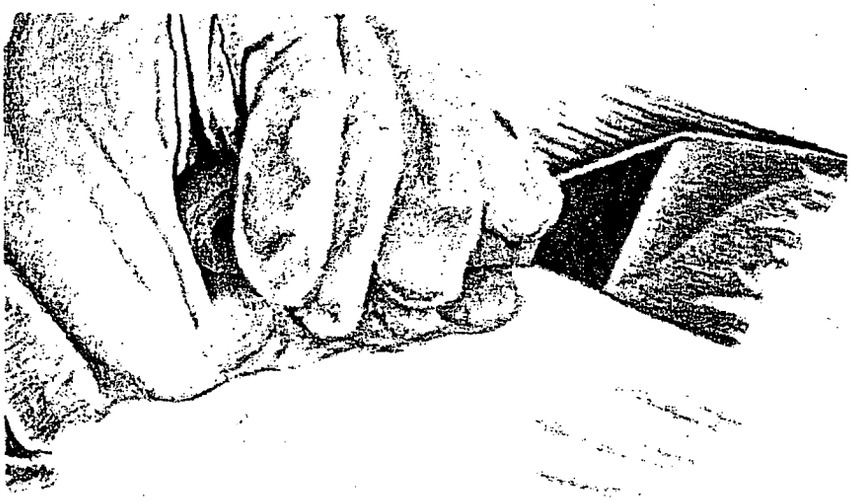
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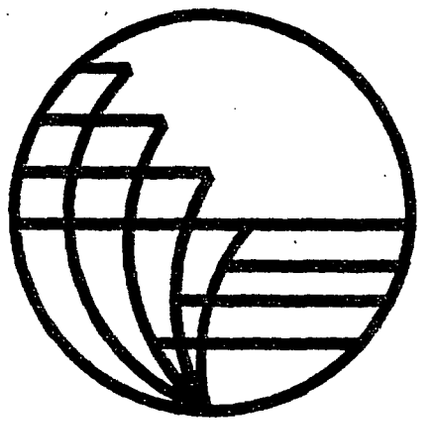




seco
Safe Environment Corporation

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DANA-018



As part of our continued effort to provide
best service possible, SECO is pleased
furnish you and your staff this asbestos repo
which contains information pertaining to
Asbestos Industry.

Our staff members at SECO have found that ma
of our clients become confused with all th
terms and acronyms used in the Asbesto
Industry. Furthermore, our clients ha
expressed the opinion that they do not care to
become an asbestos expert, but simply want to
know the "basics" and understand some of the
terms. I feel this report will provide you
with a better understanding of asbestos and
correction procedures; we are also providing
names and telephone numbers as a resource for
any questions you may have.

We appreciate your interest in SECO and hope to
be of further service to you in the future.

Sincerely,

SAFE ENVIRONMENT CORPORATION

Richard Lair

Richard Lair
President

VPD-189-0000765

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COVER

An asbestos worker wears a self-contained breathing apparatus while removing an asbestos containing material.

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WHAT IS ASBESTOS?

At it's peak, it is estimated that asbestos fiber consumption in the United States averaged 800,000 tons annually. It was not until the mid-1970's that use was sharply reduced, partially as a result of increasing health and safety considerations and liability concerns of the part of manufacturers. Just what is this asbestos people ask? Asbestos is the name of a group of natural minerals that separate into strong, very small fibers. Incombustible, durable and easily attainable is why this "miracle mineral" has been widely utilized in construction and industry. The size of asbestos fibers is quite amazing when you consider the fact it is mined and processed from the earth and not a man made material. It has been said if you are in a room with asbestos present and see an asbestos fiber in the air, there are an estimated one million you cannot see due to their size; or if you laid one million fibers end to end, they would stretch out for about an inch. Because it is naturally occurring, an asbestos mineral can be obtained by mining deposits that formed at great depths within the earth and they have since been exposed at the earth's surface by natural processes. Because asbestos minerals are formed under conditions of very high heat and pressure deep within the earth, they are resistant to the regimes of temperature and pressure found in our everyday environment at the surface. Thus, asbestos minerals are ideal as fire proofing. Due to they are fibrous, they are also excellent acoustic and thermal insulators.

WHY DID WE USE ASBESTOS?

Between 1900 and 1980, some 30 million tons of asbestos were put in place. Since the 1970's, however, asbestos use has declined significantly. The United States now mines and processes about 200,000 tons of asbestos every year into hundreds of different products. Each type of asbestos has certain qualities and is used for different purposes.

Chrysotile asbestos has fine, long fibers that are strong and resist heat. Long fibers are woven into fireproofing cloths, e.g., theatre curtains and fire blankets. Shorter fibers are used in making products to resist heat and friction, e.g., brake linings. The shortest fibers are used to strengthen products, e.g., cement pipe.

Amosite asbestos fibers are known for high resistance to heat. It can resist temperatures up to 480 degrees celsius and is used in making various types of insulation, e.g., pipe coverings.

Crocidolite asbestos is also known for heat resistance. Long and short fibers have different uses. Long fibers are woven into heat insulating fabric, e.g., boiler blankets. Shorter fibers are used in certain cement products.

Anthophyllite and **Tremolite** fibers have similar uses. They have a high resistance to most chemicals. The fibers are used in producing filters, e.g., beer strainers.

Most construction materials containing asbestos are mixtures. Piping insulation can range from 90 percent asbestos to only a few percent in old magnesium silicate block. Sprayed asbestos products have been banned from use as building materials since the 1970's.

