



## HAZWOPER TRAINING FOR THE PROFESSIONAL

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# Personal Protective Equipment - General Requirements

- **Application**
  - **Hazards of processes**
  - **Chemical hazards**
  - **Radiological hazards**
  - **Mechanical irritants**

# Personal Protective Equipment - General Requirements

- **Employee-owned equipment**
  - **Employer must assure**
    - ☞ **Adequacy**
    - ☞ **Proper maintenance**
    - ☞ **Proper sanitation**

# Personal Protective Equipment - General Requirements

## ■ Design

- Shall be of safe design and construction so as not to be a hazard to the employee in itself

# Personal Protective Equipment - General Requirements

- **Hazard assessment and equipment selection**
  - **Identifying hazards that require PPE**
    - ☞ Requires written certification
  - **Selecting PPE shall be based on**
    - ☞ Hazard assessment
    - ☞ Proper fit
  - **Communicate selection decision to each affected employee**

# Personal Protective Equipment - General Requirements

## ■ Training

- **Everyone required to wear PPE shall be trained to know at least the following**
  - 📄 **When PPE is necessary**
  - 📄 **What PPE is necessary**
  - 📄 **How to don, doff, adjust and wear PPE**
  - 📄 **Limitations of PPE**
  - 📄 **Proper care, use and maintenance**

# Personal Protective Equipment - General Requirements

## ■ Training

- Each employee shall demonstrate understanding and skill required in training
- Written certification required



# Personal Protective Equipment - Subpart - I

- **Eye and Face Protection 1910.133**
- **Respiratory Protection 1910.134**
- **Head Protection 1910.135**
- **Foot Protection 1910.136**
- **Electrical Devices 1910.137**
- **Hand Protection 1910.138**
- **Noise Protection 1910.95**



# Eye & Face Protection

# Eye & Face Protection

- **The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.**

# Eye & Face Protection

- **The employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g. clip-on or slide-on side shields) meeting the pertinent requirements of this section are acceptable.**

# Eye & Face Protection

- **The employer shall ensure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or....**

# Eye & Face Protection

- **Wears eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.**
- **Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.**

# Eye & Face Protection

- **The employer shall ensure that each affected employee uses equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation.**

# Eye & Face Protection



**Safety  
Glasses**



# Eye & Face Protection

## Safety Goggles



*National HAZMAT Program*

# Eye & Face Protection



## **Safety Goggles**

# Eye & Face Protection



## Face Shields



# Respiratory Protection

# Permissible Practice

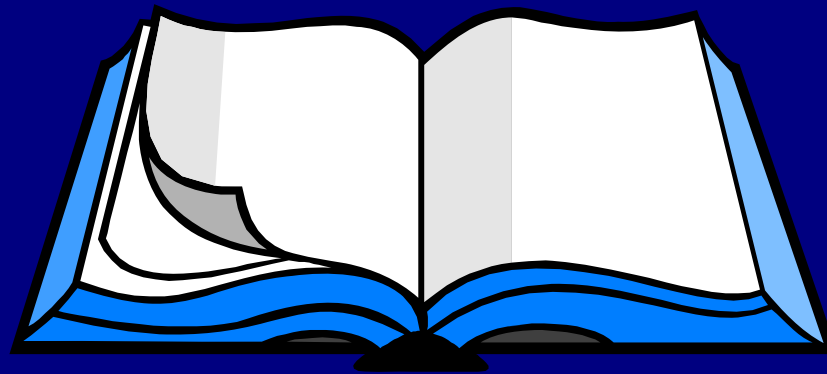
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**Employer shall provide:**

- **Engineering Controls (if feasible)**
- **Respiratory Protection Program**

# Definitions

- **Thirty-five definitions have been added to the new final rule.**



# Respiratory Protection Program

**Where respirators are necessary:**

- **Written program**
- **Worksite-specific procedures**

# Respiratory Protection Program

Where respirators are necessary:

**Must include following provisions:**

- **Procedures for selecting respirators**
- **Medical evaluations**
- **Fit testing procedures**
- **Procedures for ensuring air quality and quantity**



# Respiratory Protection Program

Where respirators are necessary:

- **Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and maintaining respirators**
- **Employee training in respiratory hazards**

# Respiratory Protection Program

- **Where respirators are necessary:**
- **Employee training in respiratory hazards in both routine use and emergencies**
- **Employee training in the proper use of respirators including donning, doffing, and limitations**

# Respiratory Protection Program

Where respirators are necessary:

- Procedures for evaluating the effectiveness of the program

# Respiratory Protection Program

Where respirators are not necessary:

