

## THE ASBESTOS PROBLEM AND SCHOOLS

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### NATURE OF ASBESTOS

Asbestos is by definition a group of naturally occurring minerals and is found in specific rock formations in our country mostly in Georgia, Vermont and California. In addition, earthquakes and volcanos can create asbestos rock. These groups of natural minerals separate into strong, very fine fibers. Asbestos has been widely used because it is a relatively inexpensive, virtually indestructible material having properties that make it readily available in a variety of physical forms and applications.

Asbestos is reported to be used in over 3600 products. Some of the products include sprayed on insulation, asphalt flooring, vinyl floor tiles, paving, and road surfaces. In addition, asbestos was used in brake linings of automobiles, clutch facings, gaskets and reinforced plastics. Structural uses in buildings included condensation control, fireproofing, thermal insulation, and acoustical applications. Between 1900 and 1980 some 30 million tons of asbestos were put into 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.

The word "asbestos" is derived from the Greek word meaning "indestructible" and it is known that asbestos has been used since before 430 B.C. for oil lamp wicks.

### ASBESTOS HEALTH HAZARDS

Asbestos is a known human carcinogen. However, the existence of asbestos in a building does not mean a hazard exists. Persons are exposed to asbestos when fibers are released into a building environment. The potential for such a release of asbestos fibers depends upon the characteristics of the asbestos-containing material. In general, soft crumbly materials tend to release fibers more easily than do hard cementitious materials. Asbestos fibers have some unique health effects on people. Of all the compounds capable of producing an adverse effect on the human body, asbestos may have a longer latency period between exposure and the subsequent appearance of disease than any other substance. The unique physical properties of asbestos, its virtual indestructibility - the very reasons why it achieved such widespread use - are the same properties which make it hazardous to health. Once it is installed, applied, or used asbestos is permanent. Indeed, once asbestos fibers become lodged in the lungs, they don't "go away." Certain types of cancer that develop from asbestos exposure may not appear until 40 years after the exposure occurred. Asbestos-related diseases are caused by inhalation or ingestion of asbestos fibers. The lungs are the primary site of adverse health effects. Asbestos-related diseases are chronic, or long term diseases, as opposed to acute, or short term health effects. Also there are no early signs or symptoms associated with exposure to asbestos nor with the tissue reactions caused by the deposition of asbestos fibers. These are the reasons for the emphasis on prevention of the disease process, reducing the risks of

exposure in the first place. Asbestosis, lung cancer, and mesothelioma are some of the specific diseases associated with asbestos exposure.

While many building materials contain asbestos not all present an immediate health hazard but can present a potential health risk. Asbestos fibers that become airborne, due to being friable, through damage or improper handling of the building product present a health risk. This is why it can be safe to have asbestos containing materials in buildings, as long as they are identified, managed and handled properly. Asbestos can no longer be used in building materials of schools in the United States but is in fact still being manufactured and exported all over the world today.

## THE PROBLEM IN SCHOOLS

Since recent investigations and research regarding asbestos exposure and the disease process indicates that the toxicity depends on the dose or exposure to the material, the dose being concentration times time, it was discovered that school children were at the greatest risk within the general population because of the wide use of asbestos containing building materials within school buildings over recent years. One can easily calculate the risk of an individual who may be exposed even to the smallest fiber amount six to eight hours per day times 180 days per year for perhaps 4-8 years. In 1985 it was estimated by the U.S. Environmental Protection Agency that approximately 15 million school children and 1.4 million school workers were at risk due to friable asbestos in school buildings. Federal Laws to identify the problem and develop response actions for school populations at risk were needed. It is very easy to understand the seriousness of asbestos containing building materials in schools when considering this. Thousands of schools across our country were constructed with materials that contain asbestos. Hundreds of these school buildings in fact presented a significant health exposure risk to the school population.

## ASBESTOS HAZARD EMERGENCY RESPONSE ACT AND THE CARLISLE SCHOOL

On October 22, 1986, President Reagan signed into law the Asbestos Hazard Emergency Response Act (AHERA). The law required the Environmental Protection Agency (EPA) to develop regulations which provided a comprehensive framework for addressing asbestos problems in public and private schools. In October of 1987 the EPA published the Asbestos-Containing Materials in Schools Rule. The rule required all public and private elementary and secondary schools to inspect for friable and non-friable asbestos, develop asbestos management plans that address asbestos hazards in school buildings, and implement response actions in a timely fashion. Implementation of AHERA Plans was required no later than July 9, 1989. To carry out these activities, involving inspections, management plans and response actions, schools are required to use

accredited persons. Accreditation is obtained by attending an EPA approved course. . The Center for Environmental Management at Tufts University in Medford, Massachusetts offers several courses on asbestos management which includes accreditation and is one of the few institutions in the country to offer a comprehensive educational program.

Prior to AHERA the Carlisle Public Schools had a very progressive asbestos removal program in the buildings and had just prior to the start of the expansion and renovation project in 1987 removed all friable asbestos from the buildings. (The only asbestos discovered was on a boiler and pipe insulation, all in non-public areas of the schools.) However, AHERA required all schools to basically reinspect all buildings, by employing an accredited person, to identify all friable and non-friable asbestos containing building materials in addition to all materials suspected of containing asbestos, document the condition, develop a management plan and appropriate response actions to be in compliance. Therefore, the school went out to bid for firms to conduct the AHERA Management Plan. The Carlisle Schools AHERA Management Plan was completed, by an accredited contractor in order to be in compliance with the Federal Regulations at a cost of \$ 6000.00 This document in accordance with the regulations is and must always be available for public inspection.

The AHERA regulations require six month surveillance activities and a three year reinspection by accredited personnel as long as the asbestos containing materials are within the school. In addition, there are very specific operations and maintenance practices and procedures that must be implemented including regular training of building maintenance personnel and annual notification to the building occupants and community.

The Carlisle School was very fortunate to have dealt with asbestos which had been identified several years ago and had seen to having it removed from the buildings. Nonetheless the AHERA inspection identified specific areas of floor tiles to be asbestos containing in addition to some exterior wall panels. Therefore these building materials required appropriate response actions to be instituted including operations and maintenance procedures. These two materials present no immediate health hazard but must be managed properly in accordance with the regulations which include periodic surveillance and reinspection.

With the Management Plan completed the annual costs were estimated to be several hundred dollars and the three year inspection costs to be between \$ 1500.00 & \$ 2000.00 since the reinspections may only be conducted by accredited personnel. With this in mind David Flannery, Supervisor of Buildings and Grounds at the Carlisle Schools, enrolled in two programs this summer at the Tufts University Center For Environmental Management. The first course involved education and training on asbestos inspections and the second course, asbestos management and planning. He received accreditation in both areas and now is certified to do the reinspections for the School and to keep the Town in compliance with the AHERA law. In addition, the Carlisle School Committee has designated David Flannery as the " Designated Person" for the Local Educational Agency to assure compliance with AHERA Rule. The responsibilities of the " designated person " include seeing that inspections, reinspections, and periodic surveillance are

conducted, that the Management Plan is available and updated, that the workers and building occupants are informed at least once each school year about inspections, response actions, and post-response activities, to see that response actions are developed and implemented, and that custodial and maintenance personnel are trained.