



Current and  
Historical  
American  
Asbestos  
Regulations

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*Edition*

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## *Forward*

*Asbestos, and asbestos-containing materials, are subject to regulation in the United States by both the federal government and each of the 50 state governments. This paper summarizes the federal government asbestos regulations which apply to the use of asbestos, asbestos-containing products, and asbestos fiber releases, in the workplace and in the ambient environment. It also briefly sets forth asbestos regulations promulgated by the State of Minnesota, the State of California, the State of New York, and the State of Texas as representative examples of state action concerning asbestos.*

*The principal federal government agencies that deal with asbestos regulation are the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA). Generally, OSHA regulations apply to regulate asbestos exposures, and potential asbestos exposures, in the occupational workplace while EPA regulations apply to asbestos exposures, and potential asbestos exposures, in nonoccupational settings. Both agencies set regulatory levels for allowable asbestos exposure. Those levels have changed, in a decreasing progression, since their enactment in the early 1970s. This paper discusses those levels and traces their progression over time.*

## *Introduction*

This paper was originally published in 1998 in the Monaldi Archives for Chest Disease, (Vol. 53., No. 2, pp 181-85) based upon a presentation by Robert D. Brownson at the first Italy-USA Conference on Malignant Mesothelioma and other Asbestos Related Neoplasms – Belgirate, Italy, May 29-30, 1997. This paper is the latest in a series of updates.

Asbestos is regulated in the United States at different governmental levels. The federal government has asbestos regulations which fall broadly into two areas, as described more completely below. Firstly, the federal government regulates asbestos exposure in occupational work places. This is accomplished through the Occupational Safety and Health Administration (OSHA). Secondly, the federal government regulates asbestos exposure in nonoccupational work places and in buildings. This is generally done through the Environmental Protection Agency (EPA).

In addition to federal government regulation, which applies on a nationwide basis, each of the 50 states has adopted independent occupational and nonoccupational asbestos regulations. These apply in addition to the federal regulations. The regulations of many states are generally similar to the federal regulations, but sometimes include slight variations and provisions which are stricter. The Minnesota, California, New York, and Texas regulations, discussed below, illustrate the approach of certain states to asbestos.

Although this paper focuses on the efforts of American entities to regulate asbestos, it is important to note that many international organizations are likewise intimately involved with asbestos regulation and related safety initiatives. For example, the International Agency for

Research on Cancer (IARC) classified all forms of asbestos as carcinogenic to humans in 2012.<sup>1</sup> Further, the International Commission on Occupational Health (ICOH) has called for a global ban on the mining, sale and use of all forms as asbestos to eradicate asbestos-related diseases in the world populace.<sup>2</sup> The actions of the United States as well as countries across the world should therefore be viewed against this global backdrop.

### *Occupational Safety and Health Administration (OSHA)*

The current federal OSHA occupational asbestos exposure level is called the “permissible exposure limit” (PEL). It is 0.1 fibers·cm<sup>-3</sup> or fibers·mL<sup>-1</sup> (tables 1 and 2).<sup>3</sup>

Table 1. – Current Occupational Safety and Health Administration (OSHA) Standards

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**General Industry (29 CFR 1910.1001)**

PEL 0.1 fibers·cm<sup>-3</sup> (8 hr time-weighted average)

Excursion limit 1.0 fiber·cm<sup>-3</sup> (30 min average)

**Construction Industry (29 CFR 1926.1101)**

PEL 0.1 fibers·cm<sup>-3</sup> (8 hr time-weighted average)

Excursion limit 1.0 fiber·cm<sup>-3</sup> (30 min average)

**Included Materials**

*Asbestos.* Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

*Asbestos-Containing Materials (ACM).* Any material containing > 1% asbestos.

*Presumed Asbestos-Containing Material (PACM).* Thermal system insulation and surfacing material found in buildings constructed no later than 1980.

**Requirements for Air Monitoring**

Employers who have employees who are, or may reasonably be expected to be exposed to airborne concentrations at or above the PEL and/or excursion limit must do initial and periodic air monitoring.

**Requirements for Initial and Periodic Medical Surveillance**

**Requirements for Initial and Periodic Training**

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PEL: permissible exposure limit

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<sup>1</sup>IARC List of Classifications by Alphabetical Order, *available at* <http://monographs.iarc.fr/ENG/Classification/index.php>.

[http://www.icohweb.org/site\\_new/multimedia/news/pdf/ICOH%20Statement%20on%20global%20asbestos%20ban.pdf](http://www.icohweb.org/site_new/multimedia/news/pdf/ICOH%20Statement%20on%20global%20asbestos%20ban.pdf).

<sup>3</sup>29 CFR § 1910.1001; 29 CFR § 1926.1101.

Table 2. – Occupational Safety and Health Administration (OSHA) Employee Information and Training Requirements (29 CFR 1926.1101(k)(9)(viii))

The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraphs (k)(9)(iii) through (vi) of this section, the employer shall ensure that each such employee is informed of the following:

- 1) Methods of recognizing asbestos, including the requirement in paragraph (k)(1) of this section to presume that certain building materials contain asbestos;
- 2) The health effects associated with asbestos exposure;
- 3) The relationship between smoking and asbestos in producing lung cancer;
- 4) The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures; where Class III and IV work will be or is performed, the contents of EPA 20T-2003, "Managing Asbestos In-Place" July 1990 or its equivalent in content;
- 5) The purpose, proper use, fitting instructions, and limitations of respirators as required by 29 CFR 1910.134;
- 6) The appropriate work practices for performing the asbestos job;
- 7) Medical surveillance program requirements;
- 8) The content of this standard including appendices;
- 9) The names, addresses and phone numbers of public health organizations which provide information, materials and/or conduct programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix J to this section, to comply with this requirement; and
- 10) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.

This standard is based upon an 8 hour time-weighted average, *i.e.*, the average exposure in occupational work places, as averaged over an 8 hour day, cannot exceed  $0.1 \text{ fibers} \cdot \text{cm}^{-3}$ .<sup>4</sup> This standard applies to all fibrous asbestos types (including chrysotile, amosite, and crocidolite).<sup>5</sup> It does not apply to nonfibrous cleavage fragments such as those found in talc.

OSHA regulations mandate procedures for testing asbestos fibers, which adhere to the OSHA ID-160 and National Institute for Occupational Safety and Health (NIOSH) 7400 methods.<sup>6</sup> NIOSH is a government scientific regulatory organization that is affiliated with OSHA. It is

<sup>4</sup> See 29 CFR § 1910.1001(c)(1).

<sup>5</sup> See 29 CFR § 1910.1001(b) ("Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.").

<sup>6</sup> See 29 CFR § 1910.1001 App. A.

headquartered in Washington, D.C. and Atlanta, GA, and frequently issues recommendations and research concerning asbestos, which form the scientific bases for various regulatory measures. Under the OSHA regulations, asbestos fibers are defined as any fiber > 5 µm in length, having a 3:1 or greater aspect ratio (length to diameter ratio), as observed under a 400× polarized light microscope.<sup>7</sup>

The OSHA standard, with the identical PEL, is administered in three separate areas: the shipyard industry, the construction industry, and the “general” industry.<sup>8</sup> This simply means that there are different sections of the regulation that apply to those industries but the standard is the same.<sup>9</sup>

Historically, the OSHA standard began in 1972 (table 3).<sup>10</sup> Enacted on June 7, 1972, the standard mandated a PEL of 5 fibers·cm<sup>-3</sup> to be reduced to 2 fibers·cm<sup>-3</sup> in 1976.<sup>11</sup> A reduction to 0.5 fibers·cm<sup>-3</sup> was proposed on October 9, 1975, but was not accepted.<sup>12</sup> NIOSH, however, recommended a deeper reduction in the OSHA PEL to 0.1 fibers·cm<sup>-3</sup> in December of 1976.<sup>13</sup> This level was not finally enacted until August 10, 1994.<sup>14</sup>

Table 3. – Chronology of Occupational Safety and Health Administration (OSHA) Asbestos Regulations and Related Activities

Date	Agency	Item
05/26/71	OSHA	OSHA formed under the Department of Labor. The act incorporates the Walsh-Healey Occupational Safety and Health (OSH) regulations into its own under the Williams-Steiger OSH Act. Explicitly references ACGIH as a source for air contaminant levels. No changes made to the asbestos standard itself (36 FR 10166 May 26, 1971).
08/13/71	OSHA	Makes exposure standards to all substances 8 hour time-weighted averages (36 FR 15701 August 13, 1971).
12/07/71	OSHA	OSHA promulgated an emergency standard for asbestos dust of 5 fibers·cm <sup>-3</sup> (> 5 microns in length) to be determined by the filter membrane method at 400–450× magnification, 4 mm objective phase contrast illumination. Set short term TLV of 5–10 fibers·cm <sup>-3</sup> for periods of 15 minutes each hour up to five times in an eight hour day. Required

<sup>7</sup> See 29 CFR §1910.1001(b).

<sup>8</sup> See 29 CFR §1910.1001(a).

<sup>9</sup> See *id.* See also 29 CFR 1915.1001; 29 CFR 1926.1101.

<sup>10</sup> See OSHA, *Regulatory History*, at Section 1, available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=PREAMBLES&p\\_id=775](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=PREAMBLES&p_id=775).

<sup>11</sup> See *id.*

<sup>13</sup> See *Workplace Exposure to Asbestos Review and Recommendations*, DHHS (NIOSH) Publication No. 81-103 (1980), available at <http://www.cdc.gov/niosh/docs/81-103/pdfs/81-103.pdf>.

