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WHAT'S CURRENT IN ASBESTOS REGULATIONS

Janis L. Kirkland*

I. INTRODUCTION

Asbestos,¹ once valued as a superb insulator, is now recognized as a deadly carcinogen.² The United States Environmental Protection Agency ("EPA") estimates that 733,000 public and commercial buildings in the United States contain friable³ asbestos or asbestos-containing materials.⁴ Thus, it is not surprising that an avalanche of litigation has resulted from concerns over exposure to asbestos.⁵

As a response to growing public concern, federal, state, and local governments are focusing increased attention on asbestos. The resulting myriad of statutes and regulations can be cumbersome and confusing. Compliance with existing governmental regulation presents a challenge to owners, landlords, tenants, managers, and occupiers of property which may contain asbestos. Recent legislative and regulatory activities indicate that controls will become increasingly stringent.⁶ Federal regulatory programs dealing with as-

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1. "Asbestos" refers to a class of minerals and includes a variety of separate compounds such as chrysotile, riebeckite, crocidolite, cummingtonitegrunerite, anthrophyllite, and actinolite-tremolite. See 40 C.F.R. § 61.141 (1988). For the purposes of this article, the term "asbestos" will include any or all forms of asbestos as well as asbestos-containing materials.

2. Dimling, *Asbestos and the Insurer as Lender, Employer and Property Owner*, 1988 A.B.A. COMMS. ON LIFE INS. L., HEALTH INS. L., EMPLOYEE BENEFITS REP. 1.

3. Asbestos is "friable" if it can be crumpled, pulverized or reduced to powder by hand pressure. See 40 C.F.R. § 61.141 (1988).

4. EPA, STUDY OF ASBESTOS-CONTAINING MATERIALS IN PUBLIC BUILDINGS, A REPORT TO CONGRESS 8 (Feb. 1988) [hereinafter EPA REPORT TO CONGRESS].

5. Asbestos litigation is one of the fastest growing areas of tort law. By August 1987, over 50,000 asbestos-related cases had been filed. An estimated 2,000 new cases are filed monthly. Dimling, *supra* note 2, at 1. Most of these suits involve claims for personal injury, for removal costs, or for insurance coverage under general liability policies. Price, *Legal Perspective Overview*, in ASBESTOS IN BUILDINGS, FACILITIES & INDUSTRY 2 (1988) [hereinafter ASBESTOS IN BUILDINGS].

6. For example, in a 1988 Report to Congress, the United States Environmental Protection Agency (EPA) recommended that Congress take steps to improve the quality of asbestos abatements in public and commercial buildings. EPA REPORT TO CONGRESS, *supra* note 4, at 36. The Occupational Safety and Health Administration (OSHA) has worked actively

bestos are administered primarily by the EPA, United States Occupational Safety and Health Administration ("OSHA"), and United States Department of Transportation ("DOT"). Owners and operators of commercial buildings which may contain asbestos must be fully aware of the ever-increasing level of state and local regulation.

II. THE ASBESTOS PROBLEM

The name "asbestos" is a common term given to minerals of the silicate family that display certain properties.⁷ Asbestos is a highly durable mineral which is resistant to heat and corrosive chemicals.⁸ In addition, asbestos fibers are valuable to industry because they have high tensile strength, flexibility, and good frictional properties.⁹

Unfortunately, asbestos has another important, but harmful, quality; its fibers are toxic if ingested or inhaled.¹⁰ Individual asbestos fibers are commonly shaped as fine threads which are invisible to the naked eye. They can float in the air for days. When inhaled, the fibers penetrate the lining of the lungs, where they accumulate.¹¹

Exposure to airborne asbestos has been linked with asbestosis (a debilitating lung disease) and mesothelioma (a rare cancer of the chest and abdominal lining), as well as with cancers of the lung, esophagus, stomach, colon, and other organs.¹² There is no known safe level of asbestos exposure.¹³ Even a single exposure may pre-

to tighten standards to protect employees in the workplace. In June 1986, OSHA adopted a comprehensive new asbestos standard reducing the permissible exposure limit for asbestos. See 29 C.F.R. §§ 1910.1001, 1926.58 (1988) (general industry and construction industry respectively). In addition, an excursion limit was imposed in September 1988. See 53 Fed. Reg. 35,610 (1988). See generally ASBESTOS IN BUILDINGS, *supra* note 5, at 2-4 (summarizing implications of the presence of asbestos in buildings).

7. Zurer, *Asbestos: The Fiber That's Panicking America*, 63 CHEM. & ENG'G NEWS 28, 30 (Mar. 4, 1985).

8. See OSHA, ASBESTOS STANDARD FOR CONSTRUCTION INDUSTRY 1 (1986) [hereinafter OSHA ASBESTOS BOOKLET].

9. OSHA ASBESTOS BOOKLET, *supra* note 8, at 1.

10. Glazerman, *Asbestos in Commercial Buildings: Obligations and Responsibilities of Landlords & Tenants*, 22 REAL PROP., PROB. & TR. J. 661, 661 (1987).

11. Barinaga, *Let Some Sleeping Asbestos Lie, Experts Advise*, Richmond Times-Dispatch, July 26, 1987, at G1, col. 1.

12. Brown, *What Lawyers Must Know About Asbestos*, 73 A.B.A. J. 74, 74 (Nov. 1987).

13. Note, *Asbestos Abatement (The Insurance Crisis): A Solution is Still up in the Ambient Air*, 38 SYRACUSE L. REV. 1343, 1348 (1987).

sent a health risk. Smoking acts synergistically with asbestos exposure and may dramatically multiply the risk of developing lung cancer.¹⁴

The latency period¹⁵ for the development of asbestos-related disease may last twenty years or longer.¹⁶

This latent period is explained by the fact that asbestos fibers, once inhaled, remain in place in the lung, causing a tissue reaction that is slowly progressive and apparently irreversible. Even if no additional asbestos fibers are inhaled, tissue changes may continue undetected for decades. By the time the disease is diagnosable, a considerable period of time has elapsed. . . .¹⁷

Asbestos was probably used by the Greeks and Romans during the first century.¹⁸ The history of modern asbestos use dates back to the late 1800's.¹⁹ Originally it was used as boiler insulation primarily in railroads and shipyards.

A spray application technique developed after World War II fostered widespread use of asbestos insulation, particularly in high rise buildings.²⁰ Although the EPA restricted the use of spray-applied asbestos in 1973,²¹ asbestos fireproofing was the accepted norm in building construction until the mid-1970's.²² Asbestos may be found in a variety of building materials including cement, acoustical plaster, fireproofing textiles, wallboard, ceiling tiles, vinyl floor tiles; and thermal insulation.²³

14. See EPA, A GUIDE TO RESPIRATORY PROTECTION FOR THE ASBESTOS ABATEMENT INDUSTRY 1 (1986).

15. The latency period is the time between exposure to a disease or the stimulus causing the disease and the clinical manifestation of the disease. See TABLER'S CYCLOPEDIA MEDICAL DICTIONARY 933 (15th ed. 1985).

16. Comment, *Asbestos: When Is Insurer Liability Triggered in California?*, 19 PAC. L.J. 845, 845 (1988).

17. *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1083 (5th Cir. 1973) cert. denied, 419 U.S. 869 (1974).

18. See Fried, *Asbestos Abatement: A Pragmatic Survey of Problems and Solutions*, in ASBESTOS REGULATION, REMOVAL AND PROHIBITION 113, 115 (Practicing L. Inst. ed. 1987).

19. Asbestos was used as a heat insulator as early as 1866. Asbestos cement was introduced around 1870. Asbestos insulation has been produced commercially since at least 1874. *Borel*, 493 F.2d at 1083 n.3.

