

**National Safety Council**

**CONGRESS  
& EXPO**

**ATLANTA  
2015**

# Spot the Hazards

Confined Space Hazards Missed by Most Safety Professionals, and the PPE Solutions that Meet OSHA Requirements

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# § 1926.1204(d) (4)

- Construction Confined Space Standard
  - § 1926.1204(d) (4) requires an employer to provide PPE when feasible engineering and work-practice controls do not adequately protect employees.
- General industry standard:
  - § 1910.146(d)(4)(iv) requires an employer provide personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees
- “If employees use respirators, then the respirator requirements in §1926.103 (Respiratory protection) must be met

# §1926.103



UNITED STATES  
DEPARTMENT OF LABOR

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- **Part Number:** 1926
- **Part Title:** Safety and Health Regulations for Construction
- **Subpart:** E
- **Subpart Title:** Personal Protective and Life Saving Equipment
- **Standard Number:** [1926.103](#)
- **Title:** Respiratory protection.
- **Applicable Standards:** [1910.94\(a\)\(1\)\(ii\)](#); [1910.94\(a\)\(5\)\(i\)](#); [1910.94\(a\)\(5\)\(ii\)\(b\)](#); [1910.94\(a\)\(8\)](#); [1910.134](#)
- **GPO Source:** [e-CFR](#)

**Note:** The requirements applicable to construction work under this section are identical to those set forth at 29 CFR [1910.134](#) of this chapter.  
[58 FR 35160, June 30, 1993; 61 FR 5507, Feb. 13, 1996; 61 FR 9227, March 7, 1996; 63 FR 1152, Jan. 8, 1998]

# The Stats

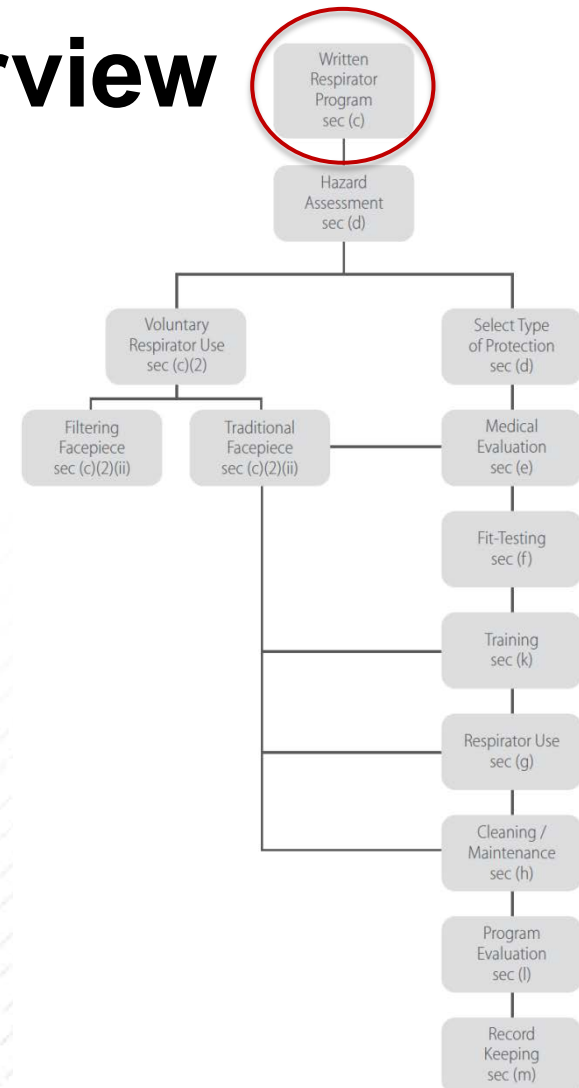
- 1910.134 argued as one of the most challenging standards in the industry
  - 13 major section
  - 150 provisions
- 2014 OSHA Violation
  - 3682 Citations
  - \$2.2 Million in fines
  - 2 out of every 3 sites where respiratory protection citation were issued were cited for inadequate or nonexistent written programs

# 1910.134 Standard Overview

- Where it is found that respiratory protection is needed your RPP must encompass 9 parts

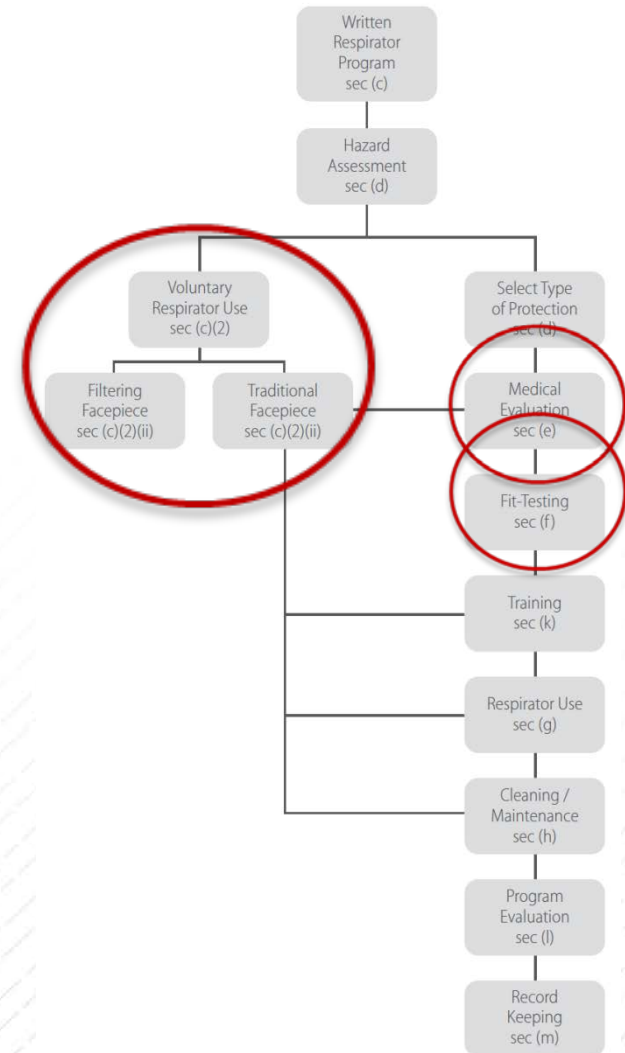
- Hazard Assessment
- Select Type of Protection
- Medical Evaluation
- Fit Testing
- Training
- Respirator Use
- Cleaning and Maintenance
- Program Evaluation
- Record Keeping

