SECTION I: GENERAL INFORMATION

What is asbestos?

"Asbestos" is the name given to a group of minerals that occur naturally as masses of fibers which can be separated into thin threads and woven, or combined with binding materials and pressed into solid form. There are six primary types of asbestos:

- Chrysotile;
- Amosite;
- Crocidolite;
- Anthophyllite;
- Actinolite; and
- Tremolite.

Asbestos is non-combustible, is resistant to corrosion, has a high tensile strength and has low electrical conductivity. These characteristics, in addition to the material's relatively low cost, made asbestos an attractive material for producing a variety of commercial products over a period of 100 years, beginning around 1880. Such products included:

- Friction devices, for example clutches and brake shoes;
- Plastic products, for example floor tile, coatings and sealants;
- Paper products, for example roofing felt and gaskets;
- Textile products, for example curtains and gloves;
- Building construction materials, for example siding and roofing shingles, "cement board", peg board;
- Road construction materials, for example wearing surfaces and curbing; and
- Insulating products, for example boiler insulation, pre-formed pipe wrapping and troweled/sprayed coatings.

How was asbestos used by New Hampshire manufacturers?

For nearly a century, New Hampshire was home to a number of asbestos manufacturing facilities. Plants were located in Nashua, Meredith, and Tilton.

The Nashua plant, owned by the Johns-Manville Corporation, commenced operations around 1900. It ceased manufacturing asbestos-containing products in 1985 and the buildings were razed in 1997. The principal raw materials used at the Nashua plant consisted of asbestos fiber and Portland cement. These were combined to produce 4' by 8' sheets of "cement board" material which ranged from 1/8" to 4" in thickness. In addition, the Nashua plant produced a variety of other asbestos-cement products for construction and industrial uses, primarily durable insulation products.

For many years (c. 1900 - 1970) the Nashua plant made its asbestos-containing waste material available free of charge to area property owners for use as fill. Consequently, asbestos-containing waste material was dumped in large quantities throughout the Nashua/Hudson communities, generally to fill low lying areas and facilitate land development. Today, over 300 properties in Nashua and Hudson are identified as asbestos disposal sites. Additional sites are being identified each year.

Less is known about the waste disposal practices of the asbestos manufacturing plants formerly located in Meredith and Tilton. At the site of the Tilton plant, there are two areas which the company used to landfill asbestos waste. These areas are no longer in use and are capped with soil materials. In Meredith, asbestos waste was disposed of at the town landfill. The existence of other dump sites in Tilton and Meredith is not known.

Why should I be concerned about asbestos?

The U.S. Occupational Safety and Health Administration (OSHA) is aware of no instance in which exposure to a toxic substance has more clearly demonstrated detrimental health effects on humans than has asbestos exposure. For this reason, asbestos manufacturing has largely ceased in this country and a number of government regulatory programs have been established to address the safe management of asbestos within our living environment.

What health hazards are associated with asbestos?

The inhalation of asbestos fibers in high concentrations is known to cause:

- **Asbestosis**, a debilitating and irreversible respiratory illness which is characterized by a scarring of the lung tissue, or linings of the lung, which thereby reduces lung function and makes breathing more difficult;

- **Mesothelioma**, a cancer of the thin membranes lining the chest and abdomen, which is almost exclusively caused by exposure to asbestos and is almost always fatal; and

- **Lung cancer and other cancers**, including cancers of the larynx, tongue, sinuses, mouth, throat, stomach, colon, rectum, intestines, kidney, pancreas, and gall-bladder.

Symptoms of asbestos-caused diseases generally do not appear for 10-35 years after the first exposure to asbestos.

There is no known level of asbestos exposure which is considered risk free. Moreover, among people exposed to asbestos, cigarette smokers are at much greater risk of developing lung cancer than those individuals who do not smoke.

What are the exposure pathways of concern?

The inhalation of asbestos is the primary exposure route of concern. Ingestion of asbestos is another concern. Direct contact with asbestos is not of concern from the perspective of absorption through the skin. However, by making direct contact with asbestos, a person's skin or clothing can become contaminated with asbestos fibers and the fibers can then be carried into the home or workplace, where they may become airborne or transferred to the mouth. The same applies when tools, machinery or toys come in contact with asbestos-containing materials.

Asbestos fibers are not water soluble and do not move through groundwater to any appreciable extent. Based on studies of other insoluble particles of similar size, the expected migration rate of an asbestos fiber through soils by the forces of groundwater is approximately 1 to 10 centimeters (0.4 to 4 inches) per 3,000 to 40,000 years. Thus, asbestos is not considered a groundwater contaminant.

Although asbestos does not move with groundwater flow, it can move with surface water flow. Therefore, if asbestos waste is allowed to come in contact with rivers, wetlands and other surface water bodies, fibers may be transported to places that will result in human exposure, including intakes for drinking water supplies and recreation areas.