20. See Diamond, *Liability in the Air: The Threat of Indoor Pollution*, 73 A.B.A. J. 78, 82 (Nov. 1987).

21. Brown, *supra* note 12, at 74.

22. ASBESTOS IN BUILDINGS, *supra* note 5, at 2.

23. Brown, *supra* note 12, at 74.

Use of asbestos was so widespread that it was "used in constructing more than half of all buildings erected in the United States during the three decades from 1940 to 1970, and in almost every factory, school and home across the land."²⁴ In a 1984 study, the EPA estimated that 733,000 public and commercial buildings and 31,000 schools in the United States contain some form of asbestos.²⁵ The American Society of Home Inspectors found asbestos in twenty-seven percent of 670 homes in a 1983 survey.²⁶

III. REQUIREMENTS TO ABATE ASBESTOS

The mere presence of asbestos does not pose a danger. Only when asbestos fibers become airborne do they present a risk of injury.²⁷ Asbestos which is not friable or which is encapsulated or otherwise set off from occupied parts of the building is not hazardous.²⁸ Asbestos becomes a health hazard as it decays and becomes friable, or when it is likely to be disturbed due to renovation or demolition of a building.²⁹ The extreme health risks associated with asbestos exposure have prompted regulatory agencies as well as individual building owners to consider when some form of asbestos management plan should be implemented.

A. Federal Requirements

Federal requirements to identify and abate asbestos currently apply only to schools.³⁰ The Asbestos Hazard Emergency Response Act of 1986 ("AHERA") orders school systems throughout the

24. Fried, *supra* note 18, at 115.

25. EPA GUIDANCE FOR CONTROLLING ASBESTOS-CONTAINING MATERIALS IN BUILDINGS 1-1 (1985) [hereinafter EPA ASBESTOS CONTROL GUIDANCE].

26. Asbestos was most commonly found in the heating systems of homes more than 20 years old. Barinaga, *supra* note 11, at G1, col. 1.

27. Zurer, *supra* note 7, at 37. It should be noted, however, that levels of airborne asbestos in buildings containing the material have been shown to be 10 to 100 times higher than outdoor levels. See EPA ASBESTOS CONTROL GUIDANCE, *supra* note 25, at 1-2.

28. Zurer, *supra* note 7, at 37.

29. See Glazerman, *supra* note 10, at 663 (quoting NEW JERSEY ASBESTOS POLICY COMMITTEE, REPORT TO THE GOVERNOR, at 1-2 (March 1985)). Some experts, however, believe that all asbestos should be removed due to the potential for future decay. See *id.* at 662.

30. Congress has considered several proposed bills which would require inspection and abatement in federal or other government facilities. Representative Florio has described this as an "interim step" to a more comprehensive requirement of asbestos inspection and management plans for all public and commercial buildings. See generally Steinway, *It's the Law: Understanding the Maze of Regulations Governing the Handling, Removal and Disposal of ACM*, ASBESTOS ISSUES '89, Feb. 1989, at 18, 22.

United States to inspect their buildings for asbestos, determine which asbestos-containing materials pose health hazards, and abate those hazards.³¹ Under the Asbestos School Hazard Abatement Act, the EPA distributes loan and grant money to financially needy schools to help fund asbestos abatement costs.³²

In addition to mandating a program to control asbestos in schools, AHERA required the EPA to conduct a study to determine "the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger."³³ In its report to Congress, the EPA determined that, while approximately 733,000 public and commercial buildings contain friable asbestos, the damaged material is commonly found in non-public building areas. Thus, significant asbestos exposure may be limited to a small number of service and maintenance workers.³⁴ In spite of this fact, exposure to asbestos in public and commercial buildings does present a significant risk.³⁵

EPA Administrator, Lee Thomas, expressed concern, however, that a comprehensive federal program to require asbestos abatement in all public and commercial buildings could exceed the capacity of accredited asbestos abatement professionals and governmental enforcement authorities.³⁶ Therefore, the EPA concluded that present efforts to reduce risks associated with asbestos in public and commercial buildings should focus on assessing and improving the quality of asbestos-related actions in such buildings.³⁷

31. Asbestos Hazard Emergency Response Act of 1986, §§ 201-214, 15 U.S.C. §§ 2641-2654 (Supp. V 1987). EPA's regulations implementing these requirements are published in 40 C.F.R. §§ 763.80-763.119 (1988). Persons conducting asbestos inspections, developing management plans, and designing or conducting asbestos abatement projects under the AHERA program must have EPA-approved training. EPA operates an accreditation program for training courses and has developed a Model Accreditation Plan establishing a mechanism to provide EPA approval of state accreditation programs. See 40 C.F.R. pt. 763, subpt. E, app. C (1988). Lists of EPA-approved courses and state accreditation programs are published periodically in the *Federal Register*. See, e.g., 53 Fed. Reg. 33,574 (1988).

32. 20 U.S.C. §§ 4011-4022 (Supp. V 1987).

33. Asbestos Hazard Emergency Response Act of 1986, § 201(b)(3), 15 U.S.C. § 2641(b)(3) (Supp. V 1987).

34. EPA REPORT TO CONGRESS, *supra* note 4, at 12-13. Occupational exposure to asbestos is regulated by OSHA. See 29 C.F.R. §§ 1910.1001, 1926.58 (1988) (standards for general industry and construction industry as amended by 53 Fed. Reg. 35,610 (1988)).

35. EPA REPORT TO CONGRESS, *supra* note 4, at 16.

36. Letter from Lee M. Thomas, EPA Administrator, to George Bush, President of the Senate, and James C. Wright, Jr., Speaker of the House of Representatives 2 (Feb. 26, 1988) (*published in* EPA REPORT TO CONGRESS, *supra* note 4, after p. 36).

37. *Id.*

Mr. Thomas recommended that the question of an inspection rule or other federal regulation of asbestos in public and commercial buildings be re-evaluated in a few years, with the benefit of experience acquired from abatements conducted under the AHERA school rule.³⁸

B. *State Requirements*

Although federal law does not currently require asbestos abatement in public or commercial buildings, many states regulate asbestos in some types of commercial facilities. At least forty states have now passed legislation relating to asbestos.³⁹ These laws address requirements to abate asbestos in public buildings, qualifications for asbestos contractors and workers, performance standards for abatement projects, and public education regarding asbestos-related health risks.⁴⁰

1. State Requirements to Inspect for Asbestos or Develop an Asbestos Management Plan

Many state asbestos programs do not require comprehensive asbestos abatement programs for all public or commercial buildings. Some require inspections and abatements for only certain types of facilities. Virginia is an example of a state with an aggressive program to abate asbestos.⁴¹ In Virginia, after July 1, 1989, an asbestos inspection will be required as a condition of obtaining or renewing a license for a hospital⁴² or child-care center.⁴³ The license of a hospital or child-care center will be issued or renewed only if: (1) no asbestos was detected; (2) asbestos was detected and response actions to abate any risk to human health are complete; or (3) asbestos was detected and response actions to abate any risk to human health will be conducted in accord with an approved schedule and plan.⁴⁴ A similar asbestos inspection and abatement program is required in order to make a public offering of a conversion

38. *Id.* at 5.

39. Steinway, *supra* note 30, at 22.

40. See ASBESTOS IN BUILDINGS, *supra* note 5, at 96.

41. A number of other states also have comprehensive asbestos regulatory programs. See ASBESTOS IN BUILDINGS, *supra* note 5, at 98-199 (descriptions of the asbestos programs in the states of California, New York, and New Jersey).

42. VA. CODE ANN. § 32.1-126.1 (Cum. Supp. 1988).

43. *Id.* § 63.1-198.01.

44. *Id.* §§ 32.1-126.1, 63.1-198.01.

condominium if the building was substantially completed prior to July 1, 1978.⁴⁵ Another of Virginia's asbestos abatement requirements could have an impact on almost all buildings built prior to 1978. With very few exceptions, an asbestos inspection is required to obtain the building permit necessary to renovate or demolish a building.⁴⁶ Exceptions to this requirement are limited to:

single-family dwellings, residential housing with four or fewer units, farm buildings, buildings with less than 3,500 square feet and buildings with no central heating system, or to public utilities required by law to give notification to the Commonwealth of Virginia and to the United States Environmental Protection Agency prior to removing asbestos in connection with the renovation or demolition of a building.⁴⁷

Thus, although owners of commercial buildings in Virginia are not all required to inspect for and abate asbestos, any renovation requiring a building permit will require them to do so.

