



Find health and safety solutions for manganese hazards in construction.

Airborne particles may present invisible hazards for construction workers involved in:



Welding



Grinding



Cutting



Polishing



These processes may create fumes and hazardous particles that contain **manganese**—an element with the potential to **damage the lungs and central nervous system** if workers are overexposed.



While useful as a material that adds durability to steel, or fumes over time which **can potentially adversely affect their health** if not controlled by ventilation, work practices, or if workers don't wear appropriate personal protective equipment (PPE).

Understand manganese exposure limits.

While US Federal OSHA established a permissible exposure limit (PEL) for manganese exposure in the 1970s, it's beneficial to take safety precautions beyond these regulations. Forward-thinking construction companies also consider the ACGIH® guidelines, which include a threshold limit value (TLV®) significantly lower than what's required by law.

ACGIH® lowered its manganese TLV in 2012 in response to studies showing potential health risks for workers exposed to airborne manganese. Common construction activities, like welding and grinding, may produce manganese levels exceeding the TLV—especially indoors¹.

Help reduce manganese exposure levels and demonstrate your commitment to worker health and safety with proven respiratory PPE solutions.

OSHA Permissible exposure limit (PEL):
5.0 mg/m³

ACGIH threshold limit value (TLV):
0.02 mg/m³

This is a graphical illustration constructed by 3M for the estimated annual dose. The illustration is based on certain important assumptions. Learn more at: [3M.com/respmanganese](https://www.3m.com/respmanganese).

¹Flynn MR, Susi P. Manganese, iron, and total particulate exposures to welders. J Occup Environ Hyg. 2010 Feb; 7(2):115-26. doi: 10.1080/15459620903454600. PMID: 20013450.

Not all respirators are rated to provide the same amount of protection.

Use the guide below to help determine what respirator options are right for your work environment.

US Federal OSHA Assigned Protection Factor (APF)	10	25	1000
<i>If you are referring to OSHA 29 CFR 1910.134 Table 1 Find your APF</i>	 8214	 M-307	 M-407
<i>3M™ Half Facepiece respirators can be combined with a variety of particulate filters with optional nuisance level acid gas and organic vapor relief. Please visit www.3M.com to find options.</i>	 6500 QL	 9100 MP	 M-409 SG
<i>If you are doing an objective or scheduled assessment Find your MUC</i>	 HF-800	 When used as part of an approved PAPR or supplied air respirator system.	

Occupational Exposure Limit		Maximum Use Concentration (MUC)		
Manganese	PEL 5 mg/m³*	50 mg/m³	125 mg/m³	5000 mg/m³***
	TLV 0.02 mg/m³**	0.2 mg/m³	0.5 mg/m³	20 mg/m³

* US Federal OSHA ceiling exposure limit. If you are in an area under the jurisdiction of a state OSHA plan, consult local standards for current OSHA exposure limits.
** ACGIH 8-hour TWA limit for respirable manganese. TLV-TWA limit (8hr) for inhalable manganese is 0.1 mg/m³
*** NIOSH 1994 Immediately Dangerous to Life or Health Concentrations (IDLH) Value is 500 mg/m³.
Always read and follow all User Instructions.