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HISTORIC CATEGORIES OF USE

Fire Life Protection:
Fire Curtains, gloves

Insulation-Thermal:
Boiler packing, tank insulation, duct wrap

Durability:
Transite, pipe, roofing, brake shoes, floor tile, transite siding shingles/ board

Sound Absorption:
Acoustical plasters and sprays

Architectural Asthetics:
Decorative ceilings, "textured" paints

Workability:
Dry wall taping compounds, plasters

Fire Retardant:
Structural steel protection

Chemical Resistance:
Laboratory table tops, fume hoods

Flexibility:
Vibration joint cloth

Fibrous Integrity:
Air, filters, food strainers

Electrically Non-Conductive:
Appliance cords, insulator blocks for electrical appliances

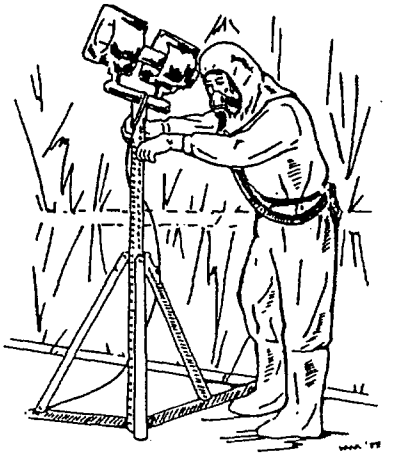
WHERE DOES ASBESTOS COME FROM?

Asbestos is mined all over the world and is found primarily in Canada, the Soviet Union, Australia, South Africa and also scattered mountain areas in the United States. The mineral is mined from the ground, much the same way as coal. The mineral is extracted from the ground with the use of cranes and explosives and then collected and processed in an asbestos mill. Historians have traced the first use of asbestos back to the 5th century B.C. when it was used as lamp wick.

WHY IS ASBESTOS A CONCERN?

Asbestos materials have been widely used in the construction trade for many years because of properties which make them strong, durable, and provide good insulation. These products became widely used before the health effects were fully understood. We now understand that the health effects are severe, even with relatively small or infrequent exposures.

The small size, needlelike shape, and indestructible nature of asbestos fibers are the most important factors contributing to serious health effects caused by asbestos exposure. Next to a single human cell, an asbestos fiber is as small as a needle next to a baseball. Like the needle, the fiber can stick into things including the cells of the body. Data from studies of various fibrous substances have shown that the thinner and more pointed fibers are, the greater their danger to health.



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ASBESTOS RELATED DISEASES

Asbestosis, or scarring of the lungs and/or the pleura which lines the lungs, is a serious long-term illness that was first recognized in workers exposed to high dust levels for long periods of time. The body reacts to the inhaled fibers by producing scar tissue. As this microscopic scarring builds up, the lungs become stiff and restricted with thickening in the walls of the breathing spaces. The stiffening of the lungs, when severe, can make it difficult to breathe, causing shortness of breath. The thickening in the wall of the air sacs makes it more difficult for oxygen to pass into the blood stream and fluid can accumulate in the lungs.

Since asbestos resides in the lungs for a long time, these events are progressive. Over thirty years may elapse from the time of first exposure before scarring has progressed sufficiently to be detected. When significant scarring has taken place, these changes can usually, but not always, be seen on a chest x-ray. There are likewise, progressive changes in the breathing tests which measure lung function.

Asbestosis is not a cancer. However, it has been found that asbestos can cause a variety of cancers.

Lung Cancer is the most common type of asbestos-related cancer. It is surprising to realize that lung cancer was rare in our society fifty years ago. Autopsies of asbestos workers made in 1935 were our first indication of the relationship between asbestos and cancer. Among asbestos insulation workers, approximately twenty percent of deaths are from lung cancer at the present time. Occupational exposure to asbestos in this group of workers increases the risk of lung cancer five times compared to the risk without asbestos exposure. By comparison, cigarette smoking increases the risk for lung cancer about ten times.

Because of interactions in the body, asbestos workers who smoke cigarettes are at 50 to 90 times greater risk for lung cancer than expected. The risk of lung cancer decreases dramatically among those who stop smoking.

Mesothelioma is next in importance among asbestos-caused cancers. Mesothelioma is a tumor occurring in the lining of the lungs or abdomen. It is very rare in our society except in persons with asbestos exposure. It has been seen after low exposures and even very brief exposures of a few days or weeks. It is not related to smoking. It does not often develop before fifteen years after first exposure. Ten percent of deaths among asbestos insulators have been caused by mesothelioma whereas almost none would be expected without asbestos.

Gastrointestinal cancers, especially those of the colon and rectum, are linked to asbestos exposure. They result from the ingestion of asbestos fibers and many of these types of cancers can be cured if early detection is achieved. However, it is often difficult to definitely correlate these types of cancer with exposure to asbestos.

Ovarian and **Uterine** cancers have also been linked to asbestos exposure.