<sup>14</sup> See 59 Fed. Reg. 40964-41162 (Aug. 10, 1994), available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=FEDERAL\\_REGISTER&p\\_id=13404](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=13404).

		enclosures, local exhaust ventilation, and “vacuum sweeping” to meet the standard and respiratory protection if workers encountered levels > 5 fibers·cm <sup>-3</sup> (36 FR 23207 December 7, 1971).
01/12/72 466	OSHA	Proposed rule required by Williams-Steiger OSH Act after an emergency rule is published. Identical to emergency rule of 12/71 (37 FR January 12, 1972).
06/07/72 fibers·cm <sup>-3</sup> in	OSHA	OSHA Standard for Exposure to Asbestos Dust: “Permanent” standard for occupational exposure of 5 fibers·cm <sup>-3</sup> ; to be lowered to 2 1976 (37 FR 11318 June 7, 1972).
10/09/75 47652	OSHA	Proposed lowering standard to 0.5 fibers·cm <sup>-3</sup> . Explicitly excluded construction activities from coverage under the proposal (40 FR October 9, 1975).
07/76	OSHA	2 fibers·cm <sup>-3</sup> became effective (per 37 FR 11318 June 7, 1972).
12/76	NIOSH	Recommended OSHA lower the standard for asbestos to 0.1 fibers·cm <sup>-3</sup> .
1977	NIOSH	“Occupational Exposure Sampling Strategy Manual” published.
09/80	NIOSH/OSHA	“Pocket Guide to Chemical Hazards” published.
11/04/83	OSHA	Issued emergency temporary standard (ETS) of 0.5 fibers·cm <sup>-3</sup> (48 FR 51086 November 4, 1983).
11/25/83	OSHA	ETS stayed pending legal arguments by asbestos industry (48 FR 53280 November 25, 1983).
03/84	OSHA	ETS issued on 04/11/83 overturned in Federal District Court.
04/10/84 rule. 14116	OSHA	Issued proposed standard for asbestos of 0.5 or 0.2 fibers·cm <sup>-3</sup> . Withdrew proposed rule of 10/75, using the ETS as basic format for new Proposal includes a construction standard in final rule (49 FR April 10, 1984).
06/20/86 (General standard of 0.2 fibers·cm <sup>-3</sup>	OSHA	OSHA ruling on Occupational Exposure to Asbestos. Tremolite, anthophyllite and actinolite – final rules on asbestos exposure Industry and Construction) including an exposure (51 FR 22612 June 20, 1986).
04/30/87 the anthophyllite asbestiform of these materials	OSHA	Extension of the partial administrative stay of the revised standards for proposal on whether non-asbestiform tremolite, actinolite, and should be regulated in the same manner as the (52 FR 15722 April 30, 1987).
07/20/88 tremolite,	OSHA	Extension of the partial administrative stay of the revised final standards until July 21, 1989 for the proposal on whether non-asbestiform actinolite, and anthophyllite should be regulated in the

same manner as the July 20, 1988).		asbestiform of these materials (53 FR 27345)
09/14/88 Anthophyllite occupational by adding an period of 30	OSHA	OSHA rule on Occupational Exposure to Asbestos, Tremolite, and Actinolite – amendment to the final rule governing exposure to asbestos in general industry and construction excursion limit of 1.0 fiber·cm <sup>-3</sup> average over a sampling minutes (53 FR 35611 September 14, 1988).
12/20/89 must resume	OSHA	Removed the ban on the spraying of asbestos-containing materials and changed regulatory text to clarify when construction employers periodic monitoring (54 FR 52024 December 20, 1989).
02/27/90 requirements explained how risk being reduced requirement that employers contiguous to regulated areas signs and labels (55 FR 3724 February 27,	OSHA	Expanded the ban on workplace smoking in areas where occupational exposure to asbestos may take place and added training covering the availability of smoking control programs; and why OSHA’s respiratory requirements will result in below that remaining at the PEL; and added a assure that employees working in or comprehend required warning 1990).
07/20/90 information transfer person requirement to all work; and the clarification on duration operations” (55 FR 29712	OSHA	Proposed rule to resolve the following issues: the establishment of operation-specific PELs; the extension of reporting and requirements; the expansion of the competent workers engaged in any kind of construction the exemption for “small-scale, short July 20, 1990).
06/08/92	OSHA	Non-asbestiform tremolite, anthophyllite, and actinolite deleted from the scope of the asbestos regulations (57 FR 24310).
08/10/94	OSHA	PEL exposure standard amended to 0.1 fibers·cm <sup>-3</sup> .
2002	OSHA	“Asbestos Fact Sheet” published.
2002	OSHA	“Asbestos Standard for the Construction Industry” published.
09/2005	OSHA	“Protecting Workers from Asbestos Hazards” published.

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NIOSH: National Institute for Occupational Safety and Health; ACGIH: American Conference of Governmental Industrial Hygienists; PEL: permissible exposure limit; TLV: threshold limit values.

OSHA rulemaking and amendment proposals have generated a great deal of debate over the years. Since its inception, a number of participants have engaged in OSHA public comment processes and have challenged asbestos-related provisions in court. For example, in *Building & Cons. Trades Dept., AFL-CIO v. Brock*, 838 F.2d 1258 (D.C. Cir. 1988), the Asbestos Information Association/North America, along with others, challenged a number of revised asbestos provisions in federal court. The District of Columbia Circuit Court of Appeals upheld a number of the



challenged provisions, but remanded the case to OSHA for reconsideration of the categorical ban on the spraying of products containing asbestos, PEL considerations, short-term exposure limits, smoking-related regulations, and various safety measures, thereby prompting a great deal of OSHA activity in the late 1980s and early 1990s.<sup>15</sup>

Throughout OSHA's history, the PEL has consistently applied to an 8 hour time-weighted average for airborne asbestos fibers  $> 5 \mu\text{m}$  in length as measured by polarized light microscopy. The standard has, however, historically contained an "excursion limit" which allows a higher exposure level for short periods of time. The level for the excursion limit has changed over the years. It is currently  $1.0 \text{ fiber} \cdot \text{cm}^{-3}$  for a 30 minute period (as compared to the 8 hour time-weighted average PEL).<sup>16</sup>

Under OSHA regulations, there has also been a lower action level (typically half of the PEL) at which safety precautions must be taken. The precautions include the wearing of respirators, annual chest radiographs, and dust suppression measures.<sup>17</sup>

Air levels are measured by OSHA inspectors during inspections. There is no schedule for OSHA inspections; they can occur at any time and rely upon the diligence of OSHA inspectors in a particular area of the country. The OSHA standards apply only to employers; they do not apply to asbestos product sellers, suppliers, or manufacturers.

If an employer is found to have airborne asbestos levels in a work place in excess of the OSHA PEL, as measured by an OSHA inspector, the employer is subject to monetary fines for each violation. These range from a few hundred dollars to thousands of dollars, per violation, based on the severity of the particular violation. OSHA also authorizes judicial imposition of criminal sanctions in instances where an employer is convicted of willfully violating a regulation and an employee death results. Finally, a pattern of repeat violations can result in a government shutdown of the workplace, though this penalty is extremely rare.

### *Environmental Protection Agency (EPA)*

The second area of federal government asbestos regulation is carried out by the EPA. The EPA was created under the authority of the Clean Air Act of 1970 (CAA) to protect the public from hazardous airborne contaminants. Pursuant to the Act, the EPA began to develop National Emissions Standards for Hazardous Air Pollutants (NESHAP) to limit public exposure to various contaminants.

Within this framework, the EPA listed asbestos as a hazardous air pollutant on March 31, 1971.<sup>18</sup> At that time, the EPA considered asbestos a carcinogen. All forms of asbestos were included, including chrysotile, amosite, and crocidolite.<sup>19</sup> The EPA has never made a distinction between asbestos fiber types. All of its regulations and exposure levels apply equally to all fiber types (table 4).

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<sup>15</sup> See *Building & Cons. Trades Dept., AFL-CIO v. Brock*, 838 F.2d 1258 (D.C. Cir. 1988).

<sup>16</sup> See 29 CFR § 1910.1001(c)(2).

<sup>17</sup> See generally 29 CFR § 1910.1001 (describing various safety precautions applicable to particular circumstances).

<sup>18</sup> See EPA, *The Asbestos Informer*, available at <http://www.epa.gov/region4/air/asbestos/inform.htm>.

<sup>19</sup> See 40 CFR § 61.141, Subpart M.

Table 4. – Environmental Protection Agency (EPA) Current National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61, Subpart M)

### **Definitions**

*Asbestos:* The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

*Friable Asbestos Material:* Any material containing more than 1% asbestos as determined using Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10% as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM.

*Category I Nonfriable Asbestos-Containing Material (ACM):* Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1% asbestos as determined using Polarized Light Microscopy.

*Category II Nonfriable ACM:* Any material, excluding Category I nonfriable ACM, containing more than 1% asbestos as determined using Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

*Regulated Asbestos-Containing Material (RACM):* (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

### **Separate Standards**

Asbestos mills (no visible emissions standards with air tests)

Roadways (no visible emissions standards with air tests)

Manufacturing (no visible emissions standards with air tests)

Applies to the manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials, cement products, fireproofing and insulating materials, friction products, paper, millboard, felt, floor tile, paints, coatings, caulks, adhesives, sealants, plastics and rubber materials, chlorine utilizing asbestos diaphragm technology, shotgun shell wads, and asphalt concrete.

Demolition and Renovation (no visible emissions standards with air tests)

Applies to a facility being demolished if the combined amount of RACM is at least 80 linear meters (260 linear ft.) on pipes or at least 15 square meters (160 sq. ft.) on other facility components, or at least 1 cubic meter (35 cubic ft.) off facility components where the length or area could not be measured previously.

Spraying (no visible emissions standards with air tests).

On April 6, 1973, the EPA prohibited spray application of products containing more than 1% asbestos by weight, and adopted a regulation prohibiting any “visible emissions” in milling and manufacturing operations and during the demolition of buildings.<sup>20</sup> Financial penalties applied. In 1978, the EPA expanded the spray ban to include spray application of such products for “decorative” purposes.<sup>21</sup>

On October 14, 1975, the EPA defined “friable asbestos material” as any material containing > 1% asbestos by weight that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure, and required that prior removal of asbestos material occur any time > 260 linear feet of pipe insulation or 160 square feet of friable surface-applied asbestos material was disrupted during building demolition or renovation.<sup>22</sup> The EPA also banned installation of asbestos block insulation on boilers and water tanks in 1975.<sup>23</sup> These regulations remain in effect today.

The EPA has a clearance level for determining whether a building is safe to occupy after asbestos removal activities have occurred. This level is currently 0.1 fibers·cm<sup>-3</sup> as measured by transmission electron microscopy (TEM), for airborne asbestos fibers > 5 μm in length and with an aspect ratio of > 3:1.

In 1976, the Toxic Substances Control Act (TSCA) was passed, conferring additional authority upon the EPA to regulate asbestos.<sup>24</sup> Under the Act, the EPA was empowered to monitor chemical substances and regulate any chemical determined to pose an “unreasonable risk” to human health and/or to the environment.<sup>25</sup> In 1989, after determining that asbestos posed such a risk, the EPA issued a final rule under the TSCA, prohibiting the manufacture, importation, processing, and distribution of most asbestos-containing products in commerce.<sup>26</sup> The rule contemplated a three-stage process during which certain products would be completely phased out of commerce over a several year period.

In 1991, however, the Fifth Circuit Court of Appeals vacated the rule in *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir.1991), concluding that the EPA failed to give sufficient consideration to its statutory mandate to promulgate regulations which achieve protective purposes in the least-burdensome manner available. The court also determined that the EPA failed to provide the public with proper notice and failed to demonstrate the alleged benefits of the rule by neglecting to assess the harmfulness of likely substitute products.<sup>27</sup> In the aftermath of the Court’s decision, the rule continues to ban only new uses of asbestos as well as asbestos-containing flooring felt, rollboard, and corrugated, commercial, or specialty paper.<sup>28</sup> The Act likewise bans new uses of

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<sup>20</sup> See 40 CFR § 61.146, Subpart M; 40 CFR § 61.149(b), Subpart M.

<sup>21</sup> See EPA, *EPA Asbestos Materials Ban: Clarification* (May 18, 1999), available at <http://www.mde.state.md.us/assets/document/Air/asb-bans.pdf>.

<sup>22</sup> See 40 CFR § 61.141, Subpart M; 40 CFR § 61.145, Subpart M. See also *id.*

<sup>23</sup> See EPA, *supra* note 21.