- Employers may provide respirators
- or may permit employees to use their own respirator if employer determines that the use will not in itself create a hazard

# Respiratory Protection Program

Where respirators are not necessary:

- If employer permits voluntary usage they must:
  - Provide users with Appendix D
  - Establish written program for:
    - ☞ Medical Qualifications
    - ☞ Respirator Maintenance

# Respiratory Protection Program

- Employer must designate a Program Administrator
- Employer must provide respirators, training, medical evaluations at no cost to the employees

# Selection of Respirators

## Employer must:

- **Select from NIOSH-certified respirators**
- **Base respirator selection on workplace respiratory hazards**
- **Identify and evaluate workplace respiratory hazards**

# Selection of Respirators

- If employer cannot identify or reasonably estimate employee exposure, shall consider atmosphere to be IDLH
- Employer shall select respirators from a sufficient number of models and sizes so that the respirator is acceptable and fits the user



# Selection of Respirators

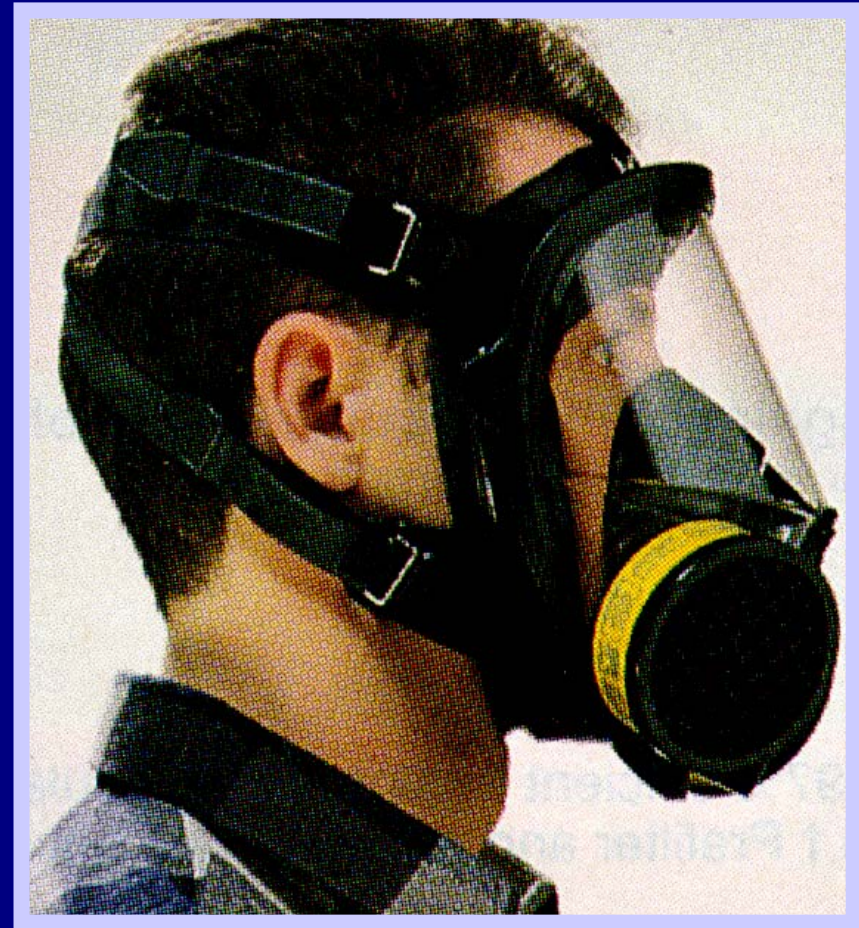
- **Respirators for IDLH Atmospheres**
- **Full-face pressure demand SCBA (minimum 30 minutes)**
- **Full-face pressure demand SAR-E**
- **Escape-only respirators must be NIOSH-certified**

# Selection of Respirators

- **Respirators for IDLH Atmospheres**
- **Oxygen-deficient atmospheres shall be considered IDLH**
  - **Exception: If employer can guarantee that the oxygen level can be maintained within specified ranges in Table II, then any SAR may be used**

# Selection of respirators

- **Respirator shall be correct for chemical state and form**
  - **Gases**
  - **Vapors**
  - **Particulate**
  - **Other**



# Selection of Respirators

## For Protection against Gases and Vapors

- SCBA, SAR-E, SAR
- APR if:
  - ESLI (End-of-service-life indicator) or
  - Change schedule that ensures changes are made before end of cartridge service life

**Breakthrough is no longer an acceptable measure for cartridge change**

# Medical Evaluation

## Why:

- Employer shall provide medical evaluation to determine the employee's ability to use a respirator