The Virginia Department of General Services has developed standards which govern any of the statutorily required asbestos inspections mentioned above.⁴⁸ These standards address what areas of a building must be inspected and describe sampling requirements. They also include guidance for developing an asbestos management plan.⁴⁹

2. State Licensure Programs

The EPA's asbestos contractor's certification program applies only to schools regulated under AHERA.⁵⁰ However, the states are establishing a trend of requiring licensure or certification for asbestos contractors and workers in many additional types of facilities.⁵¹ A few states regulate asbestos inspectors and consultants such as asbestos project designers.⁵²

45. *See id.* § 55-79.94(A)(5).

46. *Id.* § 36-99.7(A).

47. *Id.* § 36-99.7(B).

48. *See generally* 5 Va. Regs. Reg. 1219-54 (Jan. 30, 1989) (asbestos survey standards for buildings other than school buildings).

49. *Id.*

50. *See supra* note 31 and accompanying text.

51. *See Steinway, supra* note 30, at 22.

52. *See id.*

a. Requirements for Licensure Under the Virginia Asbestos Licensure Program

The Virginia Department of Commerce operates an extensive asbestos licensure program.⁵³ As of July 1, 1988, it is unlawful for anyone without an asbestos inspector's, supervisor's, contractor's, management planner's, or project designer's license to contract for compensation to carry out an asbestos project or develop a management plan in Virginia.⁵⁴ It is also unlawful for an individual to work on an asbestos project without an asbestos worker's license.⁵⁵ In order to receive a license to work in one of these asbestos-related occupations, an applicant must be at least eighteen years of age and must have successfully completed a training course approved by the Virginia Department of Commerce.⁵⁶ A license is effective for a one year period; annual refresher training is required for license renewal.⁵⁷

The asbestos licensure program allows the Director of the Department of Commerce to waive normal licensure requirements in two situations.⁵⁸

An exemption from normal licensure requirements is available when an emergency "results from a sudden unexpected event that is not a planned renovation or demolition."⁵⁹ "Business necessity" is *not* considered such an emergency.⁶⁰ Immediate written notice

53. See generally 5 Va. Regs. Reg. 1421-48 (Feb. 27, 1989) (asbestos licensing regulations). The asbestos licensure program is authorized by VA. CODE ANN. §§ 54.1-500 to -517 (Repl. Vol. 1988).

54. VA. CODE ANN. § 54.1-503 (Repl. Vol. 1988).

55. *Id.* § 54.1-504.

56. The length and contents of the required training varies depending upon the specific asbestos occupation. For example, training required for an asbestos worker's license is a three-day course focusing on physical characteristics of asbestos, health concerns, protective equipment, and safe work practices. Asbestos supervisors are required to complete a four-day course which covers federal, state, and local regulatory requirements plus other topics in addition to the material covered in the asbestos worker's course. Training for asbestos inspectors emphasizes an understanding of building systems as well as identification of and sampling for asbestos. See generally 5 Va. Regs. Reg. 1434-43 (Feb. 27, 1989) (training course requirements). Until July 1, 1989, applicants who have completed training since January 1, 1985 which is approved by EPA but not the Virginia Department of Commerce may obtain interim licensure. See, e.g., *id.* at 1423, § 2.7.

57. See, e.g., *id.* at 1423, §§ 2.4-2.5 (describing requirements for an asbestos worker's license).

58. See VA. CODE ANN. § 54.1-512 (Repl. Vol. 1988); 5 Va. Regs. Reg. §§ 1444-45 (Feb. 27, 1989) (exemptions).

59. VA. CODE ANN. § 54.1-512(A) (Repl. Vol. 1988).

60. 5 Va. Regs. Reg. 1445, § 10.2 (Feb. 27, 1989).

describing both the emergency and the proposed abatement project must be sent to the Department of Commerce in order to invoke this emergency provision. The project cannot begin until the exemption from licensure has been approved.⁶¹

An employer who desires to have his own employees conduct an asbestos project on premises owned or leased by the employer may also obtain an exemption from licensure.⁶² To obtain an exemption, an employer must provide training to the employees undertaking an asbestos project that is comparable to a Virginia approved training course.⁶³ The employer's exemption must be approved by the Department of Commerce and is subject to annual review.⁶⁴

Willful violation of the asbestos licensure program is a Class 3 misdemeanor, punishable by a fine of up to \$500.⁶⁵ The third violation and each subsequent violation within a three year period are considered Class 1 misdemeanors. Upon conviction, violators may be jailed for up to twelve months, fined up to \$1,000, or both.⁶⁶ In addition, licensees under the program are subject to civil penalties for willful violation of standards established by a number of regulatory agencies.⁶⁷

b. Duties Imposed Under the Virginia Asbestos Licensure Program

The licensure program imposes notification and recordkeeping duties on asbestos contractors.⁶⁸ Asbestos contractors must maintain detailed records describing the asbestos project, including the names and license numbers of supervisors and workers involved, the amount of asbestos removed, procedures used to comply with federal and state regulations, and the name and address of the disposal site, along with disposal site receipts.⁶⁹ These records must be maintained for at least thirty years and, upon request, must be

61. *Id.* at 1444-45, § 10.1.

62. *See* VA. CODE ANN. § 54.1-512(B) (Repl. Vol. 1988).

63. *See* 5 Va. Regs. Reg. 1445, § 10.3 (Feb. 27, 1989).

64. *Id.*

65. VA. CODE ANN. §§ 18.2-11, 54.1-517 (Repl. Vols. 1988).

66. *Id.*

67. *See id.* § 54.1-517.

68. *Id.* § 54.1-507.

69. *Id.*

made available to the Department of Labor and Industry.⁷⁰ A list of supervisors and workers on a particular asbestos project, along with their current license numbers and expiration dates, must be maintained at the job site.⁷¹

In addition, asbestos contractors must notify the Virginia Department of Labor and Industry at least twenty days prior to commencement of an asbestos project.⁷² The Department of Labor and Industry's interpretation of this requirement, however, has carved out two very limited exceptions. First, asbestos renovation projects involving no more than "10 linear feet/10 square feet" of asbestos do not need to be reported to the Department of Labor and Industry.⁷³ Recordkeeping and licensure requirements, however, are not waived for even these small projects. A second exception to the twenty-day notification requirement exists for emergency removal projects. Examples of eligible emergencies include leaking or ruptured pipes, accidentally damaged or fallen asbestos which could create an exposure risk for the public or non-asbestos workers, and certain unplanned mechanical outages requiring asbestos removal.⁷⁴ It is important to note, however, that "[l]ack of planning or inspection for asbestos before commencement of a general renovation project does *not* constitute an emergency project."⁷⁵ When an emergency prevents the usual twenty-day advance notification, a written notice, including a brief description of the emergency, should be provided as soon as possible.⁷⁶

C. *Non-Regulatory Forces Prompting Asbestos Abatement*

As a practical matter, some building owners may decide to remove asbestos from a facility even if not required to do so by statute or regulation. Because the presence of asbestos in a building poses a potential hazard,⁷⁷ occupants of a building containing asbestos may exert pressure upon the building owner to remedy the

70. *Id.* § 54.1-507(B).

71. 5 Va. Regs. Reg. 1424, § 3.2 (Feb. 27, 1989).

72. VA. CODE ANN. § 54.1-507(A) (Repl. Vol. 1988).

73. Memorandum from Carol Amato, Commissioner, Virginia Department of Labor and Industry, to Asbestos Contractors/Certified Trainers (Aug. 5, 1988) (interpreting 20 day asbestos reporting requirement).

74. *Id.*

75. *Id.* (emphasis added).

