

## *One Hour Safety Presentation*

The main goal of the Division of Safety & Hygiene is the reduction of accidents and illnesses in the workplace. Toward this goal, the *One Hour Safety Presentation* is designed to support the delivery of a presentation to co-workers in your workplace to help them understand and promote safer and healthier work environments. It is recommended that you take the DSH Training Center course as a background for using *One Hour Safety Presentation* to train others at your workplace. Call 1-800-OHI OBWC, option 2, 2, 3, for class dates and locations.

The *One Hour Safety Presentation* contains:

- **Transparency Masters** from which films can be made to use on an overhead projector,
- **Instructor Notes** which gives the instructor suggestions and script notations to use during the presentation, and
- **Student Handouts** which can be copied for those attending the presentation.

Materials are included for a one-hour presentation on each of these topics:

- ✓ Accident Analysis
- ✓ Bloodborne Pathogens
- ✓ Developing an Ergonomics Process
- ✓ Hazard Communication
- ✓ Lockout/Tagout
- ✓ Respiratory Protection
- ✓ Violence in the Workplace

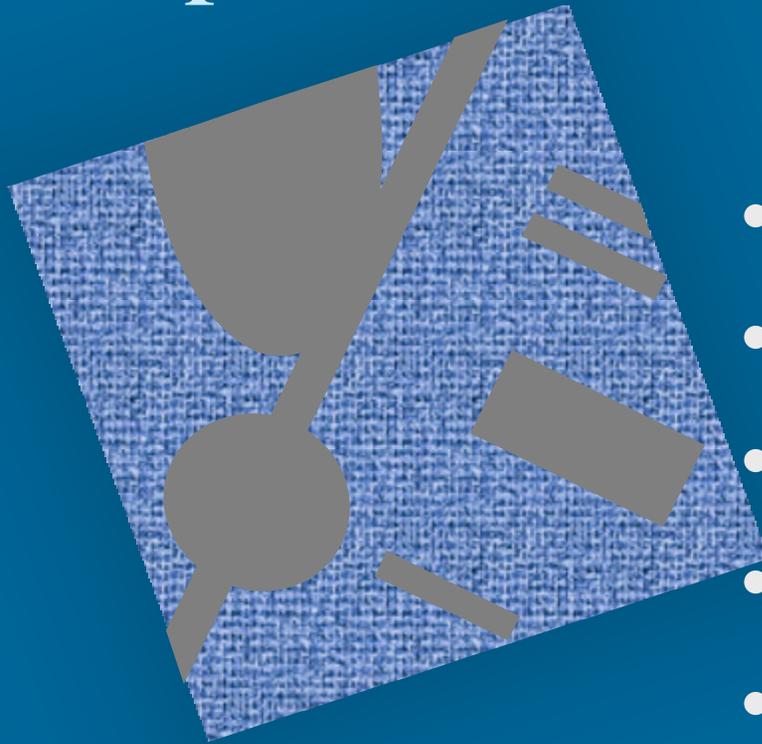
Applications used:

- 1) Text documents (ending in **.txt**) can be opened with any word processing program.
- 2) Microsoft PowerPoint slides (ending in **.ppt**) can be opened with the Microsoft PowerPoint program. If you do not have PowerPoint and you do have Windows 95, 98, 2000 or Windows NT operating system, you can view the PowerPoint slides by downloading a free PowerPoint Viewer from the following website:  
<http://office.microsoft.com/downloads/default.aspx?Product=PowerPoint&Version=95|97|98|2000|2002&Type=Converter|Viewer>
- 3) Adobe Reader document (ending in **.pdf**) contains the *One Hour Safety Presentation* in read-only format. It can be opened when you download Adobe Reader, which is available free of charge at the following website:  
<http://www.adobe.com/products/acrobat/readstep2.html>

If you have comments or questions about these materials for *One Hour Safety Presentation*, please e-mail us: OCOSHTrng@bwc.state.oh.us

# Transparency Masters

# Respirator Use



- Standard Overview
- Inspection
- Cleaning
- Storage
- Donning / Doffing
- Uses / Limitations

# The Big Question

Is the use of respirators required?

Over-exposure?

Company policy?

# Review of 1910.134

## Required Use of Respirators

### Program elements:

- Selection procedures
- Medical Evaluations
- Fit testing procedures for tight-fitting respirators
- Proper use procedures - routine & emergency

# Review of 1910.134

## Required Use (continued)

- Procedures & schedules for maintenance
- Supplied air quality & quantity
- Hazards Training - routine & emergency
- Respirator use training
- Program auditing