# Medical Evaluation

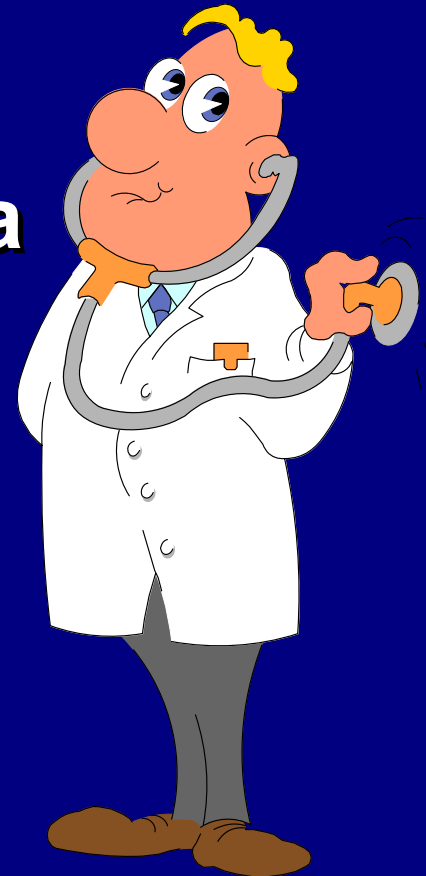
## When:

- Employer shall provide medical evaluation prior to fit test or required use of respirator
- Employer may discontinue when employee no longer requires respirator

# Medical Evaluation

**Who:**

- **Employer shall identify a physician or other licensed health care professional (PLHCP)**



# Medical Evaluation

## What:

- The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C.
- PLHCP may use medical exam or a questionnaire to obtain information



# Medical Evaluation

## Follow-up exam required if:

- Any positive response to questions 1-8 Section 2, Part A, Appendix C
- Initial medical exam demonstrates the need
- Exam shall include any test the PLHCP deems necessary

# Medical Evaluation

- Exams shall be kept confidential and be administered during the employee's normal working hours or at a time and place convenient to the employee
- Employee shall have opportunity to discuss questionnaire or exam results with PLHCP

# Medical Evaluation

## Supplemental Information:

- Type and weight of respirator
- Duration and frequency of use
- Expected physical work effort
- Additional protective clothing
- Temperature and humidity extremes
- Written respirator program

# Medical Determination

- **Obtain written evaluation from PLHCP**

**including the following:**

- **Limitations on respirator use related to:**

- **Medical condition of employee**

- **Workplace conditions**

- **Whether or not employee is medically able to wear respirator**

# Medical Determination

- **Obtain written evaluation from PLHCP**
  - **The need for follow-up examination**
  - **Statement that the PLHCP provided the employee with a copy of the written recommendation**

# Medical Determination

- **If negative pressure APR used, PLHCP may recommend PAPR**
- **Employer must comply**
- **After subsequent exams PLHCP may change recommendation**

# Fit Testing - Appendix A

- Required if any negative- or positive-pressure tight-fitting respirators used must be in negative-pressure mode
- Employee must pass fit test
  - Qualitative (100 ff or lower) (f)(6)
  - Quantitative (Half- or full-face) (f)(7)
    - 📄 full-face = 500 fit factor
    - 📄 half-face = 100 fit factor

# Fit Testing - Appendix A

- **Testing will be repeated annually, unless employee's condition changes enough to warrant a retest:**
  - **Facial Scarring**
  - **Dental changes**
  - **Cosmetic surgery**
  - **Obvious weight change**



# Fit Testing - Appendix A

- After a passed fit test, employee may notify employer that respirator fit is unacceptable
- Employer must allow employee to re-select and re-test



# Respirator Use

- **Facepiece seal protection**
  - **No facial hair in seal or valves**
  - **Nothing may interfere with seal**
- **User must perform seal check prior to each use. (Appendix B-1)**

# Respirator Use

## ■ IDLH Atmospheres

- One or more employees located outside
- Visual, voice, or signal line communication must be maintained
- Outside employee must be trained and equipped for emergency rescue
- Must notify employer prior to entry to provide emergency rescue

# Respirator Use

## ■ IDLH Atmospheres

Outside employees must be equipped with:

- Pressure demand SCBA or SAR-E
- Appropriate retrieval equipment
- Equivalent means for rescue, if retrieval system is more hazardous

# Respirator Use

- **Interior structural firefighting**
  - **All IDLH requirements plus:**
    - ☞ **Two employees enter IDLH atmosphere together and maintain visual or voice contact**
    - ☞ **At least two outside employees**
    - ☞ **All employees in this situation must use SCBA's**