<sup>24</sup> See 15 U.S.C. § 2601-2692 (1976).

<sup>25</sup> *Id.*

<sup>26</sup> See 54 FR 29460 (July 12, 1989), available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=FEDERAL\\_REGISTER&p\\_id=12963](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=12963).

<sup>27</sup> See *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir.1991).

<sup>28</sup> See EPA, *supra* note 21.

asbestos, which operates to bar inclusion of asbestos in products that historically did not contain the mineral.

In 1986, the EPA began enforcement of the Asbestos Hazard Emergency Response Act (AHERA), signed into law as Title II of the TSCA. AHERA required that all school buildings in the United States be inspected for asbestos-containing materials, that the location and amount of such materials be documented, and that emissions of fibers from such materials be prevented.<sup>29</sup> The Asbestos School Hazard Abatement Reauthorization Act (ASHARA), adopted in 1990, amended AHERA to require accreditation for individuals performing asbestos inspections and abatement projects in school, commercial, and public buildings.<sup>30</sup>

In addition to administering the contaminant-focused legislation discussed above, the EPA also monitors asbestos within the context of other pieces of legislation. Congress adopted the Safe Drinking Water Act (SDWA) in 1974, which charges the EPA with identifying safe levels (termed maximum contaminant level goals (MCLG)), of contaminants in drinking water.<sup>31</sup> The asbestos MCLG is 7 MFL (million fibers/L).<sup>32</sup> In 1996, Amendments to the SDWA required the EPA to review the validity of each contaminant level every six years. To date, the EPA has conducted two such six-year reviews, confirming the appropriateness of the 7 MFL asbestos-level in both 2003 and 2010.<sup>33</sup>

The EPA also regulates asbestos under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), enacted by Congress in 1980.<sup>34</sup> CERCLA, often referred to as Superfund, provides that the term “hazardous substance,” as contemplated by the Act, includes any hazardous pollutant identified in Section 112 of the Clean Air Act, which incorporates asbestos.<sup>35</sup> The Act authorizes the EPA to ensure that entities responsible for releasing hazardous substances into the environment cooperate in short-term removal or long-term remedial response cleanup efforts.<sup>36</sup> To date, several clean-up sites targeted under CERCLA have been

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<sup>29</sup> See 15 U.S.C. § 2643 (1986).

<sup>30</sup> See ASBESTOS SCHOOL HAZARD ABATEMENT REAUTHORIZATION ACT OF 1990, PL 101–637, November 28, 1990, 104 Stat 4589.

<sup>29</sup> See 42 U.S.C. § 300f (1974).

<sup>30</sup> See EPA, *Basic Information about Asbestos in Drinking Water*, available at

<http://water.epa.gov/drink/contaminants/basicinformation/asbestos.cfm>.

See generally EPA, *Fact Sheet: Announcement of Completion of EPA's Second Review of Existing Drinking Water Standards*, available at

[http://water.epa.gov/lawsregs/rulesregs/regulatingcontaminants/sixyearreview/second\\_review/upload/fs\\_federalregisternotice.pdf](http://water.epa.gov/lawsregs/rulesregs/regulatingcontaminants/sixyearreview/second_review/upload/fs_federalregisternotice.pdf).

<sup>32</sup> See 42 U.S.C. §9601 (1980).

<sup>33</sup> *Id.*

<sup>34</sup> See *id.*

<sup>35</sup> See EPA, *Asbestos Compendium of Technical Resources*, available at

<http://www.epa.gov/superfund/health/contaminants/asbestos/compendium/index.html>.

contaminated by asbestos. The EPA has developed a resource entitled “Asbestos Compendium of Technical Resources,” to guide investigative efforts at asbestos-contaminated superfund sites.<sup>37</sup>

*American Conference of Governmental Industrial Hygienists*

In addition to the two federal regulatory agencies described above (OSHA and the EPA); the American Conference of Governmental Industrial Hygienists (ACGIH) has had a long-standing standard for asbestos exposure (table 5). The ACGIH is not an official government agency but, rather, is a trade group of governmental industrial hygienists working in the industrial hygiene field.

Date	Standards
1946–1961	5 mppcf (million particles per cubic foot of air, based on impinger samples counted by light-field techniques).
1962–1967	Silicates (less than 1% crystalline silica) - 5 mppcf.
1968–1969	5 mppcf. Notice of intended changes: 12 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at 430× magnification phase contrast illumination), or 2 mppcf (as counted by the standard impinger, light-field count technique).
1970	5 mppcf. Notice of intended changes: 12 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at 430× magnification phase contrast illumination); concentrations of 5 fibers·cm <sup>-3</sup> but not > 10, may be permitted for 15 min. periods each hr. up to 5 times daily.
1971	Value not listed (should have been 5 mppcf). Notice of intended changes: 5 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at 400–450× magnification phase contrast illumination); concentrations of 5 fibers·cm <sup>-3</sup> but not > 10, may be permitted for 15 min. periods each hr. up to 5 times daily.
1972	Value not listed (should have been 5 mppcf). Notice of intended changes: 5 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at

400–450 fibers·cm <sup>-3</sup> but not > times daily. Substance known (Appendix A).	× magnification phase contrast illumination); concentrations of 5 10, may be permitted for 15 min. periods each hr. up to 5 to be occupational carcinogen with an assigned TLV
	Notice of intended changes: 5 fibers·cm <sup>-3</sup> > 5 μm in length.
1973 400–450× concentrations of 5 periods each hr. up to 5 times	Value not listed (should have been 5 mppcf). Notice of intended changes: 5 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at magnification [4 mm objective] phase contrast illumination); fibers·cm <sup>-3</sup> but not > 10, may be permitted for 15 min. daily. (Noted that a more stringent TLV for crocidolite may be required). Substance known to be occupational carcinogen with an assigned TLV (Appendix A).
1974 concentrations of 5 each hr. up to 5 times	5 fibers·cm <sup>-3</sup> > 5 μm in length (as determined by the membrane filter method at 400– 450× magnification [4 mm objective] phase contrast illumination); fibers·cm <sup>-3</sup> but not > 10, may be permitted for 15 min. periods daily. (Noted that a more stringent TLV for crocidolite may be required).
1975–1976	5 fibers·cm <sup>-3</sup> > 5 μm in length*. Substances, or substances associated with occupational processes, recognized to have carcinogenic or cocarcinogenic potential, with a TLV (Appendix A).
1977	Listed as 1975–1976: Appendix A adopted.
1978–1979 fibers·cm <sup>-3</sup> .	5 fibers·cm <sup>-3</sup> > 5 μm in length*. Notice of intended changes: amosite: 0.5 fibers·cm <sup>-3</sup> ; chrysotile: 2 fibers·cm <sup>-3</sup> ; crocidolite: 0.2 fibers·cm <sup>-3</sup> ; tremolite: 0.5 fibers·cm <sup>-3</sup> ; other forms: 2
1980 other forms: 2	Amosite: 0.5 fibers·cm <sup>-3</sup> (> 5 μm); chrysotile: 2 fibers·cm <sup>-3</sup> (> 5 μm); crocidolite: 0.2 fibers·cm <sup>-3</sup> (> 5 μm); tremolite: 0.5 fibers·cm <sup>-3</sup> (> 5 μm); fibers·cm <sup>-3</sup> (> 5 μm).
1981	Amosite: 0.5 fibers·cm <sup>-3</sup> (> 5 μm); chrysotile: 2 fibers·cm <sup>-3</sup> (> 5 μm); crocidolite: 0.2 fibers·cm <sup>-3</sup> (> 5 μm); other forms: 2 fibers·cm <sup>-3</sup> (> 5 μm).
1982–1983 2	Amosite [12172-73-5]**: 0.5 fibers·cm <sup>-3</sup> (> 5 μm); chrysotile [12001-29-5]: 2 fibers·cm <sup>-3</sup> (> 5 μm); crocidolite [12001-28-4]: 0.2 fibers·cm <sup>-3</sup> (> 5 μm); other forms: fibers·cm <sup>-3</sup> (> 5 μm).
1984 fibers·cm <sup>-3</sup> forms: 2 fibers·cm <sup>-3</sup>	Amosite [12172-73-5]: 0.5 fibers·cm <sup>-3</sup> (> 5 μm); chrysotile [12001-29-5]: 2 (> 5 μm); crocidolite [12001-28-4]: 0.2 fibers·cm <sup>-3</sup> (> 5 μm); other (> 5 μm).
1985–1986	Amosite [12172-73-5]: 0.5 fibers·cm <sup>-3†</sup> ; chrysotile [12001-29-5]: 2 fibers·cm <sup>-3†</sup> ; crocidolite [12001-28-4]: 0.2 fibers·cm <sup>-3†</sup> ; other forms: 2 fibers·cm <sup>-3†</sup> .

1987–1990	Amosite [12172-73-5]: 0.5 fibers·cm <sup>-3†</sup> ; chrysotile [12001-29-5]: 2 fibers·cm <sup>-3†</sup> ; crocidolite [12001-28-4]: 0.2 fibers·cm <sup>-3†</sup> ; other forms: 2 fibers·cm <sup>-3†</sup> . Redefinition of the carcinogen designations adopted in 1987.
1991–present (1980): 2	Amosite [12172-73-5] (1980): 0.5 fibers·cm <sup>-3†</sup> ; chrysotile [12001-29-5] (1980): 2 fibers·cm <sup>-3†</sup> ; crocidolite [12001-28-4] (1980): 0.2 fibers·cm <sup>-3†</sup> ; other forms fibers·cm <sup>-3†</sup> . The number in parenthesis is the year that the TVL was adopted. Notice of intended changes 1991: asbestos, all forms [1332.2104] 0.2 fibers·cm <sup>-3†</sup> . Redefinition of the carcinogenicity designations (Appendix A) adopted in 1992. Notice of intended changes 1997: asbestos, all forms [1332.2104] 0.1 fibers·cm <sup>-3†</sup> .

ACGIH recommended its first occupational exposure limits in 1946. For the years 1946–1947, these limits were called maximum allowable concentrations (MACs). In 1948, ACGIH elected to use the nomenclature “threshold limit values” (TLVs). In 1961, ACGIH published its first list of TLVs in booklet form and has continued publishing the booklet annually. \*: noted that “cigarette smoking may substantially enhance the incidence of bronchogenic carcinoma from this and other of these substances or processes”; \*\*: numbers in parentheses are Chemical Abstract Service (CAS) Registry numbers (added in 1982); †: fibers > 5 μm with an aspect ratio of ≥ 3:1 as determined by the membrane filter method at 400–450× magnification (4 mm objective), phase contrast illumination.

The ACGIH recommended its first occupational exposure limits to dusts and fibers in 1946. These limits included asbestos. For the initial years, these limits were called maximum allowable concentrations (MAC).<sup>38</sup> In 1956, ACGIH adopted the nomenclature “threshold limit values” (TLV).<sup>39</sup> According to ACGIH, TLVs represent the levels at which nearly all workers can be exposed to contaminants on a daily basis, over a working career, without experiencing adverse health effects.<sup>40</sup>

From 1946–1970, the ACGIH limit for occupational exposure to asbestos was measured in particles·foot<sup>-3</sup>. In 1970, using the new membrane filter collection method, the standard was changed from particles to fibers. Fibers were defined as > 5 μm in length (with 3:1 aspect ratio) by phase contrast microscopy. It took ACGIH from 1970–1974 to enact the new measurement method as part of its standard.

