CHAPTER 1 — EXPOSURE TO ASBESTOS INSIDE BUILDINGS

The Environmental Protection Agency (EPA) has been concerned with the disease-causing potential of nonindustrial exposure to asbestos since the early 1970s. The concern derives from epidemiologic evidence linking airborne asbestos exposures by asbestos workers to various types of cancer and nonmalignant respiratory diseases, and from recognition that large quantities of asbestos have been found in building materials, insulation, and other products used in schools and other buildings. This chapter (1) summarizes information on the relationship between health effects and exposure to airborne asbestos; (2) describes federal regulations affecting asbestos emissions, the use of asbestos materials, and worker exposure levels; and (3) compares levels of airborne asbestos in buildings with those in asbestos workplace settings and outdoors. The purpose of the chapter is to place in perspective asbestos exposure levels and health risks likely to be experienced by occupants of buildings with asbestos-containing materials. The basic exposure-risk issues are summarized below.

Safe Level of Exposure: EPA and the scientific community believe that any level of exposure to asbestos involves some health risk, although the exact degree of risk cannot be reliably estimated. The risk of cancer is of greater concern at low exposure levels than the risk of asbestosis.

Special Concerns: Children and young adults who are exposed to asbestos have a greater chance than older people of developing certain asbestos-related diseases due to a longer remaining lifespan during which disease may develop. Also, smokers exposed to asbestos are at greater risk than nonsmokers with a similar level of exposure.

Federal Regulations Affecting Asbestos in Buildings: Current regulations restrict the use of asbestos in new buildings, specify work practices during removal of asbestos-containing materials from existing buildings, and require the identification of asbestos in schools. No exposure standards have been set for nonindustrial settings, and no regulations mandate corrective actions in buildings where asbestos-containing materials are found.

Relative Exposure Levels in Buildings: Prevalent levels of airborne asbestos inside buildings where asbestos-containing materials are present may exceed outdoor levels by a factor of 100. However, these indoor levels are lower by a factor of at least 1,000 than historic asbestos workplace levels where the occurrence of asbestos-related disease is well documented. When asbestos-containing materials are damaged, peak levels inside buildings may approach historic workplace levels.

Need for Action: The level of airborne asbestos in buildings with asbestos-containing materials represents a potential for exposure and risk of asbestos-related disease that cannot be ignored. The decision whether or not to take action and the selection among different courses of action are responsibilities of individual building owners.

1.1 Health Effects Related to Asbestos Exposure

Exposure to high levels of airborne asbestos is associated with a debilitating lung disease called asbestosis; a rare cancer of the chest and abdominal lining called mesothelioma; and cancers of the lung, esophagus, stomach, colon, and other organs. The relationship between exposure level and health risk is complex. The best available data on asbestos worker exposure indicate that the risks of asbestosis, lung cancer, and mesothelioma decrease in direct proportion to a decrease in total asbestos exposure (the average airborne asbestos

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