OSHA INSTRUCTION

U.S. DEPARTMENT OF LABOR — Occupational Safety and Health Administration

DIRECTIVE NUMBER: CPL 02-00-158	EFFECTIVE DATE: June 26, 2014
SUBJECT: Inspection Procedures for the Respiratory Protection Standard	

ABSTRACT

Purpose: This Instruction establishes agency interpretations and enforcement policies, and provides instructions to ensure uniform enforcement of the Respiratory Protection Standard, 29 CFR 1910.134.

Scope: This Instruction applies OSHA-wide.

References: 29 CFR 1910.134, Respiratory Protection Standard.

Federal Register, 63 FR 1152-1300, 29 CFR Parts 1910 and 1926 Respiratory Protection; Final Rule, January 8, 1998.

Federal Register, 71 FR 50122-50192, 29 CFR Parts 1910, 1915 and 1926 Assigned Protection Factors; Final Rule, August 24, 2006.

Cancellations: This Instruction cancels OSHA Instruction, CPL 02-00-120, Inspection Procedures for the Respiratory Protection Standard, September 25, 1998.

State Impact: Notice of Intent and Equivalency Required (See Paragraph VI). States are expected to have accessible enforcement policies and procedures in place which are at least as effective as those in this Instruction.

Action Offices: National, Regional and Area Offices, and On-site Consultation Project Managers.

Originating Office: Directorate of Enforcement Programs.

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By and Under the Authority of
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Assistant Secretary

Executive Summary

This new Respiratory Protection Directive updates OSHA's inspection procedures and enforcement policies since the previous update, September 25, 1998. This Instruction provides guidance to the Occupational Safety and Health Administration (OSHA) national, regional, and area offices for performing compliance inspections involving OSHA's Respiratory Protection Standard, 29 CFR 1910.134. This Instruction also serves to inform industry, employer and worker groups, state programs, and other federal agencies concerning OSHA's policy and procedures for implementing intervention and inspection programs to reduce or eliminate workplace exposures related to hazardous airborne substances. As detailed in the U.S. Department of Labor's (DOL) Strategic Plan, OSHA is committed to improving workplace safety and health through compliance assistance and enforcement of occupational safety and health regulations and standards.

Significant Changes

This Directive supersedes OSHA's prior Respiratory Protection Directive, CPL 02-00-120, dated September 25, 1998, and includes the following significant changes:

This revision updates the definition's section of the directive to include changes to the Respiratory Protection Standard (71 FR 50122, November 2006) that provide definitions for assigned protection factors and maximum use concentrations.

This update provides greater clarification on voluntary respirator use, and better explains the components of compliant respirator programs and provides additional acceptable methods to assess respiratory hazards.

This revision also updates the directive with information related to the revised Hazard Communication standard, 29 CFR 1910.1200, which was published in March 2012. This revised Hazard Communication standard (HCS 2012) aligned OSHA's standard with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3.

This revision also provides guidance on evaluating the need for respiratory protection for chemicals used in workplaces by referring to employers' Hazard Communication Programs, 29 CFR 1910.1200, wherein chemical manufacturers may have communicated on safety data sheets that use of their products may be hazardous if inhaled and have recommended that users wear respiratory protection.

TABLE OF CONTENTS

I. **Purpose.**

This Instruction establishes agency interpretations and enforcement policies, and provides instructions to ensure uniform enforcement of the Respiratory Protection Standard, 29 CFR 1910.134.

II. **Scope.**

This Instruction applies OSHA-wide.

III. **References.**

(See additional references in Appendix D).

A. OSHA Instruction CPL 02-00-150, Field Operations Manual, April 22, 2011.

B. OSHA Instruction CPL 02-00-100, Application of the Permit-Required Confined Space Standard, May 5, 1995.

C. OSHA Instruction CPL 02-00-111, Citation Policy for Paperwork and Written Program Violations, November 27, 1995.

D. OSHA Instruction CPL 02-02-072, Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records, August 22, 2007.

E. OSHA Instruction CPL 02-02-073, Inspection Procedures for 29 CFR 1910.120 and 1926.65, Paragraph (q): Emergency Response to Hazardous Substance Releases.

F. OSHA Instruction PER 04-00-005, OSHA Medical Examination Program, August 22, 2009.

G. 29 CFR 1910.134, Respiratory Protection; 29 CFR 1915.154, Respiratory Protection; 29 CFR 1917.92, Respiratory Protection; 29 CFR 1918.102, Respiratory Protection; 29 CFR 1926.103, Respiratory Protection.

H. 29 CFR 1910.1200, Hazard Communication.

I. ADM 04-00-00, OSHA Safety & Health Management Systems, May 23, 2011.

J. Federal Register, 63 FR 1152-1300, 29 CFR Parts 1910 and 1926, *Respiratory Protection; Final Rule*, January 8, 1998.

K. Federal Register, 71 FR 50122-50192, 29 CFR Parts 1910, 1915, and 1926, *Assigned Protection Factors; Final Rule*, August 24, 2006.

IV. Cancellation.

OSHA Instruction CPL 02-00-120, Inspection Procedures for the Respiratory Protection Standard, September 25, 1998.

V. Action Offices.

A. Responsible Office. Office of Health Enforcement (OHE).

B. Action Offices. OSHA National, Regional and Area Offices, and On-site Consultation Project Managers.

C. Information Offices. State Designees, National Institute for Occupational Safety and Health (NIOSH), Regional Program Directors, 7(c)(1) Project Managers.

VI. Federal Program Change.

Notice of Intent and Equivalency Required. This instruction describes a federal program change that establishes agency interpretations and enforcement policies and provides instructions to ensure uniform enforcement of the Respiratory Protection Standard, 29 CFR 1910.134.

States with OSHA-approved State Plans are expected to have enforcement policies and procedures in place that are at least as effective as those in this instruction. These States are required to notify OSHA within 60 days whether they intend to adopt policies and procedures identical to those in this instruction or adopt or maintain different policies and procedures.

If a State adopts or maintains policies and procedures that differ from federal policies and procedures, the State must identify the differences and may either post its policy on its website and provide the link to OSHA or submit an electronic copy to OSHA with information on how the public may obtain a copy. If a State adopts policies and procedures that are identical to federal policies and procedures, the State must provide the date of adoption to OSHA. State adoption must be accomplished within 6 months, with posting or submission of documentation within 60 days of adoption. OSHA will provide summary information on the State response to this instruction on its website at www.osha.gov/dcsp/osp/index.html.

VII. Significant Changes.

This Directive supersedes OSHA's prior Respiratory Directive, CPL 02-00-120, dated September 25, 1998, and includes the following significant changes:

This revision updates the definition's section of the directive to include changes to the Respiratory Protection Standard (71 FR 50122, November 2006) that provide assigned protection factors and maximum use concentrations.

This update provides greater clarification on voluntary respirator use requirements, and explains the components of compliant respirator programs and provides additional acceptable methods to assess respiratory hazards.

This revision also includes updated information related to the revised Hazard Communication standard, 29 CFR 1910.1200, which was published in March 2012. This revised (HCS 2012) aligned OSHA's standard with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3.

This revision also provides guidance on evaluating the need for respiratory protection for chemicals used in workplaces by referring to employers' Hazard Communication Programs, 29 CFR 1910.1200, wherein chemical manufacturers may have communicated on safety data sheets that use of their products may be hazardous if inhaled and have recommended that users wear respiratory protection.

VIII. **Background.**

In 1971, OSHA adopted American National Standards Institute (ANSI) standard Z88.2-1969, "Practices for Respiratory Protection," as well as ANSI Standard K13.1-1969, "Identification of Gas Mask Canisters," as its standard for respiratory protection. In April 1971, OSHA promulgated 29 CFR 1926.103, the initial respiratory protection standard for the construction industry. On February 9, 1979, OSHA announced that 29 CFR 1910.134 would be formally recognized as also applicable to the construction industry (44 FR 8577).

On November 15, 1994, OSHA issued a Notice of Proposed Rulemaking to revise 29 CFR 1910.134. Public hearings were held in 1995, and the Final Rule was published in the Federal Register on January 8, 1998. The 1998 standard made updates to the previous standard and incorporated new technology and more current scientific knowledge regarding respiratory protection. Application of the requirements of the 1998 standard in affected workplaces promoted more effective use of respirators and provided greater compliance flexibility. Language in the 1998 standard was developed to make some requirements in the previous standard more understandable. On April 23, 1998, corrections to the regulatory text were published in the Federal Register.

The 1998 Respiratory protection standard also made the respiratory protection provisions of other health standards consistent with each other and with the final rule, making these provisions easier to administer.

On October 5, 1998, the prior 29 CFR 1910.134 (i.e., pre-1998 version) was retained, but re-designated as 29 CFR 1910.139. It applied only to respiratory protection against M. tuberculosis (TB) until OSHA withdrew promulgation of a final standard for Occupational Exposure to Tuberculosis on December 31, 2003. At that time, OSHA also revoked 29 CFR 1910.139. Effective as of January 1, 2004, employers whose employees are required to wear respirators for protection against TB must also be in compliance with the 1998 29 CFR 1910.134 standard.

On July 6, 2003, OSHA issued a Notice of Proposed Rulemaking to revise 29 CFR 1910.134. Public hearings were held in 2003, and the Final Rule was published in the Federal Register on August 24, 2006. Significant changes included the addition of Assigned Protection Factors (APFs) and Maximum Use Concentrations (MUCs). The new rule incorporates new definitions and requirements for APFs and MUCs. The revisions also supersede the respirator selection provisions of existing substance-specific standards with these new APFs (except for the respirator selection provisions of the 1,3-Butadiene Standard).

IX. **Inspection Procedures.**

These guidelines relate to specific provisions of 29 CFR 1910.134 and are provided to assist compliance officers with conducting inspections where the standard may apply. Any subparagraphs of the standard not discussed in this directive should be enforced according to their terms.

The standard applies to all respirator usage in General Industry, Shipyards, Marine Terminals, Longshoring and Construction workplaces. It does not apply to agricultural operations. The standard covers respirator use where respirators are being worn to protect employees from exposure to air contaminants above an exposure limit or are otherwise necessary to protect employee health, where respirators are otherwise required to be worn by the employer, and where respirators are voluntarily worn by employees for comfort or other reasons.

A. Permissible Practice - Paragraph (a).

Paragraph 1910.134(a)(1) restates OSHA's longstanding policy that engineering controls must be the primary means used to reduce employee exposure to toxic chemicals, and that respirators may only be used if engineering controls are infeasible or while they are being implemented. Paragraph (a)(2) requires a respirator be provided to each employee when necessary to protect his or her health.

OSHA’s preference for engineering, work practice, and administrative controls is stated in a number of OSHA's substance-specific standards (for example, the Asbestos standard, 29 CFR 1910.1001, and in the Air Contaminant standards, 29 CFR 1910.1000 and 29 CFR 1926.55). Feasible engineering, work practice, or administrative controls must be instituted even though they may not be sufficient to reduce exposure to or below the OSHA permissible exposure limit (PEL). Respirators must be used in conjunction with feasible controls whenever exposures cannot be controlled at or below permissible limits.