The TLV for all forms of asbestos is currently 0.1 fibers·cm<sup>-3</sup>.<sup>41</sup> ACGIH does not provide a short-term exposure limit for asbestos.<sup>42</sup>

The American Conference of Governmental Industrial Hygienists standard has never had the force of law in the United States.<sup>43</sup> It has however been accepted and utilized as an industry

<sup>38</sup> See ACGIH, *About: History*, available at <http://www.acgih.org/about/history.htm>.

<sup>39</sup> *Id.*

<sup>40</sup> See ACGIH, 2011 TLVs AND BEIs 3 (Signature Publications 2011) (“Threshold Limit Values (TLVs) refer to airborne concentrations of chemical substances and represent conditions under which it is believed that *nearly all* workers may be repeatedly exposed, day after day, over a working lifetime, without adverse health effects.”).

<sup>41</sup> See ACGIH, *supra* note 38, at 13.

<sup>42</sup> See *id.* at 3 (“The TLVs . . . intended for use only as guidelines or recommendations to assist in the evaluation and control of potential workplace health hazards and for no other use”).

<sup>43</sup> See generally *id.*

standard. Further, it has been a basis for state government regulation and has been used, although not adopted, by the federal regulatory agencies.

### *Additional Federal Regulation*

A number of federal agencies beyond OSHA and the EPA have adopted regulatory provisions concerning asbestos, though not as expansively as the entities discussed above. Among such agencies are the Consumer Product Safety Commission (CPSC), the Department of Transportation (DOT), and the Mining Enforcement and Safety Administration (MSHA).

#### **Consumer Product Safety Commission (CPSC)**

The CPSC is charged with protecting the public from risks posed by consumer products, including those which contain asbestos. Like the other regulatory agencies, it has promulgated its own definition of asbestos as well as its own regulations. According to the CPSC, asbestos is a “group of mineral fibers composed of hydrated silicates, oxygen, hydrogen, and other elements such as sodium, iron, magnesium, and calcium in diverse combinations,” which include “[a]mosite, chrysotile, crocidolite, anthophyllite, actinolite, and tremolite asbestos.”<sup>44</sup> Free-form asbestos meanwhile, is more specifically defined as asbestos “which is not bound, or otherwise ‘locked-in’ to a product by resins or bonding agents,” or asbestos from which fibers readily become airborne.<sup>45</sup>

With regard to regulation, the CPSC banned both asbestos-containing consumer patching compounds used to repair walls and ceilings, and artificial emberizing materials used to simulate live embers in fireplaces in 1977.<sup>46</sup>

In addition to regulating asbestos, the CPSC also provides consumers with information and warnings pertaining to asbestos in the home, the proper removal of asbestos, health concerns related to asbestos, and asbestos sampling procedures. For example, in 1979, the CPSC identified a number of hair dryers believed to contain asbestos insulation. Later that year, the CPSC entered into a voluntary agreement with various manufacturers who agreed to cease distribution of asbestos-containing hair dryers and amend the products.<sup>47</sup> In 2000, the CPSC similarly determined that color crayons from three different companies contained trace amounts of asbestos. Although the CPSC concluded that the risk of inhalation was extremely low, it nevertheless required crayon companies to reformulate color crayons with substitute materials.<sup>48</sup>

#### **Department of Transportation (DOT)**

The DOT has similarly engaged in asbestos-related regulation. In 1976, the Materials Transportation Bureau circulated an advanced notice of proposed rulemaking indicating that it was

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<sup>44</sup> 16 CFR 1304.3 (Dec. 15, 1977).

<sup>45</sup> *Id.*

<sup>46</sup> See 16 CFR 1304 (Dec. 15, 1977); 16 CFR 1305 (Dec. 15, 1977).

<sup>47</sup> See CPSC, *News from CPSC: CPSC Accepts Corrective Actions from Major Hair Dryer Companies*, available at <http://www.cpsc.gov/cpsc/pub/prerel/prhtml79/79022.html>.

<sup>48</sup> See CPSC, *CPSC Staff Report on Asbestos Fibers in Children’s Crayons*, available at <http://www.cpsc.gov/library/foia/foia00/os/crayons.pdf>.



considering whether new hazardous materials, including asbestos, should be subject to regulation under the Hazardous Materials Transportation Act of 1975, which regulated the means and methods of transporting materials designated hazardous by the Secretary of Transportation. Two years later, a notice of proposed rulemaking was issued.<sup>49</sup> The proposed rule required asbestos to be transported in rigid, airtight packaging such as metal or fiber drums, or in bags when transported in closed freight containers, vehicles, or rail cars. The rule also indicated that asbestos for transportation purposes included chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite, as well as any product that contained those minerals.<sup>50</sup>

The rule set forth above was amended in 1979 to allow for the transportation of asbestos in dust and sift-proof bags and other non-rigid packaging palletized or unitized by methods like shrink-wrapping in plastic or wrapping in fiberboard and strapping.<sup>51</sup>

Currently, the Department of Transportation mandates that asbestos be transported in rigid, leaktight packaging like metal, plastic, or fiber drums, bags or non-rigid packaging in closed freight containers, vehicles, or rail cars, or in dust and sift-proof bags or non-rigid packaging enclosed in outer packaging or closed freight containers.<sup>52</sup> The definition of asbestos has also expanded to include white, brown, and blue-colored asbestos of the same mineral variations identified in the 1970s.<sup>53</sup>

### **Mining Enforcement and Safety Administration (MSHA)**

Finally, federal mining agencies have regulated asbestos in relation to protecting the health of American miners for decades. In 1973, the Department of the Interior created the Mining Enforcement and Safety Administration (MESA) to safeguard the safety and health of miners. In 1974, MESA adopted an airborne asbestos exposure standard of 5 fibers·mL > 5 µm in length for metal and nonmetal mines.<sup>54</sup> Two years later, the agency promulgated an asbestos exposure standard of 2 fibers·cm<sup>-3</sup> over an 8-hour average, for surface areas of coal mines.<sup>55</sup>

In 1978, the Labor Department, and specifically the Mining Safety and Health Administration (MSHA), assumed MESA duties pursuant to the Federal Mine Safety and Health Act of 1977.<sup>56</sup> During that year, the asbestos exposure standard for metal and nonmetal mines was lowered to 2 fibers·mL.<sup>57</sup> In 2008, MSHA amended the asbestos exposure limits for metal and nonmetal mines, surface coal mines, and surface areas of underground coal mines to OSHA levels (a PEL of 0.1 fibers·cm<sup>-3</sup> over 8 hours and an excursion limit of 1 fiber·cm<sup>-3</sup> over a 30 minute period).<sup>58</sup>

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<sup>49</sup> See 41 FR 53824 (Dec. 9, 1976).

<sup>50</sup> See 41 FR 8562 (March 2, 1978).

<sup>51</sup> See 49 CFR §1.53.

<sup>52</sup> See 49 CFR § 173.216.

<sup>53</sup> See *id.*

<sup>54</sup> See MSHA, *Final Rule, Section E. MSHA Asbestos Standards*, available at <http://www.msha.gov/REGS/FEDREG/FINAL/2008finl/E8-3828.asp>.

<sup>55</sup> See 41 FR 10223 (1976). See also *id.*

<sup>56</sup> See MSHA, *History of Mine Safety and Health Legislation*, available at <http://www.msha.gov/mshainfo/mshainf2.htm>.

<sup>57</sup> See 43 FR 54064 (1978). See also MSHA, *Final Rule*, *supra* note 54.

<sup>58</sup> See 30 CFR § 57.5001.

At present, two entities, Coal Mine Safety and Health and Metal and Nonmetal Mine Safety and Health, administer and enforce MSHA rules. MSHA asbestos exposure limits remain at OSHA levels and asbestos fiber testing must follow OSHA's phase contrast microscopy.

### *Congressional Action*

The United States Congress has, in recent years, joined the myriad of federal and private regulatory agencies in the debate over asbestos. In 2002, Senator Patty Murray introduced the Ban Asbestos in America Act.<sup>59</sup> Since that time, the Senator has reintroduced revised versions of the bill in various congressional sessions. In October of 2007, the Senate unanimously passed the Ban Asbestos in America Act of 2007.<sup>60</sup> The bill proposed a ban on the importation, manufacture, processing, and distribution of asbestos-containing products and aimed to eliminate almost all asbestos products in the United States within two years of its passage. It also provided for additional research and treatment efforts concerning asbestos-related illnesses and advocated for increased public awareness regarding the dangers posed by asbestos and asbestos-containing products.<sup>61</sup> Despite the bill's success in the Senate, it did not win the approval of the House of Representatives or the President and is currently classified as a dead bill.<sup>62</sup> Asbestos-related legislation was also initiated by members of the House of Representatives in 2007 and 2008, but neither bill reached a House or Senate vote.

### *State Regulation*

#### **Minnesota**

The Department of Labor and Industry, directed by the Industrial Commission of the State of Minnesota, began issuing safety standards to prevent accidents and preserve health in places of employment in 1950. The standards, as originally published in 1950 and enforced by the Industrial Commission, governed exposure to atmospheric contaminants and infectious agents, and set forth means to control various contaminants in the workplace, general ventilation and temperature requirements, and safety and personal protection requirements. Exposure to asbestos dust was limited to a maximum of 5 mppcf (million particles per cubic foot of air).<sup>63</sup> In 1967, the Industrial Commission was eradicated; its duties were assumed by the Department of Labor and Industry and its commissioners became the Workers' Compensation Commission, now known as the Workers' Compensation Court of Appeals.

The 1950 codes of minimum standards were periodically updated and remained in force until 1973, at which time the State of Minnesota adopted federal OSHA standards, including the OSHA 0.1 fibers·cm<sup>-3</sup> as an 8 hour time-weighted average asbestos standard (table 6).<sup>64</sup> The

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<sup>59</sup> See S. 2641, 107th Congress (2002).

<sup>60</sup> See S. 742, 110th Congress (2007).

<sup>61</sup> See *id.*

<sup>62</sup> See S. 742: Ban Asbestos in America Act of 2007, <http://www.govtrack.us/congress/bill.xpd?bill=s110-742>.

<sup>63</sup> See Industrial Commission of Minnesota Safety Standards Laws and Codes for the Prevention of Accidents and the Preservation of Health in all Places of Employment: Industrial Environmental Sanitation § 4 (1950).

<sup>64</sup> See Minnesota Safety Council, *Safety 101: Asbestos*, available at <http://www.minnesotasafetycouncil.org/facts/factsheet.cfm?qs=B813D6F3504377C188E9F0D6BA1DE734>.

OSHA standards, administered in the general industry, construction industry, and shipbuilding industry, remain in effect today.

