**Agent Characteristics**

<table>
<thead>
<tr>
<th>Risk Group (RG)</th>
<th>Description</th>
<th>Agent Type</th>
<th>Immunizations</th>
<th>Agent Viability</th>
<th>Laboratory Handling Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG-2</td>
<td>This genus of saprotrophic (lives and feeds on dead organic matter) and pathogenic fungi, is one of the few known animal, human and plant pathogens. <em>Aspergillus</em> spp., including <em>A. fumigatus</em> and <em>A. flavus</em>, are ubiquitous worldwide in the environment including in soil, decomposing organic matter, household dust, building materials, plants, food and water. <em>A. fumigatus</em> and <em>A. flavus</em> are both etiologic agents known for causing the human disease aspergillosis. <em>A. fumigatus</em> is the leading agent causing aspergillosis, with about 70% of cases; it can be abundant in soils and presumably in dust blowing off of agricultural fields. <em>A. flavus</em> causes about 20% of aspergillosis in humans. <em>A. flavus</em> is also known for the colonization of cereal grains, legumes and tree nuts. Plant infection can occur pre-harvest and show no symptoms until postharvest storage or transport. <em>Aspergillus</em> spp. conidia (asexual spores) are commonly present in the air, both indoors and outdoors, and during all seasons of the year. Many strains of <em>A. flavus</em> produce significant quantities of aflatoxin (mycotoxin), which are toxic to mammals. For more information on aflatoxin, refer to the Aflatoxin BARS.</td>
<td>Fungus Biohazard</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agent Viability</th>
<th>Disinfection</th>
<th>Inactivation</th>
<th>Survival Outside Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:10 Bleach Dilution</td>
<td>Other: Cupric Sulfate</td>
<td>Autoclave: heat to 60°C (140°F) for 45 minutes to inactivate <em>A. flavus</em> conidia (autoclave cycles are usually set at 121°C (250°F)).</td>
<td>Conidia are generally heat-resistant; can survive in soil and decomposing vegetation.</td>
</tr>
</tbody>
</table>

| Laboratory Acquired Infection History | None reported to date. |

| Laboratory Biosafety Level (BSL) | X BSL-2 | with special practices |

| Attenuated Strain Alternatives | None |

| Training | EHS Laboratory Safety Training (CULearn #2355) | EHS Bloodborne Pathogens Training (CULearn #1079) | Lab-specific protocol training | BARS CULearn #2277.36 |

| Lab Engineering Controls | Benchtop | Biosafety Cabinet (for aerosol containment) | Chemical Fume Hood | Centrifuge lids or safety cups; samples are loaded/unloaded inside the BSC | Use of safety-engineered sharps |

| Personal Protective Equipment (PPE) | Eye protection | Single gloves | Additional gloves | Snap-front lab coat with cinch cuffs | Disposable solid front gown | Additional mucous membrane protection | Disposable outer sleeves |

| Waste Management | Regulated Medical Waste (RMW) |

| Shipping Guidance | Refer to EHS Biological Materials Shipping |

| Animal Vivarium Guidance | Animal Housing Biosafety Level (ABSL) | X ABSL-1 | ABSL-2 | ABSL-3 |

| Animal Biosecurity | Experimental animals are housed separately | Information not available |

| Perform Inoculations | Benchtop | Biosafety Cabinet |

| Change Cages | Benchtop | Biosafety Cabinet |

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**Health Hazards**

**Signs and Symptoms**

- Fever
- Headache
- Dehydration
- Weight loss
- Lethargy
- Skin lesions
- Rash
- Loss of appetite
- Nausea
- Vomiting
- Diarrhea
- Coughing
- Sneezing
- Loss of sensation
- Ataxia
- Joint and muscle pain
- Enlarged internal organs
- Reproductive Health concerns

**Immunizations**

- Available
- Not Available

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**Prophylaxis**


Formal medical advice is obtained during medical consultations with Cornell Health or primary healthcare provider as needed.
### Exposure and Spill Procedures

**Mucous Membranes**
- Flush eyes, mouth or nose for 15 minutes at eyewash station. See: responding to exposures.

**Other Exposures**
- Wash with soap and water for 15 minutes (open wounds, sores, etc.) and a minimum of 20 seconds of soap and water for areas with intact skin. See: responding to exposures.

