GMP/Product Development BSL-3 Emergency Response Packet
TAKE THIS PACKET WITH YOU!

- Emergency Contact Information
- Workers’ Compensation Information
- Directions to Authorized Treating Physicians
- Directions to Fort Collins Emergency Room
- Biosafety Incident Report Form
- Infectious Agent Fact Sheets:

<table>
<thead>
<tr>
<th>Fact Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clostridium botulinum (and Neurotoxin A)</td>
</tr>
<tr>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>Mycobacterium bovis (TBA)</td>
</tr>
<tr>
<td>Mycobacterium tuberculosis</td>
</tr>
</tbody>
</table>

Updated 12/2014
The most up to date version of this document can be found in the Biosafety or Occupational Health Websites under the “Illness Procedure and “Emergency Response Packet” Bar: [http://www.ehs.colostate.edu/WOHSP/Bsl3Packets.aspx](http://www.ehs.colostate.edu/WOHSP/Bsl3Packets.aspx)
# Emergency Phone Numbers

<table>
<thead>
<tr>
<th>BIOSAFETY EMERGENCY NUMBER</th>
<th>491-0270</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDRC On-Call</td>
<td>491-IDRC (491-4372)</td>
</tr>
<tr>
<td>Fort Collins Emergency Room</td>
<td>495-7000</td>
</tr>
<tr>
<td>Occupational Health Coordinator</td>
<td>491-3102, 420-8172</td>
</tr>
</tbody>
</table>
Workers’ Compensation Procedure

Updated 12/2014

NOTE: Workers Compensation Statutes change frequently, and every effort has been made to update this document accordingly. However, Risk Management is the source for the most current Workers’ Compensation procedures: http://www.ehs.colostate.edu/WWorkComp/Home.aspx

- First Report of Injury must be INITIATED as soon as possible
  - Online link: required forms: https://wsnet.colostate.edu/cwis86/EHslogin/default.aspx?From=WorkComp

- Medical attention must be sought by a CSU Authorized Treating Physician
  - For a complete list of CSU Authorized Treating Physicians: http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx

- All claims are subject to review and may not be covered under Workers Compensation unless found compensable under current Worker’s Compensation Statutes.
  - **GO TO A CSU AUTHORIZED TREATING PHYSICIAN WHENEVER POSSIBLE** as initial visit costs will be covered through Workers Compensation even if it is determined that your illness is not work related. If you must go to the ER or an Urgent Care provider for the specific reasons listed above, you and/or your insurance carrier will be responsible for all health care costs for illnesses/injuries that are NOT related to your employment.
  - However, in order to assure that medical attention is sought appropriately for potentially work related illnesses, CSU may cover certain out of pocket costs for ER or Urgent Care services that are NOT covered under Colorado Workers’ Compensation Statutes (provided that the requirements of this procedure have been properly followed). In general, such coverage will not exceed $2,000.

- CSU Workers’ Compensation Website: http://www.ehs.colostate.edu/WWorkComp/Home.aspx
When to go to a CSU Authorized Treating Physician

- During regular business hours
  - When you have a fever, and you have been in the BSL-3 barrier in the last 5 days
  - When you have a KNOWN exposure to or an injury INVOLVING TUBERCULOSIS
  - When you have a minor injury

- When told by the ER, Urgent Care, or Workers’ Compensation to follow up after an Emergency Room or Urgent Care visit

- Due to limitations in Workers’ Compensation coverage for ER or Urgent Care visits, see a CSU Designated Care Provider whenever possible.
  - For details see Workers’ Compensation Procedure in this packet, or “BSL3 Illness Procedures” online at [http://www.ehs.colostate.edu/WBiosafety/Home.aspx](http://www.ehs.colostate.edu/WBiosafety/Home.aspx) under the bar labeled “BSL3 Illness Procedures, Info, and Emergency Response Packets”.

CSU AUTHORIZED TREATING PHYSICIANS

For NON-EMERGENCY incidents

If you go to the Emergency Room, follow-up with one of these providers

A complete list of designated providers can be found at:
http://www.ehs.colostate.edu/WWorkComp/HealthContPrint.aspx
University of Colorado Health Occupational Health Services
4674 Snow Mesa Drive, Suite 200
Fort Collins, CO
(970) 495-8450
Mon-Fri, 7:00am - 6:00pm

FROM Foothills Campus:
• Right on Overland trail
• Left on W. Prospect Rd
• Left on S. College Ave.
• Left on Harmony Rd.
• Right on Snow Mesa Dr
• Occ Health is on 2nd floor, Suite 200
Approximate drive time is 20 minutes.

