

UNTIL STUDIES
INDICATE THAT
ASBESTOS EXPOSURES
DURING ROOFING
PROJECTS
ARE WITHIN
ACCEPTABLE
PARAMETERS,
CONCERNS OVER
THE PROTECTION OF
HUMAN HEALTH
AND THE ENVIRONMENT
MUST REMAIN FOREMOST
IN THE MINDS OF
ROOFING PROFESSIONALS.

By Robert D. Schmitter and
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ASBESTOS ROOFING MATERIALS

Concerns about the potential health effects related to asbestos exposures, as well as increased liability, have led government and industry officials to closely scrutinize the renovation and demolition practices that may disturb asbestos-containing materials (ACM). Until recently, little attention has been given to asbestos-containing roofing materials (ACRM) and the potential worker exposures to elevated concentrations of airborne asbestos fibers during roofing tear-off or re-covering projects.

Although its use is gradually decreasing, and may be banned altogether if an Environmental Protection Agency (EPA) proposal becomes law, asbestos has been used in a variety of roofing products. These products include roofing felts, mastics, base flashings, asbestos-cement shingles and asbestos-cement tiles. The most commonly used form of asbestos in roofing products is chrysotile. Asbestos has been used in roofing felts since the 1930s, and constitutes as much as 85 percent of the dry felt weight.¹ The potential for asbestos exposure occurs when a

roofing worker cuts, saws or tears roofing material during removal or re-covering operations.

Currently, there are no federal regulations that specifically address asbestos exposures during roofing projects, although the industry as a whole falls under the U.S. Department of Labor's Occupational Safety and Health Administration's (OSHA) asbestos standards for the construction industry. Specifically, the OSHA Asbestos Standard 20 CFR 1926.58 applies to the removal, encapsulation, alteration, repair or maintenance of structures, substrates or portions thereof that may contain asbestos.² Certainly, however, many roofing projects may fall under at least one of these categories.

While federal regulations have previously forgotten, ignored or tokenly addressed asbestos in roofing, some states are now taking a closer look at the potential for exposure to airborne asbestos fibers during roofing tear-off and re-covering projects. As a result of this policy re-evaluation, many states are beginning to require that asbestos abatement contractors and

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roofing contractors who become asbestos roofing contractors be fully licensed to perform work on ACRM. For example, Georgia's Asbestos Safety Act was recently amended to include the licensing of asbestos contractors and the certification of asbestos roofing forepersons. In order to become a licensed asbestos roofing contractor

concentrations greater than OSHA's permissible exposure limit (PEL) of 0.2 f/cc.⁵ In addition, the latter group re-states the opinion of OSHA and the National Institute of Safety and Health (NIOSH) that there is no proven "safe" level of asbestos exposure. In addressing the removal of roofing felts, OSHA acknowledges

requirements to the removal of non-friable asbestos-containing materials. Basically, the interpretation given in the memorandum is that if any non-friable asbestos-containing material becomes friable during a renovation or demolition project, the NESHAP requirements apply to that project. This includes the "no visible emissions" provision, the use of wet methods to reduce fiber generation and the proper disposal techniques. Additionally, the notification requirements outlined in the regulations would become applicable.

Under the OSHA asbestos standards, initial employee exposure monitoring must be undertaken at the beginning of each project where asbestos materials may be disturbed. The two exceptions to this requirement are: 1. it can be demonstrated that the asbestos fiber concentrations released will remain less than the action level (0.1 f/cc); or 2. exposure monitoring results from similar projects with workplace conditions that resemble the processes, types of material, work practices and environmental conditions of that project show exposure levels below 0.1 f/cc. However, contractors should keep in mind the fact that no two projects are identical and, therefore, interpretations of "similar" projects may be subjective.

