



# Oregon

Kate Brown, Governor

Department of Consumer and Business Services  
Oregon Occupational Safety & Health Division (Oregon OSHA)  
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January 30, 2020

[Text of changes](#)

## Oregon OSHA's Proposal to Reduce Manganese Permissible Exposure Limit; Clarifies, Cross-References Welding Rules with Other Standards Including Confined Spaces

March 26th Public hearing canceled/comment period still open. [See details here](#)

### Public Hearings Scheduled for:

<u>Date</u>	<u>Time</u>	<u>Location</u>
Feb. 20, 2020	1:30 pm	Oregon OSHA Portland Field Office 16760 SE Upper Boones Ferry Rd Tigard, OR 97224
Mar. 4, 2020	10:00 am	Oregon OSHA Eugene Field Office 1500 Valley River Drive Eugene, OR 97401
Mar. 26, 2020	10:00 am	Oregon OSHA Bend Field Office 1230 NE 3 <sup>rd</sup> St, Suite A-115 Bend, OR 97701

This rulemaking reduces Oregon OSHA's permissible exposure limit (PEL) for manganese compounds and fume (as Mn, C.A.S. # 7349-96-5) in the Air Contaminants rules for general industry (Subdivision 2/Z), construction (Subdivision 3/Z), and agriculture (Subdivision 4/Z). The proposed PEL is 0.1 mg/m<sup>3</sup>, as an 8-hour time-weighted average; and retains the Ceiling Limit of 5 mg/m<sup>3</sup>. This rule-making was initiated as a result of the work of two advisory committees. First, Oregon OSHA established a **Permissible Exposure Limits (PEL) Advisory Committee** -- comprised of occupational health professionals from various public and private entities throughout our state -- to identify hazardous substances (or physical hazards) with existing permissible exposure limits that were considered to be under-protective and to determine where serious exposures may be occurring in Oregon. This group selected manganese as a priority substance because of broad exposures to workers in Oregon across a wide range of industries and due to its potential for adverse health effects. In support of these concerns, the National Institute of Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) have both recommended significantly more protective exposure levels or threshold values for manganese than the current Oregon OSHA (and federal OSHA) "Ceiling Limit" of 5 mg/ m3.

Oregon OSHA subsequently established the **Manganese PEL Advisory Committee**. Because manganese exposures in Oregon are primarily linked to welding fume, the committee was comprised of representatives from small and large business that perform welding and other hot work activities as part of their operations. In addition, consultants who work with these firms, and representatives from manufacturing, construction, labor, and associations representing potentially affected business groups were asked to participate to help determine an appropriate PEL for manganese. During these meetings, conducted over a period of about three years, the advisory committee members made numerous recommendations including one to cross-reference the requirements of the Subdivision 2/Q Welding, Cutting and Brazing rules with other related rules such as Oregon OSHA's Confined Spaces rules (OAR 437-002-0146), our Oregon-initiated Personal Protective Equipment rules for general industry (OAR 437-002-0134), and the general industry Respiratory Protection Standard (1910.134). They regularly reviewed and offered suggestions that were incorporated into the proposal including ways to minimize any fiscal impact to their industries. Oregon OSHA's technical staff also took the opportunity to clarify and simplify the Oregon-initiated rules that supplement the federal OSHA 1910.252 General Requirements protections in Subdivision 2/Q.

This effort also resulted in the creation of three new rules to supplement the requirements in Subdivision 2/Q: OAR 437-002-0279, Additional Oregon Confined Space Requirements, OAR 437-002-0281, Manganese (includes a new Table OR Q-2.), OAR 437-002-0299, Definitions.

Please visit our web site [osha.oregon.gov](http://osha.oregon.gov) Click 'Rules and laws' in the Common resources column and view our proposed rules, or select other rule activity from this page.