1. Inspection Guidelines. The compliance officer should determine what engineering controls are in place and what work practices have been instituted to effectively reduce exposure. If controls are in place, but sampling results indicate these controls have not reduced air contaminant

levels to the extent necessary to protect the health of the employee, then the Compliance Safety and Health Officer (CSHO) should determine if the appropriate respirators are being provided and properly used. Even if the employer has not instituted the required engineering controls, failure to provide respirators to protect employees' health is citable under 1910.134(a)(1) or (a)(2).

2. Citation Guidelines. In cases where an exposure exceeds an OSHA PEL (either an 8-hour time-weighted-average (TWA), ceiling value, short term exposure limit (STEL), or acceptable maximum peak), the following principles apply:

   a. Violations for Exceeding an Exposure Limit. Where a PEL is exceeded for a substance listed in Tables Z-1, Z-2, or Z-3 of 1910.1000, Table Z of 1915.1000, or Appendix A of 1926.55, the appropriate paragraph 1910.1000(a) thru (d), should be cited. For substance-specific standards, the appropriate paragraph for exceeding the PEL should be cited.

      Exposures to levels of air contaminants that exceed the American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Values (TLVs®) or NIOSH Recommended Exposure Limits (RELs), but which have no OSHA PEL, and which are considered to be serious hazards should be considered for violations of Section 5(a)(1) of the Occupational Safety and Health Act (29 U.S.C. 654(a)(1)). Please refer to Appendix D for references to ACGIH and NIOSH. Guidelines on citing Section 5(a)(1) can be found in OSHA's Field Operations Manual (CPL 02-00-150, Chapter 4).

      Section 5(a)(1) shall not normally be used to impose a stricter requirement than that required by the standard. For example, if the standard provides for a PEL of 5 ppm, even if data establishes that a 3 ppm level is a recognized hazard, Section 5(a)(1) shall not be cited to require that the 3 ppm level be achieved unless the limits are based on different health effects. If the standard has only a time-weighted average permissible exposure level and the hazard involves exposure above a recognized ceiling level, the Area Director shall consult with the Regional Solicitor.

      NOTE: An exception to this rule may apply if it can be documented that "an employer knows a particular safety or health standard is inadequate to protect workers against the specific hazard it is intended to address." Such cases shall be subject to pre-citation review.

Section 5(a)(1) violations of the Act should be cited so as to cover all aspects of a serious hazard for which no standard exists. Related violations of the respirator or other standards should be grouped with any Section 5(a)(1) violations.

b. Engineering and Administrative Controls. An employer's failure to implement feasible engineering or work practice controls should be cited under an applicable provision of a substance-specific standard (for example, 1910.1001(f) of the general industry asbestos standard) or, for those substances listed in the Air Contaminants standards, 1910.1000(e) or 1926.55(b). These violations shall be grouped with any exposure exceeding a PEL. Paragraph 1910.134(a)(1) should not be cited along with 1910.1000(e) or 1926.55(b). Paragraph 1910.134(a)(1) should not be cited when an employer fails to use engineering or work practice controls to reduce exposures to chemicals for which OSHA has not established PELs. In appropriate circumstances, an employer's failure to use engineering or work practice controls when there is no OSHA PEL may be citable under 5(a)(1) of the Act.

c. The Requirement to Provide Respirators and Ensure their Use. Whether or not an employer has instituted required engineering or work practice controls, the employer's failure to provide respirators or ensure their use when employees are exposed to hazardous levels of air contaminants is citable under 1910.134(a)(2). The requirement to provide and ensure the use of respirators is also found in several substance-specific standards (for example, 1910.1025(f) of the general industry Lead standard). In cases involving those standards, where respirators have not been provided or used where required, the section of the substance-specific standard requiring respirators should be cited. If the substance is listed only in the Air Contaminants standard, or if a 5(a)(1) violation is established then the violation for not providing and ensuring the use of a respirator should be cited under 1910.134(a)(2). These violations should also be grouped with any overexposure.

The employer must provide the right type of respirator for the substance and level of exposure involved. If the employer provided the wrong kind of respirator, a citation should be issued under 1910.134(a)(2) or 1910.134(d) for not providing an appropriate respirator, unless a substance-specific standard is applicable.

d. The Requirement to Have a Program. Paragraph (a)(2) requires the employer to establish and maintain a respiratory protection

program that includes the requirements in 1910.134(c) whenever respirators are required to protect the health of the employee. The program must be in writing and contain all of the elements specified in 1910.134(c). If respirators are used and there is no written program and deficiencies are noted in accordance with any paragraphs 1910.134(d)-(m), then violation(s) of paragraph (d)-(m) and (c)(1) should both be cited. If an employer has a written program, but an element required by paragraph (c) is omitted, then the subsection of (c) that requires the missing element should be cited.

- The specific actions that the employer must take are in paragraphs (d)-(m). If the employer's written program has all of the required elements, but the employer has not taken one of the actions required in paragraphs (d)-(m), cite the applicable paragraph. If no written program exists, but all other provisions of the standard have been met, a violation for lack of a written program would normally not be cited. CPL 02-00-111, *Citation Policy for Paperwork and Written Programs*, should be reviewed for guidance before citing the written program.

B. Definitions - Paragraph (b).

The standard contains definitions in paragraph 1910.134(b) that provide a clearer understanding of specific terminology used in the standard and how these terms are applied to respirators and their use. Some of these definitions are listed below.

1. **"Adequate warning properties"** was not included in the final standard because the two major warning properties, odor and irritation, are unreliable or otherwise inappropriate to be used as primary indicators of sorbent exhaustion.

2. **"Assigned protection factor"** (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

3. **"Filtering facepiece"** (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium. Whenever a filtering facepiece is used to meet the requirements of the standard, it must be NIOSH approved.

4. A **"High efficiency particulate air"** (**HEPA) filter** is a filter that is 99.97% efficient in removing monodispersed particles of 0.3 micrometers in diameter. NIOSH no longer uses this term in its respirator certification

standard (42 CFR 84). However, OSHA has retained this definition because it is used in many of the existing substance-specific standards. For non-powered air-purifying respirators, NIOSH identifies filters that are 99.97% efficient as N100, P100, and R100. When HEPA filters are required by an OSHA standard, N100, R100, and P100 filters are equivalent. Note: Dust/Mist and Dust/Mist/Fume filters may only be used for particulates with mass median aerodynamic diameters (MMAD) of least 2 micrometers, in accordance with paragraph (d)(3)(iv)(C). Welding fumes and silica flour may be examples of dust particulates that are less than 2 micrometers. If the MMAD cannot be determined, a HEPA filter, or a filter certified by NIOSH under 42 CFR 84 (N95 or higher) must be selected.

5. **"Maximum use concentration"** (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance.

   Note: The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

C. Respiratory Protection Program - Paragraph (c).

A written respiratory protection program is required when necessary to protect the health of the employee from workplace air contaminants or when the employer requires the use of respirators. A limited written program is also required when respirators (other than filtering facepieces) are being voluntarily worn by employees. The program must include workplace-specific procedures and contain all applicable program elements. Where respirators are required, respirators (and their associated requirements such as fit testing and maintenance), training and medical evaluations must be provided at no cost to the employee.

It is the intent of the standard that the employer would not be required to incur any costs associated with voluntary use of filtering facepieces other than providing a copy of Appendix D of the standard to each user. If employers allow the voluntary use of respirators other than filtering facepieces, the costs associated with ensuring the respirator itself does not create a hazard, such as medical evaluations and maintenance, must be provided at no cost to the employee.

Note: A respirator use requirements flow chart is included in Appendix A of this directive. The flow chart may be used as a resource guide for 1910.134(c).

1. Inspection Guidelines. During inspections of workplaces where respirators are used, the CSHO is to evaluate the respiratory program and determine if the employer's written program is adequate and complete for that particular site.

   The program must be tailored to cover the specific work operations and practices in the workplace. The provisions listed in paragraph (c)(1)(i) thru (ix) of the standard must be included in the written program unless it is determined they are not applicable.

   These provisions are to be considered when evaluating a written program:

   a. procedures for selecting respirators,
   b. medical evaluations for users,
   c. fit-testing procedures for tight-fitting respirators,
   d. procedures for proper use during routine and emergency situations,
   e. procedures for cleaning, storing, disinfecting, etc.,
   f. procedures to ensure adequate air quality and flow for atmosphere-supplying respirators,
   g. training on respiratory hazards,
   h. training on proper use, donning and removing the respirator, etc.,
   i. procedures for regularly evaluating the effectiveness of the program.

   The CSHO shall review the written program and interview employees. Compliance with the program should be verified during the walkaround by personal observation and employee interviews. Questions asked during the interview should focus on determining how familiar the person is with the respirator program and the use of the respirators at the particular workplace.

2. Citation Guidelines. If respirators are required to be worn in the workplace or respirators other than dust masks are worn by voluntary users, a written program is required. In cases where respirators are necessary to protect the health of the employee from workplace contaminants (i.e., an overexposure to an air contaminant has been established), or when the employer requires the use of respirators for other reasons, the following apply for citing violations of 1910.134:

   a. If respirators are used and the employer has no written program, and deficiencies are noted in accordance with 1910.134(d)-(m), appropriate paragraphs of 1910.134(c)-(m) shall be cited and normally grouped as serious citations. Common examples include written program, 1910.134(c)(1), medical evaluation, 1910.134(e), fit testing, 1910.134(f), storage, 1910.134(h)(2), training, 1910.134(k), and selection of respirators, 1910.134(d).

Note: If the employer requires the use of respirators even though employees are not overexposed, a written program is required under 1910.134(c)(1).

b. If respirators are being used and a partial program is being implemented, the specific deficiencies of 1910.134(d)-(m) shall normally be cited as serious violations, regardless of whether an overexposure is documented.

c. If the employer's written program has all of the required elements listed in 1910.134(c)(1) but the employer has not taken one of the specific actions required in 1910.134(d)-(m), these deficiencies shall normally be cited as serious.

d. If no written program exists, but all other provisions of the standard have been met and it is unlikely that the deficiency in the plan will result in failure to follow proper practices in the future, a violation for lack of a written program, 1910.134(c), shall normally not be cited. (Refer to CPL 02-00-111, *Citation Policy for Paperwork and Written Programs*).

3. Voluntary Use. Voluntary use is when an employee chooses to wear a respirator (e.g., for comfort), even though the use of a respirator is not required either by the employer or by an OSHA standard. Even though employees may be voluntarily using respirators, adverse health conditions may result from the wearing of a respirator itself. Examples include, but are not limited to:

- an employee's health being jeopardized by the wearing of a respirator (e.g., employee has a cardiac and/or pulmonary disorder that could be aggravated by respirator use),
- the wearing of a dirty respirator that can cause dermatitis or ingestion of a hazardous chemical, and
- the sharing of a respirator that leads to transmittal of disease.

The requirements for voluntary use of respirators can be divided into two categories:

- Requirements for filtering facepieces , i.e., dust masks; and,
- Requirements for all other respirators, such as elastomeric (e.g., rubber, silicone, neoprene, plastic) facepieces and

powered air purifying respirators, typically with removable cartridges or filters.

a. Voluntary Use of Filtering Facepiece Respirators. The majority of voluntary use situations involve the use of filtering facepieces (i.e., disposable dust masks, including those for nuisance levels of organic vapors), which are provided for the employee's comfort. For voluntary use, NIOSH-approved filtering facepieces are strongly recommended but are not required.