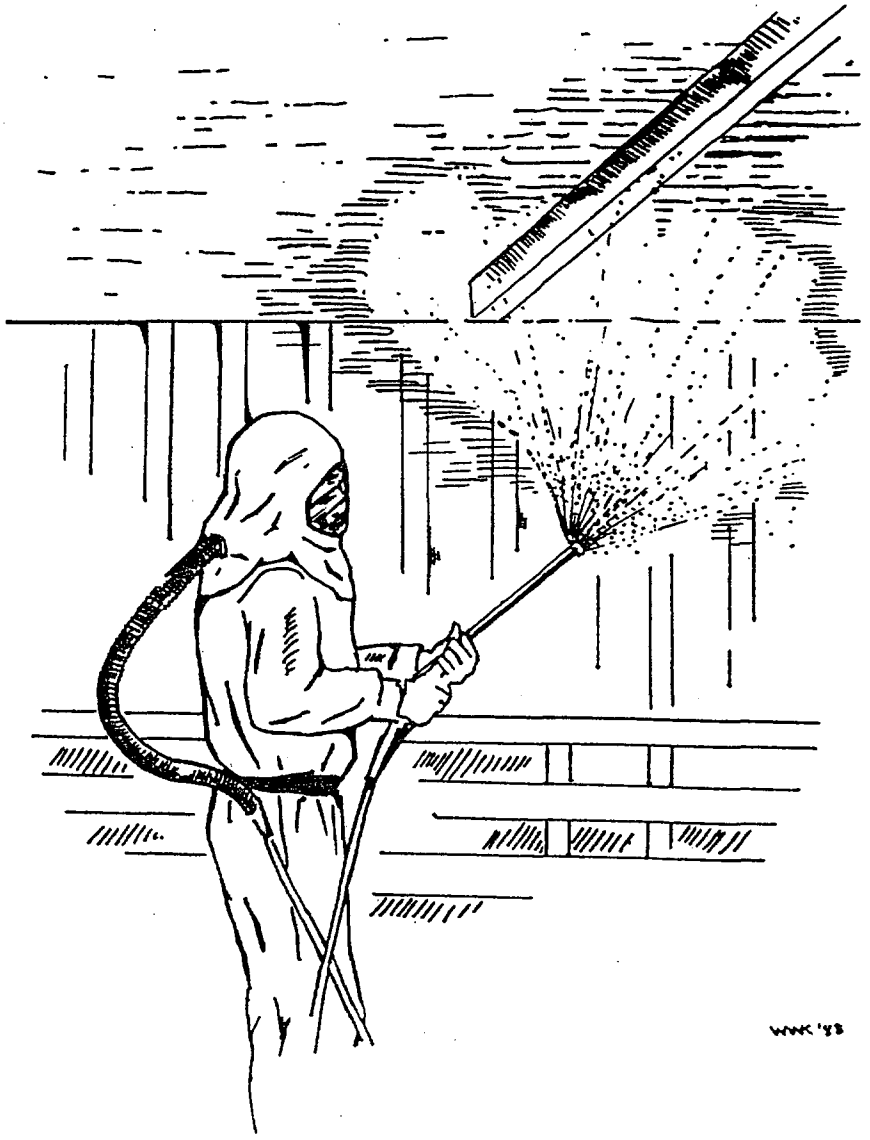
It is important to know that many years may pass – a long latency period — before any detectable changes from asbestos may be observed. The latency period is usually ten years or more after the first exposure. Workers with days or weeks of extreme exposure have developed symptoms as severe as those exposed to lower levels over many years, but only after a sufficient latency period has elapsed. Some of the nation's leading experts in asbestosis and other enivornmentally induced sicknesses have estimated

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there have been more than 100,000 deaths from asbestos associated diseases.

The director of the Environmental Sciences Laboratory at the Mount Sinai School of Medicine of the City University of New York stated in the May, 1984 issue of the EPA Journal, there will be 350,000 additional such deaths before the effects of past exposures run their course.

Many say that the predictions may be low, based on the assumption that asbestos exposure ceased after 1980 when stringent federal safety rules went into effect. But, because people are still being exposed to asbestos, the death toll could go much, much, much higher.



An asbestos worker "wets" the ceiling before removal is to start.

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WHAT IMPACT DOES ASBESTOS HAVE ON THE VALUE OF A BUILDING?

Asbestos' impact on property values is difficult to substantiate. One bank's experience with asbestos shows just how fickle the market can be. In 1985, when Bank of America sold its world headquarters building (erected in 1969), asbestos was not an issue in the $660 million sale. In July, 1986, asbestos was a major obstacle in Bank of America's attempts to sell the 15 year old, twin, 52 story Arco Towers in Los Angeles that it owned jointly with Atlantic Richfield. The two partners sold the building to Shuwa Corporation for an estimated $600 million to $650 million. The bank reportedly had been asking $700 million to $800 million, but concern over the potential cost of asbestos abatement, estimated at $50 million, reportedly lowered offers.

Another example is the purchase by Integrated Resources, Inc. of the 666 Fifth Avenue Building in New York City from the Crown family. That building reportedly has a fairly limited amount of asbestos. Yet Integrated was able to get a $20 million credit equivalent to about a year's net operating income from the seller for asbestos removal. That credit dropped the price of the building to $300 million.

Industrial plants are also seeing the same faith when they try to sell their large facilities and warehouses that contain asbestos insulation or fire-proofing.

All in all, a building with asbestos is worth far less than it would be without asbestos materials in it.

HOW DO I FIND OUT IF I HAVE ASBESTOS IN MY BUILDING?

If you feel you may have asbestos containing materials in some part of your building, and your building is large, you need to retain a consultant that specializes in asbestos assessments. If you have a small building (less than 10,000 square feet), it may be possible to identify your possible asbestos containing areas yourself.

In order to identify asbestos containing materials in a building, a survey must be conducted. A good building survey includes the following:

- identification of asbestos containing materials by testing samples of suspect materials for the presence of asbestos
- determination as to whether the material is damaged or will be damaged by normal use of the facilities, water damage, or vandalism
- complete inspection of all visible spaces including all places in the building that can be walked into, squeezed into, or looked into
- evaluation of how the population of the building interacts with the asbestos containing materials
- examination of as-built specifications for the building to see if asbestos was specified in the construction

Once you have a detailed survey of the building and all asbestos has been identified and documented, you have taken the first major step toward the correction of your problem.

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WHAT ARE MY CHOICES ONCE I KNOW I HAVE ASBESTOS IN MY BUILDING?

If friable asbestos is found to be present, and if the building occupants are exposed to this hazard, corrective action procedings should be initiated. There are four basic approaches to the problem:

1. Removal - Asbestos Containing Material (ACM) is removed from the building by qualified professional personnel and disposed of by burial in a site specifically approved for asbestos.

2. Enclosure - ACM is physically separated from the building environment by means of erecting permanent barriers such as suspended ceilings.

