amounts of asbestos and takes 10-40 years to develop. Chest X-rays and Pulmonary Function Tests are how it is diagnosed.

Lung Cancer

This disease is one or more malignant tumors of the lungs caused by the body's response to the asbestos fibers lodged there. In general the more asbestos you are exposed to, the greater your chances of getting lung cancer. **Smoking increases your risk of getting lung cancer when you work with asbestos by over 50 to 90 times that of non-smoking non-asbestos workers.** Lung cancer takes 10-40 years to develop and is diagnosed by chest X-rays and biopsy.

Mesothelioma

This disease is a malignancy of the lining of chest and/or abdominal cavity caused by asbestos fibers that have migrated from the lungs to this area. This disease has been associated with lower levels of exposure to asbestos. Mesothelioma takes from 10-40 years to develop and is diagnosed by chest X-rays and biopsies.

Other Cancers

Asbestos exposure has been linked with an increase in other cancers, particularly of the digestive system.

Remember: Asbestos is a health hazard when it is released as a dust!

IV. RESPIRATORS AND PROTECTIVE CLOTHING

Respirators

The purpose of respiratory protection is to provide clean, breathable air to the user.
There is not a one size fits all for every hazard respirator. Some respirators cannot be used in atmospheres which are **Immediately Dangerous to Life or Health (IDLH).** Such conditions may exist when there is less then 19.5% oxygen in the air or when the level of toxic contaminants is too high. Some respirators only provide protection up to a certain level or for a certain contaminant depending on the type of filter or cartridge used.

Respirators must be selected based on the hazard to which the employee will be exposed. There are two categories or types of respirators. They are **Air Supplied** and **Air Purifying.** Both of these must have tight fitting full-face pieces.

Respirators must fit tested every year. The two accepted methods are **qualitative** and **quantitative.** Qualitative fit testing is a simple pass/fail test that determines whether a person can smell, taste or be irritated by a test agent while wearing a respirator. Quantitative fit testing measures the difference in contaminant or pressure inside and outside the respirator while it is worn to determine an actual fit factor number.

There are several factors that can affect the fit of a respirator. These include: **facial hair, eyeglasses, dentures, facial scars or deformities, and a loss or gain of weight.** The presence of such factors may necessitate more frequent fit testing.

The powered air purifying respirator (PAPR) will afford protection against asbestos when it is equipped with HEPA filters, up to 100x the P.E.L. (Permissible Exposure Limit) of 0.1 f/cc when the motor is on and providing at least 4 cfm of airflow to the facepiece. (Quanitative fit tested) This respirator **cannot be used in an IDLH atmosphere**. Fit testing for this respirator must be done every year in the negative pressure mode (i.e., blower off) using either qualitative or quantitative methods.

The airline respirator will afford protection up to 1000x the P.E.L. It supplies clean pressurized air to the user rather than purifying the air in the room. It must supply what is called Grade D breathing air. The air source for this respirator can either be bottled air tanks, a compressor, or an air pump. These must be rated for use with respiratory equipment. You can't just use any pump or compressor. The compressors and pumps must have special filters and alarms to protect against things like carbon monoxide and particulate. This respirator can be used to escape from IDLH atmospheres **provided** that it has a 5 to 15 min. escape bottle of air attached directly to it. Airlines cannot use more than 300 feet of hose from the air source to the regulator. It also must be fit tested every year using quantitative methods.

Each time either respirator is used, the following must be done:

(a) Inspecting of the respirator before every use to make sure the valves, straps, mask, and hoses are all in working order.

(b) Using a flow check meter with PAPR's to insure fully charged batteries and to check to see if the filters or motors need replacing before each use. **NOTE:** PAPR's need to provide air flow into the face piece greater than 4 cfm in order to achieve the upper range of protection from the unit.

(c) Checking of the fit every time you put on the respirator using both positive (cover the exhalation valve(s) and breathe out gently-- the mask should puff out slightly) and negative pressure (cover the inhalation valves/filters and breathe in--the mask should collapse slightly) user seal checks.

Respirators also require proper care and maintenance. They must be cleaned after every use in a mild detergent in water not exceeding 120F. If they are not individually assigned they must also be disinfected with a hospital grade disinfectant. In general alcohol wipes should be avoided since the alcohol could degrade the rubber face-piece. Consult the manufacturer for recommendations on selection of an appropriate disinfectant.

Respirators should be air dried away from direct sunlight and heat exceeding 120F. They should be stored in a clean and sanitary area where they will not get crushed or broken.

Any respirator that is found to be defective shall not be used and a new one obtained or defective parts replaced.

Anytime respirators are used, there must be a written respiratory protection program in place at the facility.

The elements of a respiratory protection program include the following:

- Procedures for selecting respirators for use in the workplace
- Medical evaluations of employees required to use respirators
- Fit testing procedures for tight fitting facepieces
- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for air supplied respirators
- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and
- Procedures for regularly evaluating the effectiveness of the program
- Having a suitably trained person in charge of the program

Protective Clothing

The purpose of protective clothing is to prevent contamination of regular work clothing with asbestos fibers that can then be carried into the workplace or home. Disposable protective clothing of the **Tyvek** or **Kleen Guard** variety or equivalent must be used whenever the worker is in a restricted area. Disposable clothing must be decontaminated, placed in sealed bags, and disposed of as asbestos waste after being used. The disposable suits can only be worn once, and then they must be discarded with the asbestos waste. Any other protective equipment must be decontaminated before it is taken from the work area or placed in sealed bags which are not to be opened until the employee is in the next asbestos work area.

V. MEDICAL MONITORING

Medical monitoring is a screening of the health of employees by means of periodic medical examinations. The purpose of medical monitoring is to both detect and prevent possible adverse health effects of occupational exposure to asbestos dust as early as possible and to evaluate an employee's fitness to wear a respirator. Medical monitoring can provide the following.

. Early recognition of pre-existing lung disease or other conditions that may affect an employee's ability to wear a respirator or work with asbestos.
. Prompt referral for follow-up of abnormal findings.
. Indication of the effectiveness of respirator use & safe work practices taken to reduce asbestos exposure.
. Identification of health factors that may increase an individual's risk of developing asbestos related disease.
. Determination of appropriate follow-up and counseling for early asbestos related conditions or smoking.
. Periodic evaluation of fitness for respirator use and work with asbestos.

The examination provided is highly specific for the detection of asbestos related illness or respiratory abnormalities. The purpose of this examination is not to take the place of your regular physical exams or routine medical care.

CONTENT OF THE EXAMS:

The exams will consist of:

. Questions about medical, work history, exposure, & respirator usage
. Examination of the heart & lungs
. Pulmonary function test (to evaluate lung function)
Chest x-ray (at the discretion of the physician

Frequency of Chest Roentgenogram [29 CFR 1910.1001]

Years since first exposure	Age of employee		
15 to 35	35+ to 45	45+	
0 to 10	Every 5 years	Every 5 years	Every 5 years.
10+	Every 5 years	Every 2 years	Every 1 year.

CONFIDENTIALITY:

Confidentiality of medical records will be assured with access limited strictly to medical personnel. Records will be subject to release pursuant to the Federal (OSHA) Regulation of Access to Employee Exposure and Medical Records CFR 1910.20. Supervisory personnel will only receive information that workers have been examined & approved for respirator use.

RESULTS OF THE EXAMS:

Employees will be individually notified of their fitness for duty. Information will be sent directly to the employees home address from the clinic. Recommendations will be made for follow-up screening and referral if appropriate.

SIGNIFICANCE OF ABNORMAL TEST RESULTS:

Many of the abnormalities found in people who work with asbestos may also be found in the general population, and may or may not be a result of exposure to asbestos on the job. Questions concerning abnormal test results should be discussed with the Physician.

VI. SAMPLING AND ANALYTICAL METHODS

TYPES OF SAMPLING

PERSONAL	AREA	BULK
-Sampling pump worn on person with filter in breathing zone	- 2 Types: high volume (10-12lpm) low volume (1-4lpm)	-Only small quantity of ACM/PACM needed (about ½ tsp.)
-Pump air flow 1 to 4 liters per min (LPM)	- Pump placed on objects in and out of regulated area	-Will need multiple number of samples for proper results
-Only way for OSHA exposure determination levels envelopes etc.)	-Airborne fiber concentration (f/cc)	- Obtain in glass or plastic vials or zip lock baggies, (No paper
-Airborne fiber concentrations (fibers per cubic centimeter)		-Results in percent (%)

SAMPLE ANAYLSIS

	PHASE CONTRAST MICROSCOPY (PCM)	TRANSMISSION ELECTRON MICROSCOPY (TEM)	POLARIZED LIGHT MICROSCOPY (PLM)
COST:	$10-35	$50-200	$25-50
TURN-AROUND:	2 HOURS	24 HOURS	48 HOURS
SPECIFICITY:	IDENTIFIES ALL FIBERS	ONLY ASBESTOS	ALL FIBERS
SENSITIVITY: (thinnest fiber visible)	.25 micron	.0025 micron	.20 microns
REPORTED IN:	F/CC	STRUCTURES/ MILLIMETER SQUARED (S/MM^2)	PERCENT ASBESTOS

CLEARANCE SAMPLING: done for private and State contracts. Uses a 1 HP Leaf Blower and 20 inch box fans to blow down the area. Conducted when wall and floor layers of plastic are taken down after visual clearances but before critical barriers around doors, windows, electrical etc. are removed.

AIRBORNE CLEARANCE LEVELS: <0.01 F/CC (PCM) or 70 S/MM^2 (TEM) or Background (Pre-abatement levels.)