The voluntary use of filtering facepieces alone does not require the employer to have a written program. In exceptional circumstances, however, a citation may be warranted if an adverse health condition due to the respirator itself could be supported and documented (e.g., respirator is dirty, contaminated, or its use interferes with the employees ability to work safely). In these circumstances, a citation of 1910.134(c)(2)(i) shall be recommended and normally classified as other-than-serious (OTS). If the contamination is a toxic material (e.g., lead) and considered an ingestion hazard, then a serious citation is recommended.

Some manufacturers market unapproved respirators as "face masks" or by using other terminology. These are still considered respirators and the information in Appendix D of the standard must be given to users of these unapproved respirators. Merely posting Appendix D is not considered adequate. An employer's failure to give users the information in Appendix D shall be cited under 1910.134(k)(6) or (c)(2)(i) and shall normally be classified as OTS.

If unapproved respirators are required to be used by the employer, then by definition they cannot be considered voluntary use and a citation of 1910.134(d)(1)(ii) shall be cited as serious.

b. Voluntary Use of Elastomeric or Atmosphere-Supplying Respirators. In cases where an employee is voluntarily using a respirator other than a filtering facepiece (dust mask) respirator, the employer must provide employees with information in Appendix D of the standard. The employer's failure to provide the required information shall normally be cited under 1910.134(k)(6) as OTS. Merely posting Appendix D of the standard is not considered adequate.

Use of elastomeric or supplied-air respirators, even when voluntary on the part of the employee, will require the employer to include all applicable elements in a written program to ensure that use of

these respirators does not create a hazard. The written respiratory protection program will vary by the type of respirator used but must include at least the medical evaluation, cleaning, maintenance, and storage components. Deficiencies in the written program shall be cited under 1910.134(c)(2)(ii). If the employer's written program has the required elements listed in 1910.134(c)(1) but the employer has not taken one of the specific actions required in 1910.134(e) medical evaluation, 1910.134(h) maintenance and care of respirators, and/or 1910.134(k) training and information, these deficiencies shall normally be grouped as one serious violation.

4. Program Administrator. A "respiratory protection program administrator" is required to oversee and evaluate the respirator program. This individual must be suitably trained and have the appropriate accountability and responsibility to manage the full respiratory protection program.

   Companies with multiple work sites may have a program administrator at each work site, as long as this person is qualified and retains the accountability and responsibility for the day-to-day operation of the specific program for that site. Alternatively, a company may opt to have one program administrator for several sites and/or one program for several similar sites as long as the program contains the necessary elements and addresses the hazards at those sites.

5. Inspection Guidelines. The extent of training or experience required for the program administrator will vary based on the complexity of the respiratory hazards in the workplace. Where significant program deficiencies are discovered, compliance officers should discuss questions about the program with the program administrator to determine how familiar she or he is with respirators, the hazards in the workplace, respirator use in the facility, the respirator standard and the company's respirator program.

6. Citation Guidelines. An employer's failure to designate a program administrator, or an employer's designation of a program administrator who is not qualified, shall be cited under 29 CFR 1910.134(c)(3), and the violation will normally be classified as serious.

D. Selection of Respirators - Paragraph (d).

The employer is required to select and provide an appropriate respirator (NIOSH certified) based on the respiratory hazard(s) present in the workplace. The employer must identify hazardous airborne contaminants that employees may inhale and make a reasonable estimate of employee exposures in determining the appropriate respirator for employees to use. The employer must evaluate the

respiratory hazards in the workplace where there is a potential for an employee overexposure. Oxygen deficient atmospheres and those atmospheres that are not or cannot be estimated must be treated as immediately dangerous to life and health (IDLH) environments. Employers are encouraged to refer to the *OSHA Small Entity Compliance Guide for the Respiratory Protection Standard (http://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf)* for further guidance. Many small companies may need assistance in conducting a workplace hazard assessment and selecting the appropriate respiratory protection as required by 1910.134(d). Employers may want to 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 for air-purifying respirators. Expert assistance is available from organizations such as worker's compensation carriers, industry associations, private consulting firms, respirator product vendors, and OSHA Consultation services.

1. Workplace Hazard Assessment. Where a contaminant is regulated by a substance-specific standard that requires monitoring, failure to monitor in accordance with the standard's terms would be cited under that standard. For other contaminants, employers must make a reasonable estimate of employee exposures. As a continuing practice, employers are required to identify hazards as a result of changes in the workplace such as a change in equipment, process, products, or control measures that could result in new exposures. Appropriate respirators should be provided as necessary. Although the most reliable and accurate method to determine exposure is to conduct personal air sampling, this is not explicitly required by OSHA's Respiratory Protection standard. Other means can be used to estimate workplace exposures. Acceptable means include using one or more of the following:

    a. Personal sampling**.** This involves measuring the concentration of hazardous airborne substances in a particular employee's breathing zone over a set period of time. Personal sampling is the most reliable method because it is the most accurate way to estimate employee exposures. When employers perform personal sampling, they should use validated methods, such as the OSHA Sampling and Analytical Methods or those in the NIOSH Manual of Analytical Methods protocols, and sample results should be compared to exposure limits such as the OSHA PELs.

    If personal breathing zone sampling is used, it must reflect the exposures of employees on each work shift, in each job classification, in each work area where employees could reasonably be expected to be exposed to a respiratory hazard. The number of samples necessary to accurately assess potential employee exposure depends on the complexity, variability, and

controls of the work processes, and how well the employer has characterized those variables. Where and employer has conducted sampling, CSHOs should ensure that the employer's sampling represents all work shifts and processes associated with the hazardous airborne substance(s).

b. Environmental screening**.** This involves estimating employee exposures based on the concentrations of hazardous substances picked up by monitors in the work environment. The environmental screening data may be obtained from the work area or the worker's breathing zone as the specific instrumentation and workplace conditions permit. Environmental screening is generally considered less accurate in characterizing employee exposures than personal sampling.

Employers may use direct read instrumentation, such as photoionization detectors (PID), flame ionization detectors (FID), infrared detectors (IR), scattered light dust detectors, or detector tubes to conduct environmental screening. Where the employer relies on environmental screening to conduct the workplace hazard assessment, screening data should be obtained at times and locations appropriate for evaluating employee exposures. Employers should determine the worst-case exposure scenario when conducting the workplace hazard assessment.
To be accurate, the screening equipment used must be properly calibrated in accordance with the manufacturer's instructions and also be able to detect and analyze the suspected airborne hazard(s). Interferences to the instrumentation should also be considered when using environmental screening data to conduct the workplace hazard assessment.

c. Historical data. This is exposure data previously obtained during work operations conducted under conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer's current work operations. To ensure the greatest level of employee protection, the historical data must represent the highest exposures likely to occur under reasonably foreseeable conditions of storage, processing, use, or handling. The employer must document the use of historical data as part of its written program. For historical data to accurately characterize exposures in the employer's workplace, it is critical that the employer's processes, controls, and facility configuration are sufficiently similar to those of the source data utilized.

d. Objective data. This is exposure data obtained from industry studies, trade associations, or from tests conducted by chemical

manufacturers which may be used to closely estimate airborne concentrations in the workplace. To ensure the greatest level of employee protection, the objective data must represent the highest exposures likely to occur under reasonably foreseeable conditions of storage, processing, use, or handling. The employer must document the use of objective data as part of its written program. For objective data to accurately characterize exposures in the employer's workplace, it is critical that the employer's processes, controls, and facility configuration are sufficiently similar to those of the source data utilized.

e. Mathematical approaches. The preamble to the 1998 final rule (63 FR 1199) states that employers may use data on the physical and chemical properties of air contaminants, combined with information on room dimensions, air exchange rates, contaminant release rates, and other pertinent data (including exposure patterns and work practices) to estimate the maximum exposure that could be anticipated in the workplace.

2. Safety Data Sheets. The Hazard Communication standard requires employers to inventory the hazardous chemicals in their workplace and to maintain copies of safety data sheets (SDS) for each hazardous chemical (1910.1200(e)(1)(i), (g)(1)). Similarly, the Respiratory Protection standard requires employers to examine the workplace and determine if the quantity, circumstances, and use of the hazardous chemicals require further evaluation for respiratory hazards (1910.134(d)(1)(iii)). SDSs for hazardous chemicals are required to contain information such as the substance's hazard classification, physical and chemical characteristics, toxicological information, and generally applicable control measures. Some SDSs include recommendations on appropriate respiratory protection. For those chemicals that do present a potential respiratory hazard, employers can contact the chemical manufacturer for additional information on predicted exposure levels and methods to further control worker exposure.

OSHA issued its revised Hazard Communication standard, 29 CFR 1910.1200, in March 2012. This revision (HCS 2012) aligned OSHA's standard with the *Globally Harmonized System of Classification and Labeling of Chemicals (GHS), Revision 3*. The GHS standardizes how the hazards of chemicals are evaluated and classified. HCS 2012 incorporated these GHS changes, revised chemical labeling, and replaced material safety data sheets (MSDSs) with safety data sheets (SDSs) in a standardized format. Under HCS 2012, chemical manufacturers and importers must perform hazard classifications on the chemicals they produce or import (29 CFR 1910.1200(d)(1)), and then must convey the language required from the classifications on the labels and SDSs.

HCS 2012 requires manufacturers to classify hazardous chemicals to identify their intrinsic hazardous properties (1910.1200, Appendix A, section 0.1.1). Several chemical hazard classes and categories require respiratory protection precautionary statements. Chemicals that are acutely toxic by inhalation and respiratory sensitizers require the precautionary statements indicated in Table 1 below. Employers using chemicals classified as acutely toxic by inhalation and respiratory sensitizers must have completed exposure assessments as required by 1910.134(d)(1) if there is a reasonable possibility of employee overexposure.

Table 1. Hazard Classification and Respirator Precautionary Statement in 29 CFR 1910.1200.

Hazard Class	Hazard Category	Precautionary Statement
Acute Toxicity Inhalation	Category 1	Prevention: [In case of inadequate ventilation] wear respiratory protection. (1910.1200, Appendix C.4.3)
Acute Toxicity Inhalation	Category 2	Prevention: [In case of inadequate ventilation] wear respiratory protection. (1910.1200, Appendix C.4.3)
Sensitization Respiratory	Category 1 (including both sub-categories 1A and 1B)	Prevention: [In case of inadequate ventilation] wear respiratory protection. (1910.1200, Appendix C.4.6)

NOTE: Also, see section G. "Use of Respirators – Paragraph (g)" for inspection guidelines on paragraph 1910.134(g)(2)(i), which requires employers to maintain appropriate surveillance to identify *changes* in the workplace that could reduce respirator effectiveness, such as a change in equipment, process, products, or control measures that could result in a change in exposures.