3. Encapsulation - ACM is coated with a penetrating bonding sealant to prevent release of asbestos fibers into the air.

4. Deferred Action-In conjunction with a well defined Operations and Maintenance Plan, the actual removal, encapsulation or enclosure is postponed to a later date. It should be noted that under this alternative, the exposure potential remains and thus potential liability of the building owner should be considered.

Each of the four alternatives has advantages as well as disadvantages. The following should serve as a guide in deciding which course of action to take:

1. REMOVAL

Advantages

It eliminates the source of asbestos
It ends the exposure and precludes the development of future problems

Disadvantages

It is usually the most costly, complicated, and time-consuming method. Replacement of the removed material with a substitute material may be necessary.

There is a higher potential for exposure of removal workers to asbestos hazards.

When Appropriate

When there is a major exposure problem.
When the material is deteriorating, highly accessible, or has severe water damage.
When open material surfaces exist.

When Inappropriate

When removal is not feasible.
When accessibility to material is limited.
When the surface in question is complex (e.g., pipes, lines, and ducts).

2. ENCLOSURE

Advantages

It controls fiber release. It may be the most rapid, economical and uncomplicated method.

Disadvantages

The source of the asbestos remains in the building.
Fiber fallout continues behind the enclosure.
It may be costly if enclosure disturbs functions of other systems (e.g., enclosure may require lighting changes).
A management system is reqired.
Precautions are necessary for entry into enclosure for maintenance and renovation.
Continuing inspection and maintenance of enclosure systems are required.

When Appropriate

When removal is not feasible.
When disturbance or entry into enclosed areas is not likely.

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When Inappropriate

When removal is feasible.
When damaged or deteriorated material causes a high level of fiber fallout.
When water damage to enclosure is likely.

3. ENCAPSULATION

Advantages

It controls fiber release.
It is a rapid and economical method.

Disadvantages

The source of the asbestos remains in the building.
If the material is damaged or deteriorating, the additional weight of the sealant may cause layers of the material to break away for the underlying surface (delamination).
A management system is required.
Precautions are necessary to prevent damage during maintenance or renovation.
Requires continuing inspection and maintenance for damage or deterioration to encapsulated surface (i.e., future potential for fiber release is possible).
Encapsulation material is very difficult to remove if removal becomes necessary (for instance, when the building is eventually demolished).

When Appropriate

When the removal is not feasible.
When the material is of low friability.
When the material still retains bonding integrity.
When damage to the material is not probable.
When accessibility to material is limited.
When the surface in question is complex (e.g., pipes, lines, and ducts).
When there are economic or time constraints.

When Inappropriate

When removal is feasible.
When the material is highly friable.
When the material does not adhere well to the substrate. The weight of the sealant may cause further damage or failure.
When the material is deteriorating or damages.
When damage to the material is probable.
When water damage or the potential for water damage is evident.
When there is high accessibility.
When continuing inspection and maintenance of encapsulated material are unlikely.

4. DEFERRED ACTION

Advantages

No direct cost unless an operations and maintenance plan is implemented.

Disadvantages

Potential for exposure may increase.
Management system required.
Precautions necessary to prevent damage during maintenance or renovation.
Continuing inspection and reevaluation necessary.

Appropriate

Negligible exposure potential.

Inappropriate

Define or questionable exposure potential.
Continuing inspection doubtful.

The presence of asbestos in a building does not always mean that the occupants in the building are in grave danger. It does not mean the building should be quarantined or buried on the spot in which it was built. However, you do need to implement a plan for maintenance or correction of these products.

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IS THERE REALLY A DIFFERENCE IN ASBESTOS ABATEMENT CONTRACTORS?

The history of projects have resulted in buildings being closed down, and fines, violations and penalties levied, both for the abatement contractor and building owner, effectively answers this question.

For the owner who must remove asbestos from an occupied building, the major concern is the potential liability arising from an asbestos abatement project performed by a low bidder who may be undercapitalized, with a poor past performance record and numerous OSHA citations which have resulted in fines.

Since the building *owner* has the responsibility to see that the asbestos abatement project is completed that all the records are kept according to the law and that Asbestos Containing Material is disposed of in an approved waste site, it is only prudent to pre-qualify the bidders.

The job is not simply to remove asbestos from a building, but to remove it safely to prevent injury to workers and preclude potential litigation.

CHECKING THE RECORD

There are many simple questions that must be answered to qualify a contractor for a project. The obvious ones may include:

- Does the management of the abatement company have professional and academic safety experience?
- Is there a history of fines, penalities and violations?
- Does the contractor serve the client as a professional or act in an adversary role?
- Does he offer cut-rate prices, then try to cut every corner to turn a profit?

Contractors with fines and penalties probably will continue to take chances and generate even more. Some con-

Continued on page 16



An asbestos worker utilizing the "smoke test" method to test the negative air movement in an asbestos removal area.

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SPECIAL DEFIN

ASBESTOS GLOSSARY

Ahera — Asbestos Hazard Emergency Response Act. Federal legislation regulating asbestos in schools. Enacted October 30, 1987

Air Monitoring — The process of measuring the airborne fiber concentration of a specific quantity of air over a given amount of time.