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# Additional Stats

- 4300 Citations have been issued for failure to incorporate or perform medical evaluations, 56% of these were categorized as “serious”
- 2000 Citations have been issued for not providing adequate information to voluntary users
- Failure to perform fit testing was the fourth most cited issue



# Examples

- August 4<sup>th</sup> 2015
  - Electronics refurbishing company fined \$44,800
    - “Serious” Violation
      - Failing to comply with respiratory protection standards
      - Over exposing workers to respirable and total dust
      - Not training employees about hazardous chemicals including combustible dust in the workplace
      - Electrical hazards

# Examples

- August 4<sup>th</sup> 2015

- Connecticut Based Manufacturing Facility
- Proposed penalties: \$94,248
  - “Serious” Violations
    - Out-of-date respiratory protection program
    - No medical evaluations and fit testing for workers who wore respirators
    - No hazard analysis to know what protective equipment was needed to protect employees
    - Failed to train employees on health hazards and monitoring levels of exposure to hexavalent chromium a known carcinogenic substance
    - Failing to comply with respiratory protection standards
    - Over exposing workers to respirable and total dust
    - Not training employees about hazardous chemicals including combustible dust in the workplace
    - Electrical hazards



# Industry Focus

- Fabricated Metal Product Manufacturers
  - 435 Citations
  - \$275,000
- Specialty Trade Contractors
  - 398 Citations
  - \$262,000
- Other industries include
  - Chemical Manufacturing - \$117K
  - Primary Metal Manufacturing - \$115K
  - Repair and Maintenance - \$113K

# Spot the Violation



# Spot the Violation



# Spot the Violation



# Reference Material

## OSHA 1926.1200 Confined Spaces in Construction: **What to Expect from the New Standard**



In 1993, OSHA issued 29 CFR 1910.146 as a means to protect general industry confined space workers. This standard did not apply to construction work due to the unique nature of construction worksites. Amid continuing construction industry injuries and fatalities, in the mid-1990s, OSHA began discussions with the Advisory Committee for Construction Safety and Health (ACCSH) to develop proposals specifically designed to protect construction workers in confined spaces including atmospheric and physical hazards.

Standard 29 CFR 1926.1200, released May 1, 2015, has much in common with the general industry confined space standard and intends to address the particular safety concerns of the construction industry. The new standard becomes effective on August 3, 2015.

The changing, fluid nature of construction sites contrasts with that of the static nature of general industry facilities, necessitating a different set of safety rules concerning confined space entry and rescue. With some exceptions, the standard *"applies to employers engaged in construction work and who have confined spaces at their job site."*

This standard provides definitions and division of responsibilities on construction sites to ensure that confined space evaluations are properly performed and recorded, and that workers are provided with appropriate training and personal protective equipment (PPE) when necessary to help prevent illness, injury and death.

**Confined space** is defined as a space large enough for worker entry, has limited means for entry and exit and is not designed for continuous worker occupancy. Precautions must be taken when workers are in or near confined space that is subject to a hazard.

**Permit-required confined space** (or permit space) refers to confined space that has one or more of the following characteristics:

- Has potential to contain a hazardous atmosphere.
- Has material with potential for engulfing entrants.
- Has internal configuration that could result in entrants becoming trapped or asphyxiated by inwardly converging walls or by a downward-sloping floor that narrows to a smaller area.
- Has other recognized serious safety or health hazards

**Permit-required confined space program** (or a permit space program) refers to an employer's overall safety program intended to control and protect employees from permit space hazards, in order to regulate employee entry into permit spaces.

**Other definitions of note:**

- **Hazard** refers to physical or atmospheric hazards. Atmospheric hazards include flammable gas, vapors or mists, airborne combustible dust, oxygen-deficient or -enriched conditions, and conditions presenting immediate danger to life or health.

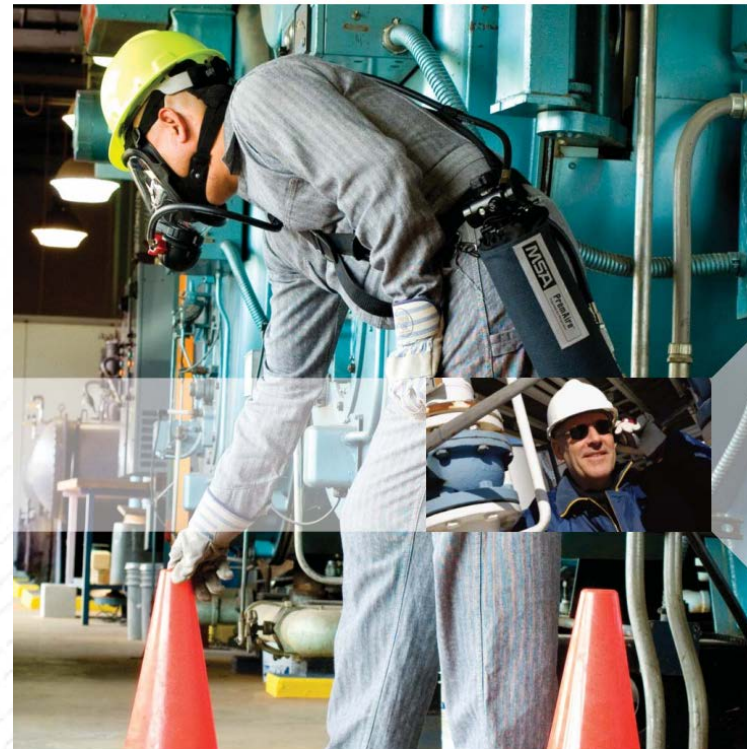
The **Host Employer** owns or manages the property where construction work takes place. The **contractor** is responsible for determining if confined spaces exist on a jobsite. If so, physical and atmospheric hazards must be identified via testing and monitoring requirements. Other requirements include training workers in use of PPE. Rescue must include retrieval using mechanical retrieval systems in some cases, and medical assistance that must record atmospheric exposure.