***When does this happen:*** Adoption tentatively will be in June 2020.

***To get a copy:*** Our web site – [osha.oregon.gov](http://osha.oregon.gov) Rules and laws, then, Proposed rules  
Or call 503-947-7449

***To comment:*** Department of Consumer and Business Services/Oregon OSHA  
350 Winter Street NE  
Salem OR 97301-3882  
E-mail – [tech.web@oregon.gov](mailto:tech.web@oregon.gov)  
Fax – 503-947-7461

***Comment period closes:*** **May 4, 2020**

***Oregon OSHA contact:*** **Kathleen Kincade, Central Office @ 503-947-7452**  
**or email at [Kathleen.kincade@oregon.gov](mailto:Kathleen.kincade@oregon.gov)**

Note: In compliance with the Americans with Disabilities Act (ADA), this publication is available in alternative formats by calling 503-378-3272.

Secretary of State  
**NOTICE OF PROPOSED RULEMAKING HEARING\***

A Statement of Need and Fiscal Impact accompanies this form.

Department of Consumer and Business Services/Oregon OSHA

OAR 437

Agency and Division

Administrative Rules Chapter Number

Heather Case

350 Winter Street NE Salem OR 97301-3882

503-947-7449

Rules Coordinator

Address

Telephone

**RULE CAPTION**

Reduces manganese permissible exposure limit; clarifies, cross-references welding rules with other standards including confined spaces.

February 20, 2020	1:30 pm	Oregon OSHA Portland Field Office 16760 SE Upper Boones Ferry Rd Tigard, OR 97224	Heather Case
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March 26, 2020	10:00 am	Oregon OSHA Bend Field Office 1230 NE 3 <sup>rd</sup> St, Ste A-115 Bend, OR 97701	Heather Case

Hearing Date

Time

Location

Hearings Officer

*Auxiliary aids for persons with disabilities are available upon advance request.*

**RULEMAKING ACTION**

**Adopt:** OAR 437-002-0279, 437-002-0281, 437-002-0299

**Amend:** OAR 437-002-0280, 437-002-0282, 437-002-0283, 437-002-0284, 437-002-0285, 437-002-0286, 437-002-0287, 437-002-0288, 437-002-0297, 437-002-0298, 437-002-0382, 437-003-1000, 437-004-9000

ORS 654.025(2) and 656.726(4)

Stat. Auth.

Other Authority

ORS 654.001 through 654.295

Stats. Implemented

## RULEMAKING SUMMARY

This rulemaking reduces Oregon OSHA's permissible exposure limit (PEL) for manganese compounds and fume (as Mn, C.A.S. # 7349-96-5) in the Air Contaminants rules for general industry (Subdivision 2/Z), construction (Subdivision 3/Z), and agriculture (Subdivision 4/Z). The proposed PEL is 0.1 mg/m<sup>3</sup>, as an 8-hour time-weighted average; and retains the Ceiling Limit of 5 mg/m<sup>3</sup>. This rule-making was initiated as a result of the work of two advisory committees. First, Oregon OSHA established a **Permissible Exposure Limits (PEL) Advisory Committee** -- comprised of occupational health professionals from various public and private entities throughout our state -- to identify hazardous substances (or physical hazards) with existing permissible exposure limits that were considered to be under-protective and to determine where serious exposures may be occurring in Oregon. This group selected manganese as a priority substance because of broad exposures to workers in Oregon across a wide range of industries and due to its potential for adverse health effects. In support of these concerns, the National Institute of Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) have both recommended significantly more protective exposure levels or threshold values for manganese than the current Oregon OSHA (and federal OSHA) "Ceiling Limit" of 5 mg/ m<sup>3</sup>.

Oregon OSHA subsequently established the **Manganese PEL Advisory Committee**. Because manganese exposures in Oregon are primarily linked to welding fume, the committee was comprised of representatives from small and large business that perform welding and other hot work activities as part of their operations. In addition, consultants who work with these firms, and representatives from manufacturing, construction, labor, and associations representing potentially affected business groups were asked to participate to help determine an appropriate PEL for manganese. During these meetings, conducted over a period of about three years, the advisory committee members made numerous recommendations including one to cross-reference the requirements of the Subdivision 2/Q Welding, Cutting and Brazing rules with other related rules such as Oregon OSHA's Confined Spaces rules (OAR 437-002-0146), our Oregon-initiated Personal Protective Equipment rules for general industry (OAR 437-002-0134), and the general industry Respiratory Protection Standard (1910.134). They regularly reviewed and offered suggestions that were incorporated into the proposal including ways to minimize any fiscal impact to their industries. Oregon OSHA's technical staff also took the opportunity to clarify and simplify the Oregon-initiated rules that supplement the federal OSHA 1910.252 General Requirements protections in Subdivision 2/Q.

