
Hazardous Materials Removal Workers

(O*NET 47-4041.00)

Significant Points

- Working conditions can be hazardous.
- Formal education beyond high school is not required, but government standards require specific types of on-the-job training.
- Good job opportunities are expected, mainly due to the need to replace workers who leave the occupation.

Nature of the Work

Increased public awareness and Federal and State regulations are resulting in the removal of more hazardous materials from buildings, facilities, and the environment to prevent further contamination of natural resources and to promote public health and safety. Hazardous materials typically possess at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity. Hazardous materials removal workers identify, remove, package, transport, and dispose of various hazardous materials, including asbestos, radioactive and nuclear materials, arsenic, lead, and mercury. These workers are sometimes called abatement, remediation, or decontamination workers. Removal workers often respond to emergencies where harmful substances are present.

Hazardous materials removal workers use a variety of tools and equipment, depending on the work at hand. Equipment ranges from brooms to personal protective suits that completely isolate workers from the hazardous material. Because of the threat of contamination, workers often wear disposable or reusable coveralls, gloves, hardhats, shoe covers, safety glasses or goggles, chemical-resistant clothing, face shields, and devices to protect one's hearing. Most workers are also required to wear respirators while working, to protect them from airborne particles or noxious gases. The respirators range from simple versions that cover only the mouth and nose to self-contained suits with their own air supply.

Asbestos and lead are two of the most common contaminants that hazardous materials removal workers encounter. Through the 1970s, asbestos was used to fireproof roofing and flooring, for heat insulation, and for a variety of other purposes. It was durable, fire retardant, resisted corrosion, and insulated well, making it ideal for such applications. Embedded in materials, asbestos is fairly harmless; airborne, however, it can cause several lung diseases, including lung cancer and asbestosis. Today, asbestos is rarely used in buildings, but there are still structures that contain the material that must be remediated. Similarly, lead was a common building component found in paint and plumbing fixtures and pipes until the late 1970s. Because lead is easily absorbed into the bloodstream, often from breathing lead dust or from eating chips of paint containing lead, it can cause serious health risks, especially in children. Due to these risks, it has become necessary to remove lead-based products from buildings and structures.

Asbestos abatement workers and lead abatement workers remove asbestos, lead, and other materials from buildings scheduled to be renovated or demolished. Using a variety of hand and power tools, such as vacuums and scrapers, these workers remove the asbestos and lead from surfaces. A typical residential lead abatement project involves the use of a chemical to strip the lead-based paint from the walls of the home. Lead abatement workers apply the compound with a putty knife and allow it to dry. Then they scrape the hazardous material into an impregnable container for transport and storage. They also use sandblasters and high-pressure water sprayers to remove lead from large structures. The vacuums utilized by asbestos abatement workers have special, highly efficient filters designed to trap the asbestos, which later is disposed of or stored. During the abatement, special monitors measure the amount of asbestos and lead in the air, to protect the workers; in addition, lead abatement workers wear a personal air monitor that indicates the amount of lead to which a worker has been exposed. Workers also use monitoring devices to identify the asbestos, lead, and other materials that need to be removed from the surfaces of walls and structures.

Transportation of hazardous materials is safer today than it was in the past, but accidents still occur. *Emergency and disaster response workers* clean up hazardous materials after train derailments and trucking accidents. These workers also are needed when an immediate cleanup is required, as would be the case after an attack by biological or chemical weapons.

Some hazardous materials removal workers specialize in radioactive substances. These substances range from low-level



Most hazardous materials removal workers are required to wear respirators to protect them from airborne particles.

contaminated protective clothing, tools, filters, and medical equipment, to highly radioactive nuclear reactor fuels used to produce electricity. *Decontamination technicians* perform duties similar to those of janitors and cleaners, but the items and areas they clean are radioactive. They use brooms, mops, and other tools to clean exposed areas and remove exposed items for decontamination or disposal. Some of these jobs are now being done by robots controlled by people away from the contamination site. Increasingly, many of these remote devices are being used to automatically monitor and survey surfaces, such as floors and walls, for contamination.

With experience, decontamination technicians can advance to *radiation-protection technician* jobs and use radiation survey meters and other remote devices to locate and evaluate materials, operate high-pressure cleaning equipment for decontamination, and package radioactive materials for transportation or disposal.

Decommissioning and decontamination workers remove and treat radioactive materials generated by nuclear facilities and power plants. With a variety of handtools, they break down contaminated items such as “gloveboxes,” which are used to process radioactive materials. At decommissioning sites, the workers clean and decontaminate the facility, as well as remove any radioactive or contaminated materials.

Treatment, storage, and disposal workers transport and prepare materials for treatment or disposal. To ensure proper treatment of the materials, laws, typically regulated by the U.S. Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA), require these workers to be able to verify shipping manifests. At incinerator facilities, treatment, storage, and disposal workers transport materials from the customer or service center to the incinerator. At landfills, they follow a strict procedure for the processing and storage of hazardous materials. They organize and track the location of items in the landfill and may help change the state of a material from liquid to solid in preparation for its storage. These workers typically operate heavy machinery, such as forklifts, earthmoving machinery, and large trucks and rigs.

