### Personal Protective Equipment

**Respirator Usage and Safety**

#### What is a respirator?
- Worn on face
- Covers nose and mouth
- Forms a tight seal against skin
- Filters out certain airborne particles

#### Types of Respirators

- **Air-Purifying Respirators**
  - Removes contaminants from the air
  - Particulate respirators
  - "Gas mask" respirators
- **Air-Supplying Respirators**
  - Provides clean source of air
  - Supplied air respirators (SAR)
  - Self-contained breathing apparatus (SCBA)

#### Particulate Filtering Facepiece

- **Air-Purifying Particulate Respirator (APR)**
- Disposable or single-use respirators
- Some have exhalation valve
- Goggle or eye protection needed
- N95s

#### NIOSH Particulate Filter Approval Categories

<table>
<thead>
<tr>
<th>Minimum Filter Efficiency</th>
<th>N Series Not Resistant to Oil</th>
<th>R Series Somewhat Resistant to Oil</th>
<th>P Series Strongly Resistant to Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>95%</td>
<td>N95</td>
<td>R95</td>
<td>P95</td>
</tr>
<tr>
<td>99%</td>
<td>N99</td>
<td>R99</td>
<td>P99</td>
</tr>
<tr>
<td>100% (99.97%)</td>
<td>N100</td>
<td>R100</td>
<td>P100 (*HEPA)</td>
</tr>
</tbody>
</table>
Elastomeric Respirators

- Air-Purifying Particulate Respirators (APR)
- Reusable facepiece with disposable filter cartridges
- Half-face APRs
  - Only covers nose and mouth
  - Goggles or faceshield needed
- Full-face APRs
  - Covers entire face
- Variety of filters

Powered Air-Purifying Respirators (PAPRs)

- Air-Purifying Particulate Respirators (APR)
- Battery-powered blower pulls air through filters then moves filtered air towards facepiece
- Can be cooling device
- Not all require fit-testing and seal checks
- Check batteries

Self-Contained Breathing Apparatuses (SCBAs)

- Air-Supplying Respirator
- Supply uncontaminated air to full facepiece
- Used in high risk environments
- Minimum usage time of 30 minutes
- Follow-up medical examination required
- Not commonly used in veterinary medicine

RESPIRATOR USAGE AND SAFETY

Selecting a Respirator

- Type of hazards
- Identity and concentration of the contaminant
- Degree of protection provided by each type of respirator
- Activity of the person wearing the respirator
- Time constraints

Standards and Regulations

- OSHA
  - Occupational Safety and Health Administration
  - OSHA 1910.134
- FDA
  - Food and Drug Administration
- NIOSH
  - National Institute for Occupational Safety and Health
NIOSH-Approved

Proper Use of Respirators

- Fit-tested
- Seal checked
- Training
- Medical evaluation
  - Personal health questions
  - Medications
  - Work conditions

Health Effects When Wearing Respirators

- Increased resistance to breathing
- Reduced endurance
- Reduced visual field
- Increased risk for heat stress
- Decreased voice clarity/loudness
- Decreased hearing ability
- Discomfort or irritation
- Psychological stress

Before Usage

- Inspect all parts of the respirator before use
- Batteries charged
- Proper air flow
- Do NOT use the respirator if it is not working properly

Safe Respirator Usage

- Do not use a respirator unless
  - Formally trained and
  - Fit tested
- Select the correct respirator for the job
  - Particulate filter will not protect against gases or vapors
- Inspect the respirator before each use
- Ensure the face seal
  - Remove facial hair
  - Prevent hair or eyeglasses from interfering
- Do not wear contact lenses with a respirator

During Usage

- Immediately leave contaminated area if respirator stops working
- PAPR – make sure battery charge is available
- SCBA – make sure air is available in tank
Cleaning

- Follow manufacturer’s cleaning guidelines
- Warm water/mild detergent
- Disinfectant solution
- Dry thoroughly
- Never soak entire unit in detergent

Respirator Storage

- Store in accordance with manufacturer’s instructions
- Check expiration dates
- Never use and discard if:
  - Color changes
  - Shrinking
  - Wearing/thinning of material
  - Stretching
  - Cuts/tears/holes

Resources

- Occupational Safety and Health Administration (OSHA) – Respiratory Protection
  - https://www.osha.gov/SLTC/respiratoryprotection/
- National Institute for Occupational Safety and Health (NIOSH) – Respirators
  - http://www.cdc.gov/niosh/topics/respirators/
- U.S. Food and Drug Administration (FDA) – Masks and N95 Respirators
  - http://www.fda.gov/medicaldevices/productsandmedicalprocedures/regulatoryinformation/personalprotectiveequipment/
- U.S. Department of Agriculture – Foreign Animal Disease Preparedness and Response Plan (FAD PReP) NAHEMS Guidelines: Personal Protective Equipment

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