



NPCE

National Precast Concrete Association

precast.org

Permissible Exposure Limits and Air Quality

What are Permissible Exposure Limits (PELs)?

Permissible Exposure Limits (PELs) are regulatory limits on the concentration of hazardous substances in the air.

- OSHA considers these to be outdated and has begun revising them (silica and beryllium have been redone)
- Based on 8-hour time weighted average (TWA) exposure.
- When exposure is above a PEL, controls to limit exposure must be implemented.
- May include skin exposure designations.

PELs in the Precast Industry

With the silica rule being revised in the recent past, most of the industry attention on PELs have been devoted to that hazard.



OSHA silica standard: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1053>

Repairs and modification of precast structures as well as sandbasting can expose employees to respirable silica. The PEL for silica is 50 $\mu\text{g}/\text{m}^3$ (microgram per cubic meter).

PELs in the Precast Industry

OSHA has a PEL for respirable Portland cement. Exposure in most plants should be limited by engineering controls.



Fugitive emissions from batch plants as well as mixing patch material could increase exposure. The PEL for respirable Portland Cement is 5 mg/m³ (milligram per cubic meter).

PELs in the Precast Industry

Most form oils can fall into one of two PELs, particulates not otherwise regulated (PNOR) or vegetable oil mists.



Spray systems can put form oil into the air. The PELs for PNOR and respirable vegetable oils are 5 mg/m³ (milligram per cubic meter).

PELs in the Precast Industry

Respirable dust is also regulated by OSHA. This is any dust that can penetrate into the gas-exchange region of the lungs.



Yard conditions and composition are major factors for exposure. Water dust suppression is often used to limit exposure. The PEL for respirable dust is 5 mg/m³ (milligram per cubic meter).

PELs in the Precast Industry

The process of welding gives off fumes considered to be hazardous.



Different welding processes can expose employees to more specific hazards in the fumes. The PEL for nonspecific welding fumes is 5 mg/m³ (milligram per cubic meter).

PELs in the Precast Industry

The beryllium PEL has recently been updated by OSHA. Respirable beryllium exposures in the precast industry is usually limited to coal slag blasting and slag admixtures.



Beryllium exposures are some of the highest restrictions by OSHA. The PEL for respirable beryllium is $5 \mu\text{g}/\text{m}^3$ (microgram per cubic meter).

Employer Testing

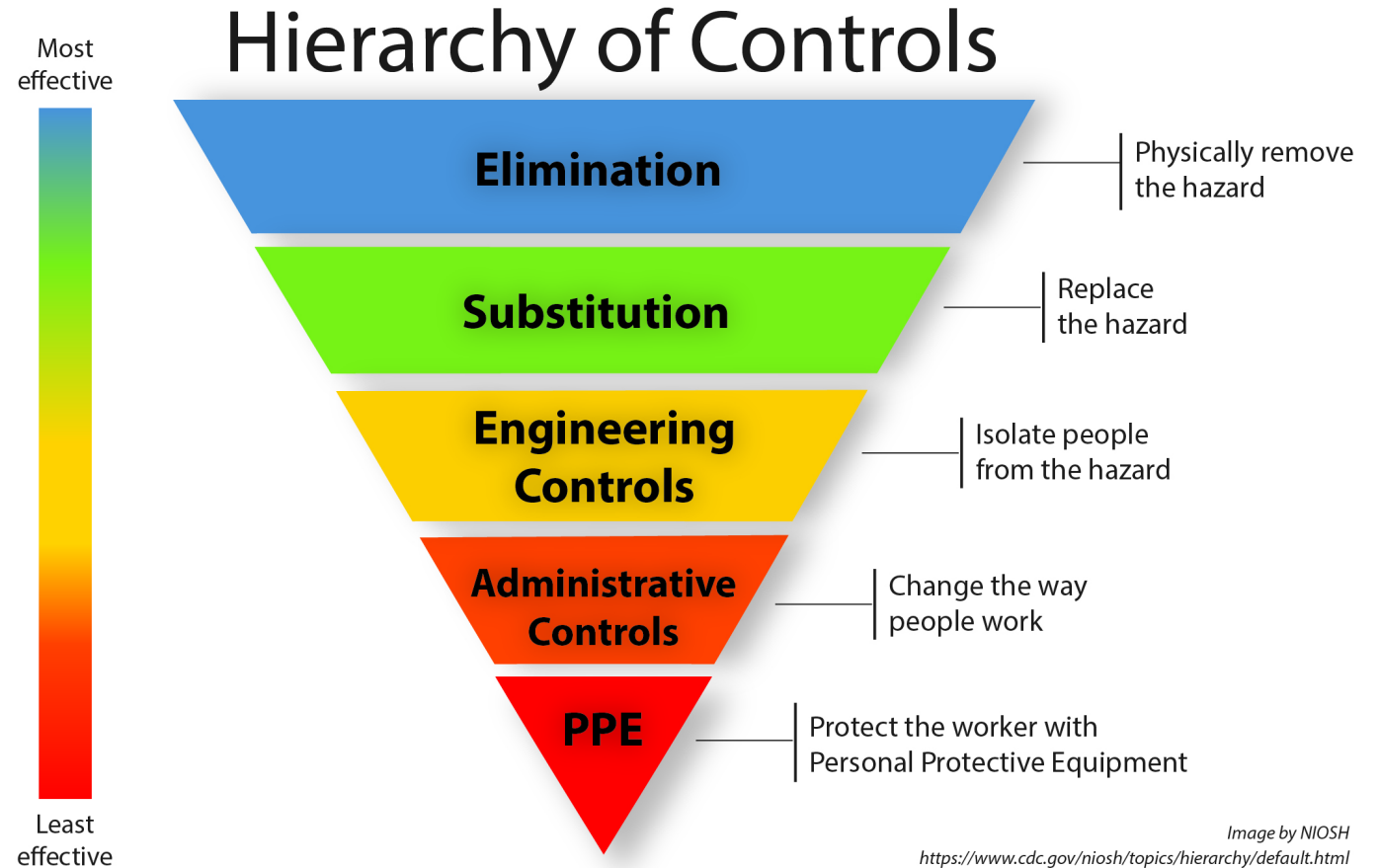
There are different methods that can be utilized to test exposures.