The **Controlling Contractor** is the employer bearing overall responsibility for worksite construction. If the Controlling Contractor owns or manages the property, then that individual is both controlling contractor and host employer.

## 29 CFR Part 1910.134 **Compliance Made Easier**



How to Comply with the Respiratory Protection Standard



*Because every life has a purpose...*





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**APPENDIX:  
OSHA Standard  
29 CFR Part 1910.134**

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## § 1926.1204(d) Permit-Required Confined Space

- Final § 1926.1204(d), which is similar to § 1910.146(d)(4), requires each employer to provide all equipment used for confined-space operations at no cost to employees, maintain the equipment, and ensure that employees use the equipment correctly.
  - Final § 1926.1204(d) varies from the language of the general industry standard only in that it specifies that the employer must provide the listed equipment to “each employee,” whereas § 1910.146(d)(4) refers generally to “employees.” Accordingly, in appropriate cases, if an employer fails to provide the necessary equipment as required, OSHA may issue separate citations with respect to each individual employee not provided with the proper equipment.

## § 1926.1204(d) Permit-Required Confined Space

- § 1926.1204(d)(1) requires an employer to provide necessary equipment for conducting adequate testing and monitoring
  - Identical to § 1910.146(d)(4)(i)
- § 1926.1204(d) (2) requires an employer to provide ventilating equipment necessary to establish acceptable entry conditions
  - Identical to § 1910.146(d)(4)(ii)
- § 1926.1204(d) (3) requires an employer to provide all communications equipment necessary to ensure that an attendant can communicate effectively with entrants in accordance with §§ 1926.1208(c) and 1209(e)
  - Substantively identical to § 1910.146(d)(4)(iii)

## § 1926.1204(d) Permit-Required Confined Space

- § 1926.1204(d) (4) requires an employer to provide PPE when feasible engineering and work-practice controls do not adequately protect employees.
  - Identical to the general industry standard at § 1910.146(d)(4)(iv)
- § 1926.1204(d) (5) requires an employer to provide lighting equipment that complies with the illumination standard
  - Similar to § 1910.146(d)(4)(v) however includes a note that lighting equipment must meet other applicable OSHA standards
- § 1926.1204(d) (6) requires an employer to provide barriers and shields when required by this standard
  - Substantively identical to § 1910.146(d)(4)(vi)

## § 1926.1204(d) Permit-Required Confined Space

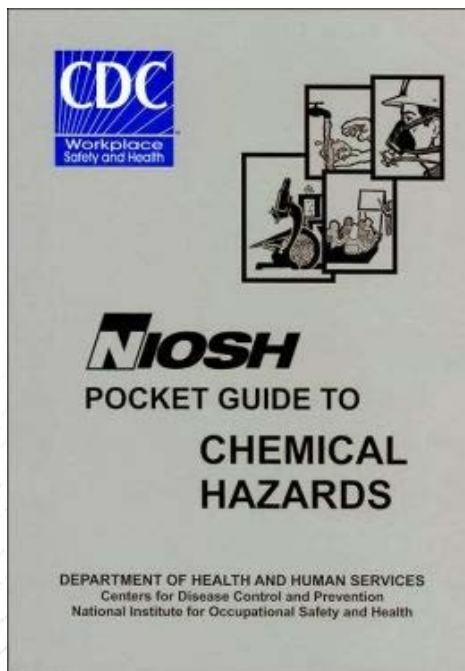
- § 1926.1204(d) (7) requires an employer to provide equipment needed for safe egress from a Permit-Required Confined Space
  - Identical to § 1910.146(d)(4)(vii) § 1926.1204(d) (8)
- § 1926.1204(d) (8) requires an employer to provide rescue and emergency equipment as needed
  - Identical to § 1910.146(d)(4)(viii)
- § 1926.1204(d) (9) requires an employer to provide any other equipment needed to safely enter or exit the permit space or to perform permit-space rescue
  - Similar to § 1910.146(d)(4)(ix) which uses the term “entry.” OSHA added the phrase “safe exit from” to this final provision to clarify that employers must provide equipment needed for employee safety during the entire period they are involved in confined space operations, which includes ensuring that employees can exit safely from the space.

# 29 CFR part 1910.134

- Applicable to:
  - General Industry
  - Shipyards
  - Maritime
  - Longshoring
  - Construction
- Does Not Apply
  - Infectious Agents
  - Nuclear, Biological, Chemical agents

# 29 CFR part 1910.134

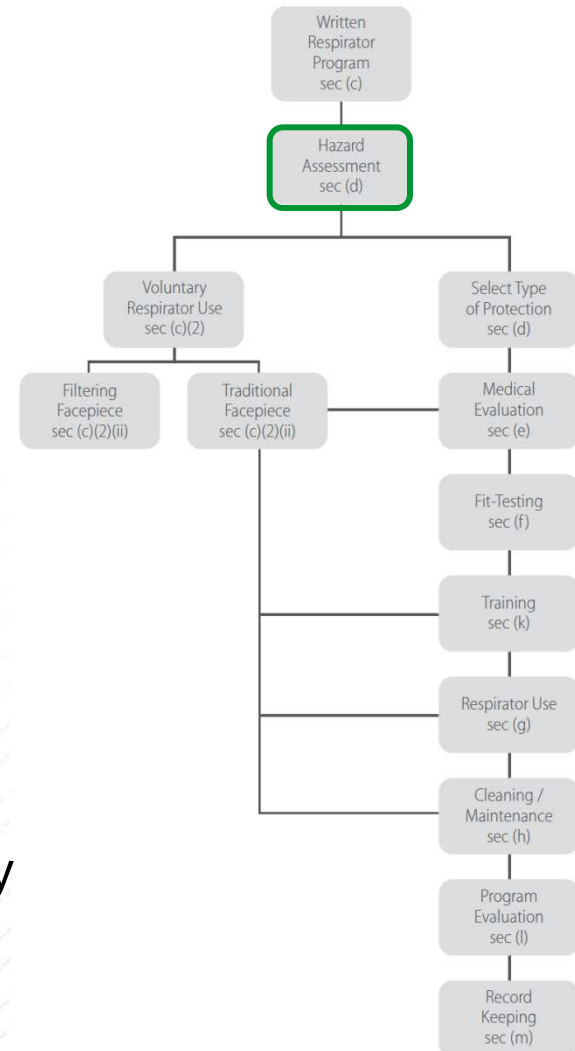
- OSHA's respiratory "rules of the game"