# Review of 1910.134 Voluntary Use

- Medical evaluations
- Maintenance, Cleaning, Storage
- Appendix D

# Review of 1910.134

## Voluntary Use

### filtering facepiece only

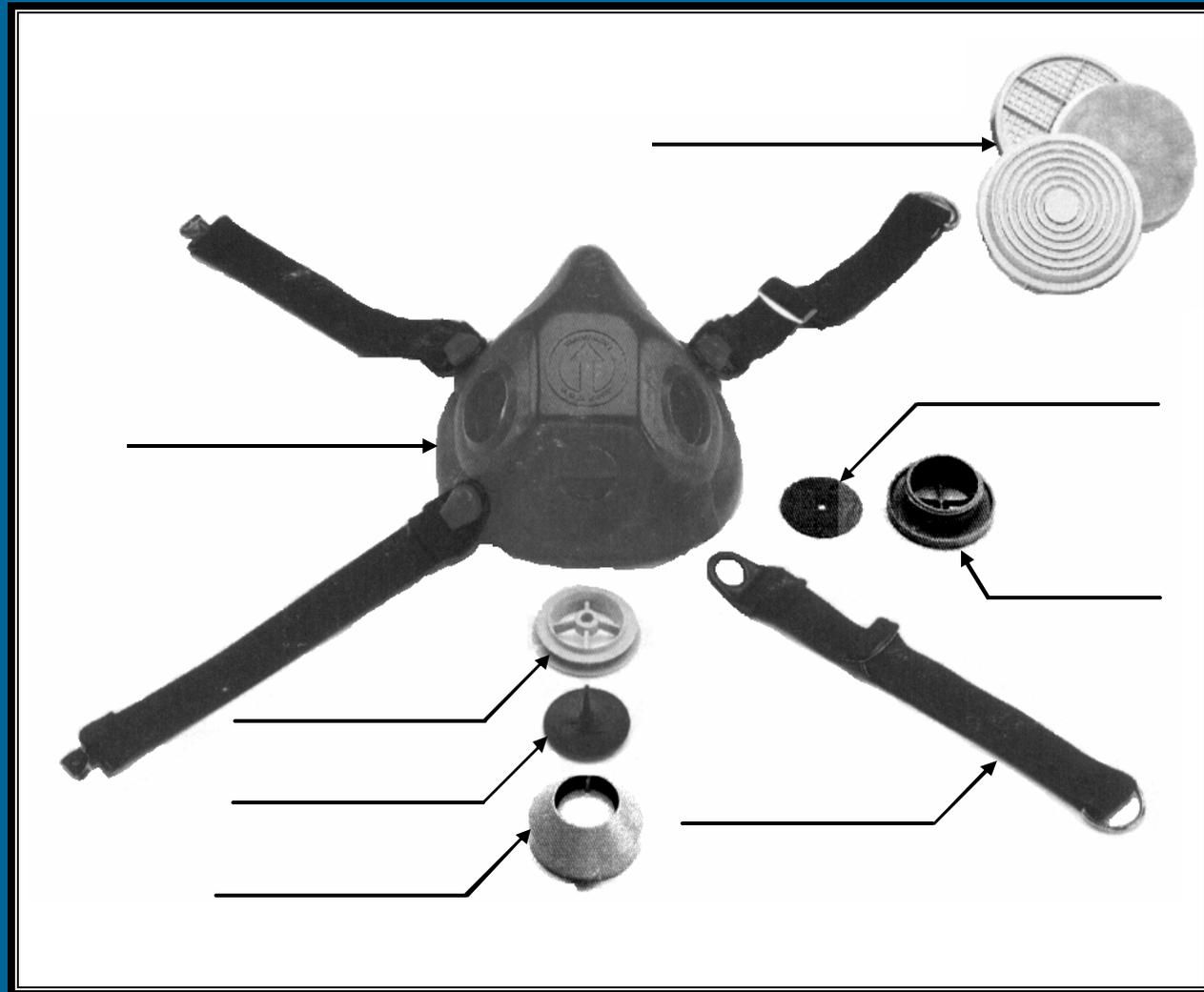
#### Appendix D only:

- Read and Heed all instructions
- Use approved respirators
- Properly selected
- Keep track of your respirator

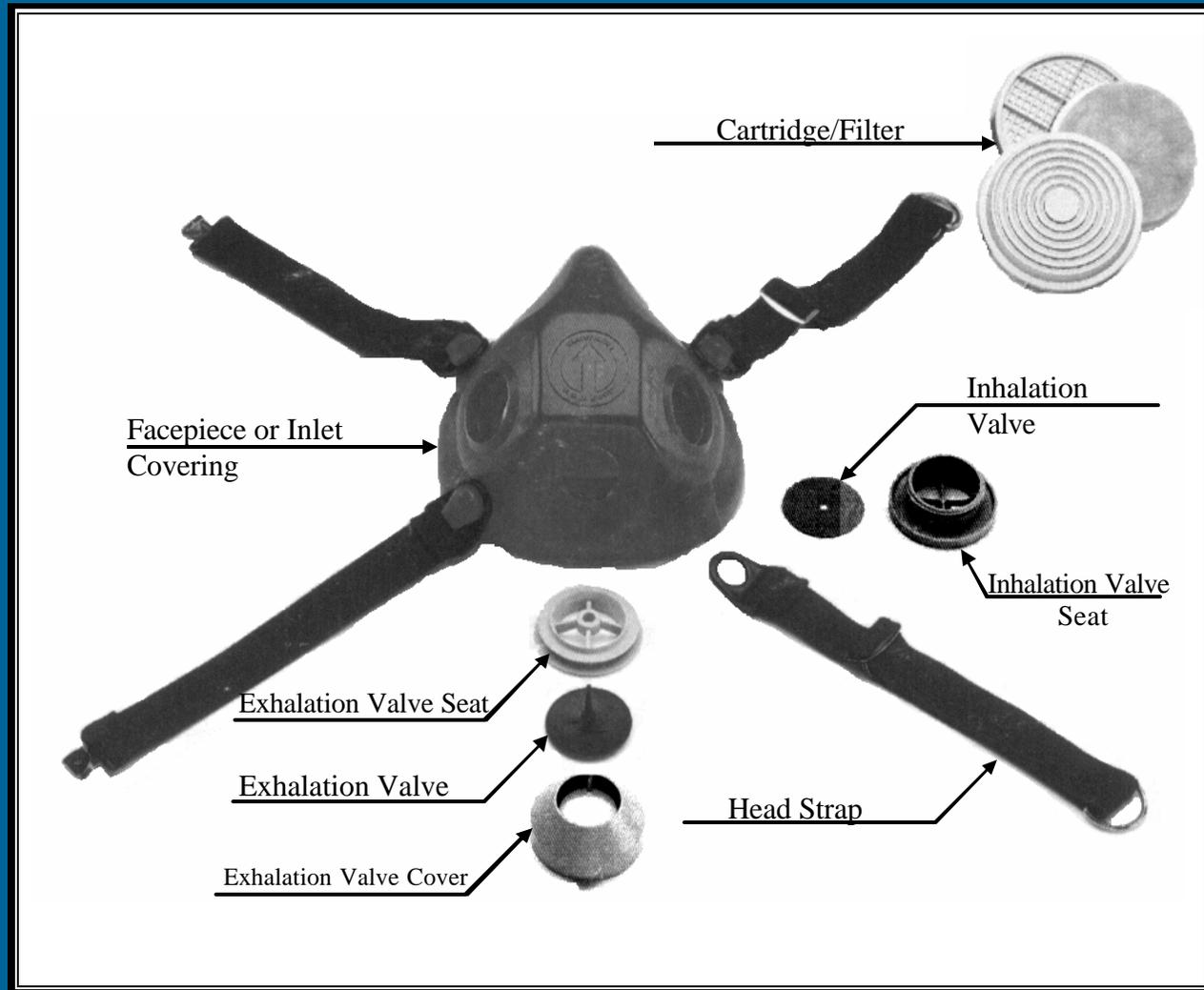
# Inspection

- Dirt
- Cracks
- Tears
- Holes
- Distortion
- Broken parts
- Missing parts
- Elasticity
- Corrosion
- Valve test