VII. SAFE WORK PRACTICES REVIEW

There are six asbestos abatement control options and one or a combination of them can be used on the same job. These control options are: **removal, repair, encapsulation, enclosure, and operations & maintenance**

When performing asbestos abatement work there are 6 principles to be emphasized

(1) Containment
(2) Air Filtration with HEPA Filters
(3) Negative Air pressure
(4) Wet Methods
(5) Good Housekeeping
(6) Proper Cleanup & Disposal

AREA PREPARATION

- Occupants Protected;
- Access Limited;
- Signs Posted;
- Barriers Erected (barrier tape, plastic, drywall etc.);
- Furniture Protected in place or removed if possible after decontamination;
- Sprayer and Amended Water Available;
- HVAC System and electrical systems deactivated, locked-out, and isolated;
- 6 Mil Thick Plastic and Duct-Tape to Cover Floors, Walls, and Other Surfaces;
- Decontamination Chamber and Procedures in Place;
- Negative pressure ventilation system or HEPA vac for exhaust in place;
- HEPA Vacuum Available;
- Cleanup Supplies Available;
- 6 Mil Labeled Disposal Bags Available;
- Glovebags Available;
- Appropriate Respirators and Disposable Clothing Available;

MINIMIZE FIBER RELEASE

- ACM Handled Wet with Amended Water;
- ACM Bagged While Still Wet;
- Work Area Under "Negative Air Pressure";
- Powered Hand tools Locally Exhausted Through HEPA Filter;
- Proper use of scrapers/cutting implements
- Good Housekeeping Procedures To Be Used (no dropping or throwing asbestos, clean up as you go)
- Prohibited Work Practices: dry, no HEPA, etc.

CLEANUP & DISPOSAL

- Means to Decontaminate Workers and Equipment Available: plastic on floor, single chamber decon, three stage decon w/shower;
- No eating, drinking, smoking, chewing, or applying cosmetics in work area
- Means to Decontaminate Waste Containers Before Removal from Regulated Area;
- Proper Storage and removal of Waste
- Procedures to Account for and Track Asbestos Waste;
- Filtration Devices in Place to Remove Asbestos from Waste Water;
- Procedure to Verify Completion of Cleanup

OSHA WARNING SIGNS AND LABELS

Danger - Asbestos Cancer & Lung Disease Hazard Authorized Personnel Only Respirators & Protective Clothing Are Required In This Area	Asbestos Danger Cancer & Lung Disease Hazard Authorized Personnel Only

Fig. 1 Sign, Asbestos Danger≅ **Fig 2** Sign, Asbestos Danger≅

Danger Contains Asbestos Fibers Avoid Creating Dust Cancer & Lung Disease Hazard	Asbestos Free

Fig 3 Danger Warning Label, Asbestos Waste Bags **Fig 4** Asbestos Free Label

Use sign shown in Fig 1 for demarcating regulated areas where respiratory protection and clothing are required.
Use sign shown in Fig 2 for demarcating regulated areas.
Use the label in Fig 3 for asbestos waste bags and drums.
Use the label in Fig. 4 for marking asbestos free materials.

The following signs may be used in addition to required OSHA signs to keep people away from a regulated area or to restrict access to an area which is awaiting abatement.

WARNING! Restricted Access For Access Call: _____

NO ACCESS! Respirators Required in this area.

Abestos Hazard! Area Restricted Protective equipment Required

DANGER! Area Restricted Authorized Entry Only!

Signs or Notices

Signal Words: “Danger, Warning, Hazard, Do Not Enter”; Statement of Hazard; Precautionary Statement; Effects of Exposure, etc.

Appendix F to 29 CFR 1926.1101. Work Practices and Engineering Controls for Class I Asbestos Operations - Non mandatory

This is a non-mandatory appendix to the asbestos standards for construction and for shipyards. It describes criteria and procedures for erecting and using negative pressure enclosures for Class I Asbestos Work. When NPEs are used as an allowable control method to comply with paragraph (g)(5)(1) of this section. Many small and variable details are involved in the erection of a negative pressure enclosure. OSHA and most participants in the rulemaking agreed that only the major, more performance-oriented criteria should be made mandatory. These criteria are set out in paragraph (g) of this section. In addition, this appendix includes these mandatory specifications and procedures in its guidelines in order to make this appendix coherent and helpful. The mandatory nature of the criteria, which appear in the regulatory text, is not changed because they are included in this "non-mandatory" appendix. Similarly, the additional criteria and procedures included as guidelines in the appendix, do not become mandatory because mandatory criteria are also included in these comprehensive guidelines.

In addition, none of the criteria, both mandatory and recommended, are meant to specify or imply the need for use of presented or licensed methods or equipment. Recommended specifications included in this attachment should not discourage the use of creative alternatives which can be shown to reliably achieve the objectives of negative-pressure enclosures.

Requirements included in this appendix, cover general provisions to be followed in all asbestos jobs, provisions which must be followed for all Class I asbestos jobs, and provisions governing the construction and testing of negative pressure enclosures. The first category includes the requirement for use of wet methods, HEPA vacuums, and immediate bagging of waste; Class I work must conform to the following provisions:

- Oversight by competent person
- Use of critical barriers over all openings to work area
- Isolation of HVAC systems
- Use of impermeable drop cloths and coverage of all objects within regulated areas. In addition, more specific requirements for NPEs include:
- Maintenance of - 0.02 inches water gauge within enclosure
- Air movement away from employees performing removal work
- Smoke testing or equivalent for detection of leaks and air direction
- Deactivation of electrical circuits

Planning the Project

The standard requires that an exposure assessment be conducted before the asbestos job is begun according to [1926.1101(f)(1)]. Information needed for that assessment, includes data relating to prior similar jobs as applied to the specific variables of the current job. The information needed to conduct the assessment will be useful in planning the project, and in complying with any reporting requirements under this standard, when significant changes are made to a control system listed in the standard (see also those of EPA 40 CFR 61, subpart M). Thus, although this standard does not explicitly require the preparation of a written asbestos removal plan, the usual constituents of such a plan, i.e., a description of the enclosure, the equipment, and the procedures to be used throughout the project, must be determined before the enclosure can be erected.

The following information should be included in the planning of the system with review by and approval of the Accredited Project Designer:

- A physical description of the work area;
- A description of the approximate amount of material to be removed;
- A schedule for turning off and sealing existing ventilation systems;
- Personnel hygiene procedures;
- A description of personal protective equipment and clothing to be worn by employees;
- A description of local exhaust ventilation systems to be used and how they are to be tested;
- A description of work practices to be observed by employees;
- The air monitoring plan;
- A description of the method to be used to transport waste material; and
- The location of the dump site.

Materials and Equipment Necessary for Asbestos Removal

Although individual asbestos removal projects vary in terms of the equipment required to accomplish the removal of the materials, some equipment and materials are common to most asbestos operations.

Plastic sheeting used to protect horizontal surfaces, seal HVAC openings or to seal vertical openings and ceilings should have a minimum thickness of 6 mils. Tape or other adhesive used to attach the plastic sheeting should be of sufficient adhesive strength to support the weight of the material plus all stresses encountered during the entire duration of the project without becoming detached from the surface.

Other equipment and materials which should be available at the beginning of each project are:

- HEPA Filtered Vacuum is essential for cleaning the work area after the asbestos has been removed. It should have a long hose capable of reaching out-of-the way places such as areas above ceiling tiles, behind pipes, etc.
- Portable air ventilation systems installed to provide the negative air pressure and air removal from the enclosure must be equipped with a HEPA filter. The number and capacity of units required to ventilate an enclosure depend on the size of the area to be ventilated. The filters for these systems should be designed in such a manner that they can be replaced when the air flow volume is reduced by the build-up of dust in the filtration material. Pressure monitoring devices with alarms and strip chart recorders attached to each system to indicate the pressure differential and the loss due to dust build-up on the filters are recommended.
- Water sprayers should be used to keep the asbestos material as saturated as possible during removal; the sprayers will provide a fine mist that minimizes the impact of the spray on the material.
- Water used to saturate the asbestos containing material can be amended by adding at least 15 mils. (1/4 ounce) of wetting agent to 1 liter (about 1 pint) of water. An example of a wetting agent is a 50/50 mixture of polyoxyethylene ether and polyoxyethylene polyglycol ester.
- Back-up power supplies are recommended especially for ventilation systems.
- Shower and bath water should be mixed with hot and cold-water faucets. Water that has been used to clean personnel or equipment should either be filtered or be collected and discarded as asbestos waste. Soap and shampoo should be provided to aid in removing dust from the worker's skin and hair.
- See paragraph (h) and (i) of 29 CFR 1926.1101 for appropriate respiratory protection and protective clothing.
- See paragraph (k) of 29 CFR 1926.1101 for required signs and labels.

Preparing the Work Area

Disabling HVAC Systems: The power to the heating, ventilation, and air conditioning systems that service the restricted area must be deactivated and locked off. All ducts, grills, access ports, windows, and vents must be sealed off with two layers of plastic to prevent entrainment of contaminated air.

Operating HVAC Systems in the Restricted Area: If components of an HVAC system located in the restricted area are connected to a system that will service another zone during the project, the portion of the duct in the restricted area must be sealed and pressurized. Necessary precautions include caulking the duct joints, covering all cracks and openings with two layers of sheeting, and pressurizing the duct throughout the duration of the project by restricting the return air flow. The power to the fan supplying the positive pressure should be locked "on" to prevent pressure loss.