76. *Id.*

77. Bennett & Gershonowitz, *Notification: The Owner's Dilemma*, ASBESTOS ISSUES '89, Feb. 1989, at 25, 26.

problem. Tenants who become aware of the presence of asbestos only after occupying a facility may assert that, in light of a building owner's failure to disclose, the material constituted a latent defect.⁷⁸ Thus, a building owner, concerned about contract liability to his tenants or about toxic tort liability to those occupants exposed to asbestos in his building, may voluntarily choose to conduct an abatement program.

Asbestos abatements also may be triggered by the sale of a facility or its use as security for financing. Asbestos contamination severely restricts the marketability of property and decreases market value. "Thus, real estate capital, which is at best not easily transferred or converted, is being restricted even more by having an asbestos problem, and, at worst, is literally being frozen in its present ownership with no alternative other than abandonment."⁷⁹ Lenders also are becoming increasingly reluctant to accept asbestos-contaminated facilities as security. Three prominent real estate investors, Prudential, Aetna and Metropolitan, have internal policies against investing in or making loans secured by real estate assets containing asbestos.⁸⁰ The owner of an asbestos-contaminated facility, therefore, may conduct an asbestos abatement to promote marketability or as a condition to a sales or financing agreement.⁸¹

IV. SUBSTANTIVE REQUIREMENTS FOR AN ASBESTOS ABATEMENT PROJECT

Once a building owner decides to conduct an asbestos abatement project, a number of substantive requirements involving numerous governmental agencies are triggered. Air pollution control regulations impose work practice standards designed to limit emissions to the outside air. In addition, the regulations restrict transportation and disposal of the resulting asbestos waste.

78. See generally Glazerman, *supra* note 10, at 674-81. A detailed discussion of common law duties and liabilities associated with asbestos is beyond the scope of this article.

79. Adams & Baker, *Sale or Lease of Asbestos-Contaminated Buildings: Legal and Marketplace Issues*, 4 NAT'L ASBESTOS COUNCIL J. 50, 53 (1986).

80. *Id.* at 53.

81. When the ARCO/Bank of America Towers Complex in Los Angeles was sold in 1986, the sales agreement established an expense reserve in excess of \$50 million for anticipated asbestos abatement costs. See Brown, *supra* note 12, at 76.

A. *Air Emissions Regulations*

Asbestos is classified as a hazardous air pollutant pursuant to section 112 of the Clean Air Act.⁸² Therefore, renovation or demolition of facilities containing asbestos are subject to the National Emission Standard for Hazardous Air Pollutants ("NESHAP") for asbestos.⁸³ The asbestos NESHAP imposes notification and work practice requirements on owners and operators of demolition or renovation projects involving asbestos.⁸⁴ It also regulates asbestos waste disposal.⁸⁵

When it promulgated the asbestos NESHAP regulating building renovation and demolition, the EPA explained that it would "have a significant beneficial environmental impact by reducing emissions of asbestos to the atmosphere."⁸⁶ Thus, the work practice standards established under this regulatory program are designed primarily "to prevent emissions of particulate asbestos material to the outside air."⁸⁷ In contrast, workplace standards established by OSHA deal with worker protection inside of buildings.⁸⁸

The asbestos NESHAP regulates building demolitions and renovation projects in which at least eighty linear meters of friable asbestos on pipes or at least fifteen square meters of friable asbestos on other facility components will be stripped or removed.⁸⁹ Under

82. 42 U.S.C. § 7412 (1982); 40 C.F.R. § 61.01(a)(1988).

83. See 40 C.F.R. §§ 61.140-61.156 (1988). EPA recently proposed to amend some of the notification and work practice requirements of the current asbestos NESHAP. See 54 Fed. Reg. 912 (1989).

84. 40 C.F.R. §§ 61.145-61.147 (1988). Some states have been delegated regulatory authority for NESHAPS pursuant to § 112(d) of the Clean Air Act. See *id.* at § 61.04(b). States are allowed to impose any regulation which is "not less stringent" than the federal NESHAP. See *id.* at § 61.17. Virginia has been delegated regulatory authority in this area and has incorporated by reference the federal asbestos NESHAP. 2 Va. Regs. Reg. 1139 (Mar. 3, 1986).

85. 40 C.F.R. § 61.156 (1988).

86. 43 Fed. Reg. 26,372 (1978).

87. 40 C.F.R. § 61.147 (1988).

88. See 29 C.F.R. §§ 1910.1001, 1926.58 (1988) (general industry and construction industry respectively as amended by 53 Fed. Reg. 35, 610 (1988)). See *infra* notes 142-234 and accompanying text for a discussion of the OSHA asbestos standards.

89. 40 C.F.R. § 61.145 (1988). To determine whether planned renovations involving individual nonscheduled operations are regulated, an estimate must be made of the additive amount of friable asbestos to be removed over a maximum time of prediction, not to exceed one year. See *id.* § 61.145(d)(2). To determine if emergency renovations are subject to regulation under the NESHAP, one estimates the amount of friable asbestos to be removed as a result of the sudden, unexpected event that necessitated the renovation. See *id.* § 61-245(d)(2).

this standard, "renovation" is defined as "altering in any way one or more facility components."⁹⁰ Wrecking or taking out any load-supporting structural members of a facility is excluded from the definition of "renovation" and classified as "demolition."⁹¹ The term "facility" includes any industrial, institutional or commercial structure, installation or building, except apartment buildings with no more than four units.⁹²

The asbestos NESHAP applies to the "owners or operators" of a demolition or renovation.⁹³ Although the terms "owner" and "operator" are not defined in the NESHAP, EPA's interpretation is that the owner or operator of a facility who purchases the services of an outside contractor is considered to be the owner or operator of a renovation or demolition under this regulation.⁹⁴ That interpretation was upheld in *United States v. Geppert Brothers*.⁹⁵ In *Geppert Brothers*, Amstar owned a facility and retained Geppert Brothers by contract to conduct a demolition. The United States sued both the demolition contractor, Geppert, and the facility owner, Amstar, for violations of the Clean Air Act, alleging violations of the asbestos NESHAP. Amstar asserted as an affirmative defense that it could not be liable as the "owner or operator of a demolition operation" where it had contracted with Geppert to do the work.⁹⁶ Amstar argued that, by contracting with Geppert, it was merely owner of the building and not an owner of the demolition operation subject to the regulation.⁹⁷ The court deferred to EPA's interpretation of its regulation by holding both the building owner and the contractor subject to the regulation.⁹⁸ The court also stated that such an interpretation would promote the purposes of the Clean Air Act by insuring that property owners act responsibly by prohibiting them from avoiding liability merely by hiring a contractor.⁹⁹

90. 40 C.F.R. § 61.141 (1988).

91. *Id.*

92. *Id.*

93. *See id.* §§ 61.145-61.147.

94. *See* 49 Fed. Reg. 13,659 (1984).

95. 638 F. Supp. 996 (E.D. Pa. 1986).

96. *Id.* at 997-99.

97. *Id.* at 998-99.

98. *Id.* at 998-1000.

99. *Id.* at 1000.

1. Notification Requirements Imposed by the Asbestos NESHAP

The asbestos NESHAP imposes notification requirements as an audit tool to allow regulatory agencies to inspect projects for compliance with required work practice standards.¹⁰⁰ Owners or operators of renovation projects regulated under the NESHAP¹⁰¹ must notify EPA in writing "[a]s early as possible before renovation begins."¹⁰² The written notice must include the name and address of the owner or operator, a description and location of the facility, an estimate of the quantity of friable asbestos present, scheduled starting and completion dates, the nature of the operation, a description of the procedures to be used to comply with the regulations, and the name and location of the disposal site where the asbestos waste will be deposited.¹⁰³

Notification requirements for demolitions are similar to requirements for renovations. A demolition which involves at least eighty linear meters or fifteen square meters of friable asbestos is subject to all requirements of the standard,¹⁰⁴ and written notification to EPA must be postmarked at least ten days before demolition begins.¹⁰⁵ Demolitions involving less than eighty linear meters or fifteen square meters of friable asbestos are subject to only some of the requirements.¹⁰⁶ Notifications of these small demolitions must be postmarked at least twenty days before demolition begins; but the notifications need not include an explanation of the nature of the planned demolition, the procedures to be used to comply with regulations or an identification of the disposal site.¹⁰⁷

2. Work Practice Standards and Disposal Requirements

The asbestos NESHAP requires the use of specific work practices for asbestos emissions control at regulated renovations and

100. See Memorandum from Edward Reich & Michael S. Alushin to Air and Waste Mgmt. Div. Directors 4, 15 (Apr. 6, 1984) (asbestos strategy document) [hereinafter Memorandum].

