

## Respirators Filter Out Particulates that Endanger the Health of Workers

*This issue of Cintar Connection is Part Three, the final part, in our Safety Series. Over the past two issues, we introduced our readers to a selection of OSHA's Most-Cited Standards. In this issue, we will discuss Respiratory Protection, OSHA's May 2018 Beryllium Standard enforcement and OSHA's Crystalline Silica Standard. If you have missed any of our newsletters, they can be viewed at [cintar.com/publications](http://cintar.com/publications).*

### Respiratory Protection

Respiratory Protection Standard violations appear on OSHA's Most Cited list year after year, much like most of the standards on the list. But what makes this one different from some of the others is the hazard involved may be difficult to see or avoid without proper protection.

Respirators filter air, purify air, or supply clean air. When a respirator is necessary, the hazard, its airborne concentrations, and the duration of exposure need assessed by an experienced safety professional or an industrial hygienist. Then, a written respiratory protection plan should be implemented with site-specific procedures. In 2017 almost 500 citations were issued due to a missing or outdated written plan (1910.13(c)(1)). OSHA also requires the use of a NIOSH-certified respirator, and over 200 citations were issued for the respirator requirement (1910.134(d)(1)(iii)).

Respirators protect the worker from particles, chemicals and gas vapors. Masks and cartridges (filters) protect workers from a multitude of hazards but each cartridge serves as protection for only select hazards. Masks and cartridges cannot be used interchangeably. The site-specific Respiratory Protection Plan should indicate which type of protection is needed.

### Beryllium Standard

OSHA began enforcing its final rule on occupational exposure to beryllium on May 11, 2018 for the general, construction, and shipyard industries.

In 2016 OSHA conducted an informational public hearing and reopened the "Notice of Proposed Rulemaking on Occupational Exposure to Beryllium and Beryllium Compounds" docket. At the time, OSHA was enforcing a 40-year-old permissible exposure limit (PEL). The limits were too high to protect workers' health. In January 2017 the final rule was announced and took effect in May 2017. The compliance date was originally slated for March 2018 and was extended to May 2018. The dates for providing changing rooms and showers (March 11, 2019) and engineering controls (March 10, 2020) are unchanged.

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Beryllium is a metal commonly used in alloys with aluminum, copper, iron and nickel. It is known for being strong, light and nonmagnetic with a high melting point. Beryllium becomes harmful as an airborne particulate. When inhaled, beryllium descends into the lungs triggering an immunologic response known as beryllium sensitization, which leads to beryllium disease. Some of beryllium disease's symptoms include lung scarring, breathing complications, fatigue, loss of appetite, dry cough and fever. No cure exists for beryllium disease, but treatments exist to slow down the progression of the disease and to improve symptoms.

The Standard decreases the PEL to  $0.2 \mu\text{g}/\text{m}^3$  of air, averaged over 8-hours. The short term exposure limit decreased to  $2.0 \mu\text{g}/\text{m}^3$  of air for a 15-minute sampling period. In addition, employers are required to use engineering and work practice controls to limit exposure to beryllium, as well as availability of medical exams and medical removal protection benefits.

### **Crystalline Silica Standard**

In 2016, OSHA's Crystalline Silica Standard went into effect. The final rule was separated into two standards. One for the Construction Industry and one for General Industry and Maritime.

Although both went into effect almost two years ago, the 'comply by' date for General Industry and Maritime went into effect June 23, 2018. The Standard's Medical Surveillance compliance date is June 23, 2020, and its dust control for hydraulic fracturing compliance date is June 23, 2021.

Crystalline silica is a mineral found in the Earth's crust with the most common form being quartz. Soil, sand, granite and many other minerals contain silica. Respirable silica is 100x smaller than a grain of sand.

Respirable silica dust particles can cause silicosis. Silicosis is a lung disease that creates scarring in the lungs. It can also cause lung cancer and other respiratory diseases. The three types of silicosis are chronic/classic (the most common), accelerated and acute. Each is associated with the degree of exposure to respirable silica. With lower exposures the onset of symptoms is slower over time. Therefore, symptoms may not be obvious at first. Symptoms for all three types include shortness of breath (more severe as exposure increases), fatigue, chest pain, weight loss, and death. Silicosis is incurable.

The Standard (1910.1053) establishes two levels for silica exposure averaged over an 8-hour day. First, an action level for exposure at or above  $25 \mu\text{g}/\text{m}^3$  requires assessment of the employees' exposure. Second, a permissible exposure limit of  $50 \mu\text{g}/\text{m}^3$  requires employees to be protected from respirable crystalline silica exposure.

In addition to limiting exposure, the Standard requires employers to implement a written exposure control plan, use dust controls and safer work methods, provide respirators, offer/maintain records of medical exams and silica exposure, and train workers.

### **Wrap - Up**

Our Safety Series was created in response to a high interest in our previous Newsletters' informative safety awareness. Safety is Cintar's Number 1 priority, and we encourage our clients to create and maintain a safe work environment for their coworkers and visitors.



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