In 1987, Minnesota adopted the Asbestos Abatement Act, which established abatement project regulations, licensing, certification, and reporting requirements, and provided that airborne asbestos should not exceed  $0.01 \text{ fibers} \cdot \text{cm}^{-3} > 5 \mu$  in length following abatement projects.<sup>65</sup> The Act defines asbestos as including chrysotile (serpentine), crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, tremolite, and actinolite.<sup>66</sup> Asbestos containing material, meanwhile, like the federal OSHA standard, is characterized as any material containing  $> 1\%$  asbestos by microscopic visual estimation by area.<sup>67</sup> The Abatement Act also granted the Commissioner of Health authority to adopt additional rules concerning asbestos.<sup>68</sup>

Various Administrative Rules also serve to regulate asbestos in the State of Minnesota.<sup>69</sup> The rules governing asbestos adopt the Abatement Act definitions of asbestos and asbestos-containing material.<sup>70</sup> They also require that asbestos inspections and transmission electron microscopy for collecting and analyzing air samples adhere to the EPA methods applied to asbestos-containing materials in the school setting.<sup>71</sup> Procedures for testing asbestos via phase contrast microscopy meanwhile are also regulated.<sup>72</sup>

At present, Minnesota does not ban asbestos outright. However, various state legislators have supported the recent congressional efforts to ban asbestos-containing products. The state also adheres to EPA prohibitions and has specifically banned asbestos as insulation material in new construction since 1972.<sup>73</sup>

Table 6. – Minnesota Asbestos Regulations 1950 to 1973

Date	Regulations*
1950	<p><b>Purpose.</b> The purpose of this Code is to prescribe the minimum requirements for the prevention and control of those conditions in industry which may deleteriously effect (sic) the health or well-being of the employee and to recommend supplemental measures designed to further promote the health and wellbeing of employees.</p> <p><b>Penalty for Violation.</b> The law provides that any person, firm, or corporation violating any of the provisions of this Code shall be guilty of a misdemeanor, and upon conviction therefor shall be punished by a fine of not more than \$100 or not less than \$25, or by imprisonment for</p>

<sup>65</sup> See Minn. St. § 326.77 (1987). See also Minn. St. §§ 326.70 - 326.81 (1987).

<sup>66</sup> See Minn. St. § 326.71, subd. 2 (1987).

<sup>67</sup> See Minn. St. § 326.71, subd. 3 (1987).

<sup>68</sup> See Minn. St. § 326.78, subd. 1 (1987).

<sup>69</sup> See MINN. R. 4620.3000 - 4620.2724.

<sup>70</sup> See MINN. R. 4620.3100, subp. 3; MINN. R. 4620.3100, subp. 7.

<sup>71</sup> See MINN. R. 4620.3598, subp. 1.

<sup>72</sup> See MINN. R. 4620.3597, subp. 2.

<sup>73</sup> See PIRG, *30 Years of Accomplishments* at 1, available at <http://www.pirg.org/pirghome/aboutus/30thBookletResults.pdf>.

not more than 90 days and not less than 30 days, or by both such fine and imprisonment for each offense. Each day of violation shall constitute a separate offense.

**Employer Responsibility.**

Every employer shall provide, install and maintain in good repair such control measures and protective equipment as is required in accordance with the provisions of this Code, and shall inform affected employees regarding the nature of the hazards and the reasons for and the methods of use of control measures and protective equipment.

**Employee Responsibility.**

Every employee shall use control measures and protective equipment provided by the employer in accordance with this Code. Employees shall not violate, abuse or mishandle control measures and protective equipment provided by the employer for the employee's protection against health hazards.

**Scope.**

The provisions of this Code shall apply to all places of employment, and shall cover such environmental factors which affect the health, safety, comfort, and efficiency of employees such as dusts, fumes, gases, vapors, mists, temperatures, pressures, noise, air condition, illumination, water supply and water disposal.

**Definitions.**

*Contaminant:* An undesirable substance or material.

*Maximum Concentration:* That amount of atmospheric contaminant which can be tolerated by man for continuous daily exposure with no impairment of health of well-being either immediately after or after years of exposure.

*Shall:* Mandatory.

*Should:* Advisable.

**Environmental Provisions. Control of Atmospheric Contaminants.** – Workers shall not be exposed to concentrations of atmospheric contaminants hazardous to health.

Atmospheric contaminants should not be permitted in concentrations tending to: Accumulate or condense upon equipment, floors, rafters, ledges or walls of any workroom in an insanitary or unsafe manner.

Provide a fire or explosion hazard.

Condense in the air in a manner which will significantly reduce visibility.

Produce any other nuisance condition within the place of employment.

Except where specifically provided for in this Code, control of atmospheric contaminants may be accomplished by any of the following methods:

Substitution of a less toxic material for the material contaminating the workroom atmosphere.

Local exhaust ventilation so that the contaminant is removed from the workroom atmosphere.

Isolation of the operation so that the contaminant does not enter the atmosphere of the general working area in hazardous concentrations, provided that any worker who is exposed to a health hazard by entering the isolated area shall be furnished personal protection in accordance with the provisions of this Code.

Enclosure of the operation so that the contaminant does not escape into the workroom atmosphere in hazardous concentrations.  
Change of process or operation method (such as by wet method, the use of foams, colloids, etc.) so that the hazard is controlled.  
Increase the general ventilation so that the contaminant is diluted to a safe concentration.  
Any other method approved by the Commission.

**Mineral Dusts.**

*Asbestos* - 5 mppcf (million particles per cubic foot of air, standard light field count).

**General Ventilation and Temperature Requirements.** – Air shall be provided and distributed in all workrooms as required in this Code.

Outside air shall be provided to all workrooms at the rate of 15 CFM (cubic feet per minute) per person or 1½ air changes per hour, whichever is greater.  
Air circulated in any workroom shall be supplied through air inlets arranged, located and equipped so that the workers shall not be subjected to air velocities excess 200 feet per minute except under special circumstances specified in this Code or where approved by the Industrial Commission.

**Personal Protective Equipment.** – Personal protective equipment shall not be used in lieu of control measures specified herein except where approved by the Commission.

Personal protective equipment and/or protective barriers approved by the Commission shall be provided whenever substances, radiations or mechanical irritants are encountered in a manner capable of causing any pathological change or injury or impairment in function of any part of the body through skin and/or mucous membrane absorption.

Personal protective equipment shall be fitted to each exposed worker when the wearing of such equipment is necessary for worker protection, and shall be maintained in an efficient and sanitary condition.

In any job where safety glasses are indicated the individual should have suitable vision tests to determine whether he needs refraction and correction for the job. Such correction should be incorporated in the safety glasses.

Working clothes shall be washed and/or dried between shifts on any job where the process is such that washing or drying is needed or a change of clothes shall be supplied so that dry clothes are assured for returning to work.

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| 1958 | Standards were renumbered and reformatted. Additional categories of gases, vapors, dusts, fumes and mists were added to the Code. The additions did not implicate the asbestos standard, which remained in the Mineral Dust category with a maximum concentration of 5 mppcf. |
| 1959 | Standards were revised on January 5, 1959.  |
| 1962 | Standards were revised on January 5, 1962.  |
| 1964 | Standards were renumbered. The maximum concentration as to asbestos remained at the 5 mppcf level.  |

1971 The regulations, renamed the Occupational Safety and Health Rules, were revised as to employer and employee responsibilities and amended to include standards concerning the use of dust respirators and protective measures applicable to the construction industry. The amendments did not implicate the asbestos standard, which remained in the Mineral Dust category with a maximum concentration of 5 mppcf.

**General.**

No employer shall require or permit any employee to engage in any occupation or employment where there is a danger of injury to such employee unless the employer shall provide to each employee the necessary personal protective equipment and any and all other type safeguards necessary to protect the lives, limbs and health of employees; and no employee shall engage in any occupation or employment subject to such danger of injury unless he shall wear or use such personal protective equipment and other type safeguards as the employer shall provide.

Every employer failing to provide such protection devices as requirements and every employee failing to use such devices provided by the employer, shall be subject to the penalties provided in Minnesota Statutes 182.61.

**Dust Collectors.**

On all dust creating operations the contractor shall provide adequate means of arresting or collecting dust to prevent a dust nuisance at the point where dust is created.

**Mineral Dusts.**

*Asbestos* – 5 mppcf.

1973 February 23, 1973 revisions to the Occupational Safety and Health Rules adopted the federal OSHA standards, including the asbestos-related standards, and reduced the number of Minnesota-specific rules to avoid conflict with OSHA. No Minnesota provisions addressed exposure to dust, asbestos, or other hazards.

**Adoption of Federal Occupational Safety and Health Regulations by Reference.**

The 1971 Minnesota Department of Labor and Industry Occupational Safety and Health Rules are amended by incorporating by reference and thereby making a party thereof, Title 29 of the Code of Federal Regulations, Part 1910, Occupational Safety and Health Standards as published in Part II, Volume 37, No. 202 of the Federal Register on October 18, 1972, including: Parts 1926, 1915, 1916, 1917, and 1918.

1973 August 27, 1973 revisions to the rules continued to adopt the federal OSHA standards, including those applicable to asbestos, and repealed many of the remaining Minnesota regulations, including the introductory provisions, personal protective equipment standards, and the provisions related to the construction industry. The remaining Minnesota-specific provisions, entitled “General Environmental Control,” concerned ventilation, temperature and illumination requirements.

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\*Excerpts from the Industrial Commission of Minnesota’s Safety Standards Laws and Codes for the Prevention of Accidents and the Preservation of Health in all Places of Employment, adopted by the Industrial Commission of Minnesota and Issued by the Department of Labor and Industry in 1950, 1958,

1959, 1962, and 1964, and the Occupational Safety and Health Rules administered by the Department of Labor and Industry in 1971 and 1973.

## California

The State of California consistently witnesses large numbers of asbestos-related illnesses due to its active participation in the mining, oil, shipyard, and marine industries. As such, the state has developed layers of regulation to govern asbestos exposure.

The California Labor Code defines asbestos as fibrous forms of various hydrated materials, including chrysotile (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummingtonite -- grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.<sup>74</sup> The Labor Code similarly provides for the development of training programs for employees who may be exposed to asbestos and requires the Division of Occupational Safety and Health to draft and adopt regulations concerning the certification of asbestos consultants.<sup>75</sup>

With regard to employers or contractors engaged in asbestos-related work, the Code requires that a good faith effort be made to determine whether asbestos is present prior to the commencement of such work and similarly requires such individuals to register with the Division of Occupational Safety and Health if the work involves a surface area of 100 square feet or more of asbestos-containing material.<sup>76</sup> Applications for registration must include specific information as provided by statute.<sup>77</sup>

Asbestos-related work is statutorily defined in California as any activity that may cause a release of asbestos fibers into the air via the disturbance of asbestos-containing construction materials, excluding activities related to the manufacture, mining or excavation of asbestos materials, or to the installation or repair of automotive asbestos-containing materials.<sup>78</sup> Asbestos-related work also does not include work related to cement piping used outside of buildings, provided employees are not exposed to asbestos at levels exceeding those identified in the California Code of Regulations.<sup>79</sup>

The California Code of Regulations, in turn, which does not apply to certain construction work or to ship repairing, shipbuilding, and shipbreaking employments, defines asbestos as including chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite and any of those minerals that have been chemically treated or altered.<sup>80</sup> Asbestos-containing materials is defined as any material containing > 1% asbestos.<sup>81</sup> The Code similarly establishes a PEL of 0.1 fibers·cm<sup>-3</sup> as an 8 hour time-weighted average and an excursion limit of 1.0 fibers·cm<sup>-3</sup> as averaged over a 30 minute sampling period.<sup>82</sup> Air sampling and testing procedures must follow the most current

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<sup>74</sup> See CAL. LAB. CODE § 6501.7 (West, Westlaw through 2013 Sess.).