101. Renovation activities are regulated under the asbestos NESHAP if at least 80 linear meters of friable asbestos on pipes or at least 15 square meters of friable asbestos on other facility components will be stripped or removed. 40 C.F.R. § 61.145 (1988).

102. *Id.* § 61.146(a), (b)(4).

103. *Id.* § 61.146(c).

104. *Id.* § 61.145(a).

105. *Id.* § 61.146(b)(1).

106. See *id.* § 61.145(b).

107. See *id.* §§ 61.145(b), 61.146(b)(2),(c).

demolitions.¹⁰⁸ Generally, friable asbestos must be removed before any wrecking or dismantling that could either break up the material or preclude access to it for later removal.¹⁰⁹ During a demolition, however, asbestos need not be removed first if it is on a facility component encased in concrete or similar material and the asbestos is "adequately wetted" whenever exposed during demolition.¹¹⁰ "Adequately wetted" means "sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions."¹¹¹

When facility components covered or coated with friable asbestos are removed, they must be adequately wet during cutting or disjoining operations and must be carefully lowered to the ground rather than being dropped or thrown.¹¹² An owner or operator of a renovation may apply to EPA for a determination that wetting is not necessary if wetting would unavoidably damage equipment.¹¹³ If wetting is not required in such a situation, then a local exhaust ventilation and collection system designed to trap asbestos particles must be used. The system must exhibit no visible emissions to the outside air.¹¹⁴

When stripping friable asbestos from components which have already been removed from the facility, the asbestos must either be adequately wetted during stripping or a local exhaust ventilation and collection system must be used.¹¹⁵ The ventilation system, if used, must be designed and operated to capture asbestos particles and must exhibit no visible emissions to the outside air.¹¹⁶ Once friable asbestos materials have been removed, they must be kept adequately wet until collected for disposal.¹¹⁷

The asbestos standard requires that asbestos waste be deposited at an acceptable waste disposal site and that no visible emissions to the outside air be generated during collection, processing, pack-

108. See generally *id.* § 61.147 (1988).

109. *Id.* § 61.147(a).

110. *Id.*

111. *Id.* § 61.141.

112. *Id.* § 61.147(b)(2).

113. *Id.* § 61.147(c)(1).

114. *Id.* § 61.147(c)(2).

115. *Id.* § 61.147(d).

116. *Id.*

117. *Id.* § 61.147(e). These materials must also be transported to the ground via dust-tight chutes or containers if they have been removed more than 50 feet above ground level and were not removed as a unit or in sections. *Id.*

ing, transporting, and disposition of the waste.¹¹⁸ Visible emissions can be avoided by wetting waste and sealing it in leak-tight containers¹¹⁹ or by processing the waste material into non-friable forms such as pellets or other shapes.¹²⁰

3. Enforcement of the Asbestos NESHAP

The Clean Air Act provides EPA with several administrative and judicial options for enforcement.¹²¹ Violators may be subject to civil penalties of up to \$25,000 per day.¹²² In addition, criminal penalties of up to \$25,000 per day, or up to one year imprisonment, or both, may be assessed for knowing violations.¹²³ Penalties may be doubled for subsequent criminal convictions.

EPA considers enforcement of the asbestos standard for renovation and demolition operations to be a high priority.¹²⁴ According to its Asbestos Strategy Document, while the number of renovation and demolition sources is greater than all other asbestos source categories combined, compliance for these sources is the worst.¹²⁵ The use of inspections is an important element of EPA's enforcement strategy. While EPA is not committed to conducting a specific number of inspections, its goal is to achieve 100% compliance.¹²⁶

Although EPA may legally proceed against both the site owner and the contractor, it determines against whom it will take enforcement action on a case-by-case basis. The contractor is considered an appropriate party to enforcement proceedings for all substantive violations since the contractor actually performs the work and is, thus, best able to effectuate compliance. While EPA also generally proceeds against the site owner, the agency may decline

118. See generally *id.* § 61.152.

119. *Id.* § 61.152(b)(1)(iii). Containers must have a specified label identifying the contents as asbestos. See *id.* § 61.152(b)(1)(iv).

120. See *id.* § 61.152(b)(2).

121. See Clean Air Act § 113, 42 U.S.C. § 7413 (1982). In an asbestos strategy document, the EPA describes each of the available enforcement options and factors for determining which enforcement strategy to adopt in any specific situation. See Memorandum, *supra* note 100, at 8-17.

122. Clean Air Act § 113(b), 42 U.S.C. § 7413(b) (1982).

123. Clean Air Act § 113(c), 42 U.S.C. § 7413(c) (1982).

124. Memorandum, *supra* note 100, at 21.

125. *Id.* at 2. This fact appears to be the catalyst in EPA's decision to limit its strategy to the renovation and demolition categories. *Id.*

126. *Id.* at 5.

to do so where an owner can show that contract specifications required the contractor to comply with asbestos regulations.¹²⁷ Therefore, a building owner is advised to choose an asbestos contractor with care and attempt to ensure that the contractor complies with the asbestos regulations.

B. Department of Transportation Requirements

The Department of Transportation regulates the transportation of asbestos under the Hazardous Materials Transportation Act of 1975.¹²⁸ This comprehensive regulatory framework is applicable to all people who transport, or cause to be transported or shipped, hazardous materials, and to all who manufacture, fabricate, recondition, repair, test, mark, or maintain packages or containers for use in the transportation of hazardous materials.¹²⁹

The Department of Transportation has designated asbestos as a hazardous material pursuant to its authority under the Hazardous Materials Transportation Act. As a hazardous material, the shipment of asbestos is subject to requirements for shipping papers, packaging, marking, labeling, and transport vehicle placarding.¹³⁰

When asbestos is transported by highway, it must be loaded, handled, unloaded, and any asbestos contamination of transport vehicles removed in a manner which will minimize occupational exposure to airborne asbestos.¹³¹ In addition, comprehensive general safety regulations applicable to motor carriers address operation of motor vehicles, driver qualifications, vehicle parts and accessories, notification and reporting of accidents, hours worked by drivers, and inspection, maintenance, and repair of vehicles.¹³²

Knowing violations of regulations implementing the Hazardous Materials Transportation Act can result in civil penalties of up to \$10,000 per day.¹³³ Any person who willfully violates the regulations may be subject to a fine of up to \$25,000, imprisonment for up to five years, or both.¹³⁴

127. *Id.* at 16.

128. 49 U.S.C. app. §§ 1801-1812 (1982 & Supp. IV 1986).

129. *Id.* § 1804(a).

130. *See* 49 C.F.R. § 172.101 (1988).

131. *Id.* § 177.844.

132. *See generally id.* §§ 390.1-397.21 (1987).

133. 49 U.S.C. app. § 1809(a)(1) (1982).

134. *Id.* § 1809(b).