# Anatomy of a half-mask respirator



# Anatomy of a half-mask respirator



# What do you know about respirator cleaning?

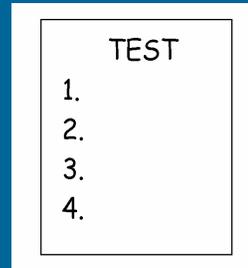
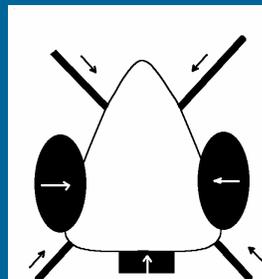
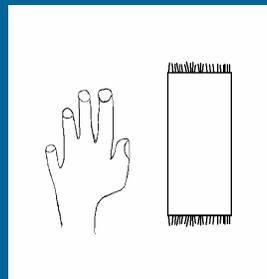
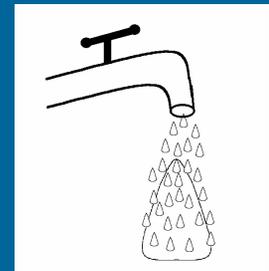
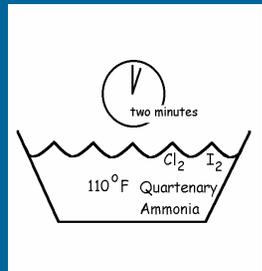
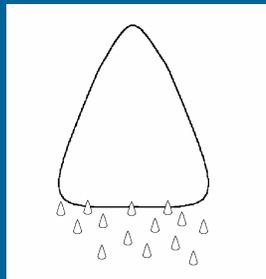
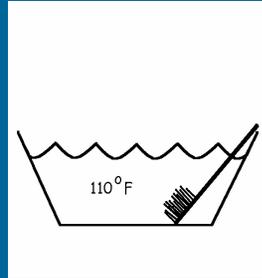
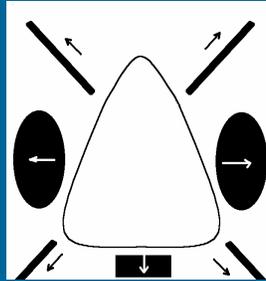
What do you know about respirator cleaning?

1. \_\_\_\_\_
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10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

# Cleaning

- Dismantle
- Wash
- Rinse
- Drain
- Sanitize
- Rinse
- Dry
- Reassemble
- Test

# Cleaning



# Storage

- Dust
- Sunlight
- Damaging chemicals
- Heat
- Extreme cold
- Excessive moisture

# Donning / Doffing

- Inspection
- Adjust straps, out
- Hook the bottom straps, snug slightly
- Seat facepiece
- Hook the top straps, snug slightly
- Snug straps
- Perform user seal checks (+ and -)

# Uses / Limitations

Never use an air purifying respirator:

- in an OXYGEN deficient atmosphere;
- in an IDLH atmosphere;
- for ABRASIVE BLASTING;
- for FIRE FIGHTING;
- which is not APPROVED for the contaminant of concern;
- with FACIAL HAIR.

# Instructor Notes

Thank you for your interest in teaching the basics of Respiratory Protection to your employees and for promoting self-sufficiency on behalf of the Division of Safety & Hygiene.

A few points to keep in mind while teaching this class to your employees.

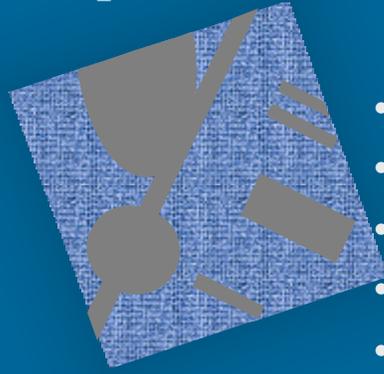
Try to do everything you can to get your students “involved” with the information that you will be presenting. This means using actual work place examples wherever possible. Try to use your own respirators for demonstrations, inspections, and cleaning steps exercises and refer to your company specific procedures when at all possible.

If possible, incorporate some exercises into your training. Respirator inspections, exercises on identifying the parts of a half-mask respirator, and the cleaning steps exercise are just samples of things that you can use. The key is to get your class involved so that they are not just listening to you lecture.

Encourage questions and repeat questions for clarity to be sure that everyone has heard and understood. Even if you know the answer, a good technique is to ask the class if anyone can answer the question. On questions where you’re not sure of the answer or there is disagreement within the class, tell the class that you’ll check on it during a break or as soon after the class as possible. Follow-up and make sure everyone gets the information.

Remember, your goal is to teach your employees to be safe and to provide accurate information about respirators your specific respirator program.

## Respirator Use



- Standard Overview
- Inspection
- Cleaning
- Storage
- Donning / Doffing
- Uses / Limitations

### Standard Overview

\$100 question..... Is the use of a respirator required

Program elements (for required use) nine steps

Program elements (for voluntary use) three steps

Program elements (voluntary use, filtering facepieces only) Appendix D

## The Big Question

Is the use of respirators required?

Over-exposure?  
Company policy?

Required use of respirators comes in two versions.

1. Over-exposure to something
2. Employer requirement.

## Review of 1910.134 Required Use of Respirators

### Program elements:

- Selection procedures
- Medical Evaluations
- Fit testing procedures for tight-fitting respirators
- Proper use procedures - routine & emergency

If the use of a respirator is **REQUIRED**, all nine elements must be written.

## Review of 1910.134 Required Use (continued)

- Procedures & schedules for maintenance
- Supplied air quality & quantity
- Hazards Training - routine & emergency
- Respirator use training
- Program auditing

## Review of 1910.134 Voluntary Use

- Medical evaluations
- Maintenance, Cleaning, Storage
- Appendix D

Voluntary use of respiratory protection requires a three step program.  
These components must have written work site specific procedures.

Medical evaluations: Appendix C the Questionnaire

Maintenance, Cleaning, & Storage WRITTEN PROCEDURES

Appendix D (INFO also on next slide)

Read and Heed all instructions

Use approved respirators

Properly selected

Keep track of your respirator

## Review of 1910.134 Voluntary Use filtering facepiece only

### Appendix D only:

- Read and Heed all instructions
- Use approved respirators
- Properly selected
- Keep track of your respirator

Read and Heed all instructions.....

Manufacturers warnings and instruction given during training

Use approved respirators against the contaminant of concern.....

NIOSH approved

42 CFR part 84

Properly selected.....