# Maintenance and Care

- **Cleaning and Disinfecting Intervals:**
  - **One user - As often as necessary to maintain sanitary condition**
  - **Two or more users - Before being used by different user**
  - **Emergency use - After each use**



# Maintenance and Care

- **Storage (Routine use)**
  - **Protect from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals**
  - **Prevent deformation**



# Maintenance and Care

## ■ Storage (Emergency use)

- Protected from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals
- Stored to prevent deformation
- Kept accessible to work place
- Stored in compartments or in covers marked **EMERGENCY RESPIRATORS**



# Maintenance and Care

## ■ Inspection

- Routine Use -

- ☞ After each use and during cleaning

- Emergency Use-

- ☞ At least monthly

- ☞ Function test before and after each use

# Maintenance and Care

- **Inspection must include:  
(Routine Use)**
  - **Function**
  - **Tightness of connections**
  - **Component condition**
  - **Elasticity**
- **SCBA's monthly**
  - **Fully charged**
  - **recharged when pressure falls below 90%**
  - **Regulator and warning device condition**



# Maintenance and Care

- **For emergency use, the employer must certify the respirator by documenting:**
  - **Date of Inspection**
  - **Name of Inspector**
  - **Findings**
  - **Required remedial action**
  - **Serial number of respirator**
  - **Provide this information on a tag or label**

# Maintenance and Care

## ■ Repairs

- Performed by trained personnel only
- According to manufacturer's specifications
- Using only NIOSH approved parts
- Reducing and admission valves, regulator, and alarms - by manufacturer or technician trained by manufacturer

# Breathing Air Quality

- **Must meet requirements of ANSI/Compressed Gas Association Commodity Specification for Air G-7.1-1989 (Type 1-Grade D)**

# Breathing Air Quality

## ■ Type 1-Grade D

- Oxygen content - 19.5% - 23.5%
- Hydrocarbon - 5 mg/m<sup>3</sup> or less
- Carbon monoxide (CO) - 10 ppm or less
- Carbon dioxide (CO<sub>2</sub>) - 1,000 ppm or less
- Lack of noticeable odor

# Breathing Air Quality

- **No compressed oxygen and compressed air mixing**
- **Oxygen concentrations above 23.5% to be used for oxygen service only**
- **Cylinders must comply with 49 CFR Part 173 and Part 178**

# Breathing Air Quality

- **Cylinders of air purchased must have a certificate of analysis for Type 1-Grade D air**
- **On-site compressors must:**
  - **Be situated to prevent contamination**
  - **Minimize moisture content so Dew point at 1 atm. is 10° below ambient temperature**



# Breathing Air Quality

- **On-site compressors must:**
  - **Have sorbent beds and filters to ensure air quality**
  - **Sorbent beds must be refurbished or replaced according to manufacturer's instructions**
  - **Must have a tag with person authorized to perform the change**



**John Doe**

# Breathing Air Quality

- **On-site compressors that are not oil-lubricated - employer shall ensure CO levels no higher than 10 ppm**
- **On-site compressors that are oil-lubricated - employer shall ensure CO levels no higher than 10 ppm and monitor air temperature**

# Breathing Air Quality

- **Employer shall ensure that breathing air couplings are incompatible with all nonrespirable cylinder outlets**

# Identification of Filters, Cartridges, and Canisters

- Color Coded
- NIOSH Approval label

# Training

- **Employers shall ensure that each employee can demonstrate knowledge of at least the following:**
  - **Why respirators are necessary**
  - **How improper fit, usage, or maintenance can affect protection**
  - **Limitations and capabilities**
  - **Proper inspection procedures**

# Training

- **Employers shall ensure that each employee can demonstrate knowledge of at least the following:**
  - **Proper donning and doffing procedures**
  - **Proper seal check procedure**
  - **Maintenance and storage**
  - **Medical signs and symptoms**

# Training

- If *new* employee has had training within the previous 12 months, employer may waive initial training and retrain the employee within 12 months of his or her previous training

# Training

- **Retraining shall be annual and when**
  - **Changes in workplace or respirator render previous training obsolete**
  - **Employee demonstrates inadequacies in respirator usage**



# Training

- **Appendix D shall be provided, in either written or oral format, when voluntary respirator usage is allowed by employer**

# Program Evaluation

- **Employer must conduct evaluations to determine:**
  - **Respiratory program is being properly implemented**
  - **Proper respirator usage**
  - **Respirator program effectiveness**