C. *Waste Disposal Regulations*

The Resource Conservation and Recovery Act of 1976¹³⁵ ("RCRA") was enacted to provide "cradle-to-grave" management of hazardous wastes and to promote appropriate methods for solid waste management and disposal.¹³⁶ EPA has determined that "[w]astes containing asbestos are not hazardous wastes under the Resource Conservation and Recovery Act."¹³⁷ Disposal of asbestos waste, therefore, is regulated under the non-hazardous waste regulations promulgated pursuant to RCRA.¹³⁸ These regulations pertain to facility siting and the general operation of solid waste disposal facilities.¹³⁹

Additional requirements for asbestos disposal facilities are imposed, however, by the asbestos NESHAP. These requirements are designed to prevent asbestos emissions into the ambient air and to prevent public asbestos exposure.¹⁴⁰ Therefore, a building owner or asbestos abatement contractor must take care that asbestos waste is sent only to an "approved" or licensed asbestos disposal site.¹⁴¹

V. THE REGULATION OF ASBESTOS IN THE WORKPLACE

The Occupational Safety and Health Act of 1970¹⁴² was enacted "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources."¹⁴³ This Act requires all employers: (1) to furnish employees a place of employment free from recognized hazards which can cause death or serious injury, and (2) to comply with standards promulgated by OSHA pursuant to the Act.¹⁴⁴

135. 42 U.S.C. §§ 6901-6987 (1982 & Supp. IV 1986).

136. *Id.* § 6902; see also Deutsch, Tarlock & Robbins, *An Analysis of Regulations Under the Resource Conservation and Recovery Act*, 25 WASH. U.J. URB. & CONTEMP. L. 145, 147 (1983).

137. EPA, ASBESTOS WASTE MANAGEMENT GUIDANCE 7 (May 1985) [hereinafter GUIDANCE]. State waste disposal regulations may be more restrictive than federal regulations. Therefore, some states may have listed asbestos as a hazardous waste. See *id.*

138. 40 C.F.R. § 257.1-4 (1988) (solid waste disposal facility regulations).

139. GUIDANCE, *supra* note 137, at 7.

140. See generally 40 C.F.R. § 61.156 (1988). See *supra* notes 82-127 and accompanying text for a discussion of the asbestos NESHAP.

141. See GUIDANCE, *supra* note 137, at 24.

142. 29 U.S.C. § 651-678 (1982 & Supp. IV 1986).

143. *Id.* § 651(b).

144. *Id.* § 654(a). The Virginia Occupational Safety and Health Codes Board has adopted the federal standard by incorporation by reference. 5 Va. Regs. Reg. 932-33 (Jan. 2, 1989).

An "employer" covered by the Occupational Safety and Health Act is defined as "a person engaged in business affecting commerce who has employees."¹⁴⁵ Cases conflict regarding whether an employer is required by OSHA to protect employees of the independent contractor.¹⁴⁶ Although some courts have extended OSHA liability to violations affecting employees of a different employer in multi-employer construction worksites,¹⁴⁷ others have refused to extend liability this far.¹⁴⁸

OSHA has promulgated two separate standards governing asbestos exposure in the workplace:¹⁴⁹ one standard governs obligations to employees in the construction industry;¹⁵⁰ the other standard governs obligations to all other types of employees (or "general industry").¹⁵¹ Both standards prohibit employee exposure to asbestos in excess of either of two permissible exposure levels ("PELs"). Exposure cannot exceed: (1) the "time weighted average limit" of 0.2 fibers per cubic centimeter (f/cc) measured as an eight-hour time weighted average or (2) the "excursion limit" of 1.0 f/cc averaged over a thirty minute sampling period.¹⁵² In addition, the asbestos standards establish an "action level" of 0.1 f/cc.¹⁵³ If employees are or may reasonably be expected to be exposed to airborne asbestos in concentrations exceeding the action level, the employer must provide initial and periodic air monitoring, em-

145. 29 U.S.C. § 652(5) (1982). The United States and any state or political subdivision of a state are excluded from the definition of "employer" and thus are not regulated under this Act. *See id.* Federal agencies, however, are directed to establish and maintain a program consistent with OSHA standards to provide safe and healthful working conditions. *See id.* § 668. Employees of state and local governments which are not covered by an OSHA asbestos standard or a state plan approved by OSHA are protected by EPA's Asbestos Abatement Projects requirements. *See* 40 C.F.R. § 763.120-763.126 (1988).

146. *Compare* Cochran v. International Harvester Co., 408 F. Supp. 598, 601-02 (W.D. Ky. 1975) (no liability for employees of independent contractor) *with* Teal v. duPont de Nemours & Co., 728 F.2d 799, 804-05 (6th Cir. 1984) (employer liable for OSHA violations affecting employees of independent contractor).

147. *See, e.g.,* Beatty Equipment Co. v. Secretary of Labor, 577 F.2d 534, 536-37 (9th Cir. 1978).

148. *See, e.g.,* Melerine v. Avondale Shipyards, Inc., 659 F.2d 706, 710-11 (5th Cir. 1981); Brennan v. Gilles & Cotting, Inc., 504 F.2d 1255, 1261-62 (4th Cir. 1974).

149. OSHA standards only regulate occupational exposure to asbestos. Public exposures to asbestos generally are regulated under the asbestos NESHAP, promulgated by EPA under the Clean Air Act. *See generally* 40 C.F.R. § 61.140-156 (1988). The asbestos NESHAP is discussed *supra* at pages 18-26.

150. *See* 29 C.F.R. § 1926.58 (1988) (as amended by 53 Fed. Reg. 35,610 (1988)).

151. *See id.* § 1910.1001 (1988) (as amended by 53 Fed. Reg. 35,610 (1988)).

152. *See id.* §§ 1910.1001(c), 1926.58 (as amended by 53 Fed. Reg. 35,610, 35,625 & 35,627 (1988)).

153. *Id.* §§ 1910.1001(b), 1926.58(b).

ployee training and medical surveillance.¹⁵⁴

An employer's failure to comply with OSHA's asbestos standards can result in a variety of civil and criminal penalties. Any employer cited for a "serious" violation shall be assessed a civil penalty up to \$1,000 per violation.¹⁵⁵ The same penalty may be imposed for violations that are not determined to be serious,¹⁵⁶ or for failure to correct a violation.¹⁵⁷ Willful or repeated violations can subject an employer to a more stringent \$10,000 civil penalty.¹⁵⁸ Willful violations which caused an employee's death are punishable by a criminal fine of up to \$10,000, imprisonment for up to six months, or both. Criminal penalties can be doubled for subsequent convictions.¹⁵⁹

A. *The "General Industry" Standard*

OSHA's "general industry" standard governs all occupational exposures to asbestos except exposures of construction employees.¹⁶⁰ The standard is clearly applicable to building owners who employ "office employees in buildings where asbestos products has [sic] been installed and to employees who work in the vicinity of asbestos abatement and renovation activities."¹⁶¹ Building owners do not incur obligations under the OSHA asbestos standard if the occupants of the building are not employed by the owner.¹⁶²

Extensive record keeping is required to document an employer's compliance with the asbestos standard.¹⁶³ Records of exposure monitoring data, medical examinations and training must be maintained. Upon request, employers must make these records availa-

154. See generally *id.* § 1910.100(d), (j)(5), (1), § 1926.58(f), (k)(3), (m).

155. 29 U.S.C. § 666(b) (1982). A serious violation is deemed to exist if the violation creates a substantial risk of death or serious physical harm, unless the employer did not, and could not with reasonable diligence, know of the violation. See *id.* § 666(k). The Sixth Circuit determined that a violation is considered serious only if an employer knew of a dangerous condition, or could have known of the dangerous condition with the exercise of due diligence. See *Dunlop v. Rockwell Int'l*, 540 F.2d 1283, 1290-91 (6th Cir. 1976).

156. See 29 U.S.C. § 666(c) (1982).

157. A penalty of \$1,000 per day may be assessed as long as the violation continues. *Id.* § 666(d).

158. *Id.* § 666(a).

159. See *id.* § 666(e).

160. See 29 C.F.R. § 1910.1001(a) (1988).

161. 51 Fed. Reg. 22,677 (1986) (preamble to 1986 amendment of OSHA asbestos standard).