To help clean up the Nation’s hazardous waste sites, a Federal program, called Superfund, was created in 1980. Under the Superfund program, abandoned, accidentally spilled, or illegally dumped hazardous waste that poses a current or future threat to human health or the environment is cleaned up. In doing so, the EPA along with potentially responsible parties, communities, local, State, and Federal authorities, identify hazardous waste sites, test site conditions, formulate cleanup plans, and clean up the sites.

Mold remediation is a new aspect of some hazardous materials removal work. Some types of mold can cause allergic reactions, especially in people who are susceptible to them. Although mold is present in almost all structures and is not usually defined as a hazardous material, some mold—especially the types that cause allergic reactions—can infest a building to such a degree that extensive efforts must be taken to remove it safely. Molds are fungi that typically grow in warm, damp conditions both indoors and outdoors year round. They can be found in heating and air-conditioning ducts, within walls, and in showers, attics, and basements. Although mold remediation

is often undertaken by other construction workers, large scale mold removal is usually handled by hazardous materials removal workers, who take special precautions to protect themselves and surrounding areas from being contaminated.

Hazardous materials removal workers also may be required to construct scaffolding or erect containment areas prior to abatement or decontamination. In most cases, government regulation dictates that hazardous materials removal workers be closely supervised on the worksite. The standard usually is 1 supervisor to every 10 workers. The work is highly structured, sometimes planned years in advance, and team oriented. There is a great deal of cooperation among supervisors and workers. Because of the hazard presented by the materials being removed, work areas are restricted to licensed hazardous materials removal workers, thus minimizing exposure to the public.

Work environment. Hazardous materials removal workers function in a highly structured environment to minimize the danger they face. Each phase of an operation is planned in advance, and workers are trained to deal with safety breaches and hazardous situations. Crews and supervisors take every precaution to ensure that the worksite is safe. Whether they work with asbestos, mold, lead abatement, or in radioactive decontamination, hazardous materials removal workers must stand, stoop, and kneel for long periods. Some must wear fully enclosed personal protective suits for several hours at a time; these suits may be hot and uncomfortable and may cause some individuals to experience claustrophobia.

Hazardous materials removal workers face different working conditions, depending on their area of expertise. Although many work a standard 40-hour week, overtime and shift work are common, especially for emergency and disaster response workers. Asbestos and lead abatement workers usually work in structures such as office buildings, schools, or historic buildings under renovation. Because they are under pressure to complete their work within certain deadlines, workers may experience fatigue. Completing projects frequently requires night and weekend work, because hazardous materials removal workers often work around the schedules of others. Treatment, storage, and disposal workers are employed primarily at facilities such as landfills, incinerators, boilers, and industrial furnaces. These facilities often are located in remote areas, due to the kinds of work being done. As a result, workers employed by treatment, storage, or disposal facilities may commute long distances to their jobs.

Decommissioning and decontamination workers, decontamination technicians, and radiation protection technicians work at nuclear facilities and electric power plants. Like treatment, storage, and disposal facilities, these sites often are far from urban areas. Workers, who often perform jobs in cramped conditions, may need to use sharp tools to dismantle contaminated objects. A hazardous materials removal worker must have great self-control and a level head to cope with the daily stress associated with handling hazardous materials.

Hazardous materials removal workers may be required to travel outside their normal working areas in order to respond to emergencies, the cleanup of which sometimes take several days or weeks to complete. During the cleanup, workers may be away from home for the entire time.

Projections data from the National Employment Matrix

| Occupational Title | SOC Code | Employment, 2006 | Projected employment, 2016 | Change, 2006-16 | |
|---|----------|------------------|----------------------------|-----------------|---------|
| | | | | Number | Percent |
| Hazardous materials removal workers | 47-4041 | 39,000 | 44,000 | 4,400 | 11 |

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

Training, Other Qualifications, and Advancement

No formal education beyond a high school diploma is required for a person to become a hazardous materials removal worker. However, Federal, State, and local government standards require specific types of on-the-job training. The regulations vary by specialty and sometimes by State or locality. Employers are responsible for employee training.

Education and training. Hazardous materials removal workers usually need at least 40 hours of formal on-the-job training. For most specialties, this training must meet specific requirements set by the Federal Government or individual States.

Licensure. Workers who treat asbestos and lead, the most common contaminants, must complete a training program through their employer that meets Occupational Safety and Health Administration (OSHA) standards. Employer-sponsored training is usually performed in-house, and the employer is responsible for covering all technical and safety subjects outlined by OSHA.

To become an emergency and disaster response worker and treatment, storage, and disposal worker, candidates must obtain a Federal license as mandated by OSHA. Employers are responsible for ensuring that employees complete a formal 40-hour training program, given either in house or in OSHA-approved training centers. The program covers health hazards, personal protective equipment and clothing, site safety, recognition and identification of hazards, and decontamination.