**Small Spills**
- Notify others working in the lab. Evacuate area and allow 30 minutes for aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply disinfectant, working from the perimeter toward the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials. See: spill cleanup.

**Large Spills**
- Request assistance from the EHS Spill Team by calling CUPD dispatch. Call 911 from a campus phone or 607-255-1111 from a mobile phone.

**Incident Reporting**
- Immediately report the incident to supervisor and complete the EHS online injury/illness report as soon as possible.

### Medical Follow Up

<table>
<thead>
<tr>
<th>During Business Hours</th>
<th>After Hours Care</th>
<th>Emergencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornell Health</td>
<td>Cornell Health Services 24-hour phone consultation line or local urgent care as listed on above webpage.</td>
<td>Call 911 from a campus phone or 607-255-1111 from a mobile phone.</td>
</tr>
<tr>
<td>607-255-5155 (24-hour phone consultation line)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Biosafety Level 2 Containment Requirements Summary

**Personal Hygiene**
- Remove PPE before leaving the lab – avoid wearing PPE in public spaces.
- Wash hands frequently with soap and water after removing gloves, handling samples, leaving lab, etc.
- Change gloves frequently while working, and before removing samples from the biosafety cabinet to minimize potential contamination of equipment and surfaces within the lab.

**Standard Microbiological Practices**
- In addition to standard BSL1 practices:
  - Biohazard signs and labels on equipment.
  - Use of a biological safety cabinet (BSC), such as a Class II Type A2, for manipulations that can generate infectious aerosols.
  - Use aerosol containing devices for high energy activities which may generate infectious aerosols. For example, centrifugation of agents which may generate infectious aerosols will use gasketed rotors or buckets. Rotors or buckets will be removed and opened inside a BSC. Centrifuge tubes will be filled and opened in a BSC.
  - Vacuum lines are protected with liquid disinfectant-filled traps and 0.45 micron filters.
  - Sharps handling and safety practices are implemented.
  - Decontaminate work surfaces after completion of work and after any spill or splash of potentially infectious material with appropriate disinfectant.
  - Chemically disinfect all surfaces and equipment.
  - Potentially infectious materials are placed in durable, leak proof, labeled primary containers during collection, handling, processing, and secondary containers during storage, or transport within a facility.
  - Windows in BSL-2 labs remain closed.

**Special Practices**
- All persons entering the laboratory are advised of the potential hazards and meet specific entry/exit requirements.
- The laboratory supervisor ensures that lab personnel demonstrate proficiency in standard and special microbiological practices before working with such agents.
- Laboratory equipment are routinely decontaminated, as well as, after spills, splashes or other potential contamination.
- Spills involving infectious materials are contained, decontaminated, and cleaned up by staff properly trained and equipped to work with infectious material.
- Equipment is decontaminated before repair, maintenance, or removal from the laboratory.

**Regulated Medical Waste Guidance**

- **Soft waste:**
  - All materials that come into contact with this agent must be placed in a biohazard waste bag.
  - If working in a BSC, have a biohazard waste bag inside the BSC for waste collection.
  - All equipment, tubes, and waste bags that are brought out of the biosafety cabinet are wiped with appropriate disinfectant.
  - Place smaller red bag waste from BSC into larger red bag outside the BSC for transport.

- **Sharps handling:**
  - Place in leak proof sharps container labeled with the biohazard symbol. If working in a BSC, place a sharps container in the BSC.

- **Liquid waste:**
  - Add EHS-approved disinfectant to appropriate concentration, hold for contact time specified per manufacturer’s guidelines, and then gently pour down the drain.

### Special Considerations

**Experiment-Specific Requirements**
- See lab protocols for additional information, any deviations from this BARS, and for lab-specific expectations.

### References


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Cornell EHS would like to thank Emory University for the use of their Biological Agent Reference Sheet (BARS) format and some content.