162. See *id.* at 22,678.

163. See generally 29 C.F.R. § 1910.1001(m) (1988).

ble to employees and regulatory officials.¹⁶⁴

1. Requirements Imposed When Airborne Asbestos Exceeds the Action Level or the Excursion Limit

Every employer subject to the general industry standard is required to conduct initial air monitoring to determine exposure levels for employees who are, or may reasonably be expected to be, exposed to airborne asbestos concentrations exceeding the 0.1f/cc action level or the 1.0 f/cc excursion limit.¹⁶⁵ OSHA has declared when employees "may reasonably be expected" to be exposed to sufficient asbestos as to warrant exposure monitoring:

Paragraph (d)(2)(i) requires that each employer shall perform initial monitoring of employees who are, or may reasonably be expected to be exposed to airborne concentrations at or above the action level. Thus, for example, because office buildings generally have air concentrations less than the action level, an employer would not be required to perform initial monitoring unless there is reason to believe that conditions exist that may expose employees to asbestos at or above the action level. Such conditions include visible evidence of deterioration of asbestos materials and construction or maintenance activities which would disturb asbestos materials.¹⁶⁶

Periodic monitoring must be conducted with a frequency and pattern which will represent, with reasonable accuracy, employee exposure to asbestos. Sampling intervals cannot exceed six months if exposures may reasonably exceed the action level or the excursion limit.¹⁶⁷ Monitoring may be discontinued if either initial or periodic monitoring shows exposure levels below both the action level and the excursion limit.¹⁶⁸

The employer must provide written results of exposure monitor-

164. *Id.* § 1910.1001(m)(5).

165. *Id.* § 1910.1001(d)(2)(i) (as amended by 53 Fed. Reg. 35,610, 35,626 (1988)).

166. 51 Fed. Reg. 22,683-84 (1986). The excursion limit was added in 1988. *See* 53 Fed. Reg. 35,610 (1988). Although exposure monitoring requirements are now triggered by asbestos concentrations reaching either the action level or the excursion limit, OSHA's 1986 guidance describing when employees "may reasonably be expected" to incur asbestos exposure remains instructive.

167. 29 C.F.R. § 1910.1001(d)(3) (1988) (as amended by 53 Fed. Reg. 35,610, 35,626 (1988)).

168. *Id.* § 1910.1001(d)(4). If changes occur creating a potential for increased exposure, monitoring must be recommenced. *Id.* § 1910.1001(d)(5).

ing to employees or post the results in an accessible place within fifteen working days after receiving test results.¹⁶⁹ If monitoring results indicate that a PEL was exceeded, the notification must describe the corrective action being taken to reduce asbestos exposure.¹⁷⁰

The employer must institute a training program for all employees exposed to airborne asbestos concentrations exceeding either the action level or the excursion limit.¹⁷¹ Training must be provided prior to, or at the time of, initial assignment and at least annually thereafter.¹⁷² Topics to be covered include: health risks associated with asbestos, including the increased risk of lung cancer from asbestos, including the increased risk of lung cancer from asbestos in smokers; the quantity, location and condition of asbestos to which the employee may be exposed; and procedures implemented for employee protection.¹⁷³

A medical surveillance program must be established to monitor the health of all employees exposed to airborne asbestos in excess of the action level or excursion limit.¹⁷⁴ When a medical surveillance program is required, a medical examination should be conducted prior to assignment of an employee in an area of potential exposure, at least annually thereafter, and within thirty calendar days before or after termination of employment.¹⁷⁵ The examination must include, at a minimum: a medical and work history; complete physical examination with emphasis on the respiratory, gastrointestinal and cardiovascular systems; completion of a respiratory disease standardized questionnaire; chest x-ray; and pulmonary function tests.¹⁷⁶ The employer must provide the employee with a copy of the physician's written opinion within thirty days of receipt.¹⁷⁷

169. *Id.* § 1910.1001(d)(7)(i).

170. *Id.* § 1910.1001(d)(7)(ii).

171. *Id.* § 1910.1001(j)(5)(i) (as amended by 53 Fed. Reg. 35, 610, 35, 627 (1988)).

172. *Id.* § 1910.1001(j)(5)(ii).

173. *Id.* § 1910.1001(j)(5)(iii).

174. *Id.* § 1910.1001(1)(1)(ii).

175. *Id.* § 1910.1001(1), (2)-(4). The requirement for a medical examination may be waived if the employee has been examined within the previous one year period. *Id.* § 1910.1001(1), (5).

176. *See id.* § 1910.1001(1), (2)(ii).

177. *Id.* § 1910.1001(1), (7)(iii).

2. Requirements Imposed When Airborne Asbestos Concentrations Exceed Permissible Exposure Limits

Additional, and more stringent, requirements are imposed upon employers if airborne asbestos concentrations exceed permissible exposure limits.¹⁷⁸ Wherever the airborne concentration of asbestos exceeds the PELs, an employer must establish a regulated area, demarcated from the rest of the workplace, access to which is limited to authorized persons.¹⁷⁹ Persons entering a regulated area must be supplied with and must use a respirator meeting OSHA requirements.¹⁸⁰ Eating, drinking, smoking, chewing tobacco or gum, and applying cosmetics are prohibited in regulated areas.¹⁸¹

Warning signs must be posted at each regulated area and at approaches to such areas.¹⁸² The signs must provide the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE
REQUIRED IN THIS AREA.¹⁸³

Labels which comply with OSHA's Hazard Communication Standard¹⁸⁴ must be affixed to all raw materials, mixtures, scrap, waste, debris, or other products containing asbestos.¹⁸⁵ Labels must state:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD.¹⁸⁶

A compliance program must be instituted in regulated areas using a number of engineering controls and work practices intended

178. PELs are: 0.2 f/cc as an eight-hour time-weighted average (TWA) and 1.0 f/cc averaged over 30 minutes. *Id.* § 1910.1001(c) (as amended by 53 Fed. Reg. 35,610, 35,625 (1988)); see also *supra* notes 149-154 and accompanying text.

179. 29 C.F.R. § 1910.1001(e)(1)-(3) (1988).

180. *Id.* § 1910.1001(e)(4). OSHA's respirator requirements are described in *id.* § 1910.1001(g)(2).

181. *Id.* § 1910.1001(e)(5).

182. *Id.* § 1910.1001(j)(1).

183. *Id.* § 1910.1001(j)(1)(ii).

184. *Id.* § 1910.1200(f).

185. *Id.* § 1910.1001(j)(2)(i).

186. *Id.* § 1910.1001(j)(2)(ii).

to minimize employee exposure to asbestos.¹⁸⁷ For example, local exhaust ventilation and dust collection systems are required.¹⁸⁸ Tools which could produce or release asbestos fibers must have local exhaust systems.¹⁸⁹ In addition, asbestos should be wet whenever possible to prevent emissions of airborne fibers.¹⁹⁰

Employees exposed to asbestos levels above the PELs must wear full-body protective clothing supplied by the employer which includes head and foot coverings, face shields and vented goggles.¹⁹¹ Employers must be provided with and use change rooms where asbestos-contaminated clothing is removed.¹⁹² Employers must ensure that employees shower at the end of a shift.¹⁹³ Contaminated clothing must be stored in closed containers which prevent dispersion of asbestos into the ambient environment.¹⁹⁴

Clean clothing and equipment must be supplied weekly by the employer.¹⁹⁵ If contaminated clothing is given to another person for laundering, the employer must inform that person of the need to prevent release of asbestos fibers and of the asbestos-related health risks.¹⁹⁶ If contaminated clothing or equipment is to be transported, it must be sealed in impermeable bags or other closed containers and labeled as asbestos-contaminated.¹⁹⁷

Employers must supply lunchroom facilities for employees working in areas where airborne asbestos exceeds the PELs.¹⁹⁸ Lunchrooms must have a positive pressure, filtered air supply, and must be readily accessible.¹⁹⁹ Employers must ensure that employees wash their faces and hands prior to eating, drinking, or smoking.²⁰⁰ Protective clothing can be worn in the lunchroom only if asbestos

187. *Id.* § 1910.1001(f)(1)-(2) (as amended by 53 Fed. Reg. 35,610, 35,626 (1988)).