3. Selection of Appropriate Respirator. After a workplace hazard assessment identifies respiratory hazards, the employer must select the respirator/filter appropriate for the workplace environment based on the airborne hazard(s) present and workplace and user factors that affect respiratory performance and reliability. This selection process must include:

   a. For particulates, the determination of the filtration efficiency, i.e., whether the filter media is 95%, 99%, or 99.97% efficient;

b. For chemical vapors, whether the sorbent bed characteristics are specific to the hazard;

c. An evaluation of the selected respirator/filter's assigned protection factor (APF) and the protection provided to the employee [(d)(3)(i)(A)]; and,

d. The maximum use concentration (MUC) for which the respirator may be used [(d)(3)(i)(B)].

All respirators required to be used in the workplace must be NIOSH-approved and appropriate for the hazard. This includes specialized-use respirators such as for Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) use.

Title 42 CFR Part 84 identifies specific use situations for APR filters depending on the presence or absence of oil aerosols. "N" respirators/filters are not resistant to oil, "R" respirators/filters are resistant to oil, and "P" respirators/filters are oil-proof. The selection of N-, R-, and P-series respirators/filters must be made as follows:

a. Series N, P, or R: If no oil particles are present in the work environment, use a filter of any series.

b. Series P or R: If oil particles (e.g., lubricants, cutting fluids, glycerine, etc.) are present, use an R- or P-series. R-series may be used for one shift only if oil aerosols are present. N-series cannot be used if oil particles are present.

c. Series P only: If oil particles are present and the filter is to be used for more than one work shift, use only a P-series. P-series may be used for more than one shift even if oil aerosols are present.

Thus, a filter marked N95 would mean an N-series filter that is at least 95% efficient. Chemical cartridges that also include particulate filter elements will carry a similar marking that pertains only to the particulate filter element.

The assigned protection factor (APF) is the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a respiratory protection program (1910.134(d)(3)(i)(A)). See Appendix C of this Instruction, Assigned Protection Factors, and OSHA's guidance publication, "Assigned Protection Factors for the Revised Respiratory Protection Standard" (3352-02, 2009) for additional details and guidance.

The maximum use concentration (MUC) is the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected using the selected respirator/filter (1910.134(d)(3)(i)(B)). Employers must (1) select a respirator/filter that maintains the exposure at or below the MUC, as measured outside the respirator, (2) not apply MUCs to IDLH conditions, (3) set the maximum MUC at the lower limit when the calculated MUC exceeds the IDLH or the performance limits of the cartridge. Employers must follow the respirator/filter manufacturer's recommendations.

4. Inspection Guidelines. The CSHO should closely scrutinize employer's estimate of employee exposure and determine if the hazard assessment is based on appropriate data and reliable information. OSHA personnel have considerable experience evaluating air monitoring data for representativeness of the sample and reliability and accuracy of data. Where historical or objective data are used to determine employee exposure, the data must have been obtained under conditions which closely resemble the process, types of materials, control methods, work practices, and environmental conditions in the workplace.

Mathematical predictive equations should be limited to situations where workplace factors, such as contaminant release and ventilation system performance, are fairly constant over the work shift and predictable. The results should incorporate reasonable safety factors and be interpreted conservatively. CSHOs must exercise professional judgment in concluding whether the mathematical approach provides appropriate guidance. An example of when a mathematical predictive equation is not allowed is the Methylene Chloride standard, 1910.1052, because it prohibits the use of air purifying respirators (APRs) for protection against methylene chloride and would supersede any model which predicts a change schedule time for this chemical.

The CSHO should examine the employer's Hazard Communication Program for further information on existing or potential respiratory hazards in the workplace. For more information on hazard communication program please refer to the Hazard Communication Standard (1910.1200).

The CSHO should be aware of the potential for an emergency situation and the type of respirators selected. The employer must provide the appropriate emergency escape respirator in the immediate work area for employee use (1910.134(d)) and address emergency use respirators in the written respirator program (1910.134(c)(1)(iv)).

The CSHO should also investigate, through routine employee interviews, what actions the employer has taken to re-evaluate employee exposure when employees have made health complaints to determine if appropriate

action has been taken to address a respiratory hazard. Employee interviews are also valuable to determine the employer's re-evaluation of worker exposures when processes, controls, and/or configuration have changed (1910.134(g)(2)(i)).

5. Citation Guidelines. If the employer has not made any effort to assess the respiratory hazards, and there is potential for an overexposure, the CSHO should cite section (d)(1)(iii). The extent to which the employer explored ways to reasonably estimate exposures must be evaluated at each worksite.

   Paragraph (d)(1)(i) should be cited when the CSHO documents that an overexposure is possible, and a suitable respirator is not being used for protection against that exposure. Paragraph (d)(1)(ii) should be cited where a NIOSH-unapproved respirator is being used, even where an overexposure has not been established.

   In certain construction settings, CSHOs may cite employers for failure to conduct an adequate workplace hazard assessment under 29 CFR 1926.20(b)(2). The Occupational Safety and Health Review Commission has upheld violations of 1926.20(b)(2) where employees were overexposed to carbon monoxide (CO) during a concrete pour in an enclosed workplace where several gas powered pieces of equipment were being operated. The employer failed to conduct adequate inspections, and permitted work where CO concentrations were subsequently calculated above the PEL.

6. Air-purifying Respirators for Protection Against Gases and Vapors in Atmospheres That Are Not IDLH. If a cartridge/canister air purifying respirator for the protection against gases and vapors does not have an end-of-service-life indicator (ESLI), then the employer must implement a cartridge/canister change schedule based on objective information that will ensure the cartridges/canisters are changed before the end of their service life (1910.134(d)(3)(iii)(B)(2)). The purpose of a change schedule is to establish the time period for replacing respirator cartridges and canisters; this is critical to preventing contaminants from respirator breakthrough, and thereby over-exposing workers. Data and information relied upon to establish the schedule must be included in the respirator program. See Appendix B, Change Schedules Guide – A Listing of Acceptable Methods, for a list of currently available approaches or methods for respirator cartridge change schedules. Several of OSHA's substance-specific standards contain provisions addressing this issue:

   a. Acrylonitrile 1910.1045(h)(2)(ii)(A): end-of-service life or end of shift (whichever occurs first).

b. Benzene 1910.1028(g)(2)(ii): end-of-service life or beginning of shift (whichever occurs first).

c. 1,3-Butadiene 1910.1051(h)(2)(ii): every 1 – 4 hours depending on the concentration according to Table 1 and at beginning of each shift.

d. Vinyl chloride 1910.1017(g)(3)(ii): end-of-service life or end of shift in which they are first used (whichever occurs first).

e. Methylene chloride 1910.1052(g)(2)(ii): canisters may only be used for emergency escape and must be replaced after use.

Change schedules for all other gases and vapors must be established and implemented by the employer (1910.134(d)(3)(iii)(B)(2)). OSHA has stated in the preamble to the 1998 final rule that the employer is not required to research and analyze experimental breakthrough data, but may obtain information from sources with expertise and knowledge that can help the employer to develop reasonable change schedules (63 FR 1152, 1205-06). The preamble further explains that warning properties cannot be the sole basis for the employer's changeout schedule (63 FR at 1205). However, respirator users should be trained to understand that abnormal odor or irritation is evidence that respirator cartridges need to be replaced. Where an effective change schedule is implemented, air-purifying gas and vapor respirators may be used for hazardous chemicals, including those with few or no warning properties.

7. Inspection Guidelines. OSHA understands that new or existing objective data could be presented in a variety of formats and from a number of different sources. CSHOs should approach the evaluation of this requirement with professional judgment and flexibility. There are a number of factors that influence the service life of a cartridge. Some of the more significant factors include: the contaminant's chemical properties, temperature, humidity, contaminant concentration, work rate (breathing rate) of the respirator user, variability of respirator cartridges between manufacturers, and the presence of multiple contaminants. To ensure fair and reasonable enforcement of this provision, the following guidelines are presented to assist the CSHO in determining compliance with this provision.

a. Availability of Objective Data: Ascertain if there are sources of objective data for the particular make and model of the respirator cartridge/canister and if this data is sufficient to implement change schedules. Typical sources would include: respirator manufacturers, industry organizations, trade associations, professional societies, chemical manufacturers (SDS), academic

institutions, and ad hoc committees. The CSHO should determine if the employer has access to adequate information to comply with this provision. For a list of some options that employers may use in developing their change schedules, refer to Appendix B of this instruction.

b. Use of Inappropriate Respirator Cartridge/Canister: Determine if the air purifying respirator is appropriate for the contaminant present in the workplace. In some cases, the breakthrough time may be so rapid (minutes) that air purifying respirators are not feasible, and supplied air respirators should be used, such as with the methylene chloride standard (1910.1052). CSHOs should consult respirator manufacturers and other reference material for this information.

c. Change Schedules for Mixtures: Establishing cartridge service life for mixtures of contaminants is a complex task and one that requires considerable professional judgment to create a reasonable change schedule. Cartridge service life for mixtures is best determined using experimental methods. Change schedules are very difficult to develop for mixtures using predictive mathematical models.

The change schedule for a mixture should be based on reasonable assumptions that include a margin of safety for the worker wearing the respirator. Where the individual compounds in the mixture have similar breakthrough times (i.e., within one order of magnitude), service life of the cartridge should be established assuming the mixture stream behaves as a pure system of the most rapidly migrating component or compound with the shortest breakthrough time (i.e., sum up the concentration of the components). Where the individual compounds in the mixture vary by two orders of magnitude or greater, the service life may be based on the contaminant with the shortest breakthrough time. OSHA believes that an approach such as this may reflect good health and safety practice where neither objective nor experimental data are available for the mixture.

The CSHO should review the written respiratory protection program to ensure that it describes the information and data relied upon, the basis for the canister and cartridge change schedule, and the basis for reliance on the data as required by the standard. Again, CSHOs should exercise judgment in evaluating mathematical models, rules of thumb, experimental data, use of analogous chemical structures, and other reasoned approaches.

d. Chemical Contaminant Migration: CSHOs should be aware that some contaminants have a tendency to migrate through cartridge/canister sorbent material during periods of storage or non-use. This is characteristic of the contaminant-carbon bed interaction for organic chemicals with boiling points below 65 degrees Centigrade (149 degrees Fahrenheit) and would predictably shorten breakthrough times. In cases where respirators are used for multiple days this could present an additional exposure to the respirator user. Where contaminant migration is possible, respirator cartridges/canisters should be changed after every workshift where exposure occurs unless the employer has specific objective data to the contrary (desorption studies) showing the performance of the cartridge in the conditions and schedule of use/non-use found in the workplace.

8. Citation Guidelines. If the employer has, or reasonably could have had, the knowledge necessary to implement change schedules and has done little or nothing to determine accurate change schedules, (d)(3)(iii)(B) should be cited. For citation purposes, the CSHO should document the purpose of respirator use, make and model of respirator(s), identification and concentration of contaminant(s), duration of use, exposure to a mixture of contaminants and any other relevant user and workplace factors.