Algorithm — A universally accepted procedure developed for the purpose of solving a particular problem

Ambient Air — The surrounding air or atmosphere in a given area under normal conditions

Amended Water — Water to which a chemical wetting agent (surfactant) has been added to improve penetration into asbestos-containing materials that are being removed

Asmosite — An asbestiform of the amphibole group containing approximately 50% silica and 40% iron (II) oxide, and is made up of straight, brittle fibers, light gray to pale brown in color

Amphibole — One of the two major varieties of rock from which the asbestiform minerals are derived, distinguished by their chain-like crystal structure and chemical composition

Approved Landfill — A site for the disposal of asbestos-containing and other hazardous wastes that has been given EPA approval

Asbestiform — Fibrous materials which, due to their crystal structures and chemical composition, can be classified as a form of asbestos

Asbestos — A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into filaments

Asbestos Fibers — Fibers with their length being greater that five microns (lenght to width ratio of 3:1), generated from an asbestos-containing material

"Blue Book" — EPA publication of March 1983 titled, "Guidance for Controlling Friable Asbestos -Containing Materials in Buildings"

Bridging Encapsulant — The application of a sealant over the surface of asbestos-containing material to prevent the release of asbestos fibers

Chrysotile (white asbestos) — The only asbestiform of the serpentine variety which contains approximately 40% each of silica and magnesium oxide. It is the most common form of asbestos used in buildings

Cancer — A cellular tumor which normally leads to premature death of its host unless controlled

Carbon Monoxide — A highly toxic colorless and odorless gas

Ceiling Concentration — The maximum allowable level of toxic material that can be present at any given point in time

Cementitious — Asbestos-containing materials that are densely packed and nonfriable

CFM — Cubic feet per minute

CIH — An industrial hygienist who has been granted certification by the American Board of Industrial Hygiene

Clean Room — The first stage of the decontamination enclosure system in which workers prepare to enter the work area

Clearance Air Sampling — Air sampling done at the end of an abatement job to determine if airborne fiber counts are at or below levels specified in the contract. Generally, a contractor is not released nor can buildings be reoccupied until fiber counts meet specified levels

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SCBA	A self-contained respiratory protection device in which the air is rebreathed after the exhaled carbon dioxide has been removed and the oxygen content restored
Contaminated Items	Any objects that have been exposed to airborne asbestos fibers without being sealed off or isolated
Continuous Flow Airline Device	A respirator that maintains a constant airflow to the wearer
Contract Specifications	A set of guidelines that a contractor must follow when conducting an asbestos abatement job
CPSC	Consumer Product Safety Commission
Crocidolite (blue asbestos)	An asbestiform of the amphibole variety containing approximately 50% combined silica and nearly 40% of combined iron II and iron III
Decontamination Enclosure System	A series of connected rooms with polyethylene curtained doorways for the purpose of preventing contamination of areas adjacent to the work area
Dirty Area	Any area in which the concentration of airborne asbestos fibers exceeds 0.01 f/cc, or where there is visible asbestos residue
Dispersion Staining	Coloration added to asbestos samples for the purpose of making the sample more visible and easier to identify
Dust Mask	Single use or disposable dust respirator having very little protective value
Employee Notification	Informing employees or building occupants if asbestos is present in the building, also informing them of the hazards associated with asbestos exposure, what is being done to eliminate the problem, etc.
Employer's Liability	Legal responsibility imposed on an employer requiring him/her to pay damages to an injured employee
Encapsulation	The coating of asbestos-containing material with a bonding or sealant agent to prevent the release of airborne fibers
Encapsulant (sealant)	A substance applied to asbestos-containing material which controls the release of airborne asbestos fibers
EPA	Environmental Protection Agency
EPA Regulations	Regulatory standards which cover emissions into the outside environment from a workplace and disposal of hazardous wastes from job sites
Equipment Room	The last stage or room of the worker decontamination system before entering the work area
Eyepiece	A component of a full facepiece respirator which is a gas-tight transparent window through which the wearer may see
Facepiece	The portion of a respirator which covers the wearer's nose, mouth, and eyes in a full facepiece
Fallout	The intermittent release of fibers which occurs as a result of weakened bonds in the material, or because of deterioration
F/CC	Fibers per cubic centimeters of air
Fiber Containment	Enclosing or sealing off an area having airborne asbestos fibers present so that the fibers will not migrate resulting in contamination of other areas
Fiber Control	Minimizing the amount of airborne fiber generation through the application of amended water onto asbestos-containing material, or enclosure (isolation) of the material
Fibrous Aerosol Monitor (FAM)	A portable survey instrument with the capability of providing instantaneous airborne fiber concentration readings
Fireproofing	Enclosing or sealing off an area having airborne asbestos fibers present so that

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	the fibers will not migrate resulting in contamination of other areas
Friable Asbestos	Any materials that contain more than 1% asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure
Full Facepiece Respirator	A respirator which covers the wearer's entire face from the hairline to below the chin
FVC	Forced Vital Capacity. The measured quantity of air that is forcibly exhaled from a person's lungs after full inhalation
Glovebag	Plastic bag-type enclosure placed around asbestos-containing pipe lagging so that it may be removed without generating airborne fibers into the atmosphere
Grade D Air	Breathing air which has between 19.5% - 23% oxygen, no more than 5 mg/m3 of condensed hydrocarbons, no more than 20 ppm or carbon monoxide, no pronounced odor, and a maximum of 1000 ppm carbon dioxide
Ground Fault Circuit Interrupter	A circuit breaker that is sensitive to very low levels of current leakage from a fault in an electrical system
Ground Fault Interrupter	A device which automatically de-energizes any high voltage system component which has developed a fault in the ground line
Half Mask - High Efficiency	A respirator which covers one-half of the wearer's face and is equipped with filters capable of screening out 99.97% of all particles larger than 0.3 microns
Heat Cramps	Painful spasms of heavily used skeletal muscles such as hands, arms, legs, and abdomen which are sometimes accompanied by dilated pupils and weak pulse, resulting from depletion of the salt content of the body
Heat Exhaustion	A condition resulting from dehydration and/or salt depletion, or lack of blood circulation which is usually accompained by fatigue, nausea, headache, giddiness, clammy skin, and a pale appearance
Heat Stress	A bodily disorder associated with exposure to excessive heat
Heat Stroke	The most severe of the heat stress disorders resulting from the loss of the body's ability to sweat which is characterized by hot dry skin, dizziness, nausea, severe headache, confusion, delerium, loss of consciousness, convulsion and coma
HEPA	High Efficiency Particulate Air (Air Filter)
HEPA Filtered Vacuum	A high efficiency particulate air (HEPA) filtered vacuum capable of trapping and retaining 99.97% of all particles larger than 0.3 microns
Homogenous	Evenly mixed and similar in appearance and texture throughout
HVAC System	Heating, Ventilation, and Air Conditioning system usually found in large business and industry facilities
Industrial Hygienist	A professional qualified by education, training, and experience to recognize, evaluate, and develop controls for occupational health hazards
Joists	The structural building component which the flooring or roof rests on
Local Exhaust Ventilation	The mechanical removal of air contaminants from a point of operation
NIOSH/MSHA	The offical approving agencies for respiratory protective equipment who test and certify respirators
Oiless Compressor	An air compressor that is not oil lubricated, which does not allow carbon monoxide to be formed in the breathing air
Open Circuit SCBA	A type of self-contained breathing unit which exhausts the exhaled air to the