FROM Main and South Campuses:
• South on College Ave.
• Left on Harmony Rd.
• Right on Snow Mesa Dr
• Occupational Health Services is on 2nd floor, Suite 200
Approximate drive time is 15 minutes.
Workwell Fort Collins
1600 Specht Point Road, Suite 115
Fort Collins, CO
(970) 672-5100
Mon- Fri, 8:00am - 5:00pm

Workwell Loveland
1608 Topaz Drive
Loveland, CO
(970) 593-0125
Mon-Fri, 8:00am - 5:00pm

FROM FOOTHILLS CAMPUS to Workwell, Fort Collins
• Turn Right on Overland Trail.
• Turn Left on W. Prospect Road.
• Turn Right at Specht Point Drive.
• Workwell is located on the first floor.

Approximate drive time is 15 minutes.

FROM MAIN AND SOUTH CAMPUSES to Workwell, Fort Collins
• Head East on Prospect Road.
• Turn Right at Specht Point Drive.
• Workwell is located on the first floor.

Approximate drive time is 15 minutes.
When to go to the Emergency Room

• When you have a KNOWN EXPOSURE to a BSL-3 infectious agent (other than Tuberculosis)

• When you have a major injury

• **WHEN A CSU AUTHORIZED TREATING PROVIDER IS CLOSED** and you have a fever within 5 days of being in the BSL-3 barrier and/or have symptoms associated with disease due to pathogens worked with.
  
  – IF YOU GO TO THE EMERGENCY ROOM OR URGENT CARE AND ARE DIRECTED TO DO SO, YOU MUST FOLLOW UP WITH ONE OF THE CSU AUTHORIZED TREATING PHYSICIAN THE NEXT BUSINESS DAY.

• Complete list: [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)

• If you go to the Emergency Room or Urgent Care, it is your responsibility to follow up by providing them with your Workers’ Compensation claim number and billing information:
  
P.O. Box 4998
  Greenwood Village, CO 80155
  Phone: (303) 804-2000
  Fax: (303) 804-2005
  Toll-Free: (888) 428-4671
Emergency Room Directions

Please do not drive yourself. Have someone take you. Contact Biosafety if you need a ride. 491-0270
EMERGENCY ROOM NEAREST TO CSU

Go to Emergency Room closest to you

Poudre Valley Hospital
Emergency Dept (Colorado Health Medical Group)
1024 South Lemay Ave
Fort Collins, CO
(970) 495-7000
24 hours, 7 days per week

FROM FOOTHILLS CAMPUS
• Turn Left on Overland Trail
• Turn Right on W. Mulberry Street
• Turn Right on Riverside Avenue
• Turn Right at S. Lemay Avenue
• Hospital is on the East side of the road.

Approximate drive time is 15 minutes.

FROM MAIN AND SOUTH CAMPUS
• Head East on Prospect or Drake
• Turn Left at Lemay Avenue
• Hospital is on the East side of the road.

Approximate drive time is 10 minutes.
Poudre Valley Hospital Harmony

URGENT CARE

Go to an Urgent Care closest to you

FROM FOOTHILLS CAMPUS

• Turn Left on Overland Trail
• Turn Right on Mulberry Ave
• Turn Right on Riverside Ave
• Turn Left on E. Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 21 minutes

FROM MAIN AND SOUTH CAMPUSES

• Head East on Prospect Rd
• Turn Right on Timberline Rd
• Turn Left on E. Harmony Rd
• Facility is on the South side of Harmony Road
• Follow signs to Urgent Care

Approximate drive time is 20 minutes

PVHs Harmony Urgent Care
2127 E. Harmony Road
Daily, 8 a.m. to 8 p.m.
(970) 297-6250
# Biosafety Incident Report Form

**THIS IS NOT A WORKERS’ COMPENSATION INCIDENT REPORT FORM**

If this is an injury, have you filled out a workers' compensation form?  □ Yes  □ No