E. Medical Evaluation - Paragraph (e).

Employers must provide a medical evaluation to determine each employee's fitness to wear a respirator. The evaluation must be provided before the initial fit-testing and before the respirator is used for the first time. Medical evaluations consist of the administration of a medical questionnaire, which is found in the mandatory Appendix C of the standard, or provision of a physical examination that elicits the same information as the questionnaire for the employee. An employer who opts to provide physical examinations to his or her employees need not also administer the medical questionnaire. These evaluations are required for all respirator users except for employees who voluntarily use dusts masks and for those whose only respirator would be the use of escape-only respirators. A self-contained breathing apparatus (SCBA) is not considered an escape-only respirator. Employees who refuse to be medically evaluated cannot be assigned to work in areas where they are required to wear a respirator.

Where employers use a transient workforce (e.g., temporary or construction workers), the employer may accept the written medical recommendation of the employee's ability to use a respirator as determined by the employee's previous employer's physician or other licensed health care professional (PLHCP) only if the work conditions and type and weight of the respirator remains the same and appropriate for use at the employee's new work site. In this situation, the

employer must obtain from the previous employer a copy of the PLHCP's written recommendation.

Paragraph (e)(2)(ii) requires the employer to obtain the information required in the questionnaire or provide the initial examination prior to performing fit testing of employees and prior to requiring the employee to wear the respirator in the workplace. When using the questionnaire, the employer may not change the wording of questions in Part A, if the form is being used as the sole means to evaluate employees. The PLHCP may add questions to the questionnaire that could assist in determining whether the employee can perform the work while wearing respiratory protection.

In order to maintain strict confidentiality of the information obtained in the questionnaire, the employer's role is limited to distributing the blank questionnaire to the employee for him or her to fill out, or providing it to the PLHCP, who will administer the questionnaire to the employee. If the employer provides the questionnaire to the employee, an addressed and postage-paid envelope should also be provided for the employee to mail it to the PLHCP. The questionnaire and findings may also be maintained by the employer's medical office, if the health office is administratively separate from the employer's central administration offices.

If the employer does not have or chooses not to use an in-house medical staff, arrangements must be made for a PLHCP to perform the medical evaluations. The PLHCP may be a physician, a registered nurse, a nurse practitioner, a physician assistant, or other licensed health care professional acting within the scope of his or her state license, registration, or certification. The PLHCP must be legally permitted by his or her professional license to conduct the type of medical evaluation required by the Respiratory Protection standard. Scope of practice for non-physician PLHCPs will vary from state to state. All PLHCPs who participate in any aspect of the medical evaluation must be practicing within the scope of their license. For assistance in determining which state licensing board or agency to contact to determine a PLHCP's legally permitted scope of practice, the CSHO can contact the Directorate of Technical Support and Emergency Management (DTSEM) in OSHA's National Office.

The employer must ensure that the questionnaire is administered in such a manner that employees can understand the content, and the confidentiality of the record is maintained. Where the employee cannot understand English, the employer must have the questionnaire translated into the employee's language either through a translator or a translated written copy. The questionnaire has been translated into Spanish and is available on OSHA's homepage (www.osha.gov) in the Respirator Q & A Document. In cases where the employee cannot read, the employee can request someone other than the employer to orally read him or her the questionnaire, or the PLHCP may obtain through an interview or examination the same information requested on the medical questionnaire.

1. Inspection Guidelines. The CSHO should determine if the requirements of paragraph (e) are being met by interviewing a number of employees and asking whether they have been provided with a confidential evaluation of their ability to wear a respirator, either by the administration of the medical questionnaire or by physical examination. Compliance officers should determine what mechanism the employer is using to ensure that the employer does not see the answers to the questionnaire in order to maintain confidentiality. The CSHO can verify that these medical evaluations have in fact been conducted by asking the employer to see the written recommendation of the employee's ability to use a respirator. The employee should have also received a copy. The recommendation must contain only the information required by subparagraph (e)(6).

   The CSHO should determine what supplemental information was given to the PLHCP by the employer. This can be done through interviewing the PLHCP or reviewing documentation from the employer. If the employer is relying on a medical evaluation for the employee from a previous employer (which is allowed only when the employer uses a transient workforce), the CSHO should determine that the work conditions and respirator remained the same.

   If the CSHO suspects employees did not receive a medical evaluation or have not answered the questionnaire honestly (e.g., been "coached" by the employer on how to respond to the mandatory questions from Appendix C of the standard), then the CSHO should ask to interview the PLHCP. If this interview still results in questions about the validity of the medical evaluation, the CSHO may wish to obtain a Medical Access Order and review the actual medical questionnaire and/or the physical examination records where necessitated by paragraph (e).

   The CSHO should also ensure that any required physical examinations have in fact been conducted, as required by (e)(3) and (e)(7). A positive answer to any question in Part A, Section 2, Questions 1-8 (also questions 10-15 for SCBA and full-face respirator users) requires a follow-up by the PLHCP. The PLHCP may evaluate positive responses through consultation with the employee to determine whether the positive response is relevant to the employee's ability to wear a respirator or if further physical examination is necessary (e.g., brief smoking history in the past, as compared to current heavy smoker status).

   If questions arise regarding the qualifications of the PLHCP, the CSHO should inquire with the state licensing board or the applicable registration or certification agencies in that state to ensure that the PLHCP is acting within the scope of his or her practice.

2. Citation Guidelines. If medical evaluations are not provided, a violation of (e)(1) exists. If the PLHCP designated by the employer is not operating within the scope of his or her license, or the license has expired or is invalid, the employer should be cited under paragraph (e)(2)(i) for choosing an inappropriate PLHCP.

   a. If the employer's medical evaluation does not obtain the mandatory information required in Part A, Sections 1 and 2 of Appendix C, then a violation of (e)(2)(ii) exists.

   b. If the PLHCP is not provided with the appropriate supplemental information, a violation of (e)(5) exists.

F. Fit Testing - Paragraph (f).

Fit testing is required for all employees using negative or positive pressure tight-fitting respirators, where such respirators are required by OSHA or where the employer requires the use of such a respirator. A fit test is not required for voluntary users or for escape-only respirators.

The fit test must be performed before the respirator is used in the workplace. It must be repeated at least annually and whenever a different respirator facepiece is used or a change in the employee's physical condition could affect respirator fit. If the respirator subsequently becomes unacceptable to the employee (i.e., causes irritation or pain to the employee), the employee must be given the opportunity to select a different respirator facepiece and be retested.

Qualitative Fit Testing (QLFT) may be used to fit test negative pressure air-purifying respirators if they will only be used in atmospheres less than ten times the PEL, since existing evidence only validates the QLFT protocols listed in Appendix A of the standard to identify respirators that achieve a fit factor of 100. For greater concentrations, Quantitative Fit Testing (QNFT) must be used. Quantitative and qualitative OSHA-accepted fit test protocols are in Appendix A of the standard. When quantitative fit testing is used, all full-facepiece respirators must meet or exceed a fit factor of 500, while quarter- and half-mask respirators must meet or exceed 100. For all positive pressure, atmosphere-supplying respirators, either qualitative or quantitative fit testing may be used. While atmosphere-supplying respirators are fit tested in the negative pressure mode, these respirators are most often used as positive pressure respirators in the workplace. Positive pressure atmosphere-supplying respirators that pass the QLFT or QNFT fit test may be used at the higher protection factors assigned to these respirators. See Table 2 for a summary.

1. Inspection Guidelines. The CSHO should determine which protocol was used for fit testing and if all employees who are wearing tight-fitting respirators have been fit tested in the last twelve months for the respirator

they are wearing. Fit testing procedures should be discussed with the program administrator. If fit testing is being performed, the CSHO should observe the company's procedures and evaluate their adherence to the prescribed protocol.

Where employees move from job to job within the year (e.g., temporary or construction workers), their fit test need not be repeated if the employer obtains a copy of the original fit test record and the same respirator make, model and size is available and appropriate for use at their new work site.

2. Citation Guidelines. Fit test records should be reviewed. If no fit test record is found it must be determined if they were not maintained ((m)(2)(ii)) or the test was not performed ((f)(2)) and cited accordingly. For not following prescribed protocol, cite (f)(5). Using QLFT for negative pressure APRs used in atmospheres greater than 10 times the PEL would be cited as (f)(6).

   a. If fit testing was done by a previous employer within the required time, but no fit test record was obtained by the current employer, a citation for (m)(2) should be issued.

   b. If the CSHO determines the fit testing was not appropriate for the present respirator usage, citations for the appropriate requirements of paragraph (f) should be issued.

Table 2

Acceptable Fit Testing Methods

	QLFT	**QNFT**
Half-Face, Negative Pressure, APR (<100 fit factor)	Yes	Yes
Full-Face, Negative Pressure, APR (<100 fit factor) used in atmospheres up to 10 times the PEL	Yes	Yes
Full-Face, Negative Pressure, APR (>100 fit factor)	No	Yes
PAPR	Yes	Yes
Supplied-Air Respirators (SAR), or SCBA used in Negative Pressure (Demand Mode) (>100 fit factor)	No	Yes
Supplied-Air Respirators (SAR), or SCBA used in Positive Pressure (Pressure Demand Mode)	Yes	Yes
SCBA - Structural Fire Fighting, Positive Pressure	Yes	Yes
SCBA/SAR - IDLH, Positive Pressure	Yes	Yes
Mouthbit Respirators	Fit testing Not Required	
Loose-fitting Respirators (e.g., hoods, helmets)		

G. Use of Respirators - Paragraph (g).

Employers must establish and implement procedures for the proper use of respirators. These procedures include prohibiting conditions that may result in facepiece leakage, preventing employees from removing respirators in hazardous environments, ensuring continued respirator operation throughout the shift, and establishing procedures for the use of respirators in IDLH atmospheres.

1. Facepiece Seal Protection.

a. Inspection Guidelines. The CSHO should be alert for the presence of facial hair (more than one day's growth) that comes between the sealing surface of the respirator and the face as well as other conditions that could result in facepiece seal leakage or interfere with valve function of tight-fitting respirators, such as the presence of facial scars, the wearing of jewelry, or the use of headgear that projects under the facepiece seal. Corrective glasses or goggles or other personal protective equipment (such as faceshields, protective clothing, and helmets) must not interfere with the seal of the facepiece to the face of the user. If employees wear other safety equipment with their respirators, the employees must pass an appropriate fit test while wearing the equipment to determine if it interferes with the seal.
Employees should be observed to determine if the seal check procedures are being performed each time the respirator is donned. The procedure used must either be listed in Appendix B-1 of 1910.134, or be recommended by the manufacturer if the employer demonstrates it is as effective as those listed in Appendix B-1. Alternative seal checks must be based on scientific studies. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece when the exhalation valve or surface is covered, the user exhales gently, and there is no evidence of outward leakage at the seal. The negative check requires covering the inlet opening or surface, inhaling gently, and having the facepiece remains in a slightly collapsed condition with no inward leakage of air detected.

b. Citation Guidelines. The CSHO should cite (g)(1)(i)(A) when employees' facial hair comes between the sealing surface of the facepiece and the face or interferes with valve function; (g)(1)(i)(B) when any other condition except for those listed in (g)(1)(ii) interferes with the face-to-facepiece seal; (g)(1)(ii) when the employee is wearing equipment (glasses, goggles, helmets, etc.) that affects the face-to-facepiece seal, but was not worn during fit testing; (g)(1)(iii) if user seal checking is not being performed or the employer has not demonstrated that the

procedures used are those listed in or as effective as those in Appendix B-1. This paragraph should not be cited in voluntary use situations if overexposures are not found.