This effort also resulted in the creation of three new rules to supplement the requirements in Subdivision 2/Q.

OAR 437-002-0279, Additional Oregon Confined Space Requirements.

OAR 437-002-0281, Manganese (includes a new Table OR Q-2.)

OAR 437-002-0299, Definitions.

### INDIVIDUAL RULE SUMMARY (By rule number)

Provide a brief summary of the rule (if new adoption), or a brief summary of changes made to the rule (if amending)

437-002-0279 - Additional Oregon Confined Space Requirements clarifies and standardizes the protections for workers welding in confined spaces. Because an exception to the requirements of OAR 437-002-0146 -- for situations when the only hazards in a confined space are "related to the welding process"-- has been a point of confusion for employers about which rules apply and what protections must be provided, this rule clarifies that any confined space must be evaluated as required in 437-002-0146, then guides the employer to specific directions for protecting workers in either situation. Rule name also emphasizes that there are additional requirements related to welding in confined spaces in 1910.252.

437-002-0280- Adoption by Reference.

- (1) Changes the reference to the OAR that applies (instead of the repealed 1910.251 Definitions) to the new rule 437-002-0299. The previously referenced rule (437-002-2253) was incorrectly cited here, as it has a limited scope.

- (2) Shows that Oregon has amended 29 CFR 1910.252 with this rule-making. (For clarity, two references to federal OSHA's PPE rules were changed to Oregon's equivalent rules, and that is noted here as an amendment to adopting the federal rule exactly as it is printed by federal OSHA.)
- (3) Corrects a typo in the reference to the OAR replacing the repealed 1910.253 Oxygen-Fuel Gas Welding and Cutting.

437-002-0281- Manganese. offers an alternative to air monitoring for manganese exposures. The guidelines are based on research completed by staff from Oregon OSHA and the Department of Consumer and Business Services. The rule allows employers to use specific levels of respiratory protection – based on the assigned protective factor (APF) of the equipment -- for specific types of welding tasks within specific periods of time and other limits. A new Table OR Q-2 correlates these guidelines which are offered as an option, and not as a requirement.

437-002-0282- Job Planning and Layout. Plain language and active verbs clarify responsibilities. One requirement eliminated because it duplicated a federal rule in 1910.252.

437-002-0283- Additional Protective Clothing Requirements. Plain language and active verbs clarify responsibilities. Requirements limited to protective clothing used during hot work activities; rule renamed to reflect more limited scope and to clarify that there are other requirements related to protective clothing in 1910.252. A previous "eye protection" provision was eliminated because it was confusing.

437-002-0284- Additional Specifications for Eye and Face Protection. Plain language and active verbs clarify responsibilities. Provisions simplified to coordinate with existing PPE requirements. Rule renamed to clarify that there are other requirements related to eye and face protection during hot work in 1910.252.

437-002-0285- Additional Special Precautions. Plain language and active verbs clarify responsibilities. Rule renamed to clarify that there are other precautions related to welding near combustible materials in 1910.252.

437-002-0286- Flammable Preservative Coatings. Plain language and active verbs clarify responsibilities. Rule renamed to reflect scope limited to flammable coatings. "Highly flammable" coatings given a working definition in the rule.

437-002-0287- Toxic Preservative Coatings. Scope expanded to include "confined and other" enclosed spaces but limited to coatings that are toxic, but not "highly flammable" (as defined in 437-002-0286.) Plain language and active verbs clarify responsibilities. An alternative to stripping coatings prior to heating is cross-referenced to the existing respiratory protection program requirements in 1910.134. Notes allow artificial cooling to limit the size of the area to be stripped; and except "coated steels" from the requirements unless the manufacturer's Safety Data Sheet classifies the product as a health hazard when heated.

437-002-0288- Additional General Health Protection. Rule renamed to reflect more general scope and to clarify that there are other requirements related to general health protection in 1910.252. Scope expanded to include welding, cutting "or grinding" operations performed on "or with" the materials listed; and, requirements in substance-specific rules cross-referenced to more general requirements in Table OR Q-1. Plain language and active verbs clarify responsibilities. Engineering controls – including local exhaust ventilation -- identified as primary control measures for indoor workplaces when feasible and effective.