Sealing Elevators: If an elevator shaft is located in the restricted area, it should be either shut down or isolated by sealing off with two layers of plastic sheeting. The sheeting should provide enough slack to accommodate the pressure changes in the shaft without breaking the airtight seal.

Removing Mobile Objects: All moveable objects should be cleaned and removed from the work area before an enclosure is constructed unless moving the objects creates a hazard. Mobile objects will be assumed to be contaminated and should either be cleaned with amended water and a HEPA vacuum and then removed from the area or wrapped and then disposed of as hazardous waste.

Cleaning and Sealing Surfaces: After cleaning with water and a HEPA vacuum, surfaces of stationary objects should be covered with two layers of plastic sheeting. The sheeting should be secured with duct tape or an equivalent method to provide a tight seal around the object.

Bagging Waste: In addition to the requirement for immediate bagging of waste for disposal, it is further recommended that the waste material be double bagged and sealed in plastic bags designed for asbestos disposal. The bags should be stored in a waste storage area that can be controlled by the workers conducting the removal. Filters removed from air handling units and rubbish removed from the area are to be bagged and handled as hazardous waste.

Constructing the Enclosure

The enclosure shall be constructed to provide an air tight seal around ducts and openings into existing ventilation systems and around penetrations for electrical conduits, telephone wires, water lines, drain pipes, etc. Enclosures should be both airtight and watertight except for those openings designed to provide for entry and/or airflow control.

Size: An enclosure shall be the minimum volume to encompass all of the working surfaces yet allow unencumbered movement by the worker(s), provide unrestricted air flow past the worker(s), and ensure walking surfaces can be kept free of tripping hazards.

Shape: The enclosure may be any shape that optimizes the flow of ventilation air past the worker(s).

Structural Integrity: The walls, ceilings, and floor must be supported in such a manner that portions of the enclosure will not fall down during normal use.

Openings: It is not necessary that the structure be airtight: openings may be designed to direct airflow. Such openings shall be located at a distance from active removal operations. They should be designed to draw air into the enclosure under all anticipated circumstances. In the event that negative pressure is lost, they should be fitted with either HEPA filters to trap dust or automatic trap doors that prevent dust from escaping the enclosure.
Openings for exits should be controlled by an airlock or a vestibule.
Barrier Supports: Frames shall be constructed to support all unsupported areas of sheeting.

Sheeting: Walls, barriers, ceilings, and floors shall be lined with two layers of plastic sheeting having a thickness of at least 6 mil.

Seams: Seams in the sheeting material shall be minimized to reduce the possibilities of accidental rips and tears in the adhesive or connections. All seams in the sheeting shall overlap, be staggered, and not be located at corners or wall to floor joints.

Areas Within an Enclosure: Each enclosure consists of a work area, a decontamination area, and waste storage area. The work area where the asbestos removal operations occur shall be separated from both the waste storage area and the contamination control area by physical curtains, doors, and/or airflow patterns that force any airborne contamination back into the work area.

See paragraph (j) of 29 CFR 1926.1101 for requirements for hygiene facilities.

D uring egress from the work area, each worker shall step into the equipment room , clean tools and equipment, and remove gross contamination from clothing by wet cleaning and HEPA vacuuming. Before entering the shower area, foot coverings, head coverings, hand coverings, and coveralls are removed and placed in impervious bags for disposal. Airline connections from airline respirators with HEPA disconnects and power cables from powered air purifying respirators (PAPRs) will be disconnected just prior to entering the shower room.

Establishing Negative Pressure within the Enclosure

Negative Pressure: Air is to be drawn into the enclosure under all anticipated conditions and exhausted through a HEPA filter for 24 hours a day during the entire duration of the project.

Air Flow Tests: Air flow patterns will be checked before removal operations begin, at least once per operating shift, and any time there is a question regarding the integrity of the enclosure. The primary test for airflow is to trace air currents with smoke tubes or other visual methods. Flow checks are made at each opening and at each doorway to demonstrate that air is being drawn into the enclosure and at each worker's position to show that air is being drawn away from the breathing zone.

Monitoring Pressure Within the Enclosure: After the initial air flow patterns have been checked, the static pressure must be monitored within the enclosure. Monitoring may be made using manometers , pressure gauges, or a combination of these devices. It is recommended that they be attached to alarms and strip chart recorders at points identified by the design engineer.

Corrective Actions: If the manometers or pressure gauges demonstrate a reduction in pressure differential below the required level, work should cease and the reason for the change investigated and appropriate changes made. The airflow patterns should be retested before work begins again.

Pressure Differential: The design parameters for static pressure differentials between the inside and outside of enclosures typically range from .02 to .10 inches of water gauge, depending on conditions. All zones inside the enclosure must have less pressure than the ambient pressure outside of the enclosure (-.02 inches of water gauge differential). Design specifications for the differential vary according to the size, configuration, and shape of the enclosure as well as ambient and mechanical air pressure conditions around the enclosure.

Air Flow Patterns: The flow of air past each worker shall be enhanced by positioning the intakes and exhaust ports to remove contaminated air from the worker's breathing zone, by positioning HEPA vacuum cleaners to draw air from the worker's breathing zone, by forcing relatively uncontaminated air past the worker toward an exhaust port, or by using a combination of methods to reduce the worker's exposure.

Air Handling Unit Exhaust: The exhaust plume from air handling units should be located away from adjacent personnel and intakes for HVAC systems.

Air Flow Volume: The airflow volume (cubic meters per minute) exhausted (removed) from the workplace must exceed the amount of makeup air supplied to the enclosure. The rate of air exhausted from the enclosure should be designed to maintain a negative pressure in the enclosure and air movement past each worker. The volume of airflow removed from the enclosure should replace the volume of the container at every 5 to 15 minutes. Airflow volume will need to be relatively high for large enclosures, enclosures with awkward shapes, enclosures with multiple openings, and operations employing several workers in the enclosure.

Air Flow Velocity: At each opening, the airflow velocity must visibly "drag" air into the enclosure. The velocity of airflow within the enclosure must be adequate to remove airborne contamination from each worker's breathing zone without disturbing the asbestos containing material on surfaces.

Airlocks: Airlocks are mechanisms on doors and curtains that control airflow patterns in doorways. If airflow occurs the patterns through doorways must be such that the air flows toward the inside of the enclosure. Sometimes vestibules, double doors, or double curtains are used to prevent air movement through the doorways. To use a vestibule, a worker enters a chamber by opening the door or curtain and then closing the entry before opening the exit door or curtain. Airlocks should be located between the equipment room and shower room, between the shower room and the clean room, and between the waste storage areas and the outside of the enclosure. The airflow between adjacent rooms must be checked using smoke tubes or other visual tests to ensure the flow patterns move air toward the work area without producing eddies.

Monitoring for Airborne Concentrations

In addition to the breathing zone samples taken as outlined in paragraph (f) of 29 CFR 1926.1101, samples of air should be taken to demonstrate the integrity of the enclosure, the cleanliness of the clean room and shower area, and the effectiveness of the HEPA filter. If the clean room is shown to be contaminated, the room must be relocated to an uncontaminated area.

Samples taken near the exhaust of portable ventilation systems must be done with care.

General Work Practices

Preventing dust dispersion is the primary means of controlling the spread of asbestos within the enclosure. Whenever practical, the point of removal should be isolated, enclosed, covered, or shielded from the workers in the area. Waste asbestos containing materials must be bagged during or immediately after removal; the material must remain saturated until the waste container is sealed. (**NOTE:** If certain circumstances are present that requires dry removal, e.g, necessity to work around energized electrical equipment. Special work practices and special permission from EPA/OSHA are required if asbestos-containing materials must be removed dry.)

Waste material with sharp points or corners such as floor tiles, must be placed in hard air tight/water impermeable containers rather than bags.

Whenever possible, large components should be sealed in plastic sheeting and removed intact.

Bags or containers of waste will be moved to the waste holding area, washed, and wrapped in a bag with the appropriate labels.

Cleaning the Work Area

Surfaces within the work area should be kept free of visible dust and debris to the extent feasible. Whenever visible dust appears on surfaces, the surfaces within the enclosure must be cleaned by wiping with a wet sponge, brush, or cloth and then vacuumed with a HEPA vacuum.

All surfaces within the enclosure should be cleaned before the negative air pressure device is deactivated and the enclosure is disassembled. If there is any visible residue present after cleaned surfaces have dried, the site is NOT clean, and re-cleaning operations are necessary. An approved encapsulant may be sprayed onto areas after visible dust has been removed.

VIII. SAFETY AND HEALTH CONSIDERATIONS (OTHER THAN ASBESTOS)

Electrical Safety Considerations

The Hazard

One of the most common hazards and one that gives the least warning, is electrical current. Incorrect wiring, improper grounding, and lack of proper shielding results in approximately 1,000 people per year being electrocuted.

Three factors determine the severity of electric shock. These are:

- The amount of current flowing through the body
- The path of the current flowing through the body
- The time the current is allowed to follow this path

Electrical Safety Review

- The use of wet methods increases the potential for electric shock when working around electrical components.

- De-energize equipment, then perform tests to verify that the circuit has been de-activated. Once this has been confirmed, lockout the controls to ensure that the circuit can not be accidentally re-activated.

- Use non-conductive scrapers and vacuum attachments (wood, plastic, rubber)

- Ensure all electrical equipment is properly grounded before the job begins and connected to GFCI (ground fault circuit interrupter) devices.

- Use care not to damage insulated coverings with scrapers, scaffolding wheels, etc.

- Avoid stringing electrical wiring across floors. Elevate wiring off the floor to keep it away from water on the floor and damage from foot traffic and rolling scaffolds.