Do NOT wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against.....

Keep track of your respirator so that you do not mistakenly use someone else's respirator.

## Inspection

- Dirt
- Cracks
- Tears
- Holes
- Distortion
- Broken parts
- Missing parts
- Elasticity
- Corrosion
- Valve test

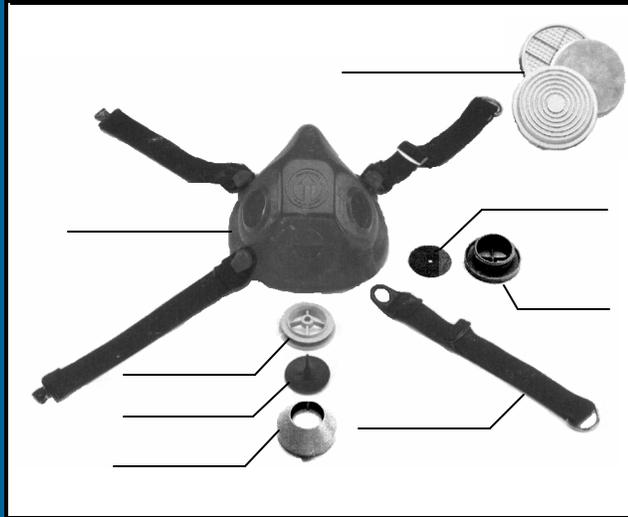
Have the trainees bring their respirators to the training session. They can be inspected as a hands on exercise during your training.

It would also be prudent to introduce the students to your specific inspection form(s). Direction should also be given at this time on the procedures for what to do if and when the respirators need to be maintained as well as what to do with their completed inspection forms.

Digital photos can also be used to supplement this portion of the training.

Valve test = the rolling up of the inhalation valve and dropping it on the table top to see if it flexes back.

## Anatomy of a half-mask respirator



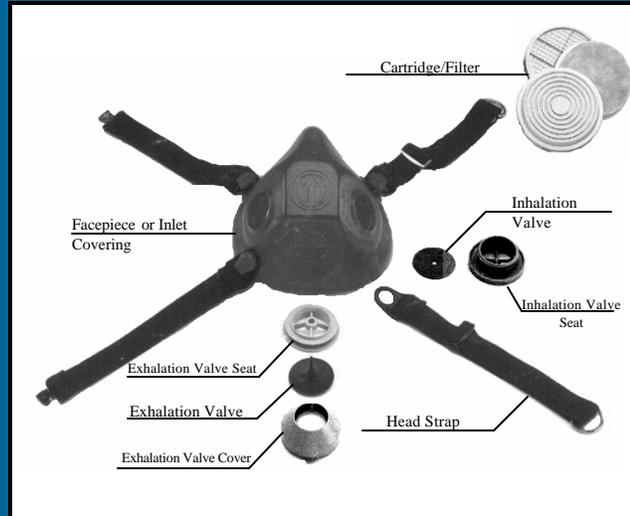
Either hand out the Anatomy of a Half-mask Respirator work sheets and let the students work in small groups to attempt to name as many of the parts of the respirator as possible

OR

just use a pointer and ask them to tell you what the name of the part is.

Note: The work sheet is a separate word document included at the end of the instructor's notes pages.

# Anatomy of a half-mask respirator



## What do you know about respirator cleaning?

What do you know about respirator cleaning?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

Either hand out the worksheet, What do you Know About Respirator Cleaning and let the students work in small groups to attempt to list as many of the steps in cleaning as possible

OR

have them name as many of the steps as they can.

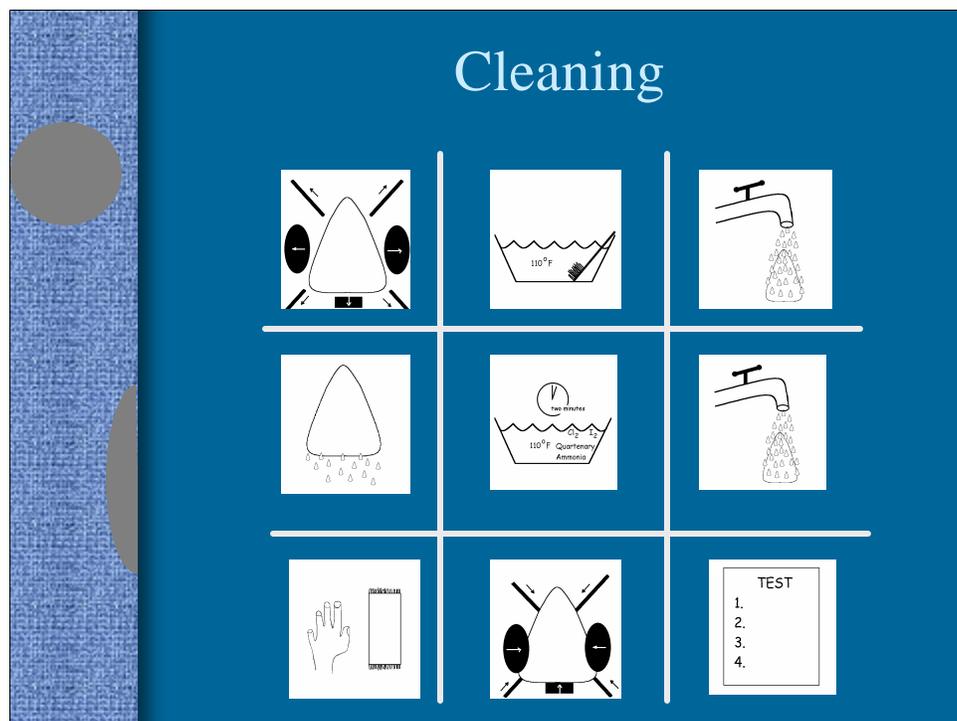
Note: The work sheet is a separate word document included at the end of the instructor's notes pages.

## Cleaning

- Dismantle
- Wash
- Rinse
- Drain
- Sanitize
- Rinse
- Dry
- Reassemble
- Test

From Appendix B2

The window paning exercise is on the next slide.



Either use this slide as a VISUAL reinforcement of the steps in cleaning, or impress them with your artistic talents and draw it on the board or flip chart page as they recite the steps.

Small group exercise..... Use the form, what do you know about cleaning respirators.