# Standard Overview

- Hazard Assessment

- Identify and evaluate respiratory hazards found in the workplace
- Estimation of the employee exposure to these hazards
- Identification of the contaminant's chemical state and physical form
- If the employer cannot identify or reasonably estimate the employee exposure, default to IDLH (Immediately Dangerous to Life and Health)

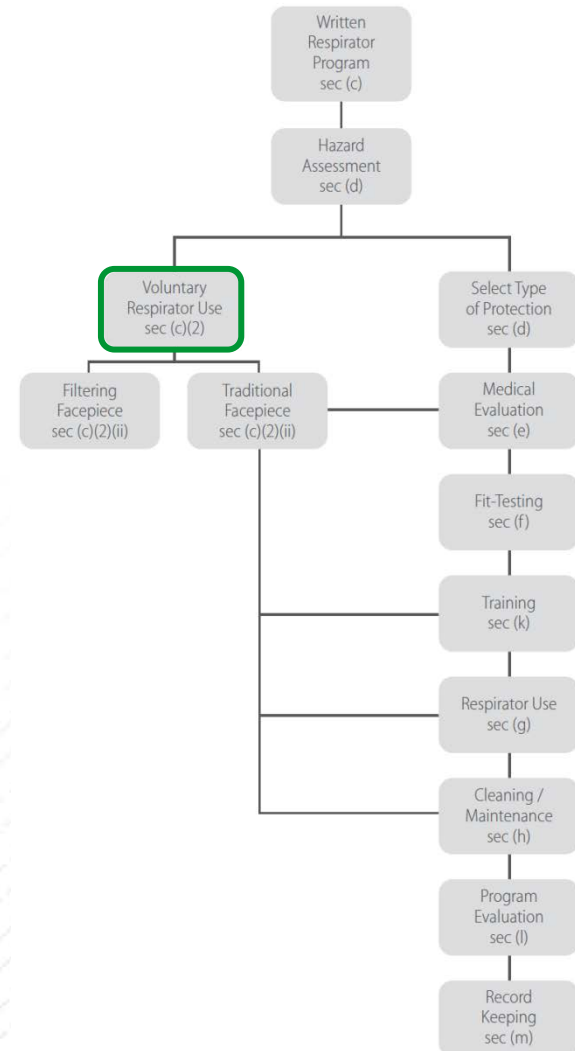


# Standard Overview

- Voluntary Respirator Use

- If the employer determines that any voluntary respirator use is permissible, the employer shall provide the respirator user with the information contained in Appendix D
- The employer must also follow the requirements the sections outlined below for any mask other than a filtering facepiece
  - Medical Evaluation
  - Training
  - Respirator Use
  - Cleaning

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# Standard Overview

- Select Type of Protection
  - For use in IDLH environment
    - Full Face pressure demand SCBA
    - Combination Full Face pressure demand SAR with auxiliary self-contained air supply
    - Respirator provided only for escape from IDLH atmospheres
  - All respirators must be NIOSH certified for escape from the atmosphere in which they will be used
  - All oxygen deficient atmospheres shall be considered IDLH

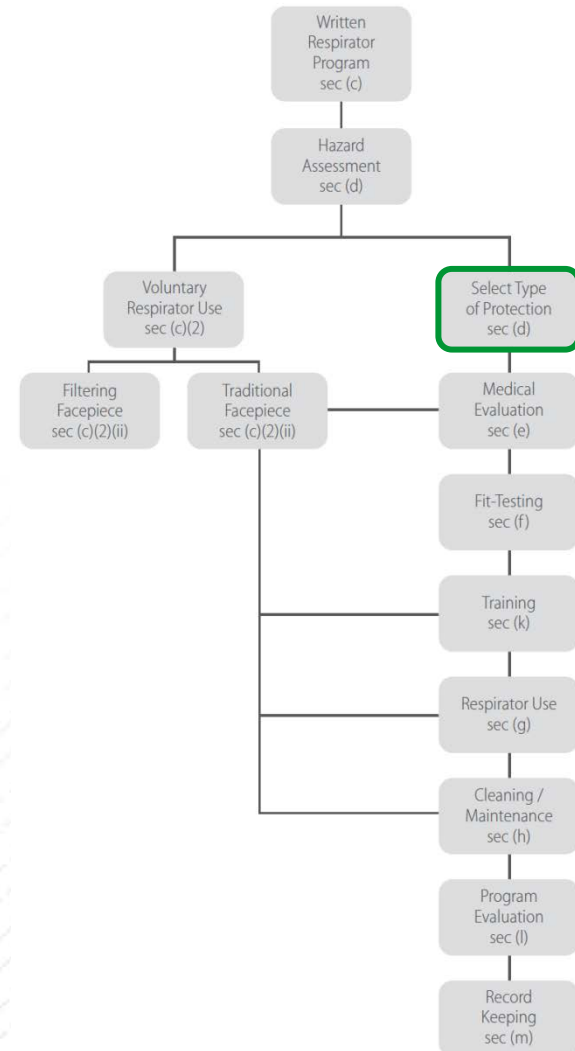


# Standard Overview

- Select Type of Protection

- For use in NON IDLH environment

- Employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements under routine and reasonably foreseeable emergency situations.
- Decisions should be based on APF



# Standard Overview

- APF (**Assigned** Protection Factor)
- The assigned protection factor (APF) reflects the level of protection that a properly functioning respirator would be expected to provide to a population of properly fitted and trained users. For example, an APF of 10 for a respirator means that a user could expect to inhale no more than one tenth of the airborne contaminant present.
- Assigned by OSHA for each class/type of respirator

# Standard Overview

- APF Continued
  - Half-mask = 10
  - Full-facepiece = 50 (CSA 100)
  - PAPR half-mask = 50 full = 1000
  - PAPR with hood/helmet = 1000
  - PAPR loose-fitting = 25
  - Air-line constant flow, half-mask = 50
  - Air-line constant flow/PD, full-face = 1000
  - Air-line constant flow, hood/helmet = 1000
  - SCBA - 10000