188. *Id.* § 1910.1001(f)(1)(iv).

189. *Id.* § 1910.1001(f)(1)(v).

190. *Id.* § 1910.1001(f)(1)(vi). For a detailed description of engineering controls and work practices, see generally *id.* § 1910.1001(f)(1).

191. *Id.* § 1910.1001(h)(1).

192. *Id.* § 1910.1001(h)(2),(i).

193. *Id.* § 1910.1001(i)(2).

194. *Id.* § 1910.1001(h)(2)(iii).

195. *Id.* § 1910.1001(h)(3).

196. *Id.* § 1910.1001(h)(3)(v).

197. *Id.* § 1910.1001(h)(3)(vi). Specific warning labeling requirements are found in *id.* § 1910.1001(j) (1988).

198. *Id.* § 1910.1001(i)(3)(i).

199. *Id.* § 1910.1001(i)(3)(ii).

200. *Id.* 1910-1001(i)(3)(iii).

fibers have been removed prior to entry.²⁰¹

Housekeeping practices are also imposed by the OSHA asbestos standard. For example, all surfaces must be maintained as free as practicable of dust and asbestos waste.²⁰² Spills and sudden releases must be cleaned up as soon as possible.²⁰³ Vacuuming must be done using HEPA-filtered²⁰⁴ vacuuming equipment.²⁰⁵ Use of compressed air for cleaning is prohibited.²⁰⁶

B. Construction Industry

The OSHA standard for the construction industry²⁰⁷ applies to all construction work including demolition operations, asbestos removal, construction, alteration, repair, maintenance, renovations, installation of asbestos-containing products, clean up of asbestos spills, and transportation, disposal, storage or containment of asbestos.²⁰⁸ Although this standard is similar to the asbestos standard for general industry, the stringency of the construction industry standard varies somewhat according to the relative hazard associated with certain work operations.

The construction industry asbestos standard establishes an action level of 0.1 f/cc as an eight hours time-weighted average, as in the general industry standard.²⁰⁹ The permissible exposure limits are also the same as for the general industry standard: 0.2 f/cc as an eight hour time-weighted average or 1 f/cc averaged over thirty minutes.²¹⁰

Where airborne concentrations of asbestos are expected to exceed the PELs, regulated areas must be established.²¹¹ In addition to the requirements discussed previously for a regulated area,²¹² the construction industry standard imposes the additional requirement that, wherever feasible in asbestos removal, demolition, and

201. *See id.* § 1910.1001(i)(3).

202. *Id.* 1910.1001(k)(1).

203. *Id.* 1910.1001(k)(2).

204. "HEPA" stands for high efficiency particulate air.

205. 29 C.F.R. § 1910.1001(k)(4) (1988).

206. *Id.* § 1910.1001(k)(3).

207. *Id.* § 1926.58 (1988) (as amended by 53 Fed. Reg. 35,610 (1988)).

208. *Id.* § 1926.58(a).

209. *See id.* § 1926.58(b).

210. *See id.* § 1926.58(c).

211. *Id.* § 1926.58(e)(1).

212. *See supra* notes 178-206 and accompanying text (describing requirements for regulated areas under the general industry standard).

renovation operations, a negative-pressure enclosure be established.²¹³ A competent person must be designated to perform or supervise the setting up of the enclosure, to insure the integrity of the enclosure, to control entry and exit, to supervise employee exposure monitoring, to insure that employees wear protective clothing and respirators as required, to insure adequate training and use of hygiene facilities, and to insure that engineering controls function properly.²¹⁴

The employer must conduct daily exposure monitoring within the regulated area unless all employees are provided with supplied-air respirators operated in the positive-pressure mode.²¹⁵ Periodic monitoring may be terminated if data indicates that employee exposures are below the action level.²¹⁶

Employers must attempt to achieve compliance with the permissible exposure limits by using one or any combination of a number of methods listed in the asbestos standard.²¹⁷ These engineering controls and work practices include local exhaust ventilation equipped with HEPA filter dust collection systems, general ventilation systems, vacuum cleaners equipped with HEPA filters, enclosure or isolation of processes producing asbestos, use of wet methods, and prompt disposal of asbestos wastes.²¹⁸ The asbestos construction standard prohibits use of certain types of equipment or practices. For example, high speed abrasive disc saws are prohibited unless equipped with appropriate engineering controls.²¹⁹ Use of compressed air to remove asbestos is prohibited unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the resulting dust cloud.²²⁰ In addition, materials containing asbestos cannot be applied by spray methods.²²¹ Finally, an employer may not use employee rotation as a means of achieving compliance with the permissible exposure limits.²²²

213. 29 C.F.R. § 1926.58(e)(b) (1988).

214. *Id.*

215. *Id.* § 1926.58(f)(3).

216. *Id.* § 1926.58(f)(4).

217. *Id.* § 1926.58(g).

218. *See generally id.* § 1926.58(g)(1)(A)-(G). If these controls are not sufficient to reduce employee exposure to below the PEL, they must be supplemented by use of appropriate respiratory protection. *Id.* § 1926.58(g)(1)(ii).

219. *Id.* § 1926.58(g)(2)(i).

220. *Id.* § 1926.58(g)(2)(ii).

221. *See id.* § 1926.58(g)(2)(iii).

222. *Id.* § 1926.58(g)(3).

Removal, demolition and renovation operations are subject to specific hygiene facility requirements.²²³ Except for small scale, short duration operations, the employer must establish a decontamination area which is adjacent and connected to the regulated area.²²⁴ The decontamination area must consist of an equipment room, shower area, and clean room in series.²²⁵ Employees can only enter and exit the regulated area through the decontamination area.²²⁶

In most other respects, the construction industry standard is similar to that for general industry. The respiratory requirements are the same under both standards.²²⁷ Housekeeping,²²⁸ protective clothing and laundering requirements,²²⁹ hazard communication, signs, labels, and training²³⁰ are all similar. With the exception of the specific hygiene requirement for removal, demolition and renovations, the required hygiene facilities and practices are similar under the general industry and the construction standards.²³¹ Generally, employers must provide clean change areas for employees required to work in regulated areas and must provide lunch facilities outside of the regulated area.²³²

In contrast to the general industry standard, the construction industry standard only requires employers to implement a medical surveillance program for employees wearing negative pressure respirators and employees exposed to levels of asbestos at or above the action level for at least thirty days per year.²³³ For employees covered by the medical surveillance program, examinations must be provided prior to assignment in a work area where negative pressure respirators are worn, within ten working days following an employee's thirtieth day of exposure in an area where the asbestos level may reach the action level for at least thirty days per year, at least annually after each of those events and at other times that

223. *Id.* § 1926.58(j)(2).

224. *Id.* § 1926.58(j)(2)(i).

225. *Id.*

226. *See id.* § 1926.58(j)(2)(i). For detailed descriptions of entry and exit procedures which must be followed in passing through the decontamination area, see generally *id.* § 1926.58(j)(2).

227. *See id.* § 1926.58(h).

228. *Id.* § 1926.58(l).

229. *Id.* § 1926.58(i).

230. *Id.* § 1926.58(k).

231. *See id.* § 1926.58(j).

232. *Id.*

233. *Id.* § 1926.58(m).

the examining physician may feel an exam is necessary. The substantive requirements for what is included in a medical examination are virtually the same under the general industry standard and the construction industry standard.²³⁴

VI. CONCLUSION

The prevalence of asbestos-containing materials in buildings, along with the well-documented health risks associated with asbestos, have generated an enormous wave of litigation and regulatory activity. The level of regulation will probably increase in coming years. Building owners need to be aware of the extensive level of asbestos regulation and need detailed legal and technical advice in order to comply with all regulatory requirements.

234. *Id.*