Step 1: Dismantle the respirator

Step 2: Wash the respirator in a mild detergent, with a soft bristled brush, maximum temperature 110°F

Step 3: Rinse

Step 4: drain the excess water

Step 5: Sanitize, chlorine, iodine (recipes in Appendix B), TWO minutes, maximum temperature 110°F

Step 6: Rinse

Step 7: Hand or air dry

Step 8: Reassemble the unit

Step 9: Test the valves and connections

## Storage

- Dust
- Sunlight
- Damaging chemicals
- Heat
- Extreme cold
- Excessive moisture

**IMPORTANT:** When a respirator is not in use, it shall be properly stored.

Storage of freshly cleaned respirators in heat sealed or reusable plastic bags or air-tight plastic (tupperware) containers and not laying around on the top of a bench or hanging on a peg-board.

## Donning / Doffing

- Inspection
- Adjust straps, out
- Hook the bottom straps, snug slightly
- Seat facepiece
- Hook the top straps, snug slightly
- Snug straps
- Perform user seal checks (+ and -)

**MUY MUY IMPORTANTE.....**

**CHECK THE SHEET THAT CAME WITH THE RESPIRATORS USED IN YOUR OPERATION TO ENSURE NO STEPS HAVE BEEN OMITTED.**

These are the steps most commonly followed in putting a respirator on.

This can be done either as a demonstration by the instructor or having someone from the audience don a respirator as the instructor directs.

Remember to mention the **USER SEAL CHECKS** Appendix B1

## Uses / Limitations

Never use an air purifying respirator:

- in an OXYGEN deficient atmosphere;
- in an IDLH atmosphere;
- for ABRASIVE BLASTING;
- for FIRE FIGHTING;
- which is not APPROVED for the contaminant of concern;
- with FACIAL HAIR.

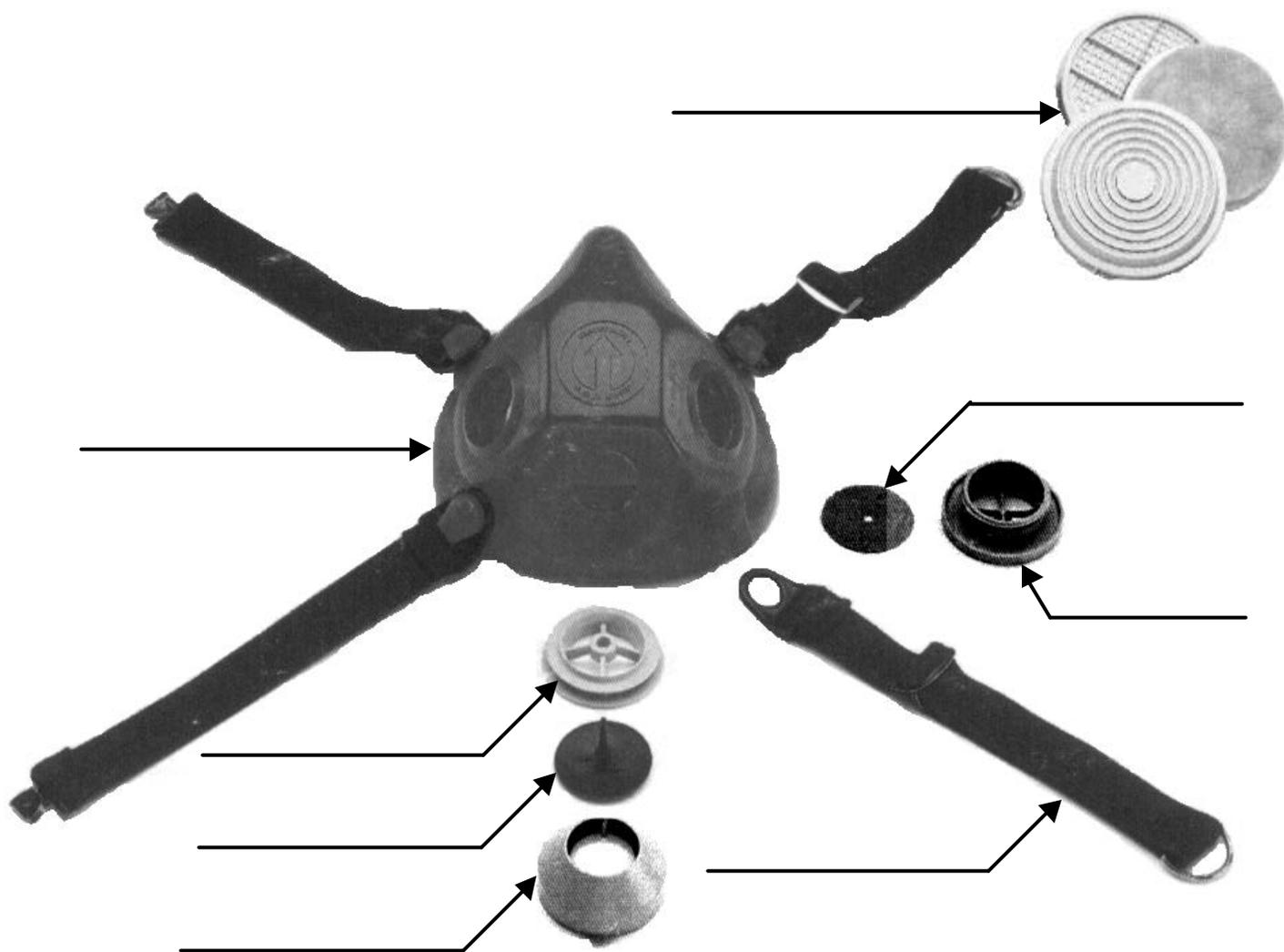
IMPORTANT STUFF.....

Add any other items that apply at your workplace.

ie. eating, drinking, smoking restrictions, areas where oxygen deficiencies may be encountered,

WHO to contact if the users have any questions.....

# Anatomy of a half-mask respirator



# What do you know about respirator cleaning?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

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10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

# Respiratory Protection

## Frequently Asked Questions

Adapted from *NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84* [DHHS (NIOSH) Publication No. 96-101] and *Protect Yourself Against Tuberculosis – A Respiratory Protection Guide for Health Care Workers* [DHHS (NIOSH) Publication No. 96-102].

### **Q: What is a respirator?**

**A:** A respirator is a protective facepiece, hood or helmet that is designed to protect the wearer against a variety of harmful airborne agents.

