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RESPIRATORY PROTECTION
AWARENESS
Enhancing Safety in HVAC

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Disclaimer

This presentation is not intended to be a comprehensive program covering all aspects of this topic. All technicians are encouraged to read and follow all applicable standards, codes and regulations related to this topic.

- ✓ It is the responsibility of each individual contractor to follow local building codes and licensing requirements and to work safely in accordance with OSHA guidelines.
- ✓ It is the contractor's responsibility to take proper precautions on each project to prevent cross contamination. Always take the health and safety of the building occupants into consideration before you conduct any cleaning procedures.
- ✓ All of the following tips are only general tips. They do not cover every situation and it is your responsibility to adapt these tips to the individual system you are working on.
- ✓ The Instructor is not responsible in any way for the work you perform after viewing this slide show. You are responsible for your own work.
- ✓ The views and opinions following are the instructors opinions and not necessarily the official position of the National Air Duct Cleaners Association.


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What We'll Learn

- Hazards in the Industry
- Regulations
- Respirators
- Case Studies/Lessons Learned

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Is the Workplace Hazardous?

An atmosphere is hazardous if it does not contain *sufficient oxygen*, or it contains *chemical, biological or radiological* contaminants in sufficient quantity to harm the health of employees.

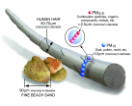
- Potential respiratory hazards:
 - Dust and fibers
 - Biological hazards
 - Fumes
 - Mists
 - Gases
 - Vapors

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Common Respiratory Hazards in the HVAC Industry

- Biological Organisms
 - Fungi (mold), Bacteria, Viruses
- Chemicals
 - Cleaning products, Refrigerants, Oil Mists and Vapors
- Gases
 - Carbon Monoxide
- Other Particulate Matter
 - Asbestos, Fiberglass, Crystalline Silica



Source: US EPA

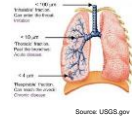
Don't forget to consider: Heat Stress!

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Why do we Focus on Respiratory Protection?

- Short Term Health Impacts
- Long Term Health Impacts
- Financial Impacts
- Production Impacts



Cough
Bronchitis
Asthma
COPD
Cancers
Mesothelioma
Silicosis

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OSHA Enforcement
29CFR1910.134

Respiratory Protection was #7 of top 10 OSHA violations in 2023, **2481 violations**

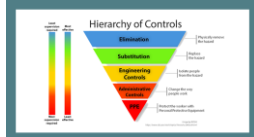
- x Inadequate Respirator Selection (exposure monitoring)
- x Lack of fit testing
- x Insufficient Training
- x Poor maintenance
- x Inadequate Program Management
- x Failure to Conduct Regular Respirator Inspections
- x Non-compliance with Medical Evaluations
- x Improper Use of Respirators
- x Failure to Replace Expired Filters and Cartridges
- x Inadequate Recordkeeping

OSHA 2024 Fines: \$16,131 per violation (other than serious), \$161,323 per violation (willful or repeat)

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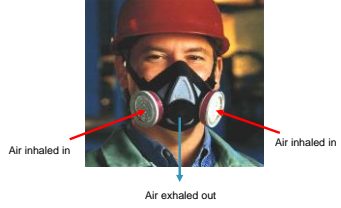
When do we use respirators?



- When controls are not feasible
- While the controls are being installed
- When controls are not sufficient to reduce respiratory hazards to a level below established permissible exposure levels
- During emergencies


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 How Cartridge Respirators Work
Air purifying respirator




Air inhaled in Air inhaled in
Air exhaled out

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 Respirator Limitations

- Must be the correct respirator for the task
- Must properly fit and be worn properly
- Certain respirators cannot be used when Oxygen is <19.5% or in atmospheres immediately dangerous to life and health (IDLH)
- Must not be damaged or contaminated

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 NIOSH Respirator Filter Classes

NIOSH classifies the filtering media based on its resistance to oil and particles







Resistance to oil is designated as 'N', 'R', or 'P'
N= Not resistant to oil
R= Somewhat resistant to oil
P= Strongly resistant to oil

Particle Efficiency is '95', '99', or '99.97' correlates to the % of particles 0.3 microns or larger, filtered out.


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Common cartridges

-  Particulates/dust- pink/magenta
-  Organic vapor - black
-  Ammonia- green
-  Acid gas - White
-  Acid gas and organic vapor - yellow
-  Chlorine - white & yellow

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Changing Cartridges





- ✓ Cartridges must be changed regularly
- ✓ Particulate cartridges are changed when they become difficult to breathe through or are damaged
- ✓ Chemical cartridges are changed on a pre-determined schedule

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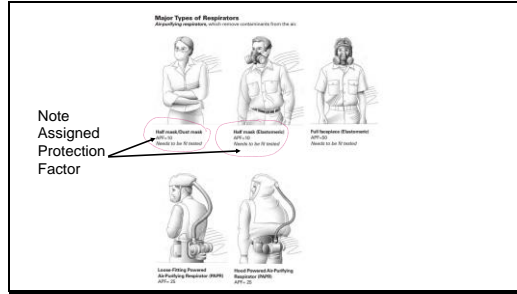
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Cleaning & Maintaining


- ✓ Respirators must be cleaned, inspected and maintained regularly
- ✓ Cleaning is especially important in dusty areas
- ✓ Clean in warm soapy water
- ✓ Allow to dry thoroughly before storing or using



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Respirator Selection

- ✓ Conduct an exposure assessment
- ✓ Consider job site and worker characteristics
- ✓ Evaluate atmospheric contaminants
- ✓ Understand respirator Assigned Protection Factors (APF)
- ✓ Evaluate respirators
- ✓ Identify cartridge/filter life expectancy

Respirators are NIOSH approved
not OSHA approved or OSHA certified



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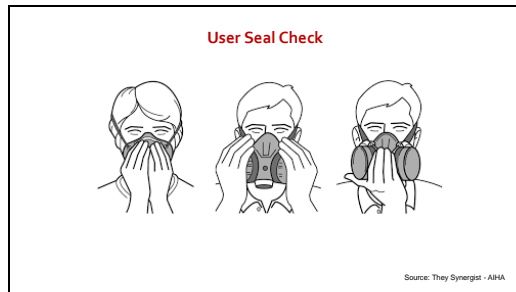
Proper Use and Maintenance of Respirator

- Don/doff procedures
- Seal testing
- Inspection and maintenance
 - Cleaning
 - Storage
 - Cartridge change out schedule

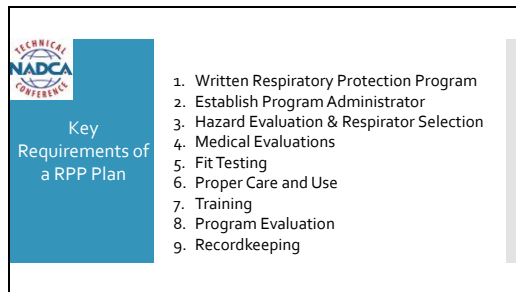
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Thank you
for
Participating!