# Standard Overview

- Other Limitations
  - Exposure Limits
    - REL, PEL, Ceiling level
      - NIOSH REL: (Recommended Exposure Limit)
        - » TWA (Time Weighted Average) concentrations for up to a 10 hour workday during a 40 hour work week
        - » STEL (Short Term Exposure Limit): 15 min exposure limit that should not be exceeded at any time during a workday
        - » C (Ceiling level) should not be exceeded at any time.
      - OSHA PEL (Personal Exposure Limit): must not be exceeded during any 8 hour workshift of a 40 hour work week

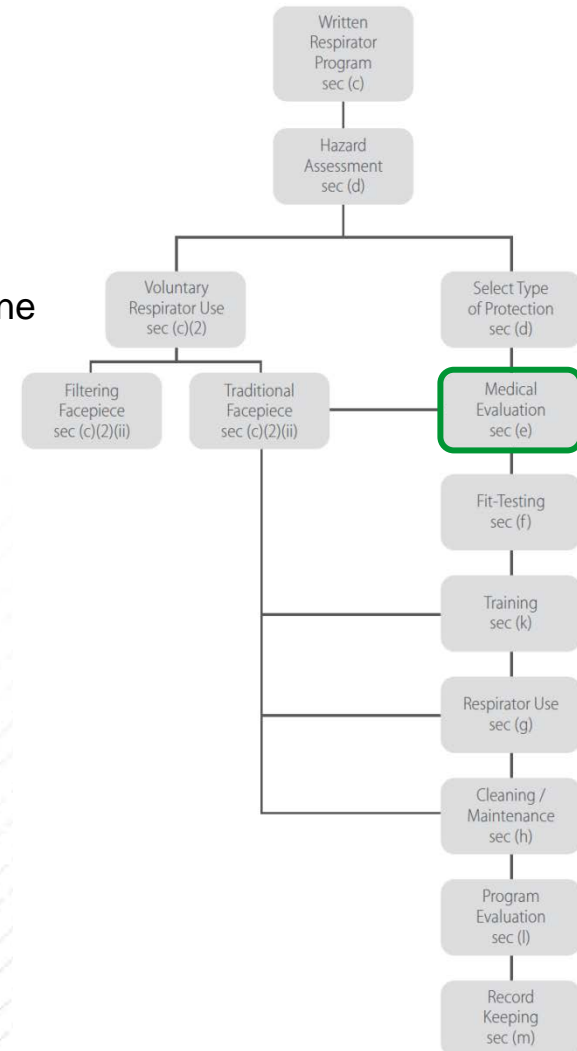
# Standard Overview

- Other Limitations Continued
  - Maximum Use Concentration (MUC)
    - $APF \times \text{Exposure Limit} = MUC$
    - The maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator

# Standard Overview

## • Medical Evaluation

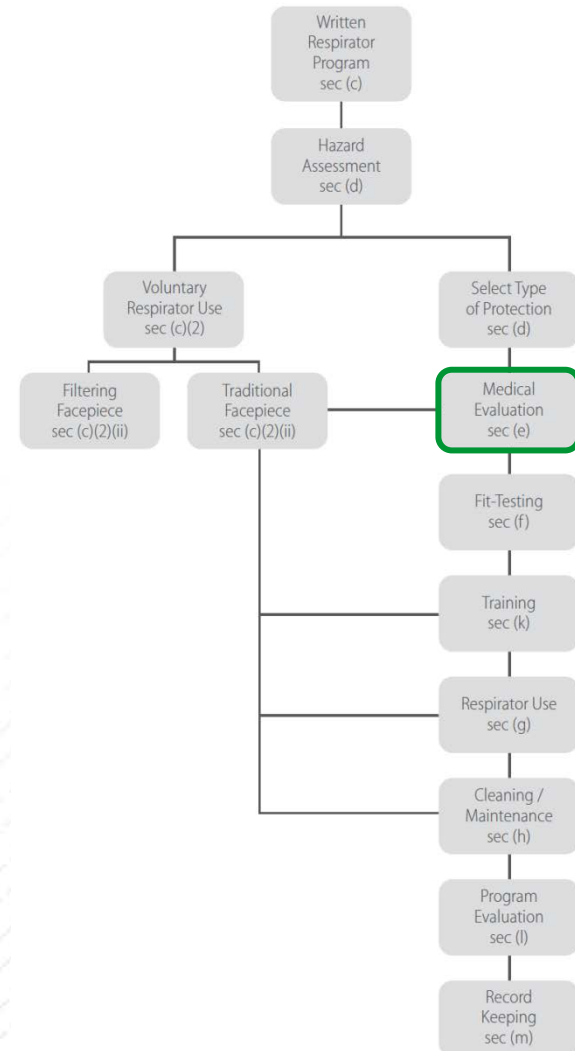
- Employer shall provide a medical evaluation to determine the employee’s ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace
- If required the employer shall ensure that a follow up medical examination is provided
- Supplemental information required by PLHCP
  - Respirator Type
  - Duration & Frequency of use
  - Expected physical work effort
  - Additional PPE
  - Environmental Conditions
  - Previously provided information if applicable
  - Copy of RPP
- Employer shall provide additional medical evaluations when deemed necessary



# Standard Overview

- Medical Evaluation Cont.