### **Q: When is the use of respirators required?**

**A:** OSHA's respirator standard, 29 CFR 1910.134, requires the use of respirators to protect employees from breathing contaminated and/or oxygen-deficient air when effective engineering controls are not feasible, or while they are being instituted. Several other OSHA regulations also require the use of respirators.

### **Q: Can any respirator be used?**

**A:** No, respirators shall be selected on the basis of hazards to which the worker is exposed (i.e., particulates, vapors, oxygen-deficiency, or combination). Also, OSHA requires the use of certified respirators.

### **Q: Who certifies respirators?**

**A:** The National Institute for Occupational Safety and Health (NIOSH).

### **Q: How can a certified respirator be recognized?**

**A:** On July 10, 1995, 30 CFR Part 11 certification procedures were replaced by 42 CFR Part 84 procedures. Under the 30 CFR Part 11 approval system, manufacturers were required to mark cartridges and filters with an abbreviated label that included a NIOSH/MSHA approval number ("TC number"). Under the 40 CFR Part 84 approval system, cartridges and filters are no longer marked with a "TC number". Instead, they are marked with "NIOSH", the manufacturer's name and part number, and an abbreviation to indicate the cartridge (e.g., OV, CL) or filter (e.g., N95, P100) type. All cartridges and filters are to be supplied with a matrix approval label, usually as an insert in the box. This label shows the NIOSH approved configurations and includes the "TC number", component parts, and cautions and use limitations. Non-powered particulate respirators that were approved under 30 CFR Part 11 and use the "old" labeling can be manufactured and sold until July 10, 1998. Distributors will be able to sell them and end-users will be able to use them until their inventories are depleted.

**Q: Which class of Part 84 respirator should be used where a particular OSHA standard requires the use of a respirator with HEPA filtration?**

**A:** Where workers are exposed to a hazard that would require the use of a respirator with HEPA filtration, the appropriate class of respirator under the 42 CFR Part 84 certification is the Type 100 (N100, R100, or P100).

**Q: Why is a formal respirator program needed?**

**A:** A respirator program increases the chances of using a respirator correctly. A respirator will only protect if it is used correctly. Also, OSHA requires a number of written elements for all respiratory protection programs.

**Q: Who is in charge of the respirator program?**

**A:** The program must be administered by a trained program administrator who is qualified and knowledgeable in respiratory protection to run all aspects of the program

**Q: What do employees need to know about the respirator program?**

**A:** Employers must establish and implement a written respiratory protection program with worksite-specific procedures and elements for required respirator use. The provisions of the program include procedures for selection, medical evaluation, fit testing, training, use and care of respirators.

**Q: How is the proper respirator size determined?**

**A:** Proper respirator size is determined through a fit test. Employees using negative or positive pressure tight-fitting facepiece respirators must pass an appropriate fit test using the procedures detailed in OSHA's respirator standard.

**Q: Can employees check the fit of their own respirator?**

**A:** Yes, employees using tight-fitting facepiece respirators are required to perform a user seal check each time they put on the respirator. They must use the procedures in Appendix B-1 of 29 CFR 1910.134 or procedures recommended by the respirator manufacturer that the employer demonstrates are as effective as OSHA's procedures. Note that a *fit test* is a method used to select the right size respirator for the user. A *user seal check* is a method to verify that the user has correctly put on the respirator and adjusted it to fit properly, as illustrated below.

**Q: When is respirator fit testing required?**

**A:** Fit testing of all negative or positive pressure tight-fitting facepiece respirators is required prior to initial use, whenever a different respirator facepiece is used, and at least annually thereafter. An additional fit test is required whenever there are changes in the user's physical condition that could affect respirator fit (e.g., facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight). The employer must be fit tested with the same make, model, style, and size of respirator that will be used.

**Q: What can be done if an employee has a very small face and has trouble being fit tested for a respirator?**

**A:** Manufacturers make several different sizes. Respirators may also vary in size from manufacturer to manufacturer. Users may be able to get a better fit by trying a respirator made by another manufacturer. In some cases, the use of powered air-purifying respirators may be appropriate. Employers must help employees find a suitable respirator.

**Q: Must employees see a doctor before they use a respirator?**

**A:** The employer must provide a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace. Not all workers must be examined by a doctor. A physician or other licensed health care professional must perform the medical evaluation using the medical questionnaire contained in Appendix C of 29 CFR 1910.134 or an initial medical examination that obtains the same information.

**Q: What maintenance and care is required for respirators?**

**A:** The employer must provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees according to the procedures in 29 CFR 1910.134.

**Q: Can a respirator be used by more than one person?  
How often should it be cleaned and disinfected?**

**A:** Disposable respirators cannot be disinfected, and are therefore assigned to only one person. Disposable respirators must be discarded if they are soiled, physically damaged, or reach the end of their service life. Replaceable filter respirators may be shared, but must be thoroughly cleaned and disinfected after each use before being worn by a different person, using the procedures in Appendix B-2 of 29 CFR 1910.134, or equally effective procedures recommended by the manufacturer.

**Q: How long can a particulate respirator be used before it must be discarded?**

**A:** Respirators with replaceable filters are reusable, and a respirator classified as disposable may be reused by the same worker as long as it functions properly. All filters must be replaced whenever they are damaged, soiled, or causing noticeably increased breathing resistance (e.g., causing discomfort to the wearer). Before each use, the outside of the filter material should be inspected. If the filter material is physically damaged or soiled, the filter should be changed (in the case of respirators with replaceable filters) or the respirator discarded (in the case of disposable respirators).

Employers must develop standard operating procedures for storing, reusing, and disposing of respirators that have been designated as disposable and for disposing of replaceable filter elements.

**Q: What is the proper way to store a respirator that is used routinely?**

**A:** Respirators must be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They must also be packed or stored to prevent deformation of the facepiece and exhalation valve. A good method is to place them in individual storage bins. Keep in mind that respirator facepieces will become distorted and the straps will lose their elasticity if hung on a peg for a long time. Check for these problems before each use. Storing the respirator in a plastic sealable bag after use is not considered a good practice. The respirator may be damp after use and sealing prevents drying and encourages microbial growth. If plastic bags are used, respirators must be allowed to dry before storage.

**Q: Are there any additional requirements for the storage of emergency respirators?**

**A:** Yes, emergency respirators must be kept accessible to the work area and stored in compartments or in covers that are clearly marked as containing emergency respirators, and stored in accordance with any applicable manufacturer instructions.