437-002-0297- Oregon Requirements for Welding or Cutting Containers. Plain language and active verbs clarify responsibilities. Requirements to be "absolutely certain" clarified by separating specific actions that a "competent person" must ensure are taken prior to or as part of the hot work process. (Competent person defined in new 437-002-0299.) A new requirement is included to document the process used to ensure safe conditions and to retain that documentation for at least one year. Rule renamed to clarify that there are other requirements related to welding or cutting containers in 1910.252. NOTE: This rule applies instead of 1910.252 (a)(3)(i), as that section was previously not adopted by Oregon OSHA.



437-002-0298- Supplied Air Respiratory Equipment. Rule renamed using a more general category for this type of respiratory protective equipment. Hazards cross-referenced to the better-understood concept of "IDLH" atmospheres and to the requirements of 1910.134. Acknowledges the National Institute for Occupational Safety and Health (NIOSH) as the agency that currently approves all respiratory protection equipment. NOTE: This rule applies instead of 1910.252(c)(4)(iii), as that section was previously not adopted by Oregon OSHA.

437-002-0299 - General definitions. Adds a more general definition of terms used in Division 2/Q. (This new rule is referenced in 437-002-0280 as an substitute for the repealed 1910.251, replacing the previous reference to 437-002-2253, where the definitions in the rule only pertain to that specific rule.) Includes definitions of the welding, cutting, or grinding tasks referenced in Table OR Q-2. Also includes a section with notes and recommended practices about the "standard order for atmospheric testing in confined or other enclosed spaces.

437-002-0382 - In Table Z-1 of the Oregon's Rules for Air Contaminants for general industry, two entries were combined into one for "Manganese Compounds and fume (as Mn)" in the "Substance" column; "7439-96-5" remains in the "CAS No." column; and the Permissible Exposure Limit is lowered to "0.1" in the "mg/ m<sup>3</sup>" as an 8-hr time-weighted average, while the 5 mg/m<sup>3</sup> Ceiling Limit is maintained.

437-003-1000 - In Table Z-1 of the Oregon's Rules for Air Contaminants for the construction industry, two entries were combined into one for "Manganese Compounds and fume (as Mn)" in the "Substance" column; "7439-96-5" remains in the "CAS No." column; and the Permissible Exposure Limit is lowered to "0.1" in the "mg/ m<sup>3</sup>" as an 8-hr time-weighted average, while the 5 mg/m<sup>3</sup> Ceiling Limit is maintained .

437-004-9000 - In Table Z-1 of the Oregon's Rules for Air Contaminants for the agriculture industry, two entries were combined into one for "Manganese Compounds and fume (as Mn)" in the "Substance" column; "7439-96-5" remains in the "CAS No." column; and the Permissible Exposure Limit is lowered to "0.1" in the "mg/ m<sup>3</sup>" as an 8-hr time-weighted average, while the 5 mg/m<sup>3</sup> Ceiling Limit is maintained .

Please visit the rules and laws section of our website at [osha.oregon.gov/rules](https://osha.oregon.gov/rules) and select *proposed rules* in the rule making column to view our proposed rules.

The Agency requests public comment on whether other options should be considered for achieving the rule's substantive goals while reducing the negative economic impact of the rule on business.

May 4, 2020

**Last Day for Public Comment**

Last day to submit written comments to the Rules Coordinator

Signature

Printed name

Date

\*The *Oregon Bulletin* is published on the 1st of each month and updates the rule text found in the Oregon Administrative Rules Compilation. Notice forms must be submitted to the Administrative Rules Unit, Oregon State Archives, 800 Summer Street NE, Salem, Oregon 97310 by 5:00 pm on the 15th day of the preceding month unless this deadline falls on a Saturday, Sunday or legal holiday when Notice forms are accepted until 5:00pm on the preceding workday.

ARC 920-2005

## STATEMENT OF NEED AND FISCAL IMPACT

A Notice of Proposed Rulemaking Hearing or a Notice of Proposed Rulemaking accompanies this form.