- Labs will rent equipment with testing media and analyze the results of inhouse testing.
- Industrial hygienists can be contracted to conduct testing.
- OSHA will conduct testing as part of the rigorous worksite analysis if an employer enrolls in the Voluntary Protection Program.



Controls

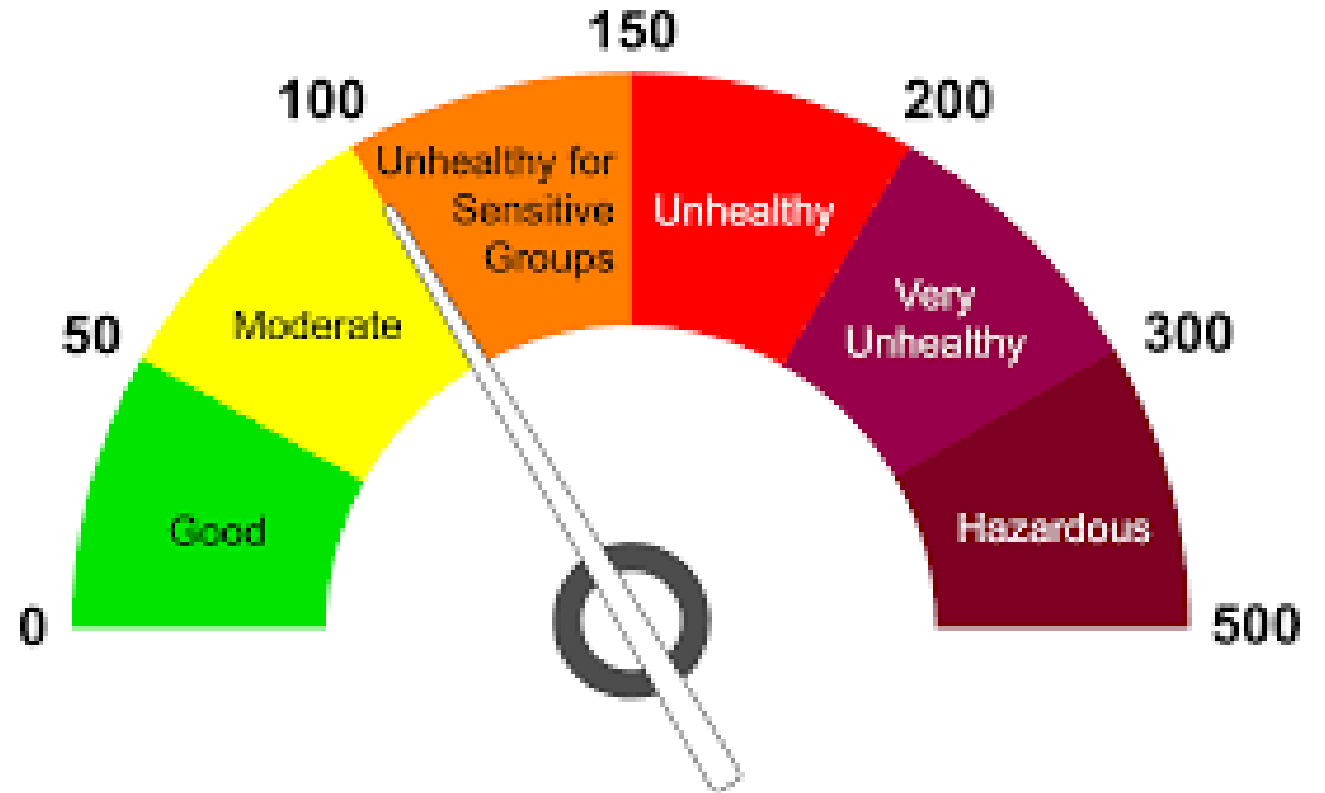
Controls can be implemented to reduce exposures to respirable hazards. Looking at what hazards are present, and the ways employees are exposed can show you where controls can be implemented.



What is Air Quality?

Air Quality is the measure of how clean or polluted the air is.

- It is measured by the Air Quality Index (AQI).
- The higher the number in AQI the more contaminant in the air.



Air Quality as a Hazard

Wildfires are a huge impact to the AQI. Winds can carry the smoke across states and even countries. Multiple states have introduced safety regulations based on AQI, and the general duty clause of OSHA is often brought up in conjunction.



Air Quality Controls

Please check your state requirements regarding air quality safety. The best controls for high AQI are to eliminate exposure.

This is not always possible, so limiting exposure time, providing space in filtered environments to work, and using respirators can be utilized.





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