**Q: What are the employer's obligations when respiratory protection is not required but employees wear respirators on their own accord?**

**A:** The employer must implement those elements of the written respiratory protection program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so its use does not present a health hazard to the user. Also, employers must provide the voluntary respirator users with the information contained in Appendix D of 29 CFR 1910.134.

Employers are not required to include in a written respiratory program those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

**Q: Is training required before a respirator is used?**

**A:** Yes, training must be provided to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. This training should include at a minimum:

- Why the respirator is necessary and how improper fit, use, or maintenance can compromise its protective effect
- Limitations and capabilities of the respirator
- Effective use in emergency situations
- How to inspect, put on and remove, use and check the seals
- Maintenance and storage
- Recognition of medical signs and symptoms that may limit or prevent effective use
- General requirements of OSHA's respirator standard, 29 CFR 1910.134

**Q: What can be done if employees find it difficult to talk with co-workers when wearing a respirator?**

**A:** Some respirators may interfere with speech more than others. Devices that enhance speech communication are available. Ask your program administrator if there are alternatives.

**Q: If employees have a beard or moustache, is their respirator still effective?**

**A:** Tight-fitting facepiece respirators must not be worn by employees who have facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function. Respirators that do not rely on a tight face seal, such as hoods or helmets, may be used by bearded individuals.

**Q: Can employees wear glasses while wearing a respirator?**

**A:** Yes, but if an employee wears corrective glasses or goggles or other personal protective equipment, the employer must ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user. Kits are available from all respirator manufacturers that allow the mounting of prescription lenses inside the respirator.

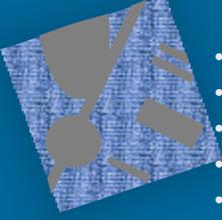
Contact lenses can be worn with any type of respirator, but their use is not recommended in dusty atmospheres while wearing a half-mask facepiece.

**Q: If employees get a rash when they wear a respirator with a latex seal, how can this be prevented?**

**A:** Users might have an allergy or sensitivity to the latex or its additives used in the manufacture of some respirators. Changing to a respirator using a silicone-based compound for the face seal, or a respirator that doesn't have a face seal (like a hooded PAPR) may solve the problem. Employers must help employees find a respirator that does not cause this problem.

# Student Handouts

## Respirator Use



- Standard Overview
- Inspection
- Cleaning
- Storage
- Donning / Doffing
- Uses / Limitations

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## The Big Question

Is the use of respirators required?

Over-exposure?  
Company policy?

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## Review of 1910.134 Required Use of Respirators

Program elements:

- Selection procedures
- Medical Evaluations
- Fit testing procedures for tight-fitting respirators
- Proper use procedures - routine & emergency

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Review of 1910.134  
Required Use (continued)

- Procedures & schedules for maintenance
- Supplied air quality & quantity
- Hazards Training - routine & emergency
- Respirator use training
- Program auditing

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Review of 1910.134  
Voluntary Use

- Medical evaluations
- Maintenance, Cleaning, Storage
- Appendix D

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Review of 1910.134  
Voluntary Use  
filtering facepiece only

Appendix D only:

- Read and Heed all instructions
- Use approved respirators
- Properly selected
- Keep track of your respirator

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## Inspection

- Dirt
- Cracks
- Tears
- Holes
- Distortion
- Broken parts
- Missing parts
- Elasticity
- Corrosion
- Valve test

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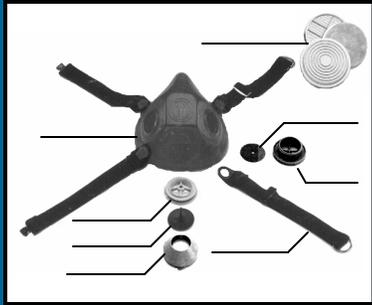
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## Anatomy of a half-mask respirator



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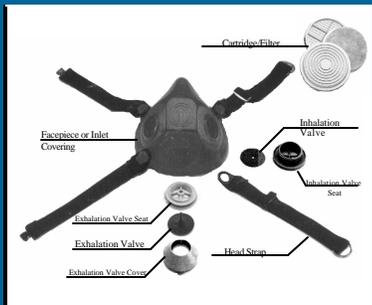
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## Anatomy of a half-mask respirator



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## What do you know about respirator cleaning?

What do you know about respirator cleaning?

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10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

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## Cleaning

- Dismantle
- Wash
- Rinse
- Drain
- Sanitize
- Rinse
- Dry
- Reassemble
- Test

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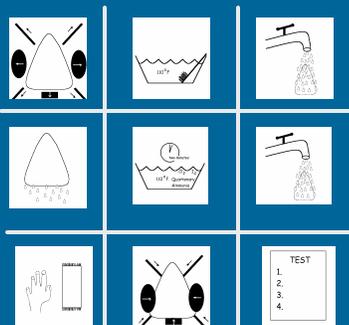
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## Cleaning



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**Storage**

- Dust
- Sunlight
- Damaging chemicals
- Heat
- Extreme cold
- Excessive moisture

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**Donning / Doffing**

- Inspection
- Adjust straps, out
- Hook the bottom straps, snug slightly
- Seat facepiece
- Hook the top straps, snug slightly
- Snug straps
- Perform user seal checks (+ and -)

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**Uses / Limitations**

Never use an air purifying respirator:

- in an OXYGEN deficient atmosphere;
- in an IDLH atmosphere;
- for ABRASIVE BLASTING;
- for FIRE FIGHTING;
- which is not APPROVED for the contaminant of concern;
- with FACIAL HAIR.