Department of Consumer and Business Services/Oregon OSHA

OAR 437

Agency and Division

Administrative Rules Chapter Number

### In the Matter of:

**Adopting:** OAR 437-002-0279, 437-002-0281, 437-002-0299

**Amending:** OAR 437-002-0280, 437-002-0282, 437-002-0283, 437-002-0284, 437-002-0285, 437-002-0286, 437-002-0287, 437-002-0288, 437-002-0297, 437-002-0298, 437-002-0382, 437-003-1000, 437-004-9000

**Rule Caption:** Reduces Manganese permissible exposure limit; clarifies, cross-references welding rules with other standards including confined spaces.

**Statutory Authority:** ORS 654.025(2) and 656.726(4)

**Stats. Implemented:** ORS 654.001 through 654.295; 654.412 through 654.423; 654.760 through 654.780

### Need for the Rule(s):

This rulemaking reduces Oregon OSHA's permissible exposure limit (PEL) for manganese compounds and fume (as Mn, C.A.S. # 7349-96-5) in the Air Contaminants rules for general industry (Subdivision 2/Z), construction (Subdivision 3/Z), and agriculture (Subdivision 4/Z). The proposed PEL is 0.1 mg/m<sup>3</sup>, as an 8-hour time-weighted average; and retains the Ceiling Limit of 5 mg/m<sup>3</sup>. This rule-making was initiated as a result of the work of two advisory committees. First, Oregon OSHA established a **Permissible Exposure Limits (PEL) Advisory Committee** -- comprised of occupational health professionals from various public and private entities throughout our state -- to identify hazardous substances (or physical hazards) with existing permissible exposure limits that were considered to be under-protective and to determine where serious exposures may be occurring in Oregon. This group selected manganese as a priority substance because of broad exposures to workers in Oregon across a wide range of industries and due to its potential for adverse health effects. In support of these concerns, the National Institute of Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) have both recommended significantly more protective exposure levels or threshold values for manganese than the current Oregon OSHA (and federal OSHA) "Ceiling Limit" of 5 mg/ m<sup>3</sup>.

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OAR 437-002-0281, Manganese offers an alternative to monitoring for manganese exposure. Based on research completed by staff from Oregon OSHA and the Department of Consumer and Business Services, the rule allows employers to use specific levels of respiratory protection – using the assigned protective factor (APF) -- for specific types of welding tasks, within specific periods of time and within other limits. A new Table OR Q-2 correlates the guidelines, which are offered as an option and not as a requirement.

OAR 437-002-0299, Definitions clarifies the meaning of terms used in Subdivision 2/Q that are not included in OAR 437-002-2253 Oxygen-fuel gas welding and cutting definitions. (Last revised in 2014, the “oxygen-fuel gas” rules have their own set of definitions and were not included in this rule-making.)

#### **Documents Relied Upon, and where they are available:**

Oregon OSHA’s Codebooks for Division 2, 3, and 4, available at <https://osha.oregon.gov/rules/Pages/default.aspx>

Records of the meetings and recommendations of the Permissible Exposure Limit Advisory Committee, available at: <https://osha.oregon.gov/rules/advisory/pel/Pages/default.aspx>

Records of the meetings, recommendations, and reference material used by the Manganese PEL Advisory Committee, available at: <https://osha.oregon.gov/rules/advisory/manganese/Pages/default.aspx>

Reports on establishments within industries by NAICS codes and average annual wage information generated by staff from the Oregon Employment Department. (Thanks to section manager Nick Beleiciks.) General information available at <https://www.Qualityinfo.org>

Information about costs of respirators and “consumable” supplies from:

- [www.Grangers.com](http://www.Grangers.com)
- [www.envirotechonline.com](http://www.envirotechonline.com)
- [www.3m.com](http://www.3m.com)
- [www.weldersupply.com](http://www.weldersupply.com)
- [www.store.sassafety.com](http://www.store.sassafety.com)

#### **Fiscal and Economic Impact:**

##### **Statement of Cost of Compliance:**

##### **1. Impact on state agencies, units of local government and the public (ORS 183.335(2)(b)(E)):**

Costs incurred by Oregon OSHA represent similar costs associated with the promulgation, implementation and administration of rules. All other state agencies and local government units that employ welders and cutters are potentially affected by the rules in the sense that they are employers under the Oregon Safe Employment Act (OSEAct).

