(CURRENT RULE)

437-002-0288 Health Protection and Ventilation – General

(1) When welding or cutting operations are being performed on the following materials (Table OR Q 1), the protective measures indicated are required unless atmospheric samples taken in the welder's breathing zone indicate that the concentration does not exceed the limits specified in Division 2/Z, OAR 437-002-0382, Oregon Rules for Air Contaminants.

(2) Nearby workers shall be afforded equivalent, effective, protection from these dangerous fumes.

Table OR Q-1

Material	*Condition*	*Protective Measures*
Manganese	*Confined Space*	*Airline Respirator or Local Exhaust Ventilation*
Manganese	*Indoors*	*Fume Respirator or Local Exhaust Ventilation*
Zinc	*Confined Space*	*Airline Respirator or Local Exhaust Ventilation*
Zinc	*Indoors or Outdoors*	*Fume Respirator or Local Exhaust Ventilation*
Lead	*Confined Space*	*Airline Respirator or Local Exhaust Ventilation*
Lead	*Indoors or Outdoors*	*Fume Respirator or Local Exhaust Ventilation*
Lead in Immediate Vicinity	*Other workers*	*Local Exhaust or Airline Respirator*
Cadmium (in or coating base metals)	*Confined Space or Indoors*	*Airline Respirator or Local Exhaust Ventilation*
Cadmium (in or coating base metals)	*Outdoors*	*Fume Respirator*
Cadmium (in filler metals)	*Confined Space*	*Local Exhaust and Airline Respirator*
Mercury	*Confined Space or Indoors*	*Airline Respirator or Local Exhaust Ventilation*
Mercury	*Outdoors*	*Approved Respirator*
Beryllium	*Confined Space*	*Airline Respirator or Local Exhaust Ventilation*
Manganese	*Confined Space*	*Airline Respirator or Local Exhaust Ventilation*
Beryllium	*Indoors or Outdoors*	*Airline Respirator and Local Exhaust Ventilation*
Beryllium	*Other Workers*	*Local Exhaust or Airline Respirator in Immediate Vicinity*
Fluorine Compounds (Fluxes)	*Indoors or Outdoors*	*Fume Respirator or Comp. Local Exhaust Ventilation*

(edited DRAFT for 10/2019 meetings)

437-002-0288 Additional General Health Protections

(1) Engineering controls, including local exhaust ventilation, must be the primary control measure for indoor workplaces, when feasible. Use respiratory protection as a control measure when engineering controls are not feasible or are insufficient to protect employees to permissible exposure levels.

(2) When welding, cutting, or grinding operations are performed on or with the materials listed in Table OR Q-1, the protective measures indicated are required unless air monitoring samples confirm that the permissible exposure limits specified in Division 2/Z, OAR 437-002-0382, Oregon Rules for Air Contaminants are not exceeded.

(3) For materials with substance-specific rules, employers must follow all applicable requirements in those rules.

(4) Nearby workers with potential exposure to these air contaminants must also be provided with effective protection.

TABLE OR Q-1 General protective measures		
Material	***Condition***	***In addition to the protective measures from1910.252 (c):***
Beryllium	*Follow applicable requirements in **Subdivision 2/Z, Beryllium***	
Cadmium	*Follow applicable requirements in **29 CFR 1910.1027 Cadmium***	
Chromium	*Follow applicable requirements in **29 CFR 1910.1026 Chromium (VI)***	
Fluorine Compounds (Fluxes)	*Indoors or Outdoors*	*Local Exhaust Ventilation or Appropriate Respirator*
Lead	*Follow applicable requirements in **29 CFR 1910.1025 Lead***	
Manganese	*Local Exhaust Ventilation or Appropriate Respirator Also, see **OAR 437-002-XXXY***	
Mercury	*Confined Space or Indoors*	*Local Exhaust Ventilation or Appropriate Respirator*
Mercury	*Outdoors*	*Appropriate Respirator*
Zinc	*Confined Space or Indoors*	*Local Exhaust Ventilation or Appropriate Respirator*
Zinc	*Outdoors*	*Appropriate Respirator*

NOTE: *The requirements of the Respiratory Protection Standard (1910.0134) apply to all respirator use referenced in OAR 437-002-0288, Table OR Q-1.*

(edited DRAFT for 10/2019 meetings)

OAR 437-002-XXXY Manganese

Table OR Q-2 describes levels of respiratory protection for specific welding-related tasks that may be relied upon, within the duration of time specified, to prevent exposure to Manganese above the Permissible Exposure Limit (PEL) listed in Division 2/Z, OAR 437-002-0382, Oregon Rules for Air Contaminants.