<sup>75</sup> See CAL. LAB. CODE § 9021.5 (West, Westlaw through 2013 Sess.).

<sup>76</sup> See CAL. LAB. CODE § 6501.5 (West, Westlaw through 2013 Sess.); CAL. LAB. CODE § 6501.9 (West, Westlaw through 2013 Sess.).

<sup>77</sup> See CAL. LAB. CODE § 6501.5 (West, Westlaw through 2013 Sess.).

<sup>78</sup> See CAL. LAB. CODE § 6501.8(a) (West, Westlaw through 2013 Sess.).

<sup>79</sup> See CAL. LAB. CODE § 6501.8(c) (West, Westlaw through 2013 Sess.).

<sup>80</sup> See CAL. CODE REGS. tit. 8, § 5208(a) (West 2013); CAL. CODE REGS. tit. 8, § 5208(b) (West 2013).

<sup>81</sup> See CAL. CODE REGS. tit. 8, § 5208(b) (West 2013).

<sup>82</sup> See CAL. CODE REGS. tit. 8, § 5208(c) (West 2013).

version of OSHA or NIOSH testing methods, or adhere to an equivalent method for examining samples.<sup>83</sup>

The Code also requires employers to take a number of protective measures, which vary according to the type of work and expected exposure level. Employers governed by the Code must institute engineering and work practices controls to maintain employee exposure below the asbestos exposure limits and must initiate additional measures if such processes are incapable of reducing exposure. Employers must also satisfy respiratory protection, hygiene, warning, training, medical surveillance, and recordkeeping requirements.

In addition to the regulations discussed above, various state and local agencies publish asbestos-related regulations in California. The Department of Toxic Substances Control (DTSC) handles issues concerning the disposal and transport of asbestos and has classified friable, finely, and powdered wastes containing > 1% asbestos as hazardous waste subject to special packaging, labeling, and handling procedures.<sup>84</sup> The Department of Consumer Affairs' Contractors State License Board oversees the certification of asbestos abatement contractors. The Board requires all contractors who plan to engage in asbestos-related work (as defined by the Labor Code) involving asbestos containing materials with a surface area of 100 square feet or more to pass an asbestos certification examination.<sup>85</sup> Cal-OSHA meanwhile, handles worker safety and worker exposure issues while Local Air Pollution Control Districts enforce atmospheric emissions of asbestos.<sup>86</sup>

## New York

New York has a long tradition of asbestos regulation given its history as a manufacturing hub. New York statutory law defines asbestos as including chrysotile (serpentine), amosite (cummingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite, and actinolite.<sup>87</sup> Asbestos material, meanwhile, is defined as any material containing > 1% percent asbestos by weight.<sup>88</sup> New York labor law similarly mandates notice and recordkeeping as well as licensing and certification requirements, governs construction, excavation and demolition work, and provides for monetary fines.

A number of state agencies regulate asbestos in the State of New York. The New York State Department of Labor mandates adherence to notice, recordkeeping, licensing, and certification requirements, sets forth standards for construction, excavation, and demolition work, and comprehensively regulates asbestos abatement projects through state regulatory rules.<sup>89</sup> Asbestos waste issues are handled by the New York State Department of Environmental Conservation. The Department enforces both Solid Waste Management Facilities regulations and Waste Transporter Permits regulations.<sup>90</sup>

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<sup>83</sup> See CAL. CODE REGS. tit. 8, App. A.

<sup>84</sup> See Department of Toxic Substances Control, *Fact Sheet: What is Asbestos*, at 3 (July 2003), available at [http://www.dtsc.ca.gov/HazardousWaste/upload/OAD\\_FS\\_Asbestos.pdf](http://www.dtsc.ca.gov/HazardousWaste/upload/OAD_FS_Asbestos.pdf).

<sup>85</sup> See CAL. BUS. & PROF. CODE §7058.5(a) (West, Westlaw through 2013 Sess.).

<sup>86</sup> See Department of Toxic Substances Control, *supra* note 84, at 3.

<sup>87</sup> See N.Y. LAB. LAW § 901 (McKinney 2008 on West, Westlaw through 2013 Sess.).

<sup>88</sup> See *id.*

<sup>89</sup> See N.Y. Comp. Codes R. & Regs. tit. 56 § 12 (2007).

<sup>90</sup> See Department of Health, *Asbestos Laws and Regulations*, available at <http://www.health.ny.gov/environmental/indoors/asbestos/laws.htm>.



The Solid Waste Management Facilities regulations define asbestos waste as friable solid waste that contains > 1% asbestos by weight and can be crumbled, pulverized or reduced to powder via hand pressure when dry as well as any asbestos-containing solid waste collected in a pollution control device designed to remove asbestos.<sup>91</sup> The Waste Transporter Permits regulations, on the other hand, govern the transportation of waste, transport permits, and asbestos transportation tracking.<sup>92</sup>

The New York State Department of Health has also issued regulations, which govern asbestos safety training providers as well as the training of workers in the asbestos abatement industry.<sup>93</sup> Pursuant to the regulations, core topics to be covered in all initial asbestos training programs include the history of asbestos use, the types of asbestos and asbestos-containing products, the status of Federal, State, and local law regarding asbestos, health effects of asbestos, protective clothing requirements, and abatement control options.<sup>94</sup> Upon completion of an approved asbestos safety training program, each individual must pass a written multiple choice examination provided by the Department of Health.<sup>95</sup>

In addition to statewide regulation, New York City has adopted its own asbestos regulations to govern asbestos abatement activities within City limits.<sup>96</sup> The regulations, enforced by the New York City Department of Environmental Protection, set forth specific definitions, govern pre-abatement activities, including the submission of required forms, reporting processes, and asbestos handler certification requirements, the inspection of abatement projects and project procedures, and the closing-out of abatement projects.<sup>97</sup>

## Texas

Exposure to asbestos in the State of Texas has centered around the state's oil, shipyard, power plant, and chemical industries. The history of the state's asbestos exposure as well as asbestos-oriented litigation has prompted a great deal of asbestos-related regulation.

The Texas Administrative Code contains a number of regulations applicable to public and commercial buildings and facilities aimed at minimizing public exposure to airborne asbestos fibers.<sup>98</sup> The Administrative Code defines asbestos as including asbestiform varieties of chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, and asbestos-containing material as any material or product that contains > 1% of any form or combination of asbestos as determined by EPA-recommended testing methods.<sup>99</sup> The Code also contains penalty provisions, notice and

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<sup>91</sup> See N.Y. ENVTL. CONSERV. 6 NYCRR 360-1.2(b)(11) (2006), *available at* <http://www.dec.ny.gov/regs/4415.html#14635>.

<sup>92</sup> See N.Y. ENVTL. CONSERV. 6 NYCRR 364 (2006), *available at* <http://www.dec.ny.gov/regs/4394.html>.

<sup>93</sup> See 10 NYCRR Part 73, *available at* [http://www.health.ny.gov/regulations/nycrr/title\\_10/part\\_73/index.htm](http://www.health.ny.gov/regulations/nycrr/title_10/part_73/index.htm).

<sup>94</sup> See 10 NYCRR Part 73.5, *available at* [http://www.health.ny.gov/regulations/nycrr/title\\_10/part\\_73/index.htm#s735](http://www.health.ny.gov/regulations/nycrr/title_10/part_73/index.htm#s735).

<sup>95</sup> See 10 NYCRR Part 73.7, *available at* [http://www.health.ny.gov/regulations/nycrr/title\\_10/part\\_73/index.htm#s737](http://www.health.ny.gov/regulations/nycrr/title_10/part_73/index.htm#s737).

<sup>96</sup> N.Y.C. ASBESTOS R. & REGS. tit. 15 § 1 (2011), *available at* [http://www.nyc.gov/html/dep/pdf/air/asbestos\\_rules\\_20110203.pdf](http://www.nyc.gov/html/dep/pdf/air/asbestos_rules_20110203.pdf).

<sup>97</sup> See *id.*

<sup>98</sup> See *generally* TEX. ADMIN. CODE tit. 25 § 295.31 (West 2013).

<sup>99</sup> See TEX. ADMIN. CODE tit. 25 § 295.32 (West 2013).

inspection requirements applicable to building owners, licensing, training, recordkeeping, and registration mandates applicable to asbestos abatement workers and persons engaged in asbestos-related activities, and minimum requirements concerning asbestos abatement practices.<sup>100</sup> Finally, the Administrative Code grants the Texas Department of Health the authority to conduct asbestos abatement inspections.<sup>101</sup>

The Texas Occupations Code similarly defines asbestos as including asbestiform varieties of chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite as well as any material that contains > 1% of the identified varieties of asbestos.<sup>102</sup> The Occupations Code also vests in the Texas Board of Health the authority to adopt regulatory rules governing work practices that may affect asbestos in public buildings, maximum airborne asbestos concentrations with respect to abatement activities, and general performance standards.<sup>103</sup>

The Texas Asbestos Health Protection Rules (TAHPR), aimed at implementing portions of the Texas Occupations Code and limiting public exposure to asbestos, became effective in 1992. The rules define asbestos as including the chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite asbestos varieties in addition to any material containing > 1% or more of any of the listed varieties. The rules likewise define asbestos-containing materials as those materials which contain > 1% of any kind of asbestos or combination of asbestos varieties.<sup>104</sup> The rules also establish licensing and reporting requirements concerning asbestos-related activities.<sup>105</sup>

The Texas Department of State Health Services (DSHS) enforces the TAHPR, which apply to public buildings and to persons engaged in asbestos activities within public buildings for any purpose, as well as federal asbestos regulations and requirements.<sup>106</sup> DSHS also conducts inspections and enforces the asbestos NESHAP in Texas, which is currently set at the EPA level.

## Nevada

Nevada began the process of implementing its own regulatory scheme of asbestos activities in 1987, due to the increasing awareness of the serious health hazards associated with the use of asbestos.<sup>107</sup> Asbestos containing materials in Nevada has largely been found in the state's historical casinos, hotels, privately owned businesses and homes, and chemical plants.<sup>108</sup>

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<sup>100</sup> See generally TEX. ADMIN. CODE tit. 25 § 295 (West 2013).

<sup>101</sup> See TEX. ADMIN. CODE tit. 25 § 295.68 (West 2013).