# Program Evaluation

- **Employer must consult with employees to assess employee views and to identify:**
  - **Respirator program effectiveness**
  - **Any problems**
  - **Respirator fit**
  - **Appropriate respirator selection**
  - **Respirator usage**

# Recordkeeping

- **Medical evaluation**
  - **The medical record for each employee shall be preserved and maintained for at least the duration of employment plus thirty (30) years. 29 CFR 1910.1020 (d)(1)(i)**

# Recordkeeping

## ■ Medical evaluation

- The medical records of employees who have worked for less than one year for the employer need not be retained beyond the term of employment if they are provided to the employee upon the termination of employment. 29 CFR 1910.1020 (d)(1)(i)(C)

# Recordkeeping

- **Fit testing records must include:**
  - **Employee name or ID**
  - **Type of fit test**
  - **Respirator make, model, size**
  - **Date of test**
  - **Pass/Fail results**

# Recordkeeping

- **Fit testing records must be retained until next fit test**
- **A written copy of respirator program shall be retained by employer**

# Dates

- **Effective date: April 8, 1998**
- **Compliance date: September 8, 1998**
- **Employer may use existing training, fit testing, medical evaluations, and program evaluations. If conducted within twelve months of April 8, 1998**



# Appendices

**Appendix A - Fit testing procedures**

**Appendix B-1 - User seal check**

**Appendix B-2 - Cleaning procedures**

**Appendix C - Medical evaluation/questionnaire**

**Appendix D - (non-mandatory) - Information for voluntary respirator usage**

# RESPIRATOR TYPES

**Air-Purifying  
Supplied-Air**

# Air-Purifying Respirators

## Types of Filtration

- Mechanical
- Chemical
- Combination
- Gas Mask

# Air-Purifying Respirators

## Types

- Paper Disposable APF-5



# Air-Purifying Respirators

## Types

- 1/2 Mask  
APF-10

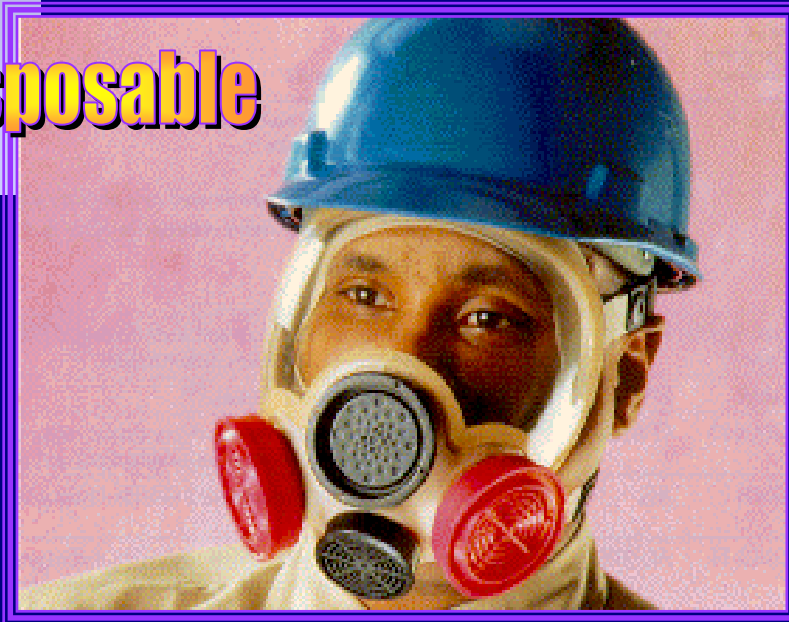


# Air-Purifying Respirators

## Types

- Full-Face (FF) APF-50

**Disposable**



**Reusable**



# Air-Purifying Respirators

## Types

- **PAPR APF-100**



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# Air-Purifying Respirators

## Limitations

### ■ Limitations

- Correct Cartridge
- Cartridge Life
- Battery Life (PAPR)

### ■ Weak Spots

- Face to Facepiece seal
- Exhalation Valve



# Air-Purifying Respirators Limitations

- **Unacceptable Conditions**
  - **Never** use in IDLH
  - **Never** use in unknowns
  - **Never** use in oxygen-deficient atmospheres
  - **Never** with substances with low warning properties
  - **Never** above MUL or MUC

# Air-Purifying Respirators Protection Factors

- **Maximum Use Levels**

$$APF \times PEL = MUL$$

- **Maximum Use Concentration  
concentration above cartridge  
approval (NIOSH)**