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	atmosphere instead of recirculating it
Operations and Maintenance Plan (O&M Plan)	Specific procedures and practices developed for the interim control of asbestos-containing materials in buildings until it is removed
"Orange Booklets"	EPA publications issued in March 1979 titled: **Asbestos-Containing Materials in School Buildings: A Guidance Document,** part I and II
OSHA	The Occupational Safety and Health Administration which was created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in the workplace environment
Oxygen Deficient Atmosphere	Any atmosphere containing less than 19.5% oxygen
PAT Samples	Proficiency Analytical Testing of the asbestos samples conducted through NIOSH for laboratories involved with the analysis of asbestos samples
Particulate Contaminants	Minute airborne particles given off in the form of dusts, smokes, fumes, or mists
P & CAM 239	A NIOSH sampling and analytical method for measuring airborne fibers using phase-contrast microscopy. It has been replaced by the 7400 method.
PEL	Permissible Exposure Limit as stated by OSHA
Penetrating Encapsulant	Liquid material applied to asbestos-containing material to control airborne fiber release by penetrating into the material and binding its components together
Peritoneum	The thin membrane that lines the surface of the abdominal cavity
Personal Protective Equipment (PPE)	Any material or device worn to protect a worker from exposure to, or contact with, any harmful material or force
Logbook	An official record of all activities which occured during a removal project
Make-Up Air	Supplied or recirculated air to offset that which has already been exhausted from an area
MCEF	Mixed Cellulose Ester Filter which is one of several different types of media used to collect asbestos air samples
Mechanical Filter Respirator	A respiratory protection device which offers protection against airborne particles including dusts, mists, metal fumes, and smokes
Medical History	A record of a person's health record, including all the hazardous materials that they have been exposed to and also any injuries or illnesses which might dictate their future health status
Mesothelioma	A relatively rare form of cancer which develops in the lining of the pleura or perithoneum with no known cure
Method 7400	NIOSH sampling and analytical method for fibers using phase-contrast microscopy. Replaces method P & CAM 239
Micron	One millionth of a meter
Mil	Prefix meaning one-thousandth
Mineral Wool	A commonly used substitute for asbestos
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
Negative Pressure	An atmosphere created in a work area enclosure such that airborne fibers will tend to be drawn through the filtration system rather than leak out into the surrounding areas. The air pressure inside the work area is less than that outside the work area
NESHAP	National Emission Standards for Hazardous Air Pollutants - EPA Regulation 40 CFR subpart M, part 61

NIOSH The National Institute for Occupational Safety and Health which was established by the Occupational Safety and Health Act of 1970

Personal Sample An air sample taken with the sampling pump directly attached to the worker with the collecting filter placed in the worker's breathing zone

Personal Protection Notification and instruction of all workers prior to the beginning of a project as to the hazards associated with the job and what they can do the protect themselves from these hazards

PF Protection factor as provided by a respirator which is determined by dividing the airborne fiber concentration outside of the mask by the concentration inside the mask

Phase Contrast Microscopy (PCM) A microscopic technique used for the counting of fibers in air samples, but which does not distinguish fiber types

Pipe Lagging The insulation or wrapping around a pipe

Pleura The thin membrane surrounding the lungs, and which lines the internal surface of the chest cavity

Polarized Light Microscopy (PLM) A microscopic technique used to distinguish between different types of asbestos fibers by their shape and unique optical properties

Polyethylene Plastic sheeting which is often used to seal off an area in which asbestos removal is taken place for the purpose of preventing contamination of other areas

Posting Refers to caution or warning signs which should be posted in any area in which asbestos removal is taking place, or where airborne fiber levels may present a health hazard

Powered Air Purifying Respirator (PAPR) Either a full facepiece, helmet, or hooded respirator that has the breathing air powered to the wearer after it has been purified through a filter

Pre-Construction Conference A meeting held before any work between the contractor and the building owner at which time the job specifications are discussed and all detail of the work agreed upon

Pre-Employment Physical Complete medical examination of an employee before the job begins to determine whether or not he/she is fit to perform the functions of their employment

Pressure Demand Airline Devices A respiratory protection device which has a regulator and valve design such that there is a continuous flow of air into the facepiece at all times

Prevalent Levels Levels or airborne contaminants occurring under normal conditions

Prevalent Samples Air samples taken under normal conditions (background samples)

Progress Payments A pre-work agreement whereby the building owner pays the contractor after completion of certain phases of the project

Protective Clothing Protective, lightweight garments worn by workers performing asbestos abatement to keep gross contamination off the body

Pulmonary Pertaining to, or affecting the lungs, or some portion thereof

Pulmonary Function Test A part of the medical examination required to determine the health status of a person's lungs

