



Respiratory Protection and Industrial Hygiene

To most employers, providing “respiratory protection” means obtaining respirators or dust masks and then enforcing their use for workers exposed to airborne contaminants. Unfortunately, this is not always so simple.

Hierarchy of Controls

In safety best practices, and also required by OSHA, is the principle that an employer attempt to provide controls in order of effectiveness. This is known as [The Hierarchy of Controls](#). In preferred order, the control methods are:

- **ELIMINATION:** Change process or find a way to do the process without the hazardous material.
- **SUBSTITUTION:** Substitute a less-hazardous material for the more hazardous one(s).
- **ENGINEERING CONTROLS:** Provide a positive venting system or an enclosed process so employees are not exposed to the material, or by providing another physical protective system.
- **ADMINISTRATIVE CONTROLS:** This would involve such protocols as rotating several different workers into a position that was exposed to a hazardous material over a work shift to minimize any one worker’s exposure to the hazardous substance over time.
- **PERSONAL PROTECTIVE EQUIPMENT (PPE):** Provide such things as respirators and dust masks that employees wear to protect themselves against the hazardous substances. **As noted above, although PPE is often the first control used by employers, it is important to note that OSHA (and good safety practice) considers PPE to be the least desirable and effective method of control, and the others should be attempted first.** If respirators are selected for protection, the employer must then implement an [OSHA Respiratory Protection Program](#).



Hazard Assessment

In any kind of safety work, first the nature of the hazard must be recognized and assessed as to its potential to cause harm. Then, using the hierarchy of controls, the most effective protection method(s) can be implemented.

With respiratory hazards, unfortunately this assessment is rarely simple or obvious. Sometimes a strong or unpleasant odor may be only irritating, and in other cases, something that can’t be detected at all may be deadly. So, how can a business owner determine if something is just annoying, or is an actual danger to the workers?

The first step is to obtain Safety Data Sheets (SDS) on all chemicals and substances used in the workplace. This can also include byproducts such as welding smoke and fumes.

In almost all cases, and generally required by OSHA, a formal hazard assessment needs to be conducted. For airborne contaminants, this usually means an industrial hygiene air survey. These typically can only be conducted by a Certified Industrial Hygienist (CIH) using specialized sampling equipment and laboratory analysis.* In some cases, OSHA will accept “objective data” that control methods already in use to reduce the contaminant to acceptable levels, but this can be technical and difficult.

Based on the CIH’s findings, an employer may find the levels are acceptable and that nothing else needs to be done. Or, they might find that control methods must be implemented per the Hierarchy of Controls listed above.

One of many ways to locate qualified industrial hygienists to conduct air quality assessments is through the American Industrial Hygiene Association. They have an easy to use search engine on their website here: <https://www.aiha.org/about-ih/Pages/Find-an-Industrial-Hygienist.aspx>

Also note that free onsite consultation is available upon request from Federal OSHA and OSHA state plans to those employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. The consultation service is delivered by state government agencies or universities employing professional safety consultants and health consultants. Comprehensive assistance includes an appraisal of work practices and environmental hazards of the workplace and all aspects of the employer’s present job safety and health program. In many cases limited industrial hygiene work may be performed including air quality assessments. OSHA Consultation Services and Contact Information by State can be found here: <https://www.osha.gov/dcsp/smallbusiness/consult.html>

Safety Zone

Respirators

As noted in the introduction, if it is determined that none of the Hierarchy of Controls can be implemented except respirators, it is not permissible to simply obtain respirators and give them to employees to wear.

Respiratory protection is a complex and technical subject, and as the OSHA Respiratory Protection Standard (RPP) is equally complex and technical, efforts to utilize the other control methods of the Hierarchy are well worth the effort.

Respirators are used in two basic ways:

1. They can be used to filter contaminants in the air such as air-purifying cartridges and canisters.
2. Other respirators protect by supplying clean, breathable air from another source.

But if respirators are to be used even on a voluntary basis**, an employer is required to implement a written respiratory protection program. Among other requirements, some of the key requirements include:

- Procedures for the proper selection of respirators for use in the workplace
- Medical evaluations of employees required to use respirators
- Fit testing procedures for tight-fitting respirators
- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators
- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations
- Training of employees in the proper use of respirators including putting on and removing them, any limitations on their use, and their maintenance
- Procedures for regularly evaluating the effectiveness of the program.

A summary with general guidance and links to other respiratory protection resources is provided by OSHA's Salt Lake Technical Center: <https://www.osha.gov/SLTC/respiratoryprotection/guidance.html>.

For small businesses, OSHA provides guidance here: <https://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf>.

The [AmTrust Loss Control website](#) also provides valuable [resources](#) under the Respiratory Protection Program (RPP) section, including a sample RPP and other links to RPP information. Also, AmTrust policyholders can access the [training and informational videos](#) free of charge. Simply click on the "Get Access" button and complete the form. There are several RPP/respirator and similar videos available.

*Voluntary use of respirators does not require the full RPP program implementation, but certain elements of it are required. (1910.134(c)(2) and Appendix D)

** Industrial Hygiene, as defined in the [American Board of Industrial Hygiene web site](#) is: "Industrial hygiene is the science of protecting and enhancing the health and safety of people at work and in their communities. Health and safety hazards cover a wide range of chemical, physical, biological and ergonomic stressors. Those dedicated to anticipating, recognizing, evaluating and controlling those hazards are known as Industrial Hygienists. They are professionals dedicated to the well-being of people – at work, at home and in the community."

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