# Supplied-Air Respirator W / SCBA

**MSA's  
Premair  
15 minute escape**



# Self-Contained Breathing Apparatus



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# Summary

- **YOU should be able to**
  - **Identify the types of respirators**
  - **Explain how a respirator operates**
  - **Properly inspect a respirator**
  - **Don an APR, SCBA and SAR-E/SCBA**
  - **Ask pertinent questions**



# Head Protection

# Head Protection

- **General requirements**
- **The employer shall ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling objects**

# Head Protection

- **The employer shall ensure that a protective helmet designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head**



# Head Protection

## Criteria for protective helmets

- Protective helmets purchased after July 5, 1994 shall comply with Personnel Protection-Protective Headwear for Industrial Workers-Requirements, "ANSI Z89.1-1986, or shall be demonstrated to be equally effective

# Head Protection

- **Protective helmets purchased before July 5, 1994 shall comply with the Requirements for Industrial Head Protection," ANSI Z89.1-1969, or shall be demonstrated by the employer to be equally effective**

# Head Protection



# Hardhats



# Foot Protection

# Foot Protection

- **The employer shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards**

# Foot Protection

## Criteria for protective footwear

- Protective footwear purchased after July 5, 1994 shall comply with ANSI Z41-1991, or shall be demonstrated by the employer to be equally effective

# Foot Protection

- **Protective footwear purchased before July 5, 1994 shall comply with the ANSI standard "USA Standard for Men's Safety-Toe Footwear," Z41.1-1967, or shall be demonstrated by the employer to be equally effective**

# Foot Protection



**Latex  
Overboots**





# Hand Protection

# Hand Protection

- **Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.**

# Hand Protection

- **Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.**

# Hand Protection

## General Purpose Gloves

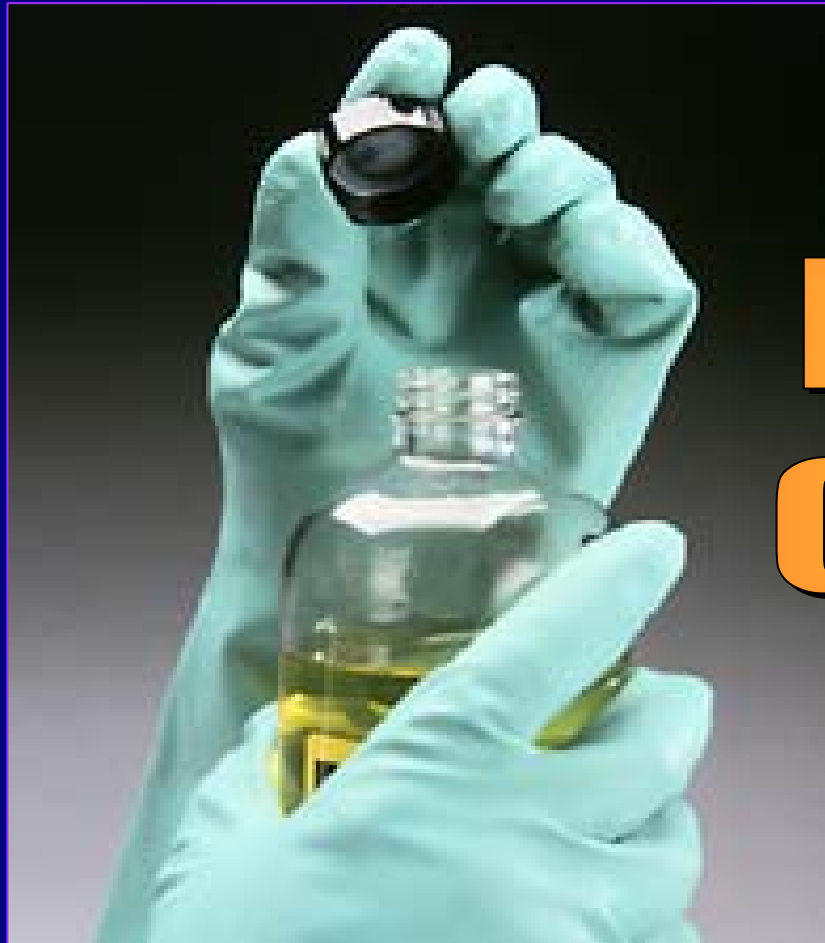


# Hand Protection



**Latex  
Gloves**

# Hand Protection



**Nitrile  
Gloves**

# Hand Protection

## Neoprene Gloves



# Hand Protection



**Kevlar  
Gloves**





# Chemical Protective Clothing

# Limitations

- **There is no such thing as impermeable protective clothing**
- **There is no one clothing material for all chemicals**
- **Certain chemicals or combinations = less than an hour of protection following contact**