Qualitative Fit Test A method of testing a respirator's face-to-facepiece seal by covering the inhalation or exhalation valves and either breathing in or out to determine the presence of any leaks

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Recordkeeping Detailed documentation of all program activities, decision, analyses, and any other pertinent information to a project

Respirator Program A written program established by an employer which provides for the safe use of respirators on their job sites

Sawyer Algorithm A numerical system for evaluating the degree of asbestos exposure hazard in a given area

Scanning Electron Microscopy (SEM) A method of microscopic analysis which utilizes an electron beam directed at the sample and then collects the beams that are reflected to produce an image form which fibers can be identified and counted

SCBA Self-Contained Breathing Apparatus

Serpentine One of the two families of crystaline structures of the asbestiform mineral of which chrysotile is one having a layered silicate structure

Shower Room A room between the clean room and the equipment in a worker decontamination system in which workers take showers when leaving the work area

Structural Member Any load-supporting member such as beams and load-supporting walls of a facility

Substrate The material or existing surface located under or behind the asbestos-containing material

Supplied Air Respirator A respirator that has a central source of breathing air which is supplied to the wearer by way of an airline

Surfactant A chemical wetting agent added to water to improve its penetration abilities into asbestos-containing materials

Threshold Limit Valve (TLV) Levels of contaminants established by the American Conference of Governmental Industrial Hygienists to which it is believed that workers can be exposed to with minimal adverse health effects

Transmission Electron Microscopy (TEM) A method of microscopic analysis which utilizes an electron beam that is focused onto a thin sample. As the beam penetrates (transmits) through the sample, the difference in densities produces an image on a fluorescent screen from which samples can be identified and counted

Treated Cellulose An insulation material made of paper or wood products with fireretarding treatment added

Tumor A swelling or growth of cells and tissue in the body which does not serve a useful purpose

TWA Time-Weighted Average, as in air sampling

Type B Reader A physician with specialized training in reading x-rays, specifically in recognizing lung disorders

Type C Supplied Air Respirator A respirator designed to provide a very high level of protection which supplies air to the wearer from an outside source such as a compressor

Tyvek (tm) Brand name for disposable clothing suitable for asbestos removal

USEPA United States Environmental Protection Agency

Vandalism Malicious destruction of property

Vermiculite A micaceous mineral that is sometimes used as a substitute for asbestos which is lightweight and highly water - absorbent

Visible Emissions Airborne fibers given off from an asbestos -containing source that are visible to the human eye

Visual Inspection A walk-through type inspection of the work area to detect incomplete work, damage, or inadequate clean up of a worksite

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Washroom A room between the work area and the clean room in the equipment decontamination enclosure system where workers shower

Water Damage Deterioration or delamination of ceiling or wall materials due to leaks from plumbing or cracks in the roof

Wet Cleaning The process of eliminating asbestos contamination from surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water

Wetting Agents Materials that are added to water which is used for wetting the asbestos-containing material in order for the water to penetrate more effectively

Workmen's Compensation A system of insurance required in some states by law, financed by employers, which provides payments to employees or their families for occupational injuries, illnesses, or fatalities resulting in loss of wage or income incurred while at work

ASBESTOS RELATED ACRONYMS

ACRONYM	DESCRIPTION
ACM	Asbestos Containing Material
AIA	Asbestos Information Assocation
AGC	Association of General Contractors of America
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
ASTM	American Society of Testing Materials
ATIS	Asbestos Technical Information Services
A/E	Architecture/Engineering
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPSC	Consumer Product Safey Commission
DEP	Department of Environmental Protection
DHEW	Department of Health, Education, and Welfare
EPA	Environmental Protection Agency
FACM	Friable Asbestos Containing Material
FAM	Fibrous Aerosol Monitor
FDA	Food and Drug Administration
FIM	Friable Insulation Material
GSA	General Services Administration
HEPA	High Efficiency Particulate Air
LCL	Lower Confidence Limit
MSDS	Material Safety Data Sheet
MSHA	Mine Safety & Health Administration
NBS	National Bureau of Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety & Health Adminstration
O & M	Operations and Maintenance
PAT	Proficiency Analytical Testing
PAPR	Powered Air Purifying Respirator
PCM	Phase Contrast Microscopy
PEL	Permissable Exposure Limit

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tractors may consider the cost of violations more cost effective than following proper safety/work procedures. Federal, State and City agencies can make an owner aware of a contractor's safety records. Previous clients can advise of their satisfaction.

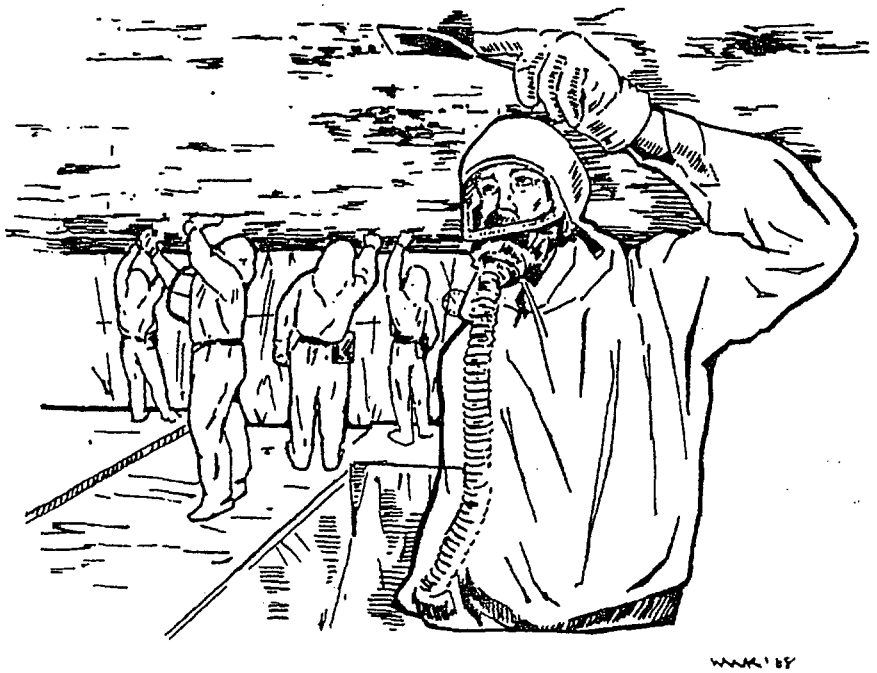
Above all, do not treat asbestos abatement as just another construction project. It is expensive work and will continue to be so. However, those owners who take time to choose the right contractor for their project have an excellent chance of a successful project and permanent solution to their asbestos related problems.