- Do not allow water to accumulate in puddles on work area floors.

- Ensure electrical outlets are tightly sealed and taped to avoid being sprayed with water.

- Use stable wooden or fiberglass ladders - not metal.

- Energized parts must be insulated or guarded from employee contact and with any other conductive object.

- Extension cords used with portable electrical tools and appliances must be the three wire grounded type and connected to a GFCI (Ground Fault Circuit Interrupter).

- Extension cords shall be protected from accidental damage and should not be fastened with staples, hung from nails, or suspended from wire.

- Portable electric hand tools shall be equipped with a 3 wire cord having a ground wire permanently fixed to the tool frame; or should be double insulated.

- All circuits and electrical disconnects shall be locked out.

Ladders/Scaffolding/Walking - Working Surfaces (Inspections and Proper Use)

Ladders and Scaffolds

Asbestos abatement projects always present risks to workers from falls, slips, or trips. The nature of the tasks necessitates the use of scaffolding and ladders.

Ladders

The following items shall always be checked on a regular basis:

- Ladders are always maintained in good condition.
- Complete inspections are done periodically
- No improvised ladder repairs are made.
- Defective ladders are not used. When they are found, the defective ladder must be removed from the job site, and must be destroyed.
- Safety feet spreaders and other components of ladders are in good condition.
- Movable parts operate freely without binding or undue play.
- Rungs are kept free of grease or oil.
- Ladders are not used for other than their intended purpose.
- Extension type ladders shall be used with a 1:4 lean ratio (1 foot out for every 4 feet of elevation).
- Stepladders shall only be used when fully open.
- The user faces the ladder when going up or down.
- Tops of stepladders are not to be used as steps.
- Bracing on the back legs is not used for climbing.
- Portable ladders are used by one person at a time.
- Ladders are secured to prevent displacement when in use.
- All ladders have well designed safety shoes.
- Hook or other type ladders used in structures are positively secured.
- Wood or fiberglass ladders must be selected to reduce electrical hazards.

Scaffolding

Some asbestos abatement projects will involve the use of scaffolding. Proper set up, regular inspections, and basic maintenance should not be overlooked. **OSHA standards require that when free standing mobile scaffolding is used, the height shall not exceed four times the minimum base dimension.** This is because scaffolding can be easily turned over. Mobile scaffolds shall be in good repair and move freely. Rented scaffolding must be checked carefully. When using a mobile scaffold the floor space must be kept clear. Workers shall not ride the scaffold while it is in motion.

Guardrails shall be used. OSHA requires that guardrails be used when scaffolding is from 4 to 10 feet tall and less than 45 inches wide. Scaffolding over 10 feet tall must have guardrails regardless of width. Midrails and toe boards are also necessary.
Planking used on a scaffold shall not extend farther than 12" over the edges and shall always be secured to the frame.

Slips, Trips, and Falls

Areas sealed with polyethylene and kept damp with amended water (water containing a surfactant) to reduce airborne fibers become very slick. Disposable booties worn on these wet surfaces can be a potential slip hazard. The supervisor needs to assess this risk, and modify the foot protection as necessary to decrease the risk of slipping on the job. Air line hoses and electrical lines can create trip hazards. When asbestos and other debris are removed, they must be bagged as soon as possible.

- Consider the height of the work, equipment in use, and the numerous trip hazards. Take a look at your walking surfaces.
- Seamless rubber boots, slip on shoes, or safety shoes with non-skid soles may help reduce slip hazards.
- Minimize the amount of water that accumulates on the floor.
- Suspend electrical lines and cords where possible using non-conductive materials.
- No horseplay should be allowed in the work area.
- Minimize debris on the floor.
- Pick up tools, scrapers, etc.

Fire Considerations

Fires can create immediate life threatening conditions. A few of the fire safety features to be concerned with are the location of exits, travel distances to exits, emergency lighting, and alarm systems.

Emergency plans should be developed to include alternative exits to the main one, which will be used only during emergencies. All personnel entering the work area must be familiar with these exits.

Both polyethylene sheeting and protective clothing can melt and burn as well as produce toxic gases. Avoid contact with transformers, steam pipes, boilers, etc. that will be hot during the removal process.

To Avoid Fire Problems In Asbestos Control Areas

- Ensure that all sources of ignition are removed from the work area and that controls are locked out.
- Cut off supply to steam lines, electric and steam heaters, and radiators. Do not allow the polyethylene to lay against hot surfaces.
- Do not allow lighters, matches, or smoking inside the work area or decontamination unit.
- Post a fire watch when using cutting torches, welding equipment, or other hot processes.
- When using a cutting torch, know what is on the other side of the wall and below the floor.
- Reduce the amount of flammable/combustible materials inside a space to a minimum, prior to hanging poly.
- Mark exits from the work area and post directional arrows.
- Keep trash and debris to a minimum.
- Lighting of exits and exit routes should be provided.
- <u>In case of fire, the fire hazard becomes an immediate threat and plastic barriers may have to be violated.</u>
- Be alert for flammable vapors at the work site.
- A telephone or other effective means of communication shall be available for notifications of authorities in an emergency.
- Post local rescue and fire department numbers.
- Make available at the worksite and provide training in the use of Class A,B,C, fire extinguishers.

Emergency Procedures

OSHA requires a written emergency action and fire prevention plan (29 CFR 1910.38) Briefly the essential items of the plan should include:

- The manner in which emergencies are announced.
- Emergency escape procedures and routes.
- Procedures for employees who must remain to operate critical plant operations which take time to shut down.
- Procedures to account for all employees after evacuation.
- Rescue and medical duties.
- Names and/or job titles of people to be contacted for additional information.
- A list of major workplace fire hazards.
- Names and/or job titles of people responsible for the building maintenance of fire prevention equipment.

Establish a system for alerting workers of an emergency or other problem requiring evacuation. All persons entering the work area must be familiar with this system. A floor plan drawing should also be posted to familiarize persons in the work area with the location of the exits.

Written emergency procedures shall cover events such as fires, power failures, compressor failure (with air supplied respirators), accident, or employee injury.

Medical Services and First Aid

Asbestos work during warm months, in steam tunnels, etc. may lead to heat cramps, heat exhaustion or heat stroke. Under the right circumstances, these can lead to death within a few minutes of exposure.

Heat Related Disorders

It is important for employees to recognize the symptoms of heat related disorders.

Heat Cramps

Symptoms:
- Cramping of the large muscles usually appearing after heavy work in a hot environment, often after the end of a break or workday.

Treatment:
- Replace lost fluids
- Rest

Prevention:
- Frequent breaks away from heat
- Regular replacement of lost body fluids
- Take time to get use to the heat

Causes:
- Loss of fluids and electrolytes supplying working muscles

Heat Exhaustion

Symptoms:
- Fatigue, weakness, profuse sweating, normal temperature, pale clammy skin, headache, cramps, vomiting, and fainting.

Treatment:
- MEDICAL ALERT
- Remove worker from hot area
- Have worker lay down with feet up
- Apply cool, wet, cloths
- Loosen or remove clothing
- Allow small sips of water if person is conscious

Prevention:
- Frequent breaks away from heat
- Increase fluid intake
- Become acclimatized to the heat
- External cooling

Causes:
- High air temperature
- High humidity
- Low air movement
- Hard Work
- Not enough breaks from the heat
- Insufficient fluid intake
- Full body clothing
- Not acclimatized to heat

Heat Stroke

Symptoms:
- Dizziness, nausea, severe headache, hot dry skin, confusion, collapse, delirium, **coma and death**

Treatment:
- **MEDICAL EMERGENCY**
- Remove worker from area
- Remove clothing
- Have them lay down
- COOL the body (Wet Cloths)
- Do not give stimulants
- Call for an ambulance

Causes:
- Same as for heat exhaustion

Prevention:
- Same as for heat exhaustion

Telephone numbers of physicians, hospitals, and ambulances should be conspicuously posted. Someone on the project should be trained in first aid.

Carbon Monoxide Poisoning

Symptoms:
- Dizziness, nausea, headache, drowsiness, vomiting, collapse, coma, and death

Sources:
- Oil lubricated compressors, particularly those used with airline respirators
- Internal combustion engines
- Open flame & fire
- Unvented gas
- Kerosene heaters

Description of CO:	Colorless, Odorless, and Tasteless
Limits:	35 ppm (Time weighted average over 8 hrs.)
	200ppm (Ceiling)
	20ppm (Grade D breathing air for airline respirators) (Maximum allowable concentration)

If these symptoms are observed, those persons should immediately be brought into fresh air and medical attention provided. The symptoms of both carbon monoxide poisoning and heat stroke are very similar. **Both are medical emergencies!**

Body Protection

The following guidance should be used when whole body protection is needed.

- Use special single-use whole body disposable clothing including shoes, for any job involving exposure to airborne concentrations of asbestos.
- Use work gloves
- Always cut away from body when using knives, wire cutters, etc.
- Use care when removing metal lathe or cutting duct work.
- Wear hardhats on job sites where there is exposure to falling objects, electrical shocks, or burns.
- Make sure protective equipment (hard hats, goggles, safety shoes etc.) is in sanitary and good working condition.
- Full-face respirators help prevent eye injuries.
- Use a non- - irritating surfactant when possible.
- Get close to the work so you don't have to overreach.
- Lift properly
- Use the buddy system for lifting
- Use handcarts or rolling pallets to avoid manual material handling.

Blood borne Pathogen Requirements

- Utilize universal precautions (such as wearing gloves) when dealing with exposure to Blood borne pathogens such as cuts, lacerations, etc. on the job.