<sup>102</sup> See TEX. OCC. CODE ANN. § 1954.002 (Vernon 2003 on West, Westlaw through 2013 Sess.).

<sup>103</sup> See generally TEX. OCC. CODE ANN. § 1954 (Vernon 2003 on West, Westlaw through 2013 Sess.).

<sup>104</sup> See TX. Asbestos Health Department Rules (Feb. 2006), available at <http://www.dshs.state.tx.us/asbestos/rules.shtm#tahpr>.

<sup>105</sup> See *id.*

<sup>106</sup> See generally Texas Department of State Health Services, <http://www.dshs.state.tx.us/asbestos/rules.shtm#tahpr>.

<sup>107</sup> See Legislative Comm'n of the Legislative Counsel Bureau, State of Nevada, Asbestos Abatement Activities Bull. No 87-35, March 1987.

<sup>108</sup> See Asbestos Removal Challenges May Hamper Hotel Projects, <http://www.casinocitytimes.com/article/asbestos-removal-challenges-may-hamper-hotel-projects-54160> (last visited Feb. 9, 2004), and Occupations and Job Sites at Risk, <http://www.asbestos.com/states.nevada/> (last visited May 12, 2017).

The southern region of Nevada may be subject to a toxic level of environmental asbestos.<sup>109</sup> Scientists conclude from the higher number of woman and younger individuals dying in the region from malignant mesothelioma that naturally occurring asbestos has likely become a hazard in that area.<sup>110</sup> Thus far, Nevada officials have denied the existence of a toxic level of environmental asbestos.<sup>111</sup>

The Nevada Revised Statutes define asbestos to include, “asbestiform, varieties of chrysotile (serpentine), crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, tremolite, and actinolite.”<sup>112</sup> Under, the Nevada Administrative Code (“Code”), found at § 618.887, a material is considered “asbestos-containing” if it is “determined to contain more than one percent asbestos.”<sup>113</sup> The Code further prohibits exposure to airborne asbestos fibers “in excess of 0.01 asbestos fibers per cubic centimeter of air” within an 8-hour period.<sup>114</sup>

Additionally, the Code establishes requirements governing licensing, training, accreditations, and record retention relating to asbestos abatement work and the disposal of asbestos.<sup>115</sup> Nevada OSHA handles the licensing and project notification enforcement of asbestos projects throughout the state.<sup>116</sup> All projects for the abatement of asbestos must be performed by licensed contractors.<sup>117</sup> To obtain licensing, contractors are required to: have at least two years of experience working on asbestos abatement projects; maintain industrial insurance; successfully complete an initial training course approved by the EPA for contractors; pay a \$200 fee; and, submit the required writings set forth in the Statute.<sup>118 119</sup>

In order to work on an abatement project, workers must: be 18 years of age; complete a training course; and, pay a \$25 licensing fee.<sup>120</sup> In order to supervise on an abatement project, workers must: be at least 18 years of age; have at least four months of experience working in asbestos abatement projects; complete a training course; and, pay a \$50 licensing fee.<sup>121</sup> Supervisors and contractors are required to attend a 5-day training course, while abatement workers are required to attend a 4-hour training course.<sup>122</sup>

Consultants are permitted to perform activities related to the preparation, managing, or coordinating of asbestos abatement projects.<sup>123</sup> To receive licensing consultants must submit an application and pay the license fee of \$100.<sup>124</sup> Consultants may be accredited in the following

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<sup>109</sup> See Deborah Blum, *In Nevada, a Controversy in the Wind*, N.Y. Times, February 9, 2015, at D1.

<sup>110</sup> See *Id.*

<sup>111</sup> See *Id.*

<sup>112</sup> See Nev. Rev. Stat. § 618.750 (2015).

<sup>113</sup> See Nev. Admin. Code § 618.887 (2015).

<sup>114</sup> See *Id.* at § 618.907.

<sup>115</sup> See Nev. Admin. Code §§ 618.910-618.948; see also §§ 444.971- 444.976.

<sup>116</sup> Information obtained from speaking to a representative at the Nevada OSHA office.

<sup>117</sup> See Nev. Admin. Code § 618.9155 (2015).

<sup>118</sup> Required writings include: a written description of protective gear that will be worn by all potentially exposed employees, written medical monitoring program for employees, and a written program monitoring air for projects for the abatement of asbestos.

<sup>119</sup> See *Id.* at §618.916.

<sup>120</sup> See *Id.* at §618.924.

<sup>121</sup> See *Id.* at §618.920.

<sup>122</sup> See 40 C.F.R. § 763, Subpt. E, App. C (2007).

<sup>123</sup> See Nev. Admin. Code § 618.928.

<sup>124</sup> See *Id.* at § 618.927.

disciplines: inspector, management planner, project designer, and monitor. Each discipline has a different job function along with specific accreditation requirements related to experience and training set forth in the Code.<sup>125</sup>

To maintain licensing contractors must follow the requirements set forth in the Code, including: the provision of written notification of any proposed project for asbestos abatement; and ensuring all records for such abatement projects are maintained for at least 30 years.<sup>126</sup> To ensure compliance, Nevada OSHA inspects at least one project a year of each contractor.<sup>127</sup>

Regulations for the disposal of material containing asbestos were adopted by the State Environment Commission.<sup>128</sup> As for the sanitation and disposal of asbestos, the Code requires that friable asbestos and asbestos capable of giving off friable asbestos dust must be wetted with a water and surfactant mixture and stored according to requirements set forth in the code.<sup>129</sup> Friable material containing asbestos is defined as “a substance which can be crumbled pulverized or reduced to powder by hand pressure.”<sup>130</sup> All containers used to dispose asbestos must have a label that conforms to the requirements set forth by the United States Environmental Protection Agency or Occupational Safety and Health Act.<sup>131</sup> The following is an example statement of what must be included on such label, “CAUTION, CONTAINS ASBESTOS FIBERS AVOID OPENING OR BREAKING CONTAINER, BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH.”<sup>132</sup> To prevent damage to the containers and the release of asbestos fibers, vehicles used to transport asbestos must be fully enclosed or covered.<sup>133</sup>

Clark County and Washoe County have their own department of air quality that require notification of asbestos projects over 160 square feet, 260 linear feet, or 35 cubic feet. Air quality throughout the counties in the rest of the state are managed by Region 9 of EPA.<sup>134</sup>

## Illinois

Asbestos products were used in a variety of industries throughout the state of Illinois. Oil refineries and power plants pose the highest risk for exposing individuals to asbestos. Additionally, located within Illinois are several Superfund Sites with asbestos concerns.

The Illinois Administrative Code (within, “Code”) regulates asbestos abatement for public and private schools, and commercial and public buildings in the State of Illinois.<sup>135</sup> The Code defines asbestos as, “the asbestiform varieties of chrysotile, amosite, crocidolite, tremolite,

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<sup>125</sup> See *Id.* at §618.930.

<sup>126</sup> See *Id.* at §618.918.

<sup>127</sup> See Nev. Rev. Stat § 618.830.

<sup>128</sup> See Nev. Rev. Stat. § 618.775.

<sup>129</sup> See Nev. Admin. Code § 444.971, subd. 1.

<sup>130</sup> See *Id.* at § 618.875.

<sup>131</sup> See *Id.* at § 444.971, subd. 2.

<sup>132</sup> See *Id.*

<sup>133</sup> See *Id.* at § 444.971, subd. 3.

<sup>134</sup> Information obtained by speaking to a representative from the Clark County Department of Air Quality.

<sup>135</sup> See 77 Ill. Adm. Code § 855

anthrophyllite, and actinolite.”<sup>136</sup> Material is “asbestos material” if it has more than one percent of asbestos.<sup>137</sup>

Also found in the Code are requirements for licensure and training course approval provisions for asbestos professionals.<sup>138</sup> Contractors are required to: (1) complete an application, (2) pay a \$250 fee, (3) obtain liability insurance, (4) provide the Illinois Department of Health (hereinafter “The Department”) with the requested evidence including: (a) licensed asbestos workers will be employed on all abatement projects, (b) a list of prior contracts for abatement projects, (c) past air monitoring data, (d) written standards operating procedures and employee protection plans, and (e) any derogatory history of asbestos abatement projects.<sup>139</sup> (5) have a minimum of one year in asbestos abatement contracting or supervision.<sup>140</sup> After the successful completion of a contractor’s application an additional \$500 fee will be required to obtain the license and for inclusion on The Department’s list of licensed contractors.<sup>141</sup>

Additionally, the Code list licensure requirements for, asbestos workers, project supervisors, inspectors, management planners, project designers, project managers, and air sampling professionals. Such professionals must: (1) be at least 18 years of age, (2) submit an application that includes two 1” X 1” photographs, (3) meet the certificate accreditation requirements, and (4) the specific requirements for licensure listed for each individual profession.<sup>142</sup> In addition to the above licensing requirements each professional is required to attend a training course outlined within the statute.<sup>143</sup>

In additional to licensing regulations, the Code sets out notification requirements, acceptable work practices and controls applicable to asbestos abatement project activities performed in commercial and public buildings.<sup>144</sup> Two working days prior to the commencement of friable or nonfriable asbestos abatement projects that are between 3 square feet and 160 square feet, the contractor or building owner must submit to The Department notification of the project.<sup>145</sup>

The Code adopts federal standards for the removal, encapsulation, enclosure, repair, and maintenance of asbestos containing building materials.<sup>146</sup> After the project has been cleaned, surfaces in the critical areas are dry, and the area is clear of residue an air sampling must be conducted and the result has to be less than or equal to 0.01 f/cc.<sup>147</sup>

The Code also incorporates requirements specific to local education agencies, which include planning and notification requirements and suitable work practice controls applicable to asbestos abatement project activities performed in public and private schools.<sup>148</sup> Local Education

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<sup>136</sup> See 77 Ill. Adm. Code § 855.20

<sup>137</sup> *Id.*

<sup>138</sup> See 77 Ill. Adm. Code § 855.100; *see also* § 855.110-120

<sup>139</sup> See 77 Ill. Adm. Code § 855.120

<sup>140</sup> *Id.*

<sup>141</sup> *Id.*

<sup>142</sup> See 77 Ill. Adm. Code § 855.100

<sup>143</sup> See 77 Ill. Adm. Code § 855.120

<sup>144</sup> See 77 Ill. Adm. Code § 855.220

<sup>145</sup> *Id.*

<sup>146</sup> See 77 Ill. Adm. Code § 855.220

<sup>147</sup> *Id.*

<sup>148</sup> See 77 Ill. Adm. Code §§ 855.300-520

Agencies (LEA) are required to (1) adhere to training requirements for custodial and maintenance employees, (2) keep records as prescribed in the statute, (3) ensure parents and all employees receive proper notifications regarding asbestos activities, (4) post proper warning labels in areas that contain asbestos building materials, and (5) ensure all management plan requirements are in compliance with the statute.<sup>149</sup> Additionally, school abatement projects are required to have: (a) workplace entry and exit procedures, (b) work area preparation, (c) a worker decontamination enclosure system, (d) a remote decontamination enclosure system, (e) an equipment decontamination enclosure system, and (f) separation barriers.<sup>150</sup> Professionals performing abatement work in schools also must adhere to specific procedures regarding (1) encapsulation and enclosure of asbestos, (2) reestablishing the work area, (2) inspections, (3) clean up/disposal requirements, (4) and use specific materials prescribed in the statute.<sup>151</sup>