2. Continuing Respirator Effectiveness.

a. Inspection Guidelines. The employer is required, by paragraph (g)(2)(i), to maintain appropriate surveillance of workplace conditions and degree of employee exposure (such as to air contaminants) or stress. Also, paragraph (c)(1)(ix) requires employers to address in its written program the type of regular surveillance of the workplace necessary to evaluate the effectiveness of the respirator program. The surveillance procedures may include continuous or periodic monitoring, on-site observations, and notation of problems. The intensity of the surveillance should be tailored to the hazards present in the workplace. Highly hazardous substances that pose acute respiratory hazards merit a higher degree of surveillance.

Paragraph (g)(2)(ii) requires that employers ensure that employees leave the respirator-use area to correct certain problems associated with respirator use, including the detection of contaminant breakthrough, and to replace the respirator or its filters or cartridges. Employees should be interviewed (e.g., What do you do if you notice a leak?) to determine whether there are any policies or actions which would prohibit or impede them from leaving the area should they have significant problems with their respirators or which impede the replacing of filters or cartridges. Paragraph (g)(2)(iii) is designed to prevent employees from reentering a workplace after leaving because of a significant respirator failure without first assuring the proper functioning of the respirator.

b. Citation Guidelines. The CSHO should cite (c)(1)(ix) if the written procedures are inadequate to identify problems or changes; (g)(2)(i) if the routine surveillance of the work conditions is not performed; the appropriate subparagraph of (g)(2)(ii)(A), (B) or (C), if prohibitions to leaving an area are identified or if employees fail to leave the area when the standard requires them to do so; (g)(2)(iii) if employees are allowed back into an area before the employer has replaced or repaired the respirator.

3. Procedures for IDLH Atmospheres - Paragraph (g)(3). The employer must be prepared for emergency rescue or respirator failure whenever employee(s) are working inside of an IDLH atmosphere. At least one person must be on standby outside the IDLH atmosphere and maintain communication with the person inside at all times ((g)(3)(i)). The standby

person(s) must be trained and equipped to provide an effective emergency rescue ((g)(3)(iii)). Except in emergency situations, environments containing IDLH atmospheres are frequently well enough characterized and controlled that a single standby person can monitor the status of multiple entrants. The need for multiple standbys should be evaluated in conjunction with the ability of the standby personnel to meet all their standby duties, including their ability to monitor the worker(s) in the area and their ability to initiate effective rescue procedures.

Planning is critical for effective response to emergency situations through the development of specific emergency procedures. These procedures must address how the employer will be notified when standby person(s) outside of the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue and what actions will be taken or assistance provided by the employer. Emergency procedures must be developed and included in the employer's written respiratory protection program. [(63 FR 1244) and 1910.134(c)(1)(iv)] According to 1910.134(g)(3)(i), employee(s) located outside must maintain a visual, voice, or signal line of communication with the employee(s) in the IDLH atmosphere.

a. Inspection Guidelines. CSHOs should specifically review protocols for communication, rescue, and notification for employees entering IDLH atmospheres. Communication protocols must be established that allow the standby person(s) to monitor entrant status and enable the standby(s) to alert entrants of the need to evacuate the area. It is not sufficient to rely on the employees in the IDLH area to call for help when needed.

   Paragraph (g)(3) does not apply to IDLH atmospheres in a permit-required confined space (PRCS) or to environments in which there is an uncontrolled release of a hazardous substance. IDLH atmospheres in a PRCS are specifically addressed in the PRCS standard, 1910.146, and its accompanying directive, CPL 02-00-100. Environments in which there is an emergency release of a hazardous substance are addressed in paragraph (q) of OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 1910.120 or 1926.65, and its accompanying directive, CPL 02-02-073. In facilities where an uncontrolled release of a hazardous substance could create an emergency IDLH atmosphere, employers must follow the requirements of HAZWOPER paragraph (q). These situations must be addressed in the employer's emergency response plan and the response procedures must be consistent with that standard.

b. Citation Guidelines. If an IDLH area meets the definition of a confined space, then the requirements of 1910.146 would apply

and the appropriate paragraph of 1910.146 should be cited where deficiencies are noted. If the IDLH is a result of an uncontrolled release of a hazardous substance, then the appropriate section of the HAZWOPER standard, 1910.120 should be cited. Otherwise, violations should be cited under the applicable subparagraph of (g)(3). If adequate communication is not maintained between the entrants and the standby personnel located outside the IDLH area, (g)(3)(ii) should be cited.

4. Procedures for Interior Structural Firefighting - Paragraph (g)(4). This section applies to private sector workers engaged in firefighting, including those working in industrial fire brigades and private incorporated fire companies, and to Federal employees under Section 19 of the Act. These or equivalent provisions apply to State and local government firefighters only in the 27 States that operate OSHA-approved State plans, which are required to adopt an identical or "at least as effective" standard and extend its coverage to public employees. (Coverage of volunteer firefighters in these States varies by State and depends on State law.) The following guidance will have applicability primarily in the State Plan States and in responding to general inquiries.

The provision is limited to workers performing an interior attack on an interior structural fire. In Subpart L (1910.155), OSHA has defined "interior structural fire fighting" to mean: "the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are beyond the incipient stage." This is firefighting to control or extinguish a fire in an advanced stage of burning, producing large amounts of smoke, heat and toxic products of combustion. Firefighter exposure during this activity is extremely hazardous. The atmosphere is considered IDLH and the use of self-contained breathing apparatus (SCBA) is required. By contrast, incipient stage firefighting involves the control or extinguishment of a fire in the initial or beginning stage, using portable fire extinguishers or small hose lines without the need for personal protective equipment. It is the incident commander's responsibility, based on training and experience, to judge whether a fire is an interior structural fire, and how it will be attacked.

a. OSHA has discussed this provision in a number of documents. Summarized below are some key points from those documents.

- There must always be at least two firefighters stationed outside during interior structural firefighting, and they must be trained, equipped and prepared to enter if necessary to rescue the (at least two) firefighters inside. However, the incident commander has the responsibility and flexibility to determine when more than two outside firefighters are

necessary given the circumstances of the fire. The two-in/two-out rule does not require an arithmetic progression for every firefighter inside, i.e., the rule should not be interpreted as 4-in-4-out, 8-in-8-out, etc.

- It is important that the CSHO recognize that life-saving activities in interior structural firefighting are not precluded by the standard. There is an explicit exemption in the standard that if life is in jeopardy, firefighters have the discretion to perform the rescue, and the "two-in/two-out" requirement is waived. There is no violation of the standard under such life-saving rescue circumstances.

- The two-in/two-out provision is not intended as a staffing requirement. It does not require fire departments to hire additional firefighters; it does not require four-person fire companies; it does not require four persons on a fire truck. Most fire departments have more than four firefighters and can assemble the numbers required on the scene by waiting for others to arrive. During this time the fire may be attacked only from the outside, sizing-up operations may occur, and emergency rescue necessary to save lives may take place as discussed above. The "two-in/two-out" rule is a worker safety practice requirement, not a staffing requirement.

- The standard allows one of the standby firefighters to have other duties such as serving as the incident commander, safety officer, or operator of fire apparatus. However, one of the outside firefighters must actively monitor the status of the inside firefighters and may not be assigned additional duties. The second outside firefighter may be involved in a wide variety of activities. Both of the outside personnel must be able to provide support and assistance to the two interior firefighters; any assignment of additional duties for one of the outside firefighters must be weighed against the potential for interference with this requirement. Proper assignment of firefighting activities at an interior structural fire must be determined on a case-by-case basis and is dependent on the existing firefighting situation. Compliance will always depend on consideration of all the worksite variables and conditions, and the judgment of the incident commander is critical in meeting this performance standard.

- The two firefighters (buddies) entering an IDLH atmosphere to perform interior structural firefighting must maintain visual or voice communication at all times. Electronic methods of communication such as the use of radios shall not be substituted for direct visual contact between the team members in the danger area. However, reliable electronic communication devices are not prohibited and certainly have value in augmenting communication and may be used to communicate between inside team members and outside standby personnel.

- For further explanation refer to the preamble of the Respiratory Protection standard (63 FR 1245-1248) and the Respirator Question and Answer document (August 3, 1998). Both documents can be found at OSHA's Homepage - www.osha.gov.

b. Inspection Guidelines. Section (g)(4) includes the requirements of (g)(3). The first and critical step in evaluating an employer's response using the two-in/two-out rule is to determine if there was interior structural firefighting activity. This determination will require consideration of the factors existing at the time of the firefighting action and the basis for the Incident Commander's finding. The CSHO should seek expert opinion from other authorities such as a state or local fire marshal or other fire protection professionals and should thoroughly interview affected personnel to document the violation.

c. Citation Guidelines. If the CSHO's investigation reveals that the two-in/two-out rule was not followed during the interior attack of an interior structural fire and there was no reasonable expectation that someone was in jeopardy inside the building, the CSHO should cite (g)(4)(i) or (g)(4)(ii) as a serious violation. If adequate communication is not maintained between the team inside and the standby personnel located outside the IDLH, (g)(3)(ii) should be cited.

H. Maintenance and Care of Respirators - Paragraph (h).

Respirators must be cleaned and disinfected as often as necessary to keep them in a sanitary condition. They must be properly stored to prevent damage and contamination, inspected regularly and repaired as necessary.

1. Inspection Guidelines. To ensure that respirators are clean and in good working order, the employer can have respirators cleaned and repaired in a centralized operation where respirators are passed out to employees, or the

employer may require the respirator user to perform all cleaning and respirator maintenance functions. The CSHO should verify that the procedures in the mandatory Appendix B-2 of the standard or an equivalent method specified by the manufacturer are being followed and are performed by employees who are adequately trained in the proper respirator care procedures. Respirators issued to more than one employee must be cleaned and disinfected before being worn by another user. The use of individually-wrapped cleaning towelettes may be appropriate as an interim method in the cleaning schedule for individually assigned respirators, but they must not be the only method in place. During fit testing, towelettes may also be used between employees being tested, however these respirators must be thoroughly cleaned at the end of each day, using the procedures in Appendix B-2.

The employer must ensure that respirators are inspected before each use and during cleaning. The CSHO should observe the condition of the respirators being used in the workplace. One or more respirators should be checked before employees enter, or as they leave the respirator area. A minimally acceptable inspection procedure for ALL respirators includes a check of respirator function, tightness of connections and the condition of the various parts, including but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters, or filters, and a check of the respirator's elastomer parts for pliability and signs of deterioration.

SCBAs also require an inspection of the air and oxygen cylinders to assure that the cylinder pressure is maintained at 90% of the manufacturer's recommended pressure level and that the regulator and low pressure warning devices function properly. To assure that both the regulator and low pressure warning devices function properly, the warning device must be activated and heard by the person performing the inspection. The CSHO should interview the individual who is inspecting SCBAs to determine if these regulator and low pressure warning devices are being activated according to the respirator manufacturer's instructions.