- At a minimum the employer shall provide additional medical evaluations when deemed necessary by:
  - Employee reports medical signs or symptoms that are related to ability to use a respirator
  - PLHCP, Supervisor, or Respiratory Program Administrator informs employer that an employee needs to be reevaluated
  - Information from the RPP indicates a need
  - A change occurs in workplace conditions

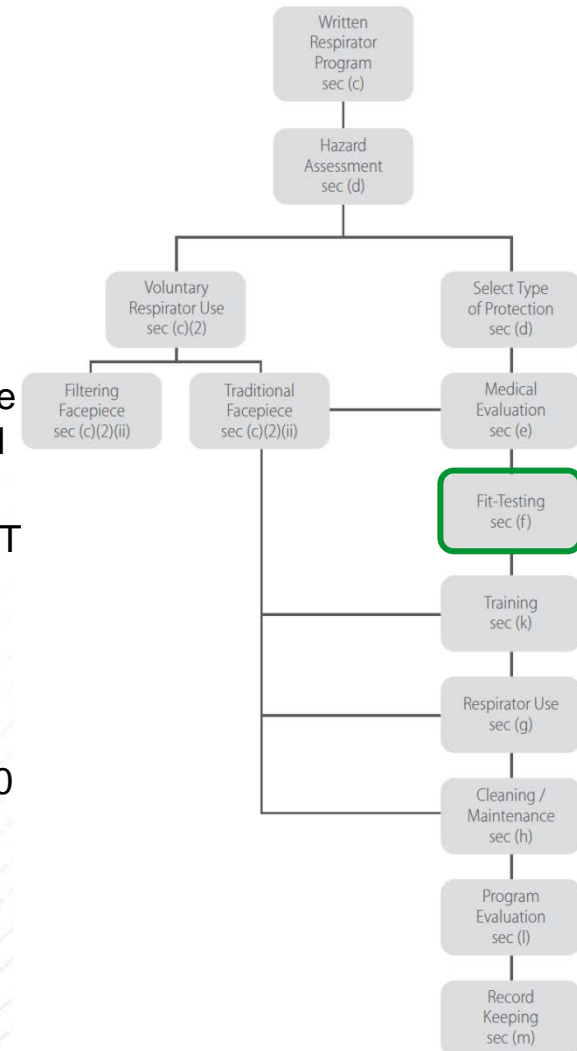




# Standard Overview

## • Fit-Testing

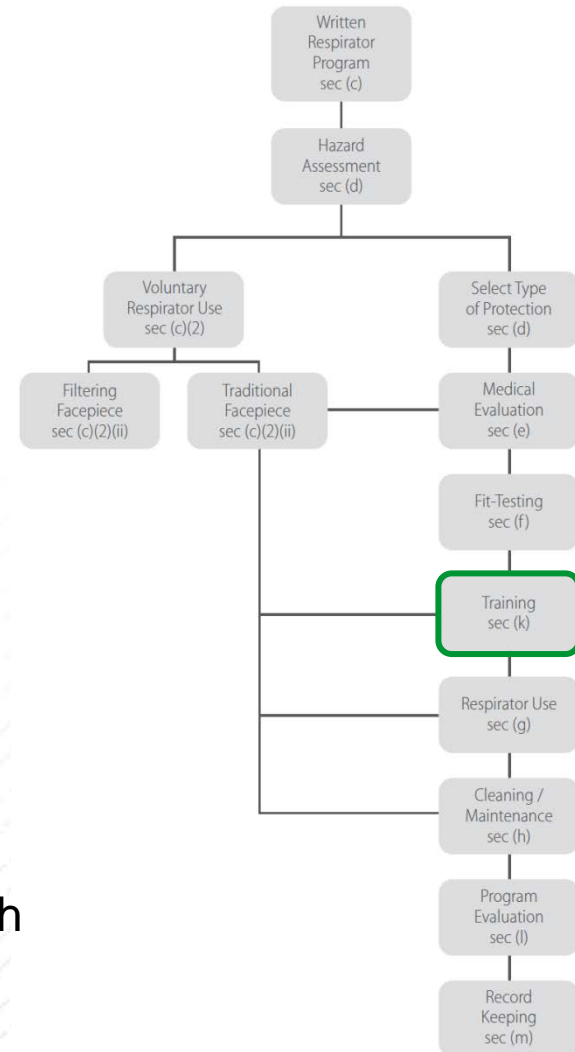
- Before an employee may be required to use any respirator with a negative or positive pressure tight fitting facepiece the employee must be fit tested with the same make, model, style, and size of respirator that will be used.
- This fit test can be accomplished using a QLFT or QNFT method depending on the mask
- A QLFT may only be used to fit test negative pressure APR that achieve a fit factor of 100 or less
- If the fit factor as determined through an OSHA accepted QNFT protocol, is equal to or greater than 100 for tight fitting half facepieces, or equal to or greater than 500 for tight fitting full facepieces, the QNFT has been passed with that respirator



# Standard Overview

- Training

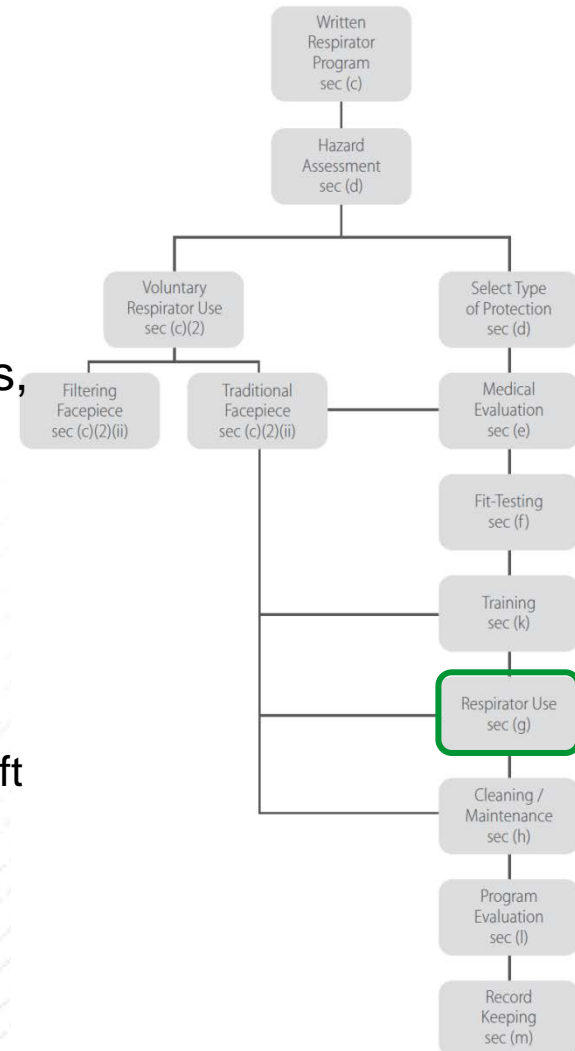
- Employers shall provide effective training to employees who are required to use respirators.
- Must be comprehensive understandable and recur annually or more often when deemed necessary
- The basic advisory information on respirators, as presented in Appendix D of this section, shall be provided by the employer in any written or oral format to employees who wear respirators when such use is not required by this section or by the employer