# Purpose

- **CPC is worn to protect the skin and eyes from harmful chemicals**
- **One must select a material with the most protection from the chemical encountered and consider the style of suit as well**

# Types of CPC

---

- **Fully-Encapsulating Suit (FES)**
- **Non-encapsulating Suit**

# Protective Material Elastomers

- Butyl Rubber
- Chlorinated Polyethylene
- Natural Rubber
- Teflon
- Neoprene
- Nitrile Rubber
- Vitron

# Protective Material Non - Elastomers

- Tyvek
- Polyethylene
- Saranex

# Performance Requirements

- **Chemical Resistance**
- **Durability**
- **Flexibility**
- **Temperature Resistance**

# Performance Requirements

- **Service Life**
- **Ability to clean**
- **Design - Size - Color - Cost**



# Chemical Resistance

- **Penetration :**

**The transportation of chemicals through openings in a garment**

# Chemical Resistance

- **Degradation :**

**A chemical action involving the molecular breakdown of the material due to chemical contact**

# Chemical Resistance

- **Permeation :**

**A chemical action involving the movement of chemicals on a molecular level, through intact material**

# Chemical Resistance

- **Breakthrough Time:**

**The elapsed time between initial contact of a chemical with the outside surface and the detection at the inside surface of the material**

# Selection of CPC

**The best protective material is  
one with a  
*low permeation rate*  
and a  
*long breakthrough time !!***

# Physical Stress

- **Heat Stress**
- **Accident Proneness**
- **Fatigue**

# Heat Stress

- Heat Cramps
- Heat Exhaustion
- Heat Stroke

# Physical Stress

- **Ways to minimize adverse effects:**
  - **Medical surveillance program**
  - **Acclimated to work environment**
  - **Length of work period vs... rest period**



# Physical Stress

- **Ways to minimize adverse effects:**
  - **Schedule work for cooler time of day**
  - **Increase intake of fluids**

# Inspection of CPC

- **Suit material**
- **Zipper and flaps**
- **Connecting devices**
- **Signs of chemical exposure**
- **Proper size**

# Inspection of CPC Fully- Encapsulating

- **Exhalation valves**
- **Suit facepiece**
- **Waist belt and ankle strap**
- **Gloves and boots**
- **Leak detection**
- **Air-line attachment**

# Record Keeping

- **Who, when and any problems**
- **Use conditions**
- **Repair status**
- **After each use and monthly**

# Levels of Protection

- **Level A - Maximum respiratory and maximum skin**
- **Level B - Maximum respiratory and moderate skin**
- **Level C - Moderate respiratory and moderate skin**
- **Level D - No respiratory and minimum skin**

# Personal Protective Equipment



**Tyvek  
Suit**

*National HAZMAT Program*

# Personal Protective Equipment



**TyvekQC**  
**Polyethelene**  
**Coated**  
**Tyvek**  
**Suit**

# Personal Protective Equipment



**Saranex  
Suit**





# Noise Protection

# Noise Protection

## ■ Noise

- Defined as unwanted sound
- The units to measure noise levels are decibels (dBs)
  - 📄 a very soft whisper is about 30 dB
  - 📄 a jack hammer is about 100dB
- At 140 dB, noise can cause physical pain

# Noise Protection

- **If employees are exposed to average noise levels above 85 dB, OSHA requires employers to implement a hearing conservation program.**

# Noise Protection

- **OSHA's permissible exposure limit (PEL) for noise is 90 dB as an 8-hour TWA**

# Noise Protection

- **Engineering controls**
- **Administrative controls**
- **Personal protective equipment (PPE)**

# Noise Protection

- **Action level 29 CFR 1910.95**
  - (c)(1-2) Table G-16a
- **Monitoring program**
  - 29 CFR 1910.95
  - Subparagraph (d)(1-3)
  - Notification
  - Hearing tests

# Noise Protection

- **Audiometric testing program (g)(1-10)**
  - **Employer shall establish and maintain an audiometric testing program**
  - **The program shall be at no cost to the employee**

# Noise Protection

- **Audiometric testing program (g)(1-10)**
  - **Audiometric testing shall be performed by a licensed or certified audiologist**
  - **Baseline audiogram**
  - **Annual audiogram**



# Noise Protection

- **Audiometric test requirements (h)(1-5)**
  - **Shall be pure tone, air conduction, hearing threshold examinations with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000 and 6000 Hz**

# Noise Protection

- **Audiometric test requirements (h)(1-5)**
- **Tests shall be taken for each ear**
  - **Equipment shall meet the specifications of ANSI S3.6-1969**
  - **Equipment shall be calibrated**