<table>
<thead>
<tr>
<th>Personal Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>CSU ID:</td>
</tr>
<tr>
<td>First Name:</td>
<td>Last Name:</td>
</tr>
<tr>
<td>Email:</td>
<td>Phone Number:</td>
</tr>
<tr>
<td>Alt. Phone Number:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emergency Contact Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Phone #:</td>
</tr>
<tr>
<td>Name:</td>
<td>Phone #:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incident Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathogen working with:</td>
<td></td>
</tr>
<tr>
<td>Does the pathogen contain recombinant DNA or synthetic nucleic acid molecules?  □ Yes  □ No</td>
<td></td>
</tr>
<tr>
<td>Location (building, room):</td>
<td>Time of Incident:</td>
</tr>
<tr>
<td>Incident Type (exposure, physical injury, etc.):</td>
<td></td>
</tr>
<tr>
<td>Incident Description (Provide as much detail as possible and list external events that may have contributed to the incident):</td>
<td></td>
</tr>
</tbody>
</table>
### Method and Location of Injury (check all that apply):

<table>
<thead>
<tr>
<th>Method</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Needlestick</td>
<td></td>
</tr>
<tr>
<td>☐ Blood or body fluids</td>
<td></td>
</tr>
<tr>
<td>☐ Spill</td>
<td></td>
</tr>
<tr>
<td>☐ Aerosol</td>
<td></td>
</tr>
<tr>
<td>☐ Animal Bite/Scratch</td>
<td></td>
</tr>
<tr>
<td>☐ Necropsy</td>
<td></td>
</tr>
<tr>
<td>☐ Broken glass</td>
<td></td>
</tr>
<tr>
<td>☐ Sharps Container</td>
<td></td>
</tr>
<tr>
<td>☐ Other (describe)</td>
<td></td>
</tr>
</tbody>
</table>

### Action(s) taken to control incident (e.g. hand washing, spill clean-up, etc.):

<table>
<thead>
<tr>
<th>Action(s)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Personal Protective Equipment (PPE) Worn at time of Injury

<table>
<thead>
<tr>
<th>PPE Worn at time of Injury</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Scrubs</td>
<td>☐ Tyvek</td>
</tr>
<tr>
<td>☐ Surgical gown</td>
<td>☐ PAPR</td>
</tr>
<tr>
<td>☐ N-95 respirator mask</td>
<td>☐ Face Shield</td>
</tr>
<tr>
<td>☐ Gloves</td>
<td>☐ Goggles</td>
</tr>
<tr>
<td>☐ Hair Cover</td>
<td>☐ Shoes</td>
</tr>
</tbody>
</table>

### Was there a PPE failure?

<table>
<thead>
<tr>
<th>If yes, explain:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Print or scan and send to the Biosafety Office: 6021 Campus Delivery, 141 General Services Building, Fort Collins, CO 80523; E-mail scanned copies to Heather.Blair@colostate.edu, or Joni.Triantis@colostate.edu
Botulinum toxin, Botulinum Toxin Producing Clostridium spp.

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL-3 Level practices, containment equipment and facilities are required for work involving large volumes of toxin producing bacterial (>10L) and/or activities with a high potential for aerosol production, and use of sharps should be limited.
- BSL2 level practices, containment equipment, and facilities are recommended for work involving infectious or potentially infectious clinical specimens, animals, or cultures <10L as well as for the purified toxin. Additional layers of PPE protection are required for handling of concentrated toxin (e.g., face shields, masks, and other additional PPE). Movement and activities in rooms should be minimized in rooms having concentrated toxin.

Special Considerations:
- Select Agent, Tier 1

HAZARD IDENTIFICATION

Disease: Botulism

Transmission: Ingestion, inhalation, contamination of wounds, needlesticks

Incubation: ingestion: 2 hrs to 8 days; inhalation: 72 hours; wound: 7 days

Infectious dose: Spores are not normally toxic for healthy adults. Botulinum toxin is the most potent toxin known. Injected toxic dose (serotype A) is 0.001 ug/kg body weight, and lethal inhalation dose of 0.07 ug/kg body weight.

VIABILITY/INACTIVATION

Stability:
- Toxin is detoxified in air within 12 hours, and following 1-3 hours exposure to sunlight. Spores are resistant to drying and heat, and can be found in soil and water.

Inactivation:
- Physical: Autoclave sensitive (minimum of 20 minutes at 121 C).
- Chemical: Vegetative state is susceptible to 70% ethanol, 10% bleach (20 minutes). Spores may be resistant to disinfectants. Toxins are inactivated by 20 minutes of exposure to 3 mg/L free available chlorine or 0.1 M sodium hydroxide. Alternatively, Sodium hypochlorite in concentrations of 0.5% or greater (equivalent to a 1:10 dilution of household bleach) may be used to bathe all surfaces exposed to botulinum toxin for a period of 20 minutes. Autoclaving at 121 C for 30 minutes or greater will also render the toxin inactive.
**MEDICAL**

**Signs and Symptoms:**
- Nausea, Vomiting
- Drooping eyelids
- Diarrhea (early)
- Constipation (late)
- Fatigue
- Weakness and dizziness
- Blurred or double vision
- Dry mouth
- Difficulty speaking and swallowing
- Descending paralysis of the arms, legs, trunk and breathing muscles (starts in the arms and moves down)

**Diagnosis:**
ELISA to detect botulinum toxin

**Medical Surveillance:**
- Before working with or around this agent, individuals must enroll in CSU’s medical surveillance program through the CSU Occupational Health Program

**Pre-exposure Prophylaxis:**
The botulism toxoid vaccine is no longer available due to declining immunogenicity, decreased potency, and adverse reactions.