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## GLOSSARY OF COMMON TERMS

**Air-Purifying Respirator:** A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. *OSHA Definition*

**Assigned Protection Factor (APF):** See Protection Factors. *NIOSH Definition*

**Atmosphere-Supplying Respirator:** A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units. *OSHA Definition*

**Breakthrough:** The penetration of challenge material(s) through a gas or a vapor air-purifying element. The quantity or extent of breakthrough during service life testing is often referred to as the percentage of the input concentration. *NIOSH Definition*

**Canister or Cartridge:** A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container. *OSHA Definition*

**Demand Respirator:** An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation. *OSHA Definition*

**Disposable Respirators:** A respirator that is discarded after the end of its recommended period of use, after excessive resistance or physical damage, or when odor breakthrough or other warning indicators render the respirator unsuitable for further use. *NIOSH Definition*

**Dust:** A solid, mechanically produced particle with a size ranging from submicroscopic to macroscopic. *NIOSH Definition*

**Emergency Respirator Use Situation:** A situation that requires the use of respirators due to the unplanned generation of a hazardous atmosphere (often of unknown composition) caused by an accident, mechanical failure, or other means and that requires evacuation of personnel or immediate entry for rescue or corrective action. *NIOSH Definition*

**Emergency Situation:** Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant. *OSHA Definition*

**Employee Exposure:** Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection. *OSHA Definition*

**End-Of-Service-Life Indicator (ESLI):** A system that warns the respirator user of the approach of the end of adequate respiratory protection; for example, that the sorbent is approaching saturation or is no longer effective. *OSHA Definition*

**Escape Gas Mask:** A gas mask that consists of a half-mask facepiece or mouthpiece, a canister, and associated connections, and that is designed for use during escape-only from hazardous atmospheres. *NIOSH Definition*

**Escape Only Respirator:** Respiratory devices that are designed for use only during escape from hazardous atmospheres. *NIOSH Definition*

**Escape-Only Respirator:** A respirator intended to be used only for emergency exit. *OSHA Definition*

**Filter or Air-Purifying Element:** A component used in respirators to remove solid or liquid aerosols from the inspired air. *OSHA Definition*

**Filtering Facepiece:** A particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium. (See Single-Use Dust or Dust and Mist Respirators and Disposable Respirators.) *NIOSH Definition*

**Filtering Facepiece (Dust Mask):** 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. *OSHA Definition*

**Fit Factor:** A quantitative measure of the fit of a specific respirator facepiece to a particular individual. *NIOSH Definition*

**Fit Factor:** A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. *OSHA Definition*

**Fit Test:** Means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.) *OSHA Definition*

**Fume:** A solid condensation particulate, usually of a vaporized metal. *NIOSH Definition*

**Gas:** An aeriform fluid that is in a gaseous state at standard temperature and pressure. *NIOSH Definition*

**Helmet:** A rigid respiratory inlet covering that also provides head protection against impact and penetration. *OSHA Definition*

**High-Efficiency Particulate Air (Hepa) Filter:** A filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters. *OSHA Definition*

**Hood:** Means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso. *OSHA Definition*

**Immediately Dangerous to Life or Health (IDLH):** Acute respiratory exposure that poses an immediate threat of loss of life, immediate or delayed irreversible adverse effects on health, or acute eye exposure that would prevent escape from a hazardous atmosphere. *NIOSH Definition*

**Immediately Dangerous to Life or Health (IDLH):** An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere. *OSHA Definition*

**Interior Structural Firefighting:** The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155) *OSHA Definition*

**Loose-Fitting Facepiece:** A respiratory inlet covering that is designed to form a partial seal with the face. *OSHA Definition*

**Maximum Use Concentration (MUC):** [Reserved] *OSHA Definition*

**Mist:** A liquid condensation particulate. *NIOSH Definition*

**Negative Pressure Respirator (Tight Fitting):** A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator. *OSHA Definition*

**Orinasal Respirator:** A respirator that covers the nose and mouth and that generally consists of a quarter- or half- facepiece. *NIOSH Definition*

**Oxygen Deficient Atmosphere:** An atmosphere with an oxygen content below 19.5% by volume. *OSHA Definition*

**Physician or Other Licensed Health Care Professional (PLHCP):** Means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section. *OSHA Definition*

**Planned or Unplanned Entry into an IDLH Environment, an Environment of Unknown Concentration of Hazardous Contaminant, or an Environment of Unknown Composition:** A situation in which respiratory devices are recommended to provide adequate protection to workers entering an area where the contaminant concentration is above the IDLH or is unknown. *NIOSH Definition*

**Positive Pressure Respirator:** A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator. *OSHA Definition*

**Potential Occupational Carcinogen:** Any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory, or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance that is metabolized into one or more potential occupational carcinogens by mammals (29 CFR 1990.103, OSHA Cancer Policy). *NIOSH Definition*

**Powered Air-Purifying Respirator (PAPR):** An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering. *OSHA Definition*

**Pressure Demand Respirator:** A positive pressure atmosphere- supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation. *OSHA Definition*

**Protection Factors:** *NIOSH Definition*

**Assigned Protection Factor (APF):** The minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of properly fitted and trained users.

**Simulated Workplace Protection Factor (SWPF):** A surrogate measure of the workplace protection provided by a respirator.

**Workplace Protection Factor (WPF):** A measure of the protection provided in the workplace by a properly functioning respirator when correctly worn and used.

**Qualitative Fit Test (QLFT):** A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent. *OSHA Definition*

**Quantitative Fit Test (QNFT):** Means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator. *OSHA Definition*

**Recommended Exposure Limit (REL):** An 8- or 10-hour time-weighted average (TWA) or ceiling (C) exposure concentration recommended by NIOSH that is based on an evaluation of the health effects data. *NIOSH Definition*

**Respiratory Inlet Covering:** The portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, a helmet, a hood, a suit, or a mouthpiece respirator with nose clamp. *OSHA Definition*

**Self-Contained Breathing Apparatus (SCBA):** An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user. *OSHA Definition*

**Service Life:** The length of time required for an air-purifying element to reach a specific effluent concentration. Service life is determined by the type of substance being removed, the concentration of the substance, the ambient temperature, the specific element being tested (cartridge or canister), the flow rate resistance, and the selected breakthrough value. The service life for a self-contained breathing apparatus (SCBA) is the period of time, as determined by the NIOSH certification tests, in which adequate breathing gas is supplied. *NIOSH Definition*

**Service Life:** The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer. *OSHA Definition*

**Single-Use Dust or Dust and Mist Respirators:** Respirators approved for use against dusts or mists that may cause pneumoconiosis and fibrosis. *NIOSH Definition*

**Supplied-Air Respirator (SAR) or Airline Respirator:** An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user. *OSHA Definition*

**This Section:** This respiratory protection standard. *OSHA Definition*

**Tight-Fitting Facepiece:** A respiratory inlet covering that forms a complete seal with the face. *OSHA Definition*

**User Seal Check:** An action conducted by the respirator user to determine if the respirator is properly seated to the face. *OSHA Definition*

**Vapor:** The gaseous state of a substance that is solid or liquid at temperatures and pressures normally encountered. *NIOSH Definition*