In some cases, workers may discover one hazardous material while abating another. If they are not licensed to work with the newly discovered material, they cannot continue to work with it. Many experienced workers opt to take courses in additional types of hazardous material removal to avoid this situation. Mold removal is not regulated by OSHA, but is regulated by each State.

For decommissioning and decontamination workers employed at nuclear facilities, training is most extensive. In addition to obtaining licensure through the standard 40-hour training course in hazardous waste removal, workers must take courses dealing with regulations governing nuclear materials and radiation safety as mandated by the Nuclear Regulatory Commission. These courses add up to approximately 3 months of training, although most are not taken consecutively. Many agencies, organizations, and companies throughout the country provide training programs that are approved by the U.S. Environmental Protection Agency, the U.S. Department of Energy, and other regulatory bodies. Workers in all fields are required to take refresher courses every year to maintain their license.

Other qualifications. Workers must be able to perform basic mathematical conversions and calculations when mixing solutions that neutralize contaminants and should have good physical strength and manual dexterity. Because of the nature of the work and the time constraints sometimes involved, employers

prefer people who are dependable, prompt, and detail-oriented. Because much of the work is done in buildings, a background in construction is helpful.

Employment

Hazardous materials removal workers held about 39,000 jobs in 2006. About 79 percent were employed in waste management and remediation services. Another 5 percent were employed in construction, primarily in asbestos abatement and lead abatement. A small number worked at nuclear and electric plants as decommissioning and decontamination workers and radiation safety and decontamination technicians.

Job Outlook

Employment of hazardous materials removal workers is expected to grow about as fast as average. Good job opportunities are expected because of the need to replace the large number of workers who leave the occupation each year.

Employment change. Employment of hazardous materials removal workers is expected to grow 11 percent between 2006 and 2016, about as fast as the average for all occupations. Since the 1970s, asbestos and lead-based paints and plumbing fixtures and pipes have not been used and much of the remediation stemming from those products has taken place. With the continuing decline in the number of structures that contain asbestos and lead, demand for asbestos and lead abatement workers will be somewhat limited. Some growth, however, will result from the need to abate lead and asbestos from Federal and historic buildings. Mold remediation is a small and previously rapidly growing part of the occupation. However, builders have reduced the mold problem by improving the quality of construction to prevent moisture from entering buildings, limiting job growth for this specialty. Also, as more workers in other occupations, such as painters and heating, ventilation, and air-conditioning workers, are able to perform mold, lead, and asbestos removal on small-scale projects, employment growth of hazardous materials removal workers will continue to be negatively impacted.

Employment of decontamination technicians, radiation safety technicians, and decommissioning and decontamination workers, however, is expected to grow in response to increased pressure for safer and cleaner nuclear and electric generation facilities. Renewed interest in nuclear power production could lead to the construction of additional facilities, resulting in the need for many new workers.

Numerous Superfund projects will require cleanup of hazardous materials waste sites, spurring demand for hazardous materials removal workers. However, employment growth will largely be determined by Federal funding, which has been declining in recent years.

Job prospects. In addition to some job openings from employment growth, many openings are expected for hazardous

materials removal workers because of the need to replace workers who leave the occupation, leading to good opportunities. The often dangerous aspects of the job lead to high turnover because many workers do not stay in the occupation long. Opportunities for decontamination technicians, radiation safety technicians, and decontamination workers should be particularly good as a number of new workers will be needed to replace those who retire or leave the occupation for other reasons.

Lead and asbestos workers will have some opportunities at specialty remediation companies as restoration of Federal buildings and historic structures continues, although at a slower pace. The best employment opportunities for mold remediation workers will be in Southeast, and parts of the Northeast and Northwest, where mold tends to thrive.

These workers are not greatly affected by economic fluctuations because the facilities in which they work must operate, regardless of the state of the economy.

Earnings

Median hourly earnings of wage and salary hazardous materials removal workers were \$17.04 in May 2006. The middle 50 percent earned between \$13.31 and \$22.75 per hour. The lowest 10 percent earned less than \$11.02 per hour, and the highest 10 percent earned more than \$28.45 per hour. The median hourly

earnings in remediation and other waste management services, the largest industry employing hazardous materials removal workers, were \$16.75.

Related Occupations

Asbestos abatement workers and lead abatement workers share skills with other construction trades workers, including painters and paperhangers; insulation workers; and sheet metal workers. Treatment, storage, and disposal workers, decommissioning and decontamination workers, and decontamination and radiation safety technicians work closely with plant and system operators, such as power plant operators, distributors, and dispatchers and water and liquid waste treatment plant and system operators. Police officers and firefighters also respond to emergencies and often are the first ones to respond to incidents where hazardous materials may be present.

Sources of Additional Information

For more information on hazardous materials removal workers in the construction industry, including information on training, contact:

► Laborers-AGC Education and Training Fund, 37 Deerfield Rd., P.O. Box 37, Pomfret, CT 06259.
Internet: <http://www.laborerslearn.org>