**Treatment**
- **Post Exposure Prophylaxis:**
  - *Contact State Health Department IMMEDIATELY*
  - *24 hour CDC Emergency Operations Center: 770-488-7100*
  - Heptavalent Botulinum Antitoxin (HBAT) to be administered but must be acquired by State Health Department from CDC.
  - In 2013, the FDA approved Botulism Antitoxin Heptavalent (A, B, C, D, E, F, G)-(Equine) to treat patients showing signs of botulism following documented or suspected exposure to botulinum neurotoxin. The product is derived from horse plasma and contains a mixture of antibody fragments that neutralize all of the seven botulinum nerve toxin serotypes known to cause botulism.
- **Treatment of clinical cases:**
  - Supportive care: Antibiotics are recommended for wound botulism after antitoxin is administered.
    - Penicillin G – 3 million units IV every 4 hours in adults
    - Alternatively, 500 mg IV metrodiazole every 8 hours

**WHAT TO DO IF AN EXPOSURE OCCURS**

**IF CLINICAL SIGNS OR SYMPTOMS ARE PRESENT, PROCEED DIRECTLY TO EMERGENCY ROOM**

**Employees, Graduate Students, Work Study**
1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   • The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   • Biosafety Incident report form:
Student Not Paid by CSU
1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)
4. After the visit to CSU Health Network, student fills out Biosafety Incident Report form

Volunteers and Visitors
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician
4. Individual fills out Biosafety Incident Report form

REFERENCES
- CDC Treatment Outline for Physicians: http://www.bt.cdc.gov/agent/botulism/clinicians/treatment.asp
- CDC Vaccine Information: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6042a3.htm?s_cid=mm6042a3_w
- Iowa State University Technical Data Sheet: http://www.cfsph.iastate.edu/Factsheets/pdfs/botulism.pdf

CONTENT REVIEW
- CSU subject matter expert: Dr. Dennis Pierro
- Licensed Physicians: Occupational Health Services (principal: Dr. Tracy Stefanon)
Human Immunodeficiency Virus (HIV)

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

CONTAINMENT AND SPECIAL PRECAUTIONS

Containment:
- BSL2 level practices, containment equipment, and facilities are recommended work involving clinical specimens and non – culture protocols.
- BSL3 level practices, containment equipment and facilities are recommended for work involving culture or infected or inoculated animals.

Special considerations:
- Transplacental transfer can occur

Training:
- Bloodborne pathogen training required annually, taken online

HAZARD IDENTIFICATION

Disease: HIV/AIDS

Transmission: person to person by direct exposure to body fluids

Incubation: 6 months to 7 years or longer

Infectious dose: unknown

VIABILITY/INACTIVATION

Stability
- Relatively stable in blood at room temperature. Potentially infectious in blood remaining in syringes for up to 4 weeks, dried blood at room temperature for up to 6 days

Inactivation methods:
- Autoclave sensitive, Sensitive to drying
- 1% bleach (500 ppm available sodium hypochlorite), 70% Ethanol, 2% glutaraldehyde, and formaldehyde

MEDICAL

Signs and symptoms:
- Early: non-specific symptoms, fever, flu-like symptoms
- Rapid weight loss
- Dry cough
- Recurring fever or profuse night sweats
- Swollen lymph nodes
• Diarrhea that lasts for more than a week
• White spots or unusual blemishes on the tongue, mouth or throat
• Pneumonia
• Red, brown, pink, purplish blotches on or under the skin, mouth, nose, eyelids
• Memory loss, depression, other neurological disorders

Pre-exposure prophylaxis: NONE

Testing:
• Baseline HIV test available upon hire at CSU designated Occupational Health Care provider
• Routine HIV tests available every 2 years

Post-exposure prophylaxis:  (See tables below)
• Treatment varies with resistance to reverse transcriptase and protease inhibitors.
• Recommendations from CDC for a FOUR week regimen:

Basic Regimen:
Zidovudine (Retrovir, ZDV, AZT) + Lamivudine (Epivir, 3TC) available as Combivir
   ZDV: 300mg twice daily or 200 mg three times daily, with food; total 600 mg daily
   3TC: 300mg once daily or 150mg twice daily
   Combivir: One tablet twice daily
Zidovudine (Retrovir, ZDV, AZT) + Emtricitabine (Emtriva, FTC)
   ZDV: 300mg twice daily or 200 mg three times daily, with food; total 600 mg daily
   FTC: 200mg once daily
Tenoforv DF (Viread,; TDF) + Lamivudine (Epivir, 3TC)
   TDF: 300mg once daily
   3TC: 300mg once daily or 150mg twice daily
Tenoforv DF (Viread,; TDF) + Emtricitabine (Emtriva, FTC); available as Truvada
   TDF: 300mg once daily
   FTC: 200mg once daily
   Truvada: one tablet daily

Alternate Basic Regimens:
Lamivudine (Epivir; 3TC) + Stavudine (Zerit; D4T)
   3TC: 300mg once daily or 150mg twice daily
   D4T: 40mg twice daily
Emtricitabine (Emtriva, FTC) + Stavudine (Zerit; D4T)
   FTC: 200mg once daily
   D4T: 40mg twice daily
Lamivudine (Epivir; 3TC) + Didanosine (Videx; DDI)
   3TC: 300mg once daily or 150mg twice daily
   DDI: chewable tablet, on empty stomach as either 200mg twice daily or 400 mg twice daily.
Emtricitabine (Emtriva, FTC) + Didanosine (Videx; DDI)
   FTC: 200mg once daily
   DDI: chewable tablet, on empty stomach as either 200mg twice daily or 400 mg twice daily.
From CDC's Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis

### TABLE 1. Recommended HIV postexposure prophylaxis (PEP) for percutaneous injuries

<table>
<thead>
<tr>
<th>Exposure type</th>
<th>HIV-positive, class 1*</th>
<th>HIV-positive, class 2*</th>
<th>Source of unknown HIV status†</th>
<th>Unknown source§</th>
<th>HIV-negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less severe†</td>
<td>Recommend basic 2-drug PEP</td>
<td>Recommend expanded 3-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings in which exposure to HIV-infected persons is likely</td>
<td>No PEP warranted</td>
</tr>
<tr>
<td>More severe§§</td>
<td>Recommend expanded 3-drug PEP</td>
<td>Recommend expanded 3-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings in which exposure to HIV-infected persons is likely</td>
<td>No PEP warranted</td>
</tr>
</tbody>
</table>

* HIV-positive, class 1 — asymptomatic HIV infection or known low viral load (e.g., <1,500 ribonucleic acid copies/ml). HIV-positive, class 2 — symptomatic HIV infection, acquired immunodeficiency syndrome, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of PEP should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.
† For example, deceased source person with no samples available for HIV testing.
§ For example, a needle from a sharps disposal container.
†† For example, solid needle or superficial injury.
** The recommendation “consider PEP” indicates that PEP is optional; a decision to initiate PEP should be based on a discussion between the exposed person and the treating clinician regarding the risks versus benefits of PEP.
††† If PEP is offered and administered and the source is later determined to be HIV-negative, PEP should be discontinued.
§§ For example, large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient’s artery or vein.

### TABLE 2. Recommended HIV postexposure prophylaxis (PEP) for mucous membrane exposures and nonintact skin* exposures

<table>
<thead>
<tr>
<th>Exposure type</th>
<th>HIV-positive, class 2††</th>
<th>HIV-positive, class 2††</th>
<th>Source of unknown HIV status†</th>
<th>Unknown source§§</th>
<th>HIV-negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small volume**</td>
<td>Consider basic 2-drug PEP††</td>
<td>Recommend basic 2-drug PEP</td>
<td>Generally, no PEP warranted</td>
<td>Generally, no PEP warranted</td>
<td>No PEP warranted</td>
</tr>
<tr>
<td>Large volume§§</td>
<td>Recommend basic 2-drug PEP</td>
<td>Recommend expanded 3-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP†† for source with HIV risk factors§§</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP†† in settings in which exposure to HIV-infected persons is likely</td>
<td>No PEP warranted</td>
</tr>
</tbody>
</table>

* For skin exposures, follow-up is indicated only if evidence exists of compromised skin integrity (e.g., dermatitis, abrasion, or open wound).
†† For example, deceased source person with no samples available for HIV testing.
§§ For example, splash from inappropriately disposed blood.
** For example, a few drops.
††† The recommendation “consider PEP” indicates that PEP is optional; a decision to initiate PEP should be based on a discussion between the exposed person and the treating clinician regarding the risks versus benefits of PEP.
§§§ If PEP is offered and administered and the source is later determined to be HIV-negative, PEP should be discontinued.
†††† For example, a major blood splash.