WHO DO I CONTACT ABOUT MY ASBESTOS QUESTIONS?

If you have any questions about asbestos, there are several ways to obtain answers. The first contact for most questions may be your state agencies. They can provide you with the names and numbers of approved contractors, consultants, labs and engineers who are actively involved with asbestos issues. These same agencies can also provide you with the most up-to-date requirements on contractor certification, worker certification and landfill requirements for their state.

Another contact for general questions would be the EPA. They have regional offices throughout the United States that can answer most any question related to asbestos. The EPA also can sometimes help a building owner find qualified contractors, architects or labs to assist with asbestos projects.

Questions that require answers about costs, quantities or other related contracting questions can usually be answered best by a contractor who deals with these topics on a daily basis.



An asbestos worker scrapes the sprayed on asbestos containing materials off a ceiling.

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An asbestos consultant checks levels of airborne asbestos in a removal area.

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Typical asbestos workers wearing various types of protective respirators

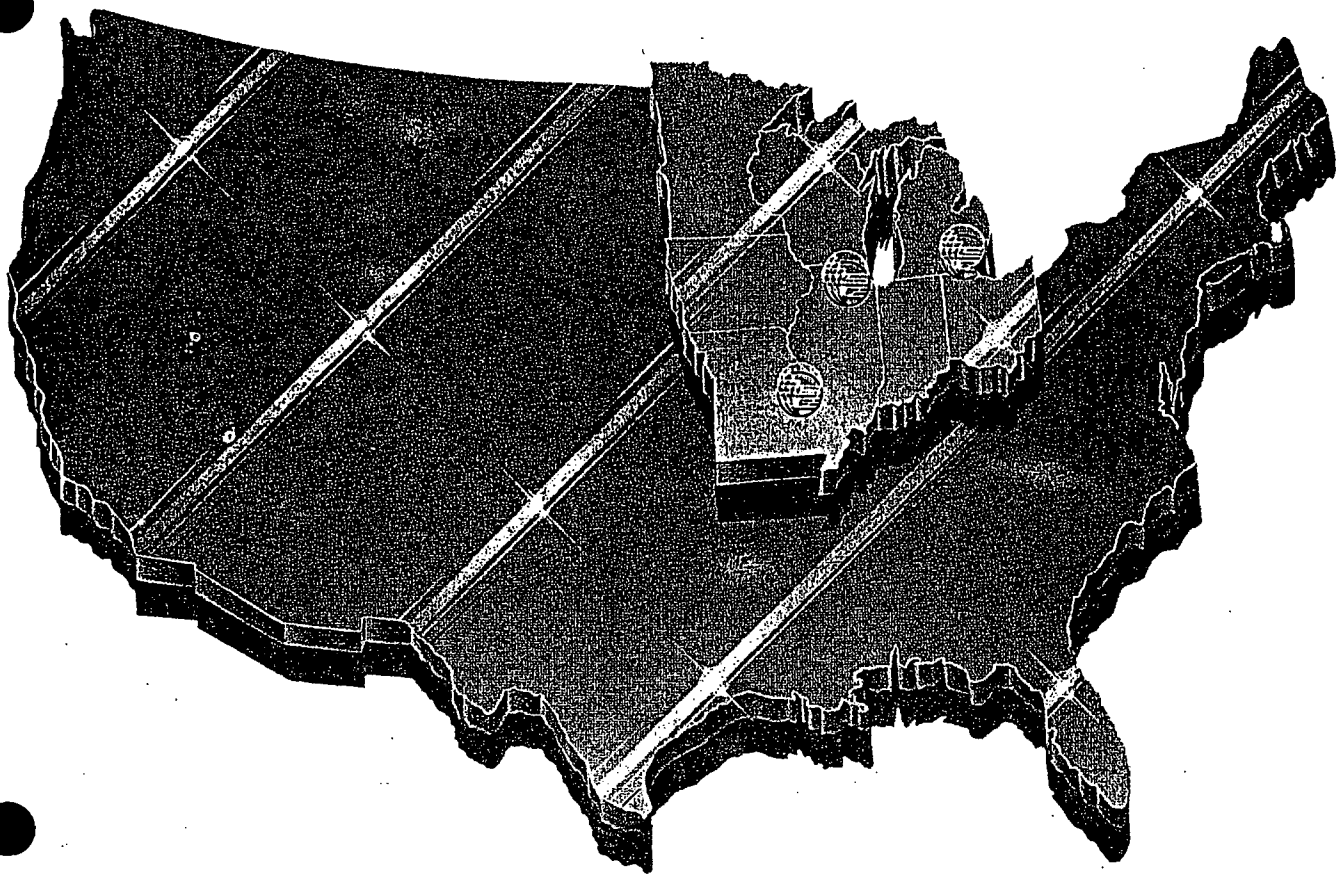
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NOTES

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