The public as a whole will be affected to the extent that they are employers and employees and are under the scope of these rules.



## 2. Cost of compliance effect on small business (ORS 183.336):

### a. Estimate the number of small businesses and types of business and industries with small businesses subject to the rule:

In September 2019 there were 109,091 private sector employers in Oregon; 96,794 of those -- 89 percent of firms -- had 20 or fewer employees. The scope of the affected air contaminant rules make them applicable to general industry, construction, agriculture, and forest activities. We anticipate that any small business in the state with employees who engage in welding, cutting or brazing (hot work activities) as part of their operations are potentially affected by this rulemaking. A wide range of industries perform hot work activities on an occasional basis; for instance, during facility maintenance or equipment repair.

Other businesses perform these activities as a more fundamental part of their operations. As an example, the following information was provided by Systems & Economic Analysis staff at the Oregon Employment Department:

North American Industrial Code System (NAICS)	Primary activities of the Industry	Total # of establishments listed in Oregon (as of 3 <sup>rd</sup> quarter 2019)	# with 20 or fewer employees	~% of "small employers"	Annual average wage per employee (2018)
238122	Nonresidential structural steel contractors	56	44	~79%	\$65,206.
331xxx	Includes iron, steel, and ferroalloy manufacturers and iron foundries.	~9	~4	~44%	~\$90,000.
332xxx	Includes manufacturers of fabricated structural metal, metal hardware and fabricated pipe	~66	~40	~61%	~\$62,000.
336xxx	Includes ship building and repairing and manufacturers of railroad rolling stock	~27	~14	~52%	~\$80,000.
811310	Repair and maintenance of commercial and industrial machinery and equipment -- does not include	438	417	~95%	\$83,710.

	automotive or electric repair. <b>(WELDING SHOPS</b> are typically included here)				
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**b. Projected reporting, recordkeeping and other administrative activities required for compliance, including costs of professional services:**

There are new record-keeping requirements proposed in two rules; specifically, to document certain information associated with ensuring safe and healthful conditions prior to and during certain activities:

- 437-002-0279 - Additional Oregon Confined Space Requirements. This new rule standardizes the documentation and record-retention requirements for welding in confined spaces. Stakeholders indicated that they already document entries related to welding – as required by the Confined Spaces rules -- whether or not there are hazards beyond those associated with the welding process. Some employers may have considered themselves exempt from these confined spaces-related requirements when the only hazards are related directly to the welding process.
- 437-002-0297- Oregon Requirements for Welding or Cutting Containers – includes new specific requirements to ensure safe working conditions, to document the process used, and to retain that documentation for at least one year. The previous rule required employers to use appropriate testing equipment to meet the “absolutely certain” test; however, no documentation was previously required.

Both rules also require employers to maintain that documentation for a minimum of one year; this may result in additional administrative duties for workers designated as “competent persons” by their employers. (It is the responsibility of the employer to ensure compliance.) The time needed to establish the use of the checklist for documentation and a protocol for maintaining that document for at least one year is estimated at one hour for one person. The time to ensure that each required event is documented is estimated at 0.25 hours per event. Depending on the situation, an employer’s designated “competent person” will likely absorb these duties as they become part of their compliance routine. The amount of time for establishing the new documentation protocols will likely vary among different types of businesses.

Oregon’s Employment Department estimates the average annual wage for employees of welding shops (last calculated for 2018) at \$83,710. This breaks down to ~\$42.00 per hour for the sector that includes most welding shops. In other industries where welding skills may supplement other core activities, the wage rate is much more variable. However, using the professional welders’ salary as an overall average: \$42.00 (for 1 hour) to set up the documentation protocol, and \$10.25 (0.25 hours) for each event documented. Costs for small employers are anticipated to be proportional to their size.