In addition to the Code, the Illinois Environmental Protection Agency Asbestos Unit enforces the standards set forth by the National Emission Standards for Hazardous Air Pollutants (NESHAP) during demolition, renovation, and disposal of regulated asbestos.<sup>152</sup> Prior to beginning an asbestos demolition or renovation project, owners and operators subject to NESHAP must submit a \$150 fee along with a Demolition/Renovation/Asbestos Project Notification form to the Illinois EPA.<sup>153</sup> A combined form may be used to send to The Department, City of Chicago, and Cook County when necessary.<sup>154</sup>

Furthermore, Cook County and the City of Chicago have adopted their own asbestos regulations. The Cook County Department of Environmental Control regulates activities within the county that may involve the discharge of asbestos into the air. Cook County defines “asbestos” as “any fiber or mixture containing fiber of hydrated silicate mineral, which, on the basis of its crystalline structure, falls into one of two categories: (1) Pyroxenes (chrysotile fiber) or (2) Amphiboles (crocidolite, amosite, tremolite, actinolite, or anthophyllite fiber).”<sup>155</sup> “Asbestos containing materials” is defined as any material containing more than one percent asbestos.<sup>156</sup>

Asbestos abatement contractors doing business in Cook County, excluding the Chicago region, are required to register with the Cook County Department of Environmental Control.<sup>157</sup> Additionally, Cook County requires a submission of a demolition permit application ten days prior to the start of a demolition project.<sup>158</sup> The application must include an inspection report completed to AHERA/ASHARA standards by an Department certified building inspector.<sup>159</sup> An

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<sup>149</sup> See 77 Ill. Adm. Code § 855.300

<sup>150</sup> See 77 Ill. Adm. Code § 855.370; see also 77 Ill. Adm. Code §§ 855.400-430

<sup>151</sup> See 77 Ill. Adm. Code § 855.390; see also § 855.465; see also § 855.475; see also §§ 855.500-520)

<sup>152</sup> See Asbestos, Illinois Environmental Protection Agency, (2015), <http://www.epa.illinois.gov/topics/air-quality/asbestos/>

<sup>153</sup> *Id.*

<sup>154</sup> *Id.*

<sup>155</sup> See Code of Ordinances of Cook County, Illinois, 30-541, available at [https://library.municode.com/il/cook\\_county/codes/code\\_of\\_ordinances?nodeId=PTIGEOR\\_CH30EN\\_AR\\_TVASRESU\\_S30-541DE](https://library.municode.com/il/cook_county/codes/code_of_ordinances?nodeId=PTIGEOR_CH30EN_AR_TVASRESU_S30-541DE)

<sup>156</sup> *Id.*

<sup>157</sup> *Id.* at §§30-551

<sup>158</sup> *Id.* at §§30-541

<sup>159</sup> *Id.*

asbestos removal permit is also required for all demolition, alteration, or repair of any asbestos-containing structure or structural component.<sup>160</sup>

The City of Chicago also has standards to limit the public's exposure of dust and debris caused by demolition, renovation, alteration, repair, cleaning, or maintenance of certain types of buildings within the City of Chicago.<sup>161</sup> Asbestos exposure is a primary concern for the city since in the past the material was heavily used in building construction.<sup>162</sup> Chicago requires a written notice of an intent to demolish ten working-days before the demolition of any building, facility, or structure within the city.<sup>163</sup> If asbestos abatement work is performed along with a demolition a notice to the city is also required ten working days before the abatement work begins.<sup>164</sup> Demolitions involving residential buildings with two or more units, commercial, or industrial buildings requires the federal asbestos NESHAP form to be completed in addition to the intent to demolish form.<sup>165</sup>

The Chicago Municipal Code prescribes safeguards to be utilized by asbestos professionals to assure the emission of airborne dust is minimal.<sup>166</sup> The Chicago Code also requires the removal of storage tanks or containers before a demolition takes place.<sup>167</sup> Debris disposal must be properly disposed of or recycled at a licensed facility to accept such material.<sup>168</sup> If asbestos abatement is not done prior to demolition all debris will be deemed asbestos containing material and must be disposed of at a facility licensed to accept asbestos containing waste.<sup>169</sup> Finally, the Chicago Code mandates any asbestos abatement work to be performed by a licensed asbestos professional as prescribed in the Code.<sup>170</sup>

## Michigan

Michigan's legislature created the Michigan Occupational Safety and Health Administration in 1974.<sup>171</sup> The Administration was formed to create safer working conditions for

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<sup>160</sup> *Id.*

<sup>161</sup> See Asbestos, Demolition or Renovation, Sandblasting, and Grinding Standards, [https://www.cityofchicago.org/content/dam/city/depts/cdph/environmental\\_health\\_and\\_food/AsbestosdemorenovsandblagrindInfo.pdf](https://www.cityofchicago.org/content/dam/city/depts/cdph/environmental_health_and_food/AsbestosdemorenovsandblagrindInfo.pdf)

<sup>162</sup> *Id.*

<sup>163</sup> See Municipal Code of Chicago, 11-4-2170, available at [http://library.amlegal.com/nxt/gateway.dll/illinois/chicago\\_il/title11utilitiesandenvironmentalprotecti/chapter11-4environmentalprotectionandcon?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:chicago\\_il\\$sanc=JD\\_11-4-2150](http://library.amlegal.com/nxt/gateway.dll/illinois/chicago_il/title11utilitiesandenvironmentalprotecti/chapter11-4environmentalprotectionandcon?f=templates$fn=default.htm$3.0$vid=amlegal:chicago_il$sanc=JD_11-4-2150)

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*

<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

<sup>168</sup> *Id.*

<sup>169</sup> *Id.*

<sup>170</sup> *Id.*

<sup>171</sup> MIOSHA At 30 Years Three Decades of Making a Difference, MIOSHA News (2005), [https://www.michigan.gov/documents/MIOSHA\\_news\\_summer\\_05\\_132659\\_7.pdf](https://www.michigan.gov/documents/MIOSHA_news_summer_05_132659_7.pdf)

Michigan workers.<sup>172</sup> In 1986, the Asbestos Abatement Licensing Act was enacted to protect workers and the public from health threatening asbestos exposure.<sup>173</sup> The Act established the current asbestos program in Michigan, which is discussed below.<sup>174</sup> Shortly thereafter, in 1988, the Asbestos Workers Accreditation Act was enacted to require accreditation and training for asbestos removal workers and providers.<sup>175</sup>

Three agencies in Michigan regulate asbestos: the Michigan Department of Environmental Quality (DEQ), the Michigan Department of Licensing and Regulatory Affairs (DLARA), and the Michigan Department of State Police (MSP).<sup>176</sup>

#### **Michigan Department of Environmental Quality**

The Air Quality Division (AQD), a sector within the Michigan Department of Environmental Quality (DEQ) was delegated authority from the U.S. EPA to enforce the Asbestos National Emission Standards for Hazardous Air Pollutants, also known as, NESHAP in the state of Michigan.<sup>177</sup> The Air Quality Division is responsible for receiving and reviewing notifications of intent to renovate/demolish building structures subject to NESHAP.<sup>178</sup> Under NESHAP, the building owner or contractor must submit the notice to the Air Quality Division ten days prior to the commencing of the project.<sup>179</sup> Such notifications should be sent online by using Michigan's online Asbestos Notification System found at [www.michigan.gov/air](http://www.michigan.gov/air).<sup>180</sup> In addition to reviewing notifications, the Air Quality Division also inspects demolitions and asbestos removal projects to ensure compliance with NESHAP, and commences enforcement actions when a violation has occurred.<sup>181</sup> Beside the Air Quality Division, the Waste Management Division of the DEQ regulates the disposal of asbestos throughout the state.<sup>182</sup>

#### **Michigan Department of Licensing and Regulatory Affairs (DLARA)**

The Occupational Health Division of DLARA puts into effect the Asbestos Abatement Contractors Licensing Act, the Michigan Occupational Safety and Health Act, the Asbestos Workers Accreditation Act, and the Michigan Occupational Safety and Health Act Construction Standard.<sup>183</sup> Requirements in those acts include: standard work practices, training, and project notifications.<sup>184</sup> Additionally, the Construction Standard provides: employees may not be

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<sup>172</sup> *Id.*

<sup>173</sup> *Id.*

<sup>174</sup> *Id.*

<sup>175</sup> *Id.*

<sup>176</sup> *Understanding the Asbestos NESHAP*, Michigan Department of Environmental Quality Air Quality Division, [https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos\\_312899\\_7.pdf](https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos_312899_7.pdf)

<sup>177</sup> *Id.*

<sup>178</sup> *Id.*

<sup>179</sup> *Asbestos NESHAP Program*, Department of Environmental Quality, [http://www.michigan.gov/deq/0,4561,7-135-3310\\_4106-11856--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3310_4106-11856--,00.html)

<sup>180</sup> *Id.*

<sup>181</sup> *Understanding the Asbestos NESHAP*, Michigan Department of Environmental Quality Air Quality Division, [https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos\\_312899\\_7.pdf](https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos_312899_7.pdf)

<sup>182</sup> *Id.*

<sup>183</sup> *Id.*

<sup>184</sup> *Id.*



exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight-hour time weighted average, nor be exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1/f/cc) as averaged over a sampling period of thirty minutes.<sup>185</sup>

The goal of the Michigan Occupational Safety and Health Administration Asbestos Program is to ensure asbestos workers are properly trained and are in compliance with the rules governing asbestos work.<sup>186</sup> The program is also a part of Michigan's DLARA. The program provides the following services: (1) approves asbestos-related training courses, (2) accredits professionals in the asbestos industry, (3) licenses asbestos abatement contractors, (4) processes asbestos abatement project notifications, (5) investigates asbestos-related compliance issues, and (6) reviews AHERA-mandated management plans.<sup>187</sup>

#### **Michigan Department of State Police (MSP)**

The Hazardous Materials and Investigations unit within MSP regulates the shipping and transportation of asbestos by highway.<sup>188</sup>

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<sup>185</sup> Part 602. Asbestos Standards for Construction, 1926.1101(c)

<sup>186</sup> *Asbestos Program Overview*, Department of Licensing and Regulatory Affairs,  
[http://www.michigan.gov/lara/0,4601,7-154-11407\\_15333\\_15369-36193--,00.html](http://www.michigan.gov/lara/0,4601,7-154-11407_15333_15369-36193--,00.html)

<sup>187</sup> *Id.*

<sup>188</sup> *Understanding the Asbestos NESHAP*, Michigan Department of Environmental Quality Air Quality Division,  
[https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos\\_312899\\_7.pdf](https://www.michigan.gov/documents/deq/deq-ead-caap-asbestos_312899_7.pdf)



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