# Standard Overview

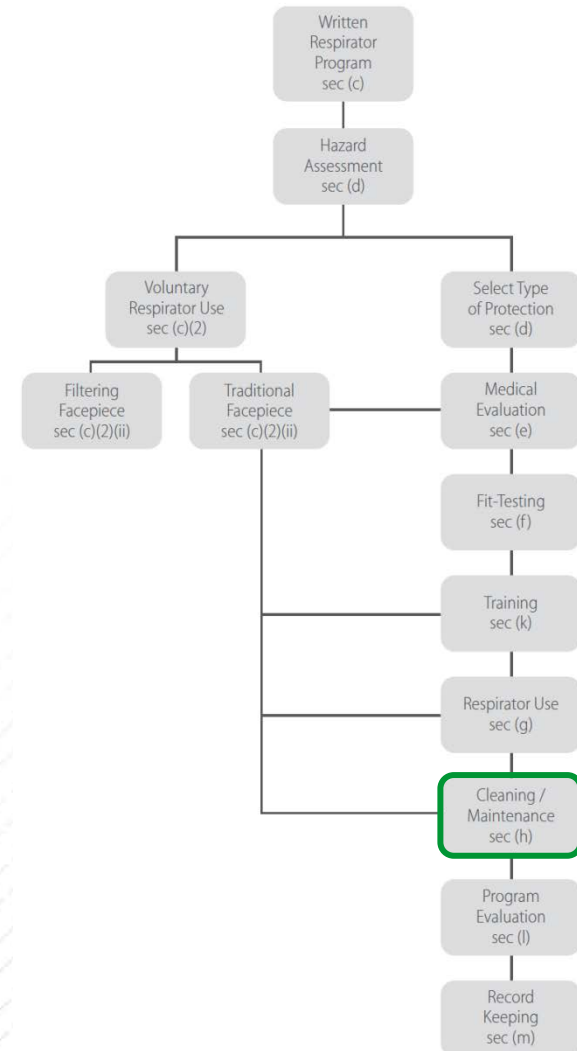
## • Respirator Use

- Employers shall establish and implement procedures for the proper use of respirators, including:
  - Prohibiting conditions that may result in facepiece seal leakage
  - Preventing employees from removing respirators in hazardous environments
  - Taking actions to ensure continued effective respirator operation throughout the work shift
  - Establishing procedures for the use of respirators in IDLH atmospheres or interior structural firefighting situations



# Standard Overview

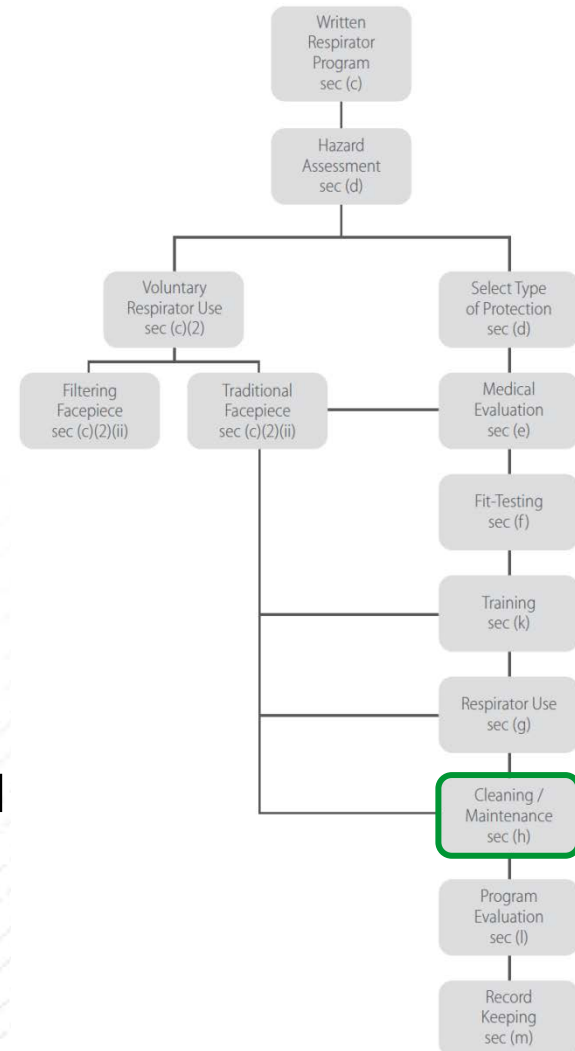
- Cleaning and Maintenance
  - The employer shall provide each respirator user with a respirator in clean, sanitary, and good working order; Following the cleaning procedures recommended by the manufacturer or provided by OSHA
  - Respirator should be stored to protect it from damage, contamination, dust, sunlight, extreme temps, excessive moisture and damaging chemicals



# Standard Overview

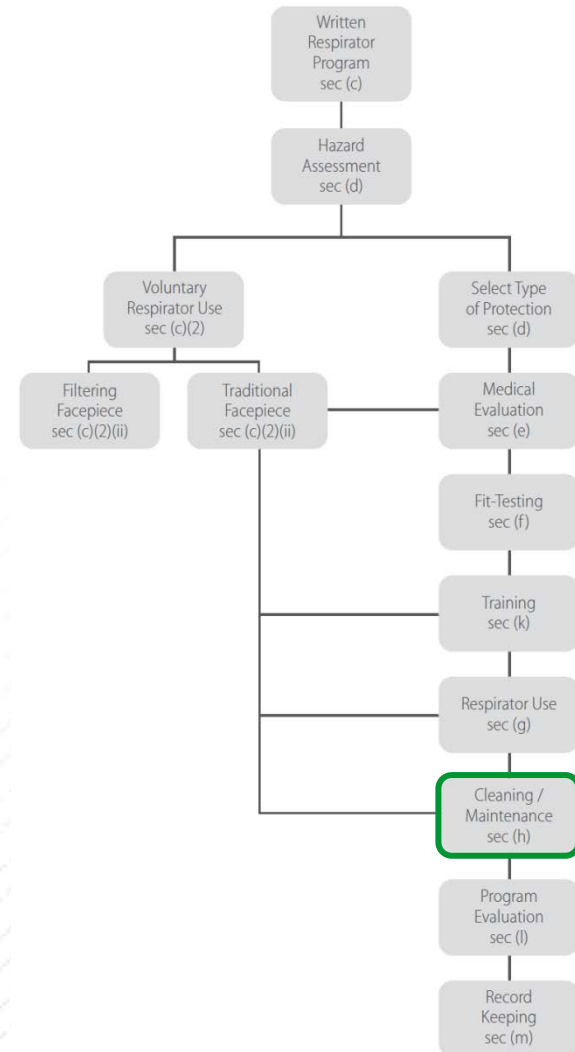
- Inspection

- All respirators maintained for use in emergency situations shall be inspected before each use and during cleaning
- Emergency use respirators should be expected at least monthly
- Emergency escape only respirators shall be inspected before being carried into the workplace for use