**c. Equipment, supplies, labor and increased administration required for compliance:**

Although engineering controls such as local exhaust ventilation are retained as the preferred methods for controlling workplace air contaminants, the rules acknowledge that these systems may have significant limits in the diverse world of hot work activities. There are many types of ventilation equipment currently available and innovation in this market sector appears to be on the increase. Examples of this type of industrial equipment with reported costs include:

- ~ \$5,200.00 each for [DiversiTech] long neck, portable fume extractors
- ~\$12,400.00 for [Miller manual weld gun] hand weld system for 6 hoses + cost of hose and guns
- ~\$60,000.00 each for [IVEC] Gantry extraction systems
- ~\$80,000.00 each for [IVEC] Robot extraction systems
- ~\$2,030,000.00 each for [IVEC] Push-pull ambient extraction systems

Many of the advisory committee members indicated that they already use direct-reading instruments at their workplaces. Employers not already using this type of air monitoring equipment will likely be required to purchase that equipment, establish a protocol for proper use (based on the manufacturer's recommendations), and train key employees to ensure that the equipment is used properly and effectively. These instruments must be regularly calibrated – typically using consumable calibration gases. Direct reading, air-monitoring equipment is anticipated to cost between ~\$1,400.00 [QRAE 3 Confined Space Monitor] and ~\$5,500.00 [Mini RAE 3000 PID] These costs are per instrument, purchased new with accessories and a “calibration kit”. Employers may determine that it is most effective to rely upon one (or more) key individuals in their organization to keep these instruments working properly.

The rules offer a number of compliance alternatives in an effort to ease costs for small businesses while maintaining or improving the health protections for their affected workers. Most of these rely upon the use of appropriate respiratory protection; many employers already have a workplace Respiratory Protection Programs (RPP). Additional costs are associated with establishing (or expanding) an employer's RPP for those employers who use this form of control. The Respiratory Protection Standard (1910.134) is cross-referenced throughout Division 2/Q. Requirements of that standard include the following:

- The employer must establish and maintain a written respiratory protection program.
- A qualified individual must ensure that training and program evaluations are completed.
- For exposures covered by substance-specific standards, monitoring is already required. For other air contaminants, the employer must make a reasonable estimate of employee exposures. Smaller companies may need assistance in conducting a workplace hazard assessment and in selecting the appropriate respiratory protection. Employers can seek outside expert assistance to measure the concentration of hazardous chemicals in the air, select the appropriate respirator, and determine the respirator/cartridge change-out schedule (as required) for air-purifying respirators. Expert assistance is available from organizations such as worker's compensation insurance carriers, industry associations, private consulting firms, respirator product vendors, and from OSHA's Consultation services.
- Costs of appropriate respirators vary widely. For example:
  - The average cost of a tight-fitting respirator with an Assigned Protective Factor (APF) of 10 that could be used with the other necessary personal protective equipment necessary to protect the face and eyes during hot work is between ~\$4.00 [Miller N95 Disposable Mask] through ~\$15.00 [Honeywell Standard 7190 Series Half Face Welding Air Purifying Respirator W/ N99 Filter]
  - The average initial cost of a Powered Air-Purifying Respirator (PAPR) with an APF of 25 --that could be used during hot work and either include or accommodate the appropriate protection for the face and eyes is between \$1,200.00 and \$4,000.00 per unit. “Consumable” supplies such as respirator filters and pre-filters, outer lens replacements, inner grinding shields, PAPR battery packs, and other miscellaneous replacement parts were reported by one advisory committee member whose workers use the equipment daily to average about \$3,000.00 per employee/ per year.
  - Supplied air respiratory equipment can be self-contained (SCBA) or, more typical to industrial settings, as a supplied-air respirator (SAR) system with breathable air from a stationary source, such as a compressor, separated from the user. Breathable air is supplied to the user's face piece or head enclosure through a flexible hose. One example is the One-Person Full-Face Supplied Air System that includes 1/4-HP oil-less air pump, 50' lightweight breathing airline, Full-face Opti-Fit supplied-air respirator with belt available from SAS Safety Corporation for ~\$1,056.00.
- A medical evaluation must be provided prior to any worker being required to use a respirator in the workplace. Records from the healthcare professional who makes the determination that each worker can use a respirator without adverse health effects must be maintained by the employer. Another cost is employee time; completing the (required) Appendix C Medical Evaluation questionnaire has been estimated to be 0.5 hours per employee for English speakers. (Questionnaires are also available in Spanish; speakers of other languages will need additional


accommodation.) The questionnaires are considered confidential medical information. On a per-employee basis, the average cost of a medical evaluation is estimated to be between \$50.00 and \$200.00. (One source estimated that about 20% of those completing the medical evaluation form would require additional evaluation or follow-up tests in order to receive a positive determination – these can require an additional 1.5 hours including travel time for each affected employee.