The CSHO should also observe how respirators are stored in the workplace. Respirators must be properly stored to protect them against physical damage, contamination, excessive moisture, extreme temperatures, sunlight, and damaging chemicals. Emergency use respirators must be stored in compartments or in covers, both of which must be clearly marked as containing the emergency respirators.

2. Respirators That Are Available for Emergency Use. An inspection must be conducted monthly for all emergency use respirators. The employer must certify in writing that an inspection was performed. The certification must include the name (or signature) of the person who made the inspection, the findings of the inspection, any remedial action, and a serial

number or other means of identifying the inspected respirator. The respirator must also be checked before and after each use. Emergency escape-only respirators carried by employees must be inspected before being taken into the workplace for potential use.

3. Repairs. Defective respirators must be removed from service. A respirator is defective if one or more of its components is missing, damaged, or visibly deteriorated. The employer must develop some means to ensure defective respirators are not used in the workplace. The employer can comply by placing an "out of service" tag on the respirator to help ensure that the defective respirator is not inadvertently used or by removing the respirator from the work area. An appropriately trained person must be responsible for performing repairs or adjustments to respirators.
The CSHO must interview the employee(s) at the worksite who repair respirators, and determine what training they have received. An appropriately trained person is an individual who has received training from the manufacturer or otherwise has demonstrated that he or she has the skills to return the respirator to its original state of effectiveness. The training is performance-oriented, so it is acceptable for the employee to have acquired the skills through practice rather than by attending a formal training course. Repairs to reducing and admission valves, regulators, and alarms must be done by a technician trained by the manufacturer. Only the respirator manufacturer's NIOSH-approved parts that are designed for the particular respirator being repaired can be used to repair a respirator.

4. Citation Guidance. CSHOs should cite the appropriate subparagraph under 1910.134(h)(4) for violations where defective respirators are not effectively removed from service or repaired.

I. Breathing Air Quality and Use - Paragraph (i).

Compressed breathing air must meet at least the requirements for Grade D breathing air. The ANSI/CGA G.7-1 - 1989 specifies the contents of Grade D breathing air as: oxygen (volume/volume) of 19.5 to 23.5 %; hydrocarbon (condensed) of 5 mg/m^3 of air or less; carbon monoxide of 10 ppm or less; carbon dioxide of 1,000 ppm or less; and the lack of a noticeable odor.

1. Inspection Guidelines. If compressors are used to supply breathing air, the CSHO should note the location of the compressor intake and ensure it is located in an area uncontaminated by either combustion exhaust gases produced by vehicles or the compressor itself (if applicable), or by other exhaust gases ventilated from plant processes. A tag containing the signature of the person authorized by the employer to change the in-line sorbent beds and filters and the date of the latest change must be maintained at the compressor.

For air compressors that are not oil lubricated, a CO alarm is not required. However, the employer is required to ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm. Some practical methods for ensuring that the carbon monoxide level does not exceed 10 ppm include: placing the air intake for the compressor in an area that the employer knows is free from contaminants, frequent or continuous monitoring of the breathing air supply, the use of carbon monoxide filters, or the use of a high temperature alarm or shut off devices.

If the employer is using an oil-lubricated air compressor, it must have either a carbon monoxide alarm, high temperature alarm, or both. If only a high temperature alarm is used, then the breathing air must be tested for the presence of carbon monoxide at intervals sufficient to ensure that carbon monoxide levels do not exceed 10 ppm. The alarm must be able to alert the users or another employee who knows to alert any respirator users.

If cylinders are used they must be marked with a NIOSH-approval label. Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the required Grade D air and moisture content.

If compressed or liquid oxygen is used, it must meet the specifications for breathing oxygen outlined by the United States Pharmacopoeia (USP). Compressed oxygen must not be used for any respirators that previously used compressed air.

All breathing air couplings must be incompatible with those of non-respirable air or other gases used at the site to prevent inadvertent servicing of airline respirators with non-respirable gases or oxygen.

2. Citation Guidance. CSHOs should cite the appropriate subparagraph under 1910.134(i) for violations of requirements and standards for breathing air quality and use.

J. Identification of Filters, Cartridges, and Canisters - Paragraph (j).

The employer must ensure that all canisters and filters are properly labeled and color coded with the NIOSH-approval label and that the label is not removed, obscured, or defaced while in service. This requirement enables the employee using the respirator to check and confirm that the respirator has the appropriate filters before the respirator is used and also allows fellow employees, supervisors, and the respirator program administrator to readily determine that the employee is using the appropriate filters.

1. Inspection Guidelines. The CSHO should verify that properly labeled filters and canisters are being used, and that the labels remain legible. Date and time labels applied to the filters/cartridges should not be considered violations unless they are expired, obscure the label to disallow ready identification, or cause the labeled filter/canister to become illegible.

K. Training and Information - Paragraph (k).

The employer is required to provide effective training to employees who wear respirators. Training must be provided prior to an employee's use of a respirator in the workplace and must be comprehensive and understandable. Training must recur annually and more often if retraining appears necessary to ensure safe use. The employer must ensure that each employee can demonstrate a knowledge of all items in (k)(1)(i) thru (vii). Pre-testing may be used as a training aid to determine the extent of retraining required.

1. Inspection Guidelines. The effectiveness of the training program can be evaluated by determining how well employees understand how to use their respirators. If respirators are improperly worn, missing parts, dirty, improperly stored, or the wrong cartridges are being used, the compliance officer should interview the employee for knowledge of the respirator requirements.

   Employees should be interviewed to determine if they have received the required training and the extent of that training. If the CSHO detects a trend in employee responses that indicate training is not being conducted, or is conducted in a cursory manner, a closer review of the training program is necessary.

   Employees who voluntarily wear respirators must, at least, be given the information in Appendix D of the standard.

2. Citation Guidelines. Lack of training should be cited under 1910.134(k). Citations for insufficient training should usually be based on several interviews that reveal a lack of understanding of the respirator program, and should be cited under 1910.134(k) and can be grouped with the specific provisions the employees are missing. Lack of knowledge about the hazards for which the respirator is being used could also indicate a deficiency in the employer's Hazard Communication training (1910.1200(h)).

L. Program Evaluation - Paragraph (l).

The employer must conduct evaluations of the workplace to ensure the written respiratory protection program is properly implemented. The employer must

observe and consult employees to determine if they have any problems with the program and ensure that the respirators are used properly.

1. Inspection Guidelines. The CSHO should evaluate how well the written respiratory protection program is being implemented in the workplace. Observed deficiencies in the program and evaluation procedures should be discussed with the program administrator to determine what previous efforts she or he may have made to evaluate how well the employer's program was working. Deficiencies should also be discussed with employees to determine how long any deficiency has existed and what requests or complaints about the respiratory protection program, if any, they have made to the program administrator. If the program administrator keeps a written assessment, implemented changes may be considered as efforts toward improvement. Recent changes in the workplace such as new processes should have been evaluated for necessary respiratory protection program changes.

2. Citation Guidelines. Multiple deficiencies found during the inspection, especially long-term deficiencies, could indicate inadequate program evaluation. Inadequate program evaluation should be cited under 1910.134(l).

M. Recordkeeping - Paragraph (m).

For every employee required to wear a respirator, the employer must establish and retain records of medical evaluations and fit testing. An employee's medical evaluation records must be made available to the employee and to OSHA in accordance with 1910.1020. The employer must also make an employee's fit testing records available to that employee and to OSHA. The standard does not intend for the employer to make an employee's medical or fit testing records available to any other individual unless that individual is the employee's "designated representative," as defined in 1910.1020(c)(3).

1. Inspection Guidelines. Even though the employer must ensure that the medical evaluations are maintained, the actual medical evaluations will normally be maintained with the PLHCP, not the employer. Alternatively, the company nurse or doctor may maintain these files, but only if medical confidentiality is maintained. The employer must retain a record of the medical evaluation which includes the PLHCP's written recommendation. If an employee states she or he has not had a medical evaluation, the CSHO should check if a medical evaluation record is on file.

   Fit test records must be kept until the next fit test is administered. Each fit test record must contain the employee identification, type of fit test, date last tested, the results of the test, and the make, model and size of the respirator tested. The CSHO should review these records to verify that fit-

testing is being done annually and confirm that the fit tested respirators are the same models and sizes as those observed in the workplace.

The CSHO should also check on the availability of the written program.

2. Citation Guidelines. If a medical evaluation record cannot be found, it must be determined whether the record was not maintained or the evaluation was not performed. If not maintained, (m)(1) would normally be cited. If no record can be found and the employee confirms an evaluation was not performed, then (e)(1) would be cited.

   Lack of a fit test record or lack of information on a fit test record would be cited under (m)(2). If an employee is wearing a respirator different from that found in his fit test records then (f)(2) should be cited. Improper fit testing procedures would similarly be cited under the appropriate subparagraph in (f).

Section O (Dates) regarding 1910.134(n) and section P (Appendices) have been deleted.

X. **Interface with Other Standards.**

A. Exceeding an Exposure Limit.

PEL overexposures will usually be linked to compliance with the Respiratory Protection standard. Most OSHA PELs are listed in Tables Z-1, Z-2, and Z-3 in 1910.1000, Table Z in 1915.1000, and Appendix A in 1926.55. Overexposures to hazardous substances with no OSHA PEL may be cited under the General Duty clause and linked to the Respiratory Protection standard. Section IX.A.2. of this directive sets forth citation guidelines for exceeding an exposure limit.

B. Standards Regulating Toxic Substance Exposure.

A number of industry-specific standards and substance-specific standards regulating exposure to toxic substances contain respiratory protection requirements. Section VIII.D.4 of this directive identifies examples of those requirements. CSHOs should ensure industry- and substance-specific standard respiratory protection requirements are evaluated during inspections.

C. Medical Records Access.

The Access to Employee Exposure and Medical Records standard (29 CFR 1910.1020) requires that employees have access to all medical and exposure records generated under this standard.

D. Multi-Employer.

The multi-employer citation policy (CPL 02-00-124) describes multi-employer worksites in all industry sectors where more than one employer may be citable for a hazardous condition that violates an OSHA standard. The policy directs CSHOs to a two-step process that must be followed in determining whether more than one employer is to be cited.

XI. Classification and Grouping of Violations.

The procedures in chapter 4 of the FOM should be followed. The FOM describes the circumstances, such as proposing willful or criminal violations, where the CSHO or Area Directors (AD) may need to consult the Region or the Solicitor's office. The Citation Policy for Paperwork and Written Program Requirement Violations, CPL 02-00-111, should be reviewed for guidance when citing the written program.

XII. Authorization to Review Limited Medical Information.

Appropriately qualified compliance personnel are authorized to review medical records and medical opinions pertinent to compliance with the Respiratory Protection Standard. The directive that addresses the limitations and procedures which are to be followed is OSHA Instruction CPL 02-02-072, *Rules of Agency Practice and Procedure Concerning OSHA Access to Employee Medical Records*.

XIII. Training for OSHA Personnel.

A. CSHO Experience.

For all inspections on a site where respirators are used and the exposures are expected to be above the 8-hour TWA or the STEL (as defined in the OTM), only experienced and properly trained CSHOs shall perform the on-site evaluations. CSHOs are expected to be knowledgeable of the:

1. Potential hazards which may be encountered at the site,
2. Contents of the Respiratory Protection standard,
3. Appropriate PPE to be worn. Each CSHO who will be expected to use PPE must be trained in the proper care, use, and limitations of the PPE.