IX. INSURANCE AND LEGAL CONSIDERATIONS

Insurance

Errors and Omissions - insurance to protect against "mistakes" in the inspection or management plan.

General Liability - insurance to protect against events occurring during inspection and reinspection. (Like fire or property damage)

Occurrence - insurance that protects against events that occur during the policy period even if the actual claim is made later.

Claims Made - insurance that protects against events that occur during the policy period but claims must be made at the time the policy is in force.

Bonding - bonding for asbestos projects usually comes in two forms.
Performance bonds guarantee that a project will be completed even if the contractor fails to do so.
Payment bonds guarantee that the contractor will be able to meet his payroll and pay for his equipment and any subs.

Bid bonds help ensure that the building owner will get the lowest price, by ensuring that the bidder selected be awarded the contract will actually enter an agreement with the Owner. Bid bonds are usually within 5-10% of the bid.

Legal Considerations

Contractual Liability - liability incurred from a breach of contract if the contract is not properly performed.

Tort (Negligence) Liability - liability that is a legal wrong , often termed negligence. It is failure to perform one's work in accordance with the business standards of one's profession.

Regulatory Liability - liability incurred by failure to adhere to requirements imposed by law or regulation.

X. CONTRACT SPECIFICATIONS

Well-planned detailed project designs provide the overall guidance for each asbestos abatement project. Contract specifications (project designs) are a written set of standards and procedures informing the contractor or supervisor of materials and operations necessary to successfully complete an abatement project. Typically, these documents cover the entire spectrum of an abatement project; from site investigation by the contractor or supervisor to use and application of replacement materials.

A well-designed and organized set of specifications will provide for a successfully completed abatement project. However, it is important for a contractor to remember that not all regulations and requirements will be included in project specs. For this reason a contractor or should become familiar with any Federal, State, and Local laws which apply to his or her situation.

Poorly - designed specifications will result in a poorly - performed project. If details are omitted in the specifications or procedures are unclear, the work may not be done the way it was intended. Since regulations are the minimum criteria for any job activity, the knowledgeable project designer must understand practices consistent with state-of-the-art methods and implement these procedures, which are often beyond those required by regulations, when they are necessary to protect human health and the environment. The project designer must have comprehensive knowledge of conditions at the planned work site. Note that per ASHARA regulations, an accredited project designer must design asbestos abatement projects in public and commercial buildings.

If a change is made to the design or specs during the time period that outside contractors have to bid on a project, the change is called an addendum. Should a change be necessary after the contract has been awarded, it is called a modification to the contract. A change order is the procedure generally used for a contract modification.

It is important for an asbestos abatement project designer to keep in mind that no two-abatement projects will be identical. Various aspects of a project may be similar from job to job, but no one set of specifications can be used from project to project without modification or large scale changes. Hence, it is extremely important that the person who develops the specifications know the conditions present at the work site and the specific work details needed to successfully accomplish the project.

ELEMENTS OF THE SPECIFICATIONS

Contract specifications for a project, which will be handled by an outside firm, will be packaged into a project manual and released for bid. The Project Manual will consist of the following parts:

Bidding Requirements, consisting of
- Advertisement
- Instruction to Bidders
- Information Available to Bidders
- Bid Forms and Attachments
- Bid Security Forms (e.g. Bid Bonds)

Contract Forms, consisting of
- Agreement
- Performance Bond
- Payment Bond
- Certifications (e.g., Affidavits, Contractor License Certificate, Minority Business Enterprise Utilization Forms and other stipulated requirements specified which the bidder must have in order to be awarded the contract

Conditions of the Contract
- General Conditions (i.e., often AIA=s Form 201 for private sector contracts, or the General Conditions issued by the Department of General Services, or other agency having procurement authority, on public sector projects.
- Supplementary General Conditions (which modify the General Conditions and Afine tune≅ them for the specific project at hand.

Specifications

Drawings

If an addendum or modification is issued on the project, they will be incorporated into the Project Manual

The project **"scope of work"** will be laid out in the specifications (design). This section will include a description of ACM locations (which may or may not, also be provided on drawings), the general type of abatement procedures to be used in a particular area, and any restoration requirements that may be necessary.

A "description of work" section will detail abatement measures for each work area. Additionally the contractor will be required in this section to arrange for or supply all labor, materials, services, insurance, equipment, etc. necessary to carry out the work in accordance with the specs and all applicable laws. Any special conditions, which may be encountered on the project (i.e. high temperatures, operational equipment, etc.), will be detailed. This section also will include the requirement that the contractor restore the abatement area to conditions equal to or better than the original ones.

The Scope of Work and the Description of Work are found in Division 1 of the Specifications. Division 1 is the part of the specifications that provides directives and requirements for work covering the entire project. It includes language on contract administration as well as technical requirements such as temporary facilities, temporary enclosure, personal protective equipment, decontamination procedures, and clean-up and clearance criteria. Detailed work practices are included in other Divisions of the contract ranging from Division 2 - Site Work (where specific asbestos abatement specifications are found) to Division 15 and 16 (which include mechanical and electrical work, respectively).

The specific language that will be used to construct the specifications will depend to a large extent on the approach the project designer takes. Specifications are often written following three approaches. The first is a Means & Method type of specification. Under this approach, the project designer tells the contractor exactly what to do --the materials to be used and specifically how the work will be done. The second approach is a Performance type of specification. Under this approach, the project designer specifies the objective or end results for the project, but allows the contractor the flexibility on how he/she will achieve these end results. The third approach represents a combination of a Means & Method and a Performance specification. This is frequently the type used in many asbestos abatement projects. It sets specific work requirements for environmental and worker safety but allows the contractor to be creative in removing the asbestos containing materials.

Submittals and notices are important in getting the abatement project off to a smooth start. The contract documents (project design) will usually spell out the contractor/supervisor's responsibility for properly notifying applicable regulatory agencies. Such as notifying EPA's Region X Office in Seattle, WA or the Alaska Operations Office in Anchorage . These notifications must follow procedures required under NESHAP (the National Emission Standard for Hazardous Air Pollutants). In addition, the contractor must submit a Contractors Plan to the Department of Labor/Workforce Development – OSH for approval at least 3 days prior to the start of the project, the contractor must secure the necessary resources for waste handling and disposal according to State and federal regulations. Documentation that employees on the job have been properly trained and medically monitored under applicable regulations will also be submitted to the Owner=s representative for inclusion into the project records. It is also important that any existing damage be documented by the contractor/supervisor and submitted to the Owner's representative prior to any work commencing.

Included in the contractor's submittals will be a list of equipment to be used along with any certification documents, which the specs call for. (For example: HEPA -vacuums conforming to ANSI standards). This will include respirators as well as other equipment for the project. During the abatement activity itself, the periodic progress reports on abatement status, transport

manifests and waste disposal receipts, monitor logbooks, bulk and air samples results, and documentation of HEPA-filter changes may be required by the Owner's representative.

In addition to requirements for the contractor/supervisor, the project specifications will sometimes require the Owner's representative to perform certain functions. This may include notification of building occupants of the work to be performed and making arrangements for temporary relocation. Additionally, the Owner's representative will usually have to make available to the contractor the results of any pre-abatement air sampling or bulk sampling tests. Level II supervisors should look for these historic records, and if they exist, incorporate this information in their approach to the abatement activity.

An area of concern for the Owner's representative and the Contractor or Supervisor is site security and emergency planning during the abatement project. The specifications should say that only authorized personnel will be allowed access to the work site (employees of the Owner's representative, contractor, etc.). This is done to limit the liability of the parties involved and to prevent any worksite problems. Emergency planning will include written notification of police, fire, and emergency medical personnel as well as the facility's on-site security office, of proposed abatement activity. The plan must include the proper procedures to follow if an emergency situation arises. In addition, procedures must be in place to minimize adverse consequences should an accident occur.

MATERIALS, EQUIPMENT, AND SUBSTITUTE SPECIFICATIONS

Material specifications will include requirement on the quality of materials used on the job as well as how they must be stored at the site. Specific materials will be detailed in part two -- PRODUCTS in each Section of the specifications. **Proprietary specifications** will require the use of a specific material from a specific manufacturer, whereas **non-proprietary specifications** will indicate materials or performance requirements and will allow the selection of materials, which perform to those limits.

Equipment specifications will detail the performance requirements of units such as negative air filtration units, Type C respirators and associated compressed air systems, and protective clothing and safety equipment such as footwear, hardhats, and eye protection. Equipment used in the actual removal of ACM will also be specified such as scaffolds, ladders, sprayers, and their capacity ratings, and any other equipment deemed essential for proper completion of the job.

In the event that a substitution of materials or equipment is necessary, specifications will usually call for the submission of complete technical data and information on the substitution from the outside contractor to the Building Owner. The Building Owner will then review the information and have the authority to approve or disapprove such substitution. It is important to keep in mind that the terms "or equal" and "or equal as approved by Owner" do not mean automatic Owner approval of substitutions. Any material or equipment which the outside contractor feels is equal to what has been specified should be approved by the Owner in writing before being used.

SPECIFICATIONS FOR THE EXECUTION OF WORK

Procedures for preparation of the work area will be specified in the project design (specs). The specs will include the shutting down and locking out of electrical power to the area, if possible. Provisions for temporary power and lighting will be made, usually by the Building Owner. Considerations will be detailed for furniture, machinery, etc., which will be cleaned and sealed using specified methods.

Specifications will often detail the construction design of the decontamination facilities, including location, size of chambers, and number of airlocks. Additionally, entry and exit procedures will be set forth, with provisions for waste material removal and storage.