- Fit-testing of tight-fitting respirators must be done annually and those records maintained until the next annual fit-test. Annual fit-testing requires about 0.5 hours per employee/ per year and may be done on site by a qualified employee (with expenses for "consumables" associated with the required fit-testing protocols); or may include "contract costs" if performed on site, or off site or by an outside vendors.

#### **How were small businesses involved in the development of this rule?**

Oregon OSHA used the **Permissible Exposure Limits (PEL) Advisory Committee** to identify manganese as a hazardous substances with an under-protective permissible exposure limit. The **Manganese PEL Advisory Committee** was subsequently established – consisting of representatives from small and large business with welding and cutting operations as part of their regular activities. In addition, consultants who work with these businesses were included as well as representatives from manufacturing, construction, labor, and associations that speak for business groups to help Oregon OSHA determine a new PEL for manganese and to consider other changes to the general industry welding rule requirements.

**Administrative Rule Advisory Committee consulted?:** Yes. Eight meetings of the Manganese PEL Advisory Committee were conducted over an approximate three year period. Members were given the opportunity to regularly review the rules in progress and were instrumental in formulating both the new, proposed PEL for manganese and the proposed rules to modify the requirements in Division 2/Q.

	Michael D. Wood	1/28/2020
Signature	Printed name	Date

Administrative Rules Unit, Archives Division, Secretary of State, 800 Summer Street NE, Salem, Oregon 97310. ARC 925-2007



## HOUSING COST IMPACT STATEMENT

FOR ESTIMATING THE EFFECT OF A PROPOSED RULE OR ORDINANCE ON THE COST OF DEVELOPING  
A \*TYPICAL 1,200 SQ FT DETACHED SINGLE FAMILY DWELLING ON A 6,000 SQ FT PARCEL OF LAND.  
(ORS 183.534)

### FOR ADMINISTRATIVE RULES

**AGENCY NAME:** DCBS/Oregon OSHA

**PERMANENT:** XX

**HEARING DATES:** 2/20, 3/4, 3/26

**ADDRESS:** 350 Winter Street NE

**CITY/STATE:** Salem OR 97301-3882

**TEMPORARY:**

**EFFECTIVE DATE:** June 1, 2020

**PHONE:** 503-947-7449

BELOW PLEASE PROVIDE A DESCRIPTION OF THE ESTIMATED SAVINGS OR ADDITIONAL COSTS THAT WILL RESULT  
FROM THIS PROPOSED CHANGE.

PROVIDE A BRIEF EXPLANATION OF HOW THE COST OR SAVINGS ESTIMATE WAS DETERMINED.

IDENTIFY HOW CHANGE IMPACTS COSTS IN CATEGORIES SPECIFIED

**Description of proposed change:** (Please attach any draft or permanent rule or ordinance)

See attached Notice of Proposed Rulemaking Hearing.

**Description of the need for, and objectives of the rule:**

See attached Notice of Proposed Rulemaking Hearing.

**List of rules adopted or amended:**

**ADOPT:** OAR 437-002-0279, 437-002-0281, 437-002-0299

**AMEND:** OAR 437-002-0280, 437-002-0282, 437-002-0283, 437-002-0284, 437-002-0285, 437-002-0286, 437-002-0287, 437-002-0288, 437-002-0297, 437-002-0298, 437-002-0382, 437-003-1000, 437-004-9000

**Materials and labor costs increase or savings:**

None.

**Estimated administrative construction or other costs increase or savings:**

None.

**Land costs increase or savings:**

Oregon OSHA does not foresee any effect on land costs.

**Other costs increase or savings:**

Oregon OSHA does not foresee any additional costs.

\*Typical-Single story 3 bedrooms, 1 1/2 bathrooms, attached garage (calculated separately) on land with good soil conditions with no unusual geological hazards.

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