   Instructions for the use of respiratory protection by CSHOs are contained in OSHA Instruction CPL 02-02-054. The CSHO should closely review and examine all the data available on site concerning the exposures or potential exposures in this particular location. If the employer cannot supply adequate data to support the selection of the types of respirators that are in use, the CSHO must not enter the areas where respirators are in use. If the hazard determination performed by the employer has been completed in accordance with the standard, the CSHO must don the

appropriate respirator required in that work-site prior to the walkaround in areas where respirators are required.

B. Emergency Procedures.

For all inspections on a site where OSHA personnel are investigating an emergency that involves hazardous substances:

1. The CSHO must be knowledgeable of appropriate training required by 29 CFR 1910.120, or any applicable annual refresher training;

2. CSHOs should consult with their supervisor and Regional Office for assistance in determining the appropriateness of SCBA.

XIV. **Medical Examinations for OSHA Personnel.**

Regional Administrators and Area Directors are responsible for implementing the OSHA Medical Examination program in accordance with OSHA Instruction, PER 04-00-005. This medical evaluation is more stringent than what is required by the revised Respiratory Protection standard.

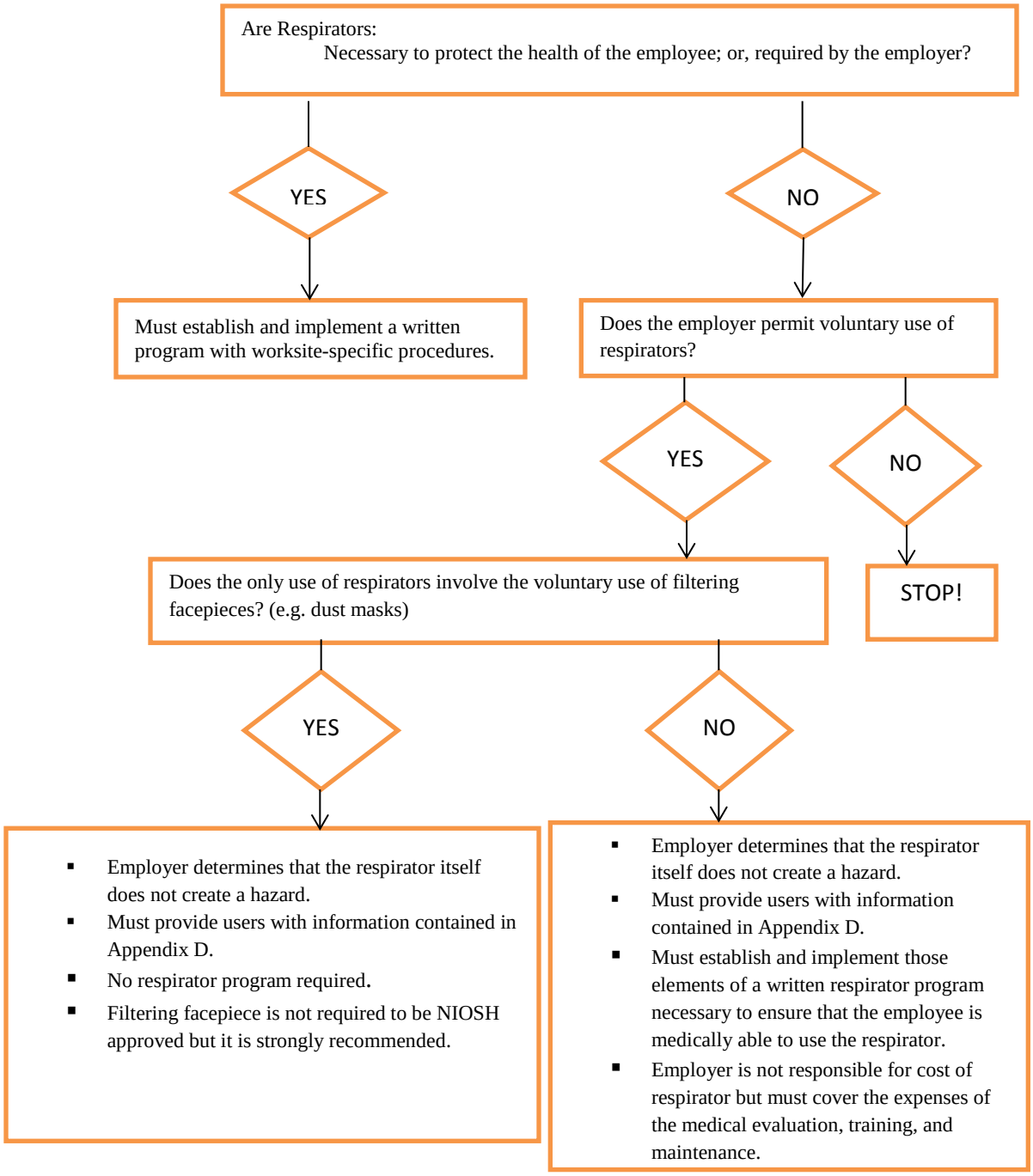
Many of the hazards that CSHOs may encounter are already regulated by the medical surveillance requirements in other OSHA standards. CSHOs that are required to wear any respiratory protection must be medically cleared via the medical eligibility examination procedures as described in CPL 02-02-054, Respiratory Protection Program Guidelines.

XV. **Protection of OSHA Personnel.**

The paramount concern addressed in this section is the protection of the CSHO. Compliance Officers are reminded about Agency policy that requires that appropriate personal protective equipment be used when CSHOs are exposed to a hazard. When and if a CSHO is not adequately protected by the use of appropriate PPE, the CSHO should stay out of the contaminated area to avoid being overexposed to any hazardous substance. Regional Administrators and Area Directors must ensure that appropriate PPE is available for the CSHO. Respirators must be selected in accordance with 1910.134. Eye and face protection must meet the requirements of 29 CFR 1910.133.

Appendix A

Respirator-Use Requirements Flow Chart 29 CFR 1910.134(c)



Appendix B

Change Schedule Guide – A Listing of Acceptable Methods

A brief description of some currently available approaches or methods for respirator cartridge change schedules is presented below. The CSHO should assess the good faith efforts of the employer on a case by case basis and contact appropriate regional or national office staff for guidance, as necessary. This is not intended to be an exhaustive list, but a summary of some reasonable methods that an employer may take in creating a change schedule. No matter which method is used, the employer must maintain any data used in making its decision as part of its program.

Manufacturers Objective Data: Respirator cartridge model-specific objective data that are available from the manufacturer or through a distributor may be used to establish change schedules. Objective data may be presented in tabular or graphical format or simply provided verbally over a manufacturer's telephone help line. Some manufacturers have developed elaborate computer programs available on the internet that provide the necessary objective data to the user.

Experimental Methods: Experimental breakthrough-time data from a laboratory based on worst case testing of simulated workplace conditions can provide fairly accurate service life data.

Mathematical Predictive Modeling: One tool that has demonstrated value is the use of mathematical modeling based on predictive equations. These models are typically complex and require considerable expertise to apply. They also require some proprietary information from the respirator manufacturer. OSHA fully supports the further development and validation of these models. The agency believes that respirator manufacturers may be in a good position to develop predictive mathematical models for their products.

Analogous Chemical Structures: In some circumstances, employers could rely on service life values from other chemicals having an analogous chemical structure to the contaminant under evaluation for breakthrough. Or in some cases a chemical with known migration may reasonably be anticipated to act as a surrogate for a similar chemical that would have less rapid migration (e.g., an employer could assume that a heavier, less volatile compound than another in the same chemical series that had been tested for breakthrough would breakthrough no faster than the latter compound, such as benzene versus toluene). The use of this method requires a substantial amount of judgment and assumption of similar chemical properties. The use of analogous chemical structures would be appropriate as long as objective data or information for lower molecular weight compounds is used to predict the breakthrough times for higher molecular weight analogues containing only additional methyl or phenyl groups. Data from higher molecular weight groups should not be used to predict the behavior of analogous substances with lower molecular weight. This approach relies heavily on experimental data and expert analysis. This method may be less accurate than others and should be used only when better information is not available.

Workplace Simulations: Unvalidated methods exist or are under development where the respirator cartridge is tested in the workplace in "real time" and under actual conditions of use. Simple designs have been informally described to the agency. Workplace air during representative conditions is drawn over the cartridge at a rate approximating normal breathing at a higher work rate. An air sampling/analytic device would be placed on the other side of the filter to measure the time of breakthrough. Employers could incorporate this type of testing into their air monitoring program using sampling strategies established in their workplace. In theory, these approaches could be an accurate method for determining change schedules and could accommodate fluctuating conditions of humidity, concentration, etc., to allow less conservative schedules that utilize a larger fraction of the true service life.

Rules of Thumb: Generalized rules or guidance can be generated from experimental work. Presented below is a rule of thumb for estimating organic vapor service life found in Chapter 36 of the American Industrial Hygiene Association publication, *The Occupational Environment: Its Evaluation, Control, and Management:*

- *If a chemical's boiling point is >70° C and the concentration is less than 200 ppm you can expect a service life of 8 hours at a normal work rate.
- Service life is inversely proportional to flow rate.
- Reducing concentration by a factor of ten will increase service life by a factor of five.
- Humidity above 85% will reduce service life by 50%.

These generalizations should only be used in concert with one of the other methods of predicting service life for specific contaminants.

Appendix C

Assigned Protection Factors

This appendix reproduces Table 1 under 29 CFR 1910.134(d)(3)(A), which requires employers to use the APFs listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

Table 1. -- Assigned Protection Factors[5]

Type of respirator[1], [2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	.....	.....
2. Powered Air-Purifying Respirator (PAPR)	.....	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
• Demand mode	.....	10	50	.....	.....
• Continuous flow mode	.....	50	1,000	[4]25/1,000	25
• Pressure-demand or other positive-pressure mode	.....	50	1,000	.....	.....
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	.....	10	50	50	.....
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	.....	.....	10,000	10,000	.....

Notes:

[1]Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2]The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

[3]This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

[4]The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

[5]These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Appendix D

Additional References

1. Respiratory Protection in the Workplace: A Practical Guide for Small-Business Employers. Cal/OSHA Department of Industrial Relations, 2005.

2. NIOSH Respirator Selection Guide. National Institute for Occupational Safety and Health, 2004, DHHS (NIOSH) Publication 2005-100.

3. Assigned Protection Factors for the Revised Respiratory Protection Standard. OSHA Publication 3352-02 2009.

4. NIOSH Respirator Certification Requirements 42 CFR 84.

5. 1992 American National Standards Institute (ANSI) Z88.2 Respirator Standard.

6. OSHA Publication 3384-09, Small Entity Compliance Guide for the Respiratory Protection Standard, 2011.

7. Fundamentals of Industrial Hygiene, 5th Edition, National Safety Council, 2002.

8. Federal Register, 68 FR 75768-75775, 29 CFR Parts 1910, Occupational Exposure to Tuberculosis; December 31, 2003.

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