Medical professionals should seek appropriate resources for diagnosis and treatment.**
WHAT TO DO IF AN EXPOSURE OCCURS

**Employees, Graduate Students, Work Study**

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to Emergency Room
3. After the Emergency Room visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up with CSU Authorized Treating Physician

**Student Not Paid by CSU**

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Student goes to CSU Health Network (formerly Hartshorn Health Services)
4. After the visit to CSU Health Network, student fills out Biosafety Incident Report form
   - [http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf](http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf)

**Volunteers and Visitors**
1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed
3. Individual goes to their personal physician, or as otherwise directed by their physician
4. Individual fills out Biosafety Incident Report form
   [http://www.ehs.colostate.edu/WBiosafety/PDF/IncidentReportForm.pdf]

**REFERENCES**

- CDC Information for Health Care Workers: [http://www.cdc.gov/hantavirus/health-care-workers/]
- MMWR Revised Recommendations for HIV Testing: [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm]

**CONTENT REVIEW**

This document has been reviewed by:
- CSU subject matter expert: Dr. Ramesh Akkina
- Licensed Physicians: Occupational Health Services (principal: Dr. Tracy Stefanon)
**Mycobacterium tuberculosis Complex (MTC)**  
**M. tuberculosis, M. bovis, M. microti, M. africanum, M. pinnipedi, M. caprae, and M. canetti**

Principal investigators are responsible for communicating this information to staff working with or around this agent, and for mitigation of associated risks. This document is not intended to be used as a sole source for diagnosis, medical treatment, or medical advice. Consult a CSU Authorized Treating Physician for concerns about work related medical conditions.

**CONTAINMENT AND SPECIAL PRECAUTIONS**

**Containment**
- BSL-3 Level practices, containment equipment and facilities are required for work involving infectious materials, animals, cultures and for activities with a high potential for aerosol production
- BSL2 practices and containment equipment can be utilized for handling some clinical specimens. Consult with CSU Biosafety office related to such work.

**Special Considerations**
- Many of the strains worked with at CSU are drug resistant and researchers should be aware of strains being worked with and antibiotic resistance profiles.
- Immuno-compromised individuals and those with pre-existing lung damage (e.g. cystic fibrosis, emphysema, smokers) are more susceptible.

**HAZARD IDENTIFICATION**

**Disease:** Tuberculosis (TB). There is more than one form of TB. For most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. The bacteria are thought to remain alive in the body but can become active later. When there is infection but there are no signs or symptoms of TB, this is called latent TB infection and is manifest by evidence of a positive skin test or blood test (see below) but with no symptoms of disease. However, some people can go on to develop active TB from the latent infection. People with a compromised immune system such as certain immune problems, malignancies, medications, diabetes, other diseases and especially HIV are at particular risk of tuberculosis.

**Transmission:** Direct contact with mucous membranes or broken skin, injection, injection, aerosols, fomites; M. bovis can be transmitted by eating or drinking contaminated, unpasteurized milk products, and by inhalation of bacteria in the exhalation of infected animals

**Communicability:** Person to person by the aerosol route

**Incubation:** 2-12 weeks from infection to the development of a positive TB skin test or blood test for TB.

**Infectious dose:** as low as 1-10 bacilli, organisms can be stable in the environment

**VIABILITY/INACTIVATION**

**Stability:** Can survive on surfaces and in soil for months.

**Inactivation:**
- Mycobacteria are very resistant to inactivation, and inactivation methods should species and strain being worked with.
- Mycobacteria are autoclave sensitive, but longer cycles may be required
The following disinfectants may be effective for inactivation, depending on species, strain, and conditions:
  - Sensitive to 5% phenol or 5% formaldehyde, 2% glutaraldehyde.
  - Minimum of 20% bleach (10,000 ppm available sodium hypochlorite) \(\text{Note that bleach should not be used when waste will be subsequently processed by autoclaving}\)
  - For a list of EPA Registered tuberculocidal products:
    http://www.epa.gov/oppad001/list_b_tuberculocide.pdf

**MEDICAL**