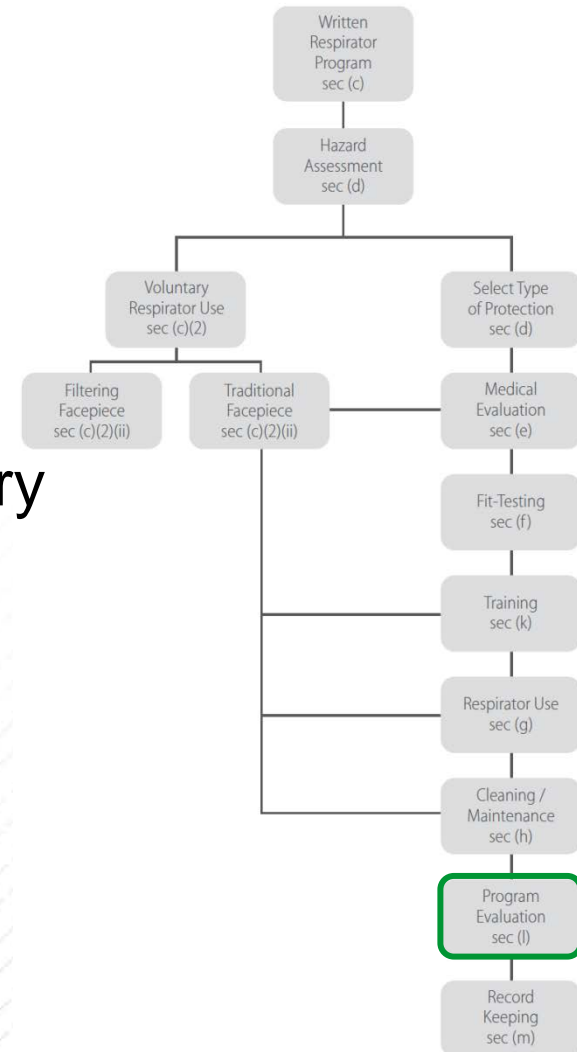
# Standard Overview

- Repairs
  - Should a respirator fail inspection the employer must remove it from service and be discarded, repaired, or adjusted
  - Repairs should only be preformed by trained professionals and made in accordance with manufacturer's specifications



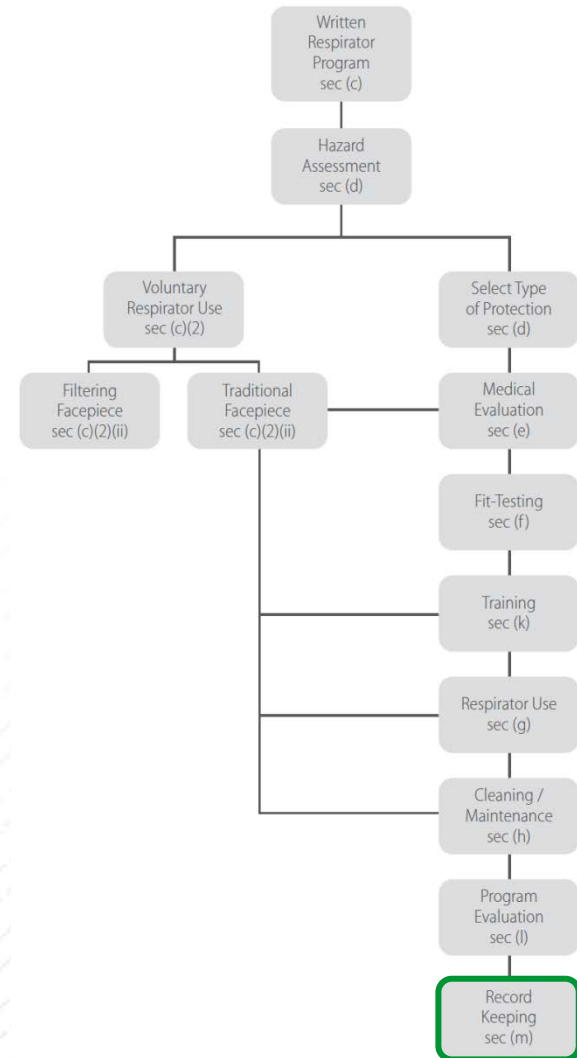
# Standard Overview

- Program Evaluation
  - Employer must conduct regular evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented
  - Employer must consult employees to ensure they are using the respirators properly



# Standard Overview

- Record Keeping
  - The employer must establish and retain written information regarding medical evaluations, fit testing and the overall respirator program





# Respiratory Summary

- Everyone has to breath
- Two types of respirator
  - Tight Fitting
  - Loose Fitting
- Three Classes
  - APR
  - SAR
  - Combination
- Styles of Mask
  - Quarter Mask
  - Half Mask
  - Full Face
  - Hood/Helmet
  - Mouthpiece w/Nose Clip
- Filtering
  - Particulate  
(N,R,P) (95, 99, 100)
  - Chemical
  - Combo

# 29 CFG Part 1910.134 Summary

- Where it is found that respiratory protection is needed your RPP must encompass 9 parts
  - Hazard Assessment
  - Select Type of Protection
  - Medical Evaluation
  - Fit Testing
  - Training
  - Respirator Use
  - Cleaning and Maintenance
  - Program Evaluation
  - Record Keeping

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