Most of the personal air samples collected during roofing projects have been analyzed using phase contrast microscopy (PCM). Under the OSHA regulations, analysis of personal samples is required to be completed using the OSHA Reference Method, or an equivalent, which specifies PCM analysis. The drawbacks of using PCM for the analysis of air samples for the presence of asbestos are well known—the method is not specific for asbestos, nor can it detect fibers thinner than approximately 0.25 microns. To date, only a handful of detailed studies using transmission electron microscopy (TEM) for analysis of personal and area air samples on roofing projects have been completed. In the future it will be necessary to continue these research efforts in order to accomplish the goal of establishing an asbestos-specific index of worker exposures. Until such studies indicate that exposures to asbestos during roofing projects are within universally acceptable parameters, concerns over the protection of human health and the environment must remain in the minds of roofing professionals. ■

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in Georgia, a person must successfully complete either an EPA-approved contractor supervisor course in asbestos abatement procedures (in addition to passing a 100-question multiple-choice examination), or a state-approved three-day training program on procedures and practices for dealing with ACRM (plus passing a 50-question multiple-choice examination) based on the Georgia Model Curriculum.³

Persons successfully completing the five-day contractor/supervisor course and exam are eligible to perform asbestos abatement inside a building, as well as on a roof. In comparison, those who successfully complete the three-day course and exam specifically for handling ACRM are only licensed to perform abatement projects involving roofing materials.⁴

Currently, a controversy exists about whether airborne asbestos fiber concentrations become elevated enough to warrant concern over exposure levels during roofing operations. The two opposing sides argue whether personal protective equipment, including respirators, should be required for roofing workers. The roofing industry itself is divided as to the hazard potential. Those who claim that no hazard exists have produced numerous air monitoring studies indicating that airborne fiber concentrations fall below the OSHA action level of 0.1 fibers per cubic centimeter (f/cc) based on an eight-hour time-weighted sampling period. Those who charge that concern over asbestos exposure on roofing projects is legitimate have produced data showing airborne fiber

that engineering controls will not reduce asbestos exposure below 0.2 f/cc (the PEL) in all instances, and that respirators will be required in those situations.⁶ Additionally, OSHA states that evidence in the construction industry indicates that installation of asbestos roofing papers and felts causes difficulty in meeting an exposure level below the current PEL without the use of respirators.⁷

At the heart of the exposure controversy lies the argument regarding the relative friability of roofing products such as felts, base flashings, asbestos-cement shingles and asbestos-cement tiles that are considered non-friable. Yet, as a result of the weathering of these materials during the expected life-span, some of these products may not retain their original structural integrity and may even become brittle. Also, the question of friability becomes more of an issue when it comes to implementing those procedures necessary to tear off a roof, such as the use of roofing saws. The current National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations address only the release of asbestos fibers from friable materials. Although the definition of "friable" in the regulations is relatively clear, a problem arises over the interpretation of whether non-friable materials have the potential to become friable through the implementation of various work practices.

An EPA memorandum from the Office of Air Quality Planning and Standards dated Dec. 5, 1985, addresses the application of the NESHAP

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REFERENCES

1. Information distributed by the Roofing Industry Educational Institute, Englewood, Colo.
2. U.S. Department of Labor, Occupational Safety and Health Administration, June 20, 1986, 29 CFR Parts 1910 and 1926, *Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite: Final Rules and Notice*, Fed. Reg. Vol 51, Rules and Regulations, p. 22756.
3. Georgia Asbestos Safety Act, Amendments to the Rules of the Asbestos Licensing Board, Filed Sept. 13, 1988, Chapter 52-53, Licensing and Certification, Sect. 52-3-04.
4. Bradford, M. Program Manager, Asbestos Licensing and Certification Unit, Environmental Protection Division, Georgia Department of Natural Resources, personal communication.
5. *Health and Safety Facts: Questions and Answers Concerning Asbestos*, Johns-Manville Corporation, Denver, Colo. (Undated, circa 1981).
6. U.S. Department of Labor, Occupational Safety and Health Administration, June 20, 1986, 29 CFR Parts 1910 and 1926, *Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite: Final Rules and Notice*, Fed. Reg. Vol 51, Rules and Regulations, p. 22663.
7. U.S. Department of Labor, Occupational Safety and Health Administration, June 20, 1986, 29 CFR Parts 1910 and 1926, *Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite: final Rules and Notice*, Fed. Reg. Vol 51, Rules and Regulations, p. 22708.

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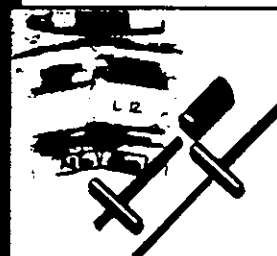
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