# Noise Protection

- **Personal protective equipment (PPE)**
  - **Employers shall make hearing protectors available to all employees exposed to 85 decibels TWA or greater at no cost to employee**

# Noise Protection

- **Personal protective equipment (PPE)**
  - **Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the employer**

# Noise Protection

- **Personal protective equipment (PPE)**
  - **Training shall be provided in the use and care of all hearing protectors provided to employees**
  - **The employer shall ensure proper initial fitting and supervise the correct use of all hearing protectors**

# Noise Protection

- **Hearing protector attenuation (j)(1-4)**
  - **The adequacy of hearing protector attenuation shall be reevaluated whenever noise exposure changes**

# Noise Protection

- **Hearing protector attenuation (j)(1-4)**
  - **The employer shall institute a training program for all employees who are exposed to noise at or above an 8-hour TWA of 85 decibels, and shall ensure employee participation in such program**

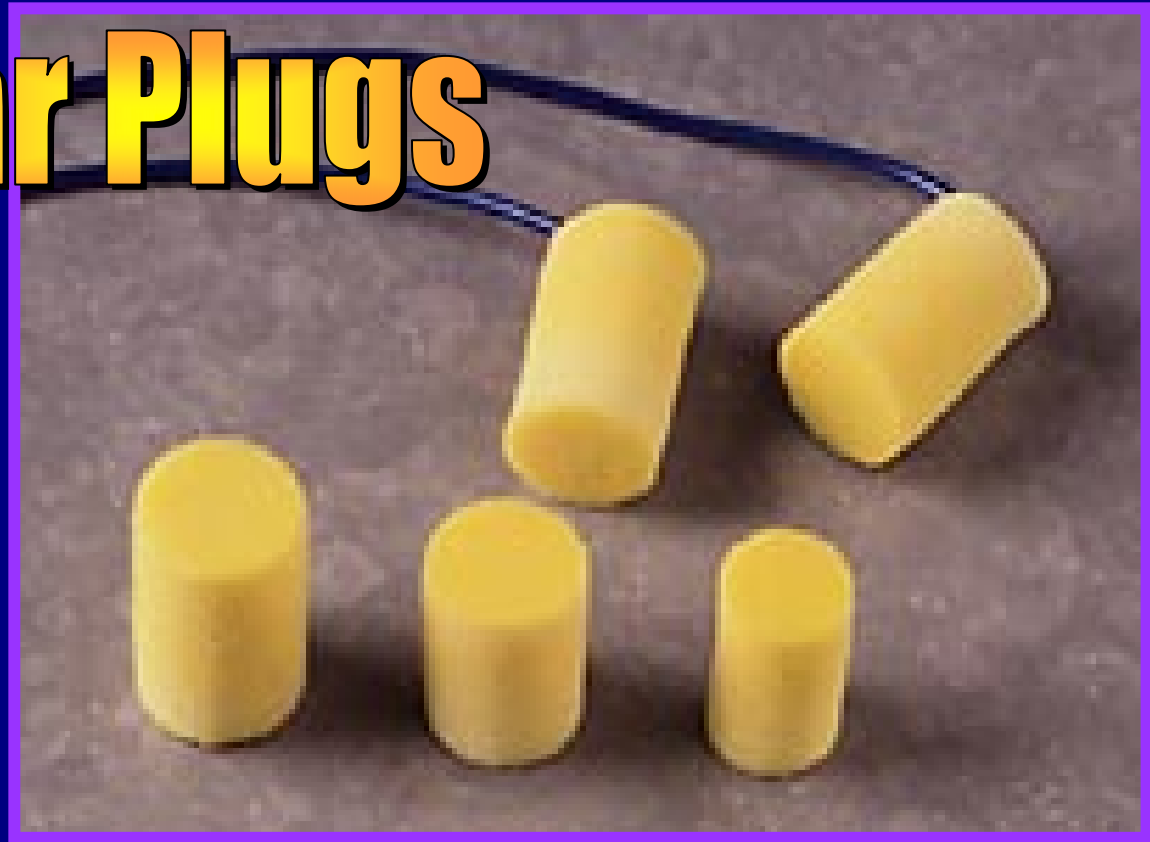
# Noise Protection

- **Recordkeeping (m)(1-2)**
  - **Monitoring results**
  - **Audiometric tests**



# Noise Protection

## Ear Plugs



# Noise Protection



**Ear Plugs**

# Noise Protection

## Headband Hearing Protection



# Noise Protection



## Ear Muffs

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