1) The guidelines in Table OR Q-2 may be used as an alternative to air monitoring for Manganese exposure, under the following conditions:

a) *The employer must provide respiratory protection with the Assigned Protective Factor (APF) based on the type of welding-related task and the expected duration of that task. (See descriptions of tasks in 437-002-XXXZ.)*

b) *If the duration of the task reaches the upper time limit for the APF listed, then the employer must either:*
   A) End the exposures for that shift, or
   B) Provide respiratory protection with the higher APF listed in the Table for any additional performance of that task during that shift.

2) If, during the course of a single work shift, an employee will perform more than one task listed in Table OR Q-2, the employer must add together the anticipated actual duration of all tasks and provide the respiratory protection with the most protective Assigned Protective Factor for the total duration for all tasks performed.

NOTES:
EXAMPLE #1: The employer anticipates 60 minutes of "Grinding tasks related to welding" and 90 minutes of FCAW during an employee's work shift. Although both of these tasks, performed individually for the specified time periods would fall within the APF-10 column for respiratory protection, adding 90 + 60 minutes together = 150 total minutes. For FCAW, exposures above 120 minutes fall in the APF -25 column. Therefore, to meet the conditions for the exemption from air monitoring for Manganese, the employer would be expected to provide the APF -25 level of respiratory protection for the duration of both of the combined tasks.

EXAMPLE #2: The employer anticipates 10 minutes of "Grinding tasks related to welding" and 30 minutes of "Hand-held torch cutting" during a work shift. Although the grinding tasks, if done alone for the specified time would be below the threshold for the APF-10 column of respiratory protection, adding 10 + 30 minutes together = 40 total minutes. The combined duration of 40 minutes places both the hand-held torch work and the grinding tasks within the APF-10 column. Therefore, to meet the conditions for the exemption from air monitoring for Manganese, the employer would be expected to provide the APF-10 level of respiratory protection for the duration of both of the combined tasks.

TABLE OR Q-2 for Manganese		
Welding, cutting or grinding tasks	***Minimum Assigned Protective Factor (APF) for respiratory protection*** *when performing the task listed within the range of times shown during a single work shift.*	
	APF = 10	***APF = 25***
Carbon Arcing	*5 minutes -- 60 minutes (1 hr.)*	*> 60 minutes*
Flux Core Arc Welding (FCAW) or MIG-flux core welding	*15 minutes -- 120 minutes (2.0 hrs.)*	*> 120 minutes*
Gas Metal Arc Welding (GMAW) or MIG-solid wire welding	*30 minutes -- 270 minutes (4.5 hrs.)*	*>270 minutes*
Gas Tungsten Arc Welding (GTAW) or Tungsten Inert Gas (TIG) welding	*150 minutes (2.5 hrs.) or more*	*N/A*
Grinding Tasks directly related to the Welding process	*15 minutes -- 180 minutes (3 hrs.)*	*> 180 minutes*
Hand-Held Torch Cutting	*15 minutes -- 150 minutes (2.5 hrs.)*	*> 150 minutes*
Hand-Held Plasma Cutting	*30 minutes -- 300 minutes (5 hrs.)*	*> 300 minutes*
Stick Metal Arc Welding (SMAW)	*10 minutes -- 90 minutes (1.5 hrs.)*	*> 90 minutes*

NOTES for Table OR Q-2:

- *The symbol ">" means "greater than" the number of minutes that follow it.*
- *See descriptions of the tasks included in OAR 437-002-XXXZ.*
- *Assigned Protective Factor (APF) is defined in 1910.0134 Respiratory Protection.*
- *Estimated exposures to Manganese within these guidelines are calculated using a more protective exposure target of 0.02 mg/m3.*