The work area will be prepared according to project specs, which will usually state polyethylene sheeting thickness, layers, and seam overlap. State-of-the-art practices, require polyethylene sheeting to be at least 6 mils thick. Special considerations for equipment, which cannot be shut down and removed from the work area (computers, communications switching equipment), and for work areas with adjacent occupied space will also be specified.

Once the preparation of the work area is complete, specifications will usually detail the methods and order of removal of contaminated materials in the work area. Any encapsulation or enclosure of asbestos containing material will be specified..

RESPIRATORY PROTECTION

Specifications for respiratory protection may vary with either the type of abatement activity or with fiber concentrations. For example, half-face negative pressure respirators may be specified for use during work area preparation and/or following complete removal of gross contamination and during cleaning; while HEPA filtered powered air purifying respirators (PAPR's) may be specified from the beginning of actual ACM removal until gross contamination has been cleaned-up and removed from the area due to higher fiber concentrations in the air. or grossly contaminated areas.

CLEARANCE AIR TESTING

The procedures to be followed for final air clearance testing should always be thoroughly spelled out in the specs. Sampling locations and the number of samples to be collected will sometimes be specified although the exact locations are frequently left to the professional judgement of the Industrial Hygiene Services Contractor monitoring the job on behalf of the Owner. Sampling methods (aggressive or non-aggressive) analytical techniques (PCM or TEM), and length of the tests will be specified according to applicable regulations. The specs should also state very clearly what will be considered "clean" in regard to airborne fiber levels.

Additionally, specifications should include requirements that the Owner's Representative, prior to final air clearance testing conduct a complete and thorough visual examination of the work area.

WASTE DISPOSAL

Contract specifications will indicate the use of an Alaska DEC authorized landfill (one which will accept asbestos waste and follow ADEC guidelines)or another approved disposal site (Out of state, one-time use permit, etc). A record-keeping procedure whereby all receipts and manifests will be retained and delivered to the Building Owner will be included. Specific requirements for the transportation of asbestos waste will include preparation of the waste containers and truck, proper loading and unloading procedures, personal protective equipment which must be worn by waste handlers, and decontamination procedures for the transport vehicle.

MATERIAL REPLACEMENT

Material replacement such as re-fireproofing, reinsulation, reinstallation of a drop or suspended ceiling, or any other renovation work will be completed following passage of clearance testing. This work may be covered under the original specs or may be under a separate set of specs. Selection of appropriate replacement materials must take applicable fire protection codes into consideration. Specification of new fireproofing materials as well as wall and ceiling materials must have acceptable flame spread criteria and fire rating times equal to or better than that required by applicable building, life safety, and fire protection codes. Acoustical, thermal insulation, and aesthetic factors may also need to be considered in certain circumstances.

OTHER ABATEMENT PROFESSIONALS

Specifications will specify the qualifications and responsibilities of other abatement professionals associated with the particular project. For example, in situations that involve life safety issues, the project designer must have the input and approval of a licensed professional engineer or licensed architect.

These other persons will include the Asbestos Project Manager -usually the Owner or Owner's representative. The Project Manager who will be responsible for assisting in decision making; developing, implementing, and enforcing the contract specs, inspecting the work areas and critical barriers; and possibly coordinating bulk and air sampling collection as well as other duties.

The Industrial Hygiene Services Contractor engaged by the Owner will be in charge of collecting air sampling in accordance with the project specifications. The types of sampling: pre-abatement, area sampling, personal, and any air volume requirements or associated sampling strategies will be outlined. The procedures to be followed for final air clearance testing will be detailed in accordance with applicable Federal regulations.

The laboratory services utilized will be specified as having to be accredited for both bulk and air sample analysis. In general, the laboratory should be listed under the National Voluntary Laboratory Accreditation Program (NVLAP) sponsored by the National Institute of Standards and Technology (NIST). It is recommended that individual industrial hygienist who analysis air samples on-site, be successful participants of the Asbestos Analyst Registry Program sponsored by the American Industrial Hygiene Association (AIHA). Turnaround time for samples may also be specified, as well as accreditation requirements for individual analysts.

PRE-WORK ACTIVITIES AND CONSIDERATIONS

ASSESSING THE WORK AREA

An important "rule of thumb" for any asbestos abatement supervisor is to never oversee a project, without first viewing and assessing the site. There is much valuable information to be gained during one of these assessments. In addition, EPA's NESHAP regulation for Asbestos actually requires an inspection of the site prior to commencement of the work. A survey such as this also provides the basis upon which the supervisor can formulate an effective strategy for asbestos removal and/or control. Existing damage or potential problems (expensive rugs, fixtures, etc. which need special handling) need to be identified and procedures for resolution dealt with before work begins. Some of the important items an asbestos abatement supervisor needs to look for on this walk-through survey of the site are outlined in this section.

Check Analytical Results of Bulk Samples

The first questions that a supervisor probably should ask during the pre-job walk-through survey are who did the initial survey to identify the asbestos, what type of sampling was conducted, and what forms of analysis were used. The supervisor should review appropriate bulk sampling results as well as any relevant air sampling data. It is very important to determine that sample results are representative of the materials that will be disturbed during work activities. If the abatement work will involve going into previously inaccessible spaces, i.e. behind walls etc., than the supervisor may wish to have additional bulk samples taken of any newly uncovered suspect material. Note that federal regulations and good practices require that all materials that might contain asbestos, be treated as asbestos until the material can be confirmed as non-asbestos through prescribed laboratory testing. If the material in the area was only

assumed to contain asbestos, now might be a good time to find out for sure. **(Please note that any samples taken must be taken by an accredited Building Inspector).** The supervisor must also evaluate the qualifications of the laboratory who analyzed the samples. In order to have reliable results, the laboratory must have properly trained technicians who utilize methods specified by the Asbestos Regulations coupled with an appropriate quality assurance program. Both bulk and air samples shall be analyzed in an accredited laboratory. Any inspections done in a public or commercial building fall under the ASHARA requirements (see "Regulations" section) and must have been completed by an accredited inspector. Bulk sample analysis should be done by laboratories accredited by the National Institute of Standards and Technology (NIST). The supervisor should review the results of the bulk sample analysis to determine the types and percentages of the asbestos present.

Inspect the Nature of the Asbestos-Containing Material

The supervisor should determine the hardness and texture of the asbestos containing material to be removed. He/she should note whether or not it has been covered, painted, or encapsulated. (A disposable suit and a HEPA filtered respirator will be needed to do this since the material must be touched in order to determine its friability).

Checking the Accessibility of the Material

Note the accessibility of the material to be removed. If it is poorly accessible, additional equipment and procedures method might have to be used to safely reach the material. Several factors that enter into this decision include ceiling height, false ceilings, and pipes. sprinklers, ducts, sloping floors, fixed barriers, etc. The building access may also require innovative methods particularly if the asbestos containing materials are located in areas defined as confined spaces. If so, safety officials should be consulted for recommendations on dealing with confined space hazards in addition to asbestos hazards.

Checking for Difficulty of Isolating the Work Area

Another important concern is isolating the area in which removal will take place. A space that is difficult to isolate can increase job time and may call for an alternative abatement method. For example, it is important to check the degree of containment above a drop ceiling, since there are often open spaces where pipes and other utilities penetrate through structural members (e.g., walls and ceilings). The space above a suspended ceiling could also be part of a return air plenum, which will be a major pathway for any contamination that may become released during work activities. Identifying these situations and taking appropriate action to close and seal openings will make asbestos work much safer. It is absolutely necessary to control some of the supervisor's liability associated with asbestos work.

Determine if Areas Adjacent to Abatement Activity Will Be Occupied

If areas adjacent to the abatement area will remain occupied, several important practices need to be observed. These include isolating the abatement areas HVAC from the occupied area and locking out the HVAC controls. It also includes erection of isolation barriers and insuring the integrity of the barriers through periodic inspections. Additional negative air machines may be needed as well. Negative air pressure machines are good practice and required by federal regulations when performing certain classes of work. For small jobs with corresponding smaller containment enclosures (e.g., mini-enclosures and glovebags) a HEPA filtered vacuum cleaner can be used to create a negative air pressure condition. The supervisor must also make sure that any required OSHA and EPA notifications take place. These include the appropriate signs specified in the regulation as well as written notifications to the agency as required by the regulation.

Determine Room Volume and Natural Air Movement in the Work Area

During this walk - through survey, consideration should be given to the number and placement of negative air units. A calculation of the air volume in the work area is necessary for determining the number of units needed to achieve the desired number of air changes

per hour. Also, the way in which air will move through the work area is a consideration in the placement of the negative air units. The volume (in cubic feet) of the work area is determined by multiplying the length of the room by its width and then by the height of the ceiling. The total volumetric airflow requirement (in cubic feet/minute) for the work area is determined by dividing this volume by the recommended air change rate (i.e. one air change every 15 minutes).

Check Items Requiring Special Protection

During the pre-job walk-through, items requiring special protection should be noted. These items might include wood paneling, trophy cabinets, glass piping, carpets, lab equipment, chemicals, computers, and elevators.

Determine Supervisor's Responsibility Concerning Moveable Objects

During the pre-job walk-through, it must be determined what the supervisor's responsibilities are concerning any and all moveable objects. Prior to any work, it should be established who will move objects found in the work area -- The occupants or the supervisor and his/her crew. The Supervisor must also determine if the objects to be moved are contaminated/potentially contaminated with asbestos and must be decontaminated before they are moved to a clean area.

Note Any Materials or Equipment Which Will Require Special Handling

In addition to finishes and furniture that could be easily damaged during the work activities, some equipment needs special consideration. For example, computers and other electronic equipment are easily impacted by changes in temperature and humidity. Any equipment that must remain operating in the work area needs special consideration to protect it from damage and contamination. For example, an operating pump motor must be enclosed to protect it from contamination. However, this enclosure may result in heat buildup around the motor that can lead to damage. In this situation a source of clean air must be found to vent the motor within the enclosure. The Supervisor must be aware of these situations and consult engineering specialists when needed.

Note Stationary Objects That Require Special Attention

As previously mentioned, if the abatement work area will be in a room that contains computers that cannot be moved, other strategies to isolate the work space from these objects must be developed. Be aware of the special environmental conditions required by these devices. Consult the manufacturer and other resources for recommendations on protecting computer equipment.

Other Considerations

The supervisor should also document all pre-existing damage in the areas in which his/her employees will be working. This consideration is important because often after a project has been completed, the staff reoccupying the area may claim that some damage occurred as a result of the work. By using the list that was developed at the beginning of the job, the supervisor can verify whether the damages were pre-existing and not as a result of the work.

Other important aspects that should be considered by a supervisor when conducting a pre-job walk-through survey include an estimate of the temperature when the job is scheduled to begin. Appropriate climate control strategies will need to be implemented. Also, at this time, it should be decided who will provide security at night or off-hours to assure that no unauthorized entries into the contaminated work area will occur.

Additional safety hazards that need to be considered include all electrical circuits and/or receptacles and equipment. Since the work area in an asbestos abatement job will commonly contain large amounts of water, the potential for electrical hazards will be greatly increased. During the pre-job walk-through the contractor should make note of all these potential hazards. The circuits and their

control boxes should be identified during this pre-walk survey, so that appropriate lockout-tagout procedures can be implemented prior to commencement of the work.
Another area of concern during the walk-through should be the configuration of the areas where tape will be attached. This is important to determine how the poly will have to be hung to adequately enclose the work area.

The location and type of decontamination units should also be a major consideration. Will it be possible to have one central decontamination unit? Will it be necessary to establish multiple units? Some facilities may have their own units already built.

Also, a major area of concern when assessing a facility prior to beginning work is identification of any hot surfaces (pipes) that could present a hazard to abatement workers. Note that heat levels can change radically once existing asbestos insulation is removed from pipes actively conveying steam or hot water. The supervisor needs to be aware of the current and anticipated heat load in the work area so that precautions can be taken against burns and heat stress illnesses.

If Type C air supplied respirators will be used, the supervisor must determine whether or nor the hoses will reach the work area from the air generating source without exceeding the 300 feet limitation specified by OSHA.

Another important aspect that must be considered by a supervisor before a job, is who will do the air monitoring. The supervisor is often responsible (and required) to conduct personal air sampling on the asbestos abatement employees.

The supervisor should ensure that enough time has been allotted for the project. Projects greater than 3 sq. ft. or 3 lin. ft will need to be designed by an accredited project designer, if using alternative control methods. If the facility head calls for a hurry-up job, the supervisor should inform the facility head if they do not feel that adequate time is available to complete the project. There must not be any compromise on work practices necessary to protect the workers and the environment. Likewise, sufficient time must be allotted to adequately remove all traces of asbestos containing material and decontaminate the site**. Any short cuts taken to do a hurry-up job could result in creating of a hazard for which the supervisor could be liable.**

These are not all of the special considerations that need to be examined when conducting a pre-job walk-through survey of an asbestos containing facility; rather they are some common concerns that should typically be investigated because they could cost a substantial amount of money and time, in addition to possibly endangering the lives of employees or other building occupants. It is imperative that the supervisor and the facility head have a firm understanding as to how exactly each step of the project will be carried out.

MEDICAL SURVEILLANCE

The employer to provide at no cost to the employee a physical examination by a qualified physician. There are specific items that these physicals must address (Refer to OSHA 29CFR 1926.1101).

EMPLOYEE TRAINING

Under the Asbestos School Hazard Abatement & Reauthorization Act (ASHARA) and OSHA's Construction Industry Asbestos Standards (29 CFR 1926.1101), there are mandatory training requirements for different levels of asbestos work. These requirements dictate both the content and amount of training that employees must receive.

DESIGN AND USE OF A PROJECT LOGBOOK

Prior to the start of any asbestos abatement project, a logbook should be established. This logbook will serve as a vehicle for maintaining all the records associated with a project. The logbook serves many important functions. First of all, it provides an easy reference for projects that can be presented at any time during a project, or long after its completion. Likewise, the logbook can be an important tool for planning future jobs and estimating costs. Another function of the project logbook is possible protection for a supervisor regarding liability over specific projects. A completed logbook containing comprehensive information on each and every project involving asbestos is the supervisor's best defense should legal suits arise in the future.

The logbook should be well organized, but in a style decided by the supervisor. There are two common methods of organization. First, there is the day by day such as a ship captain's log. If this method is chosen, a loose leaf or bound notebook with dividers labeled for each day should be maintained for each job.

Another more common method of organizing a logbook is by activity. Using this method, a three-ring binder or loose-leaf notebook is divided into each activity and all documentation, notes, and receipts concerning that activity are maintained in the appropriate section.

PRE-ABATEMENT CONSIDERATIONS

WHO

-FACILITY REP.
-PHYSICAL PLANT LIAISON
-PARTIES WHO NEED NOTIFICATION

WHAT

-MATERIAL TO BE ABATED
-MATERIAL TO BE PUT BACK
-WORK NOT INCLUDED IN PROJECT
-RENOVATION/RESTORATION NEEDS

WHEN

-PROJECT WINDOW
-WORK HOURS
-IMPACT OF DELAY

WHERE

-SITE EVALUATION

WHY

-DO WE REALLY HAVE TO?
-ARE THERE ALTERNATIVES?

HOW

-SECURITY
-SPECIAL NEEDS

SITE EVALUATION AKA SYSTEMS ANALYSIS

Containment Problems

* Identify open space scenario
  HVAC systems
  * only in work area
  * multiple services area
  * how to deactivate?
* Holes, cracks & crevices to/be closed
* Open Non-functioning pipes/ducts, etc. communicating with adjacent area.

MECHANICAL SYSTEM

Identify equipment to be taken out of services
Identify equipment to left operating

* Special ventilation, & other precautions
* Identify facility personnel who may have to service/repair equipment.

ELECTRICAL SYSTEM

Identify circuits - what can be cut off in work area
Identify electrical capacity

* Enough to handle negative air devices & HEPA vacuum cleaners & MISC. equipment?

* Where can temporary electric lines be tied into

Determine other needs, e.g. need for portable generator, ground fault interrupter circuit, etc. present?

PLUMBING SYSTEM

Availability of water?
Availability for hot water for shower?
Where floor drains are located
Toilet facility available? Need for portable toilet?
Where can temporary water lines be installed?
Vacuum breakers for hose connections

LIGHTING SYSTEMS

Adequate natural light?
Need for temporary lights?

FIRE PROTECTION SYSTEM

Presence of sprinklers, smoke alarms, etc?
Will those be left activated?
If not, what alternative measures are needed?

FINISHES

What finishes need special protection?

FACTORS AFFECTING COST

(1) Amount of material to be removed

(2) Difficulty removing material

- (a) Irregular Surfaces
- (b) Embedded utilities (e.g. electrical/water lines, etc.)
- (c) Height above the floor
- (d) Poor accessibility
  - (i) Obstructions
  - (ii) Close quarters (e.g. attics, crawlspaces, etc.)

(iii) Need to remove ducts or other structures to get to ACM

(e) Condition of Material

(i) Previously encapsulated
(ii) Non-friable/slightly friable (e.g. pipe elbows, floor tile etc.)
(iii) Material difficult to detach from substrate

(3) Difficulty with containment

(a) Plenum extending beyond work site (e.g. walls in project area extending just up to suspended ceiling, open plenum area above suspended ceiling)
(f) Multi services area for HVAC system
(g) Excessive penetrations through critical barriers (e.g. large number of pipes, ducts, and/or conduits penetrating the walls, floor and/or ceiling which could serve as pathways for contamination.)
(h) Substantial changes in pressure between the work site and adjacent areas (consider the presence of elevator shafts, infiltration/exfiltration through the building envelope, unbalanced air handling systems in the building etc.)

(4) Protection of special finishes

(a) Carpets
(b) Hardwood Floor
(c) Wood Panels
(d) Other easily damaged materials

(5) Special Environmental Problems

(a) Elevated heat
(b) Confined spaces
(c) Toxic materials (in tank or other containers and/or applied with the space such as pesticides)
(d) Pressurized vessels, pipes, etc.
(e) Electrically energized equipment and/or utilities

(6) Special Decontamination Problems

(a) High probability that the interior of duct is contaminated
(b) Contaminated dirt floor
(c) Contaminated ceiling tiles
(d) Debris and contamination beyond the site of damage
(e) Mechanical equipment with contamination between flanges, or other components that will require it to be dismantled to abate contamination.

(7) Tight time frame for completion of the work

(a) Double or Triple shifts per day
(b) Work six or seven days a week

(8) Entrance/Exits

(a) For workers

(i) Insufficient entrances and exits for worker decontamination chamber and waste transfer chamber
(ii) Excessive difficulty in moving waste in multi story building (e.g. more than three stories) necessitation for outside elevator or other waste transfer system

(b) For Occupants

(i) Abatement activities will take a fire exit out of service, restricting occupancy per life safety codes
(ii) Alternative fire exits not feasible if one or more building exits taken out of service

(9) Disposal problems

(a) No landfills willing to accept asbestos waste
(b) Special handling

ESTIMATING PITFALLS

1. Misinterpretation of the scope of work

2. Omission or improperly defined scope of work

3. Poorly defined or overly optimistic schedule

4. Inaccurate work break down

5. Applying improper skill levels to tasks

6. Failure to account for risks

7. Failure to understand or account for cost escalation and inflation

8. Failure to use correct estimating technique

9. Failure to consider costs associated with over head, general and administrative and indirect costs

CONTRACT MANAGEMENT

BASIC KNOWLEDGE

1. Know **ALL** provisions of the contract specifications
2. Know **ALL** conditions at worksite

EVALUATE SPECIFICATIONS WITH SITE CONDITIONS

1. Know of conditions which could potentially injure workers and/or contaminate the property
2. Know the circumstances to be better able to rule on change order requests

SPECIFIC KNOWLEDGE

1. Up Front Information

    a. Bonds & Insurance, etc. received and approved
    b. Board approval to authorize funds
    c. Submittals received & approved according to the provisions of the contract
    d. Date of notice to proceed
    e. Schedule
    f. Joint site inspections for damage

2. In Process Information

    a. Inspection reports
    b. Material evaluation
    c. Schedule compliance - if deviations- the reason(s) why
    d. Work performance matching payment request

3. Close Out Information

    a. Site inspection for compliance with contract
    b. Receipt of all submittals
        - Tests and independent inspection agency reports
        - Records which contractor had to keep
        - Manufacturer's literature, instruction manuals, etc. for materials and/or equipment installed on the job
    c. Joint site inspection for damage
    d. Punch list finished
    e. Area clean

Course Evaluation
8-HOUR EPA/AHERA ASBESTOS REFRESHER COURSE

Course: _____

Date: _____ Instructor: _____

1. Where did you hear about this course?

_____	Newspaper	_____	EMI Reminder
_____	Friend	_____	EMI Staff (Who? _____)
_____	Employer	_____	Other (_____)

2. What is your overall evaluation of this course?

_____Excellent _____Good _____Fair _____Poor

3. Do you feel the course material was:

_____About right _____Too complicated _____Too elementary

4. This course

_____Met my expectations _____Was better than my expectations _____Was less than I expected

5. Would you have liked to see more coverage, the same, or less coverage of the following subjects?

	More Coverage	Same Coverage	Less Coverage
a. History and background	_____	_____	_____
b. Review of regulations	_____	_____	_____
c. Site characterization	_____	_____	_____
d. Effects of exposure on health	_____	_____	_____
e. Respiratory protection and protective clothing	_____	_____	_____
f. Site control, work practices and systems	_____	_____	_____
g. Sampling and analysis	_____	_____	_____
h. Decontamination systems	_____	_____	_____
i. Confined spaces	_____	_____	_____
j. Waste disposal	_____	_____	_____
k. Medical surveillance	_____	_____	_____
l. Site emergencies	_____	_____	_____
m. Hands-on training	_____	_____	_____

6. Please rate your satisfaction with the instructor.

	Very Satisfied	Satisfied	Dissatisfied
a. Main instructor	_____	_____	_____
b. Secondary instructor	_____	_____	_____

7. We would appreciate your comments on the following:

   a. Instructors and their presentations:

   b. What, for you, would have improved the course?

   c. Are there other classes you would like us to provide?

   d. Any other suggestions or comments?

APPLICATION FOR CERTIFICATE OF FITNESS

Alaska Department of Labor & Workforce Development
Mechanical Inspection
1251 Muldoon Rd., Suite 113,
Anchorage, Alaska 99504
Anchorage (907) 269-4963

REQUIRED APPLICANT INFORMATION (PLEASE PRINT)	
Certificate of Fitness Number	Drivers License Number
Name (Last, First, MI)	Phone Number ( ) Social Security Number
Address	Date of Birth (month, day, year)
City /State/Zip	Weight Height (feet, inches)

TYPE OF APPLICATION (CHOOSE ONE)	
Initial Renewal	Training Provider's Information
☐ ☐ Asbestos Abatement $100-1Yr Lic.	Provider
☐ ☐ Hazardous Paint Handlers $100-3yr Lic.	Location
☐ Duplicate $25.00 Lic.	Course Date(s)

DUPLICATES

☐ Asbestos Abatement ☐ Hazardous Paint Handlers

Current COF Expiration Date ___ / ___ /____

PREVIOUS LICENSES

Do you now hold, or have you ever held an equivalent license in any other state, borough, parish, municipality or other political subdivision? YES or NO. Did you obtain this license by testing? YES or NO

License Type License Number

SIGNATURE BLOCK

THEREFORE I CERTIFY UNDER PENALTY OF PERJURY THAT THE INFORMATION SUPPLIED IS TRUE AND ACCURATE. (AS 09.065.012) I have read this application and understand the statement herein.

NOTE-HAZARDOUS PAINTERS APPLICATIONS ARE DUE WITHIN 90 DAYS OF COURSE COMPLETION

Date _____ City _____ Signature _____

IF A DISAPPROVED OR PENDING APPLICATION HAS NO ACTION FOR ONE YEAR, REGARDLESS OF THE REASON, THE FILE WILL BE DESTROYED AND THE APPLICANT MUST REAPPLY AND PAY FEES.

****

OFFICIAL STATE USE ONLY

☐ APPROVED ☐ DENIED ☐ INCOMPLETE ☐ PENDING

Approved By Title Date

ALL APPLICATIONS MUST BE COMPLETED, SIGNED AND DATED

INSTRUCTIONS FOR STATE OF ALASKA CERTIFICATE OF FITNESS

ASBESTOS ABATEMENT CERTIFICATE OF FITNESS — LICENSE FEE: $100.00 Initial /Renewal 1 year license

Asbestos Abatement requires forty (40) hours initial course by an approved Asbestos Abatement training provider. Contact a state approved provider for dates and times of classes. Once you have completed the training you may obtain a license by completing, signing, and dating an application and paying the required license fee at the Anchorage Mechanical Inspection office: 1251 Muldoon Rd. Suite 113, Anchorage, Alaska 99504. If an application is mailed **you must enclose a head and shoulders photo of yourself (photo must be no smaller than 2"x 2" in size). Polaroid photos are acceptable. Photo must have applicant's name on it.** All applications are approved in the Anchorage office.

- WORK MAY NOT BE PERFORMED WITH AN EXPIRED LICENSE

Renewal: Card holders must take the 8 hour renewal course within one year after the expiration of the previously issued certificate. If not taken within one year of expiration, then the applicant must retake the initial forty (40) hour course. Renewal license may be obtained by the same means as stated above.

****ASBESTOS LICENSE WILL EXPIRE ONE YEAR FROM THE LAST DAY OF TRAINING****

HAZARDOUS PAINT HANDLERS CERTIFICATE OF FITNESS / LICENSE FEE: $100.00 Initial / Renewal 3 year license

Hazardous Paint Handlers requires sixteen (16) hours of initial training conducted by an approved Hazardous Paint training provider. Contact a state approved provider for dates and times of classes. Once you have completed the training, you must make application and pay the required license fee within 90 days at the Anchorage Mechanical Inspection office: 1251 Muldoon Rd. Suite 113, Anchorage, Alaska 99504. If application is not made with 90 days, applicant must retake the initial sixteen (16) hour course. If application is mailed, **you must enclose a head and shoulders photo of yourself (photo must be no smaller than 2"x 2" in size). Polaroid photos are acceptable. Photo must have applicant's name on it.** All applications are approved in the Anchorage office.

- WORK MAY NOT BE PERFORMED WITH AN EXPIRED LICENSE

Renewal: requires an 8-hour refresher course conducted by an approved training provider. Contact an approved provider for dates and times of classes. Once you have completed the training, you must make application and pay the required license fee within 90 days. If paperwork is not received within the 90 day timeframe, applicants are required to retake the eight (8) hours of refresher training.

EXPLOSIVES HANDLERS CERTIFICATE OF FITNESS — LICENSE FEE: $150.00 Initial / Renewal 3 year license

Explosive Handlers (Initial) – requires an application to be completed, **an initial 32 hour training course,** provide (1) fingerprint card and a $47.00 fee to be paid at the time of application for the State required background check; a notarized employment verification form showing a minimum of six (6) months experience in the State of Alaska as a driller, chucktender, or powderman's helper **(DO NOT INCLUDE MILITARY ORDINANCE WORK).** An application by mail will require a photo, head and shoulders, approximately 2 X 2. Contact the Anchorage Mechanical Inspection office at (907) 269-4963 to schedule an exam. You must be approved prior to setting a testing date. Exams may also be taken in other selected Alaska communities. The exam may only be taken twice within a six-month period. A passing score requires a 75 percent or greater. After successful completion of the exam, a completed background check, and 32 hour course completion a license will be issued after the $150.00 fee is paid.

Renewal: You must complete your renewal application, submit the $47.00 fee, and provide (1) one fingerprint card for the state required background check and submit a certificate for the state approved eight (8) hour training course, taken within the last 18 months. These may be presented by mail or in person, to the Anchorage Mechanical Inspection office. **PLEASE BEGIN THE RENEWAL PROCESS 90 DAYS PRIOR TO THE EXPIRATION OF YOUR CURRENT CARD**

****All mail in applications must include a head and shoulders photo of yourself (photo must be no smaller than 2x 2 in size). Polaroid photos are acceptable. Photo must have applicant's name on it.**

- WORK MAY NOT BE PERFORMED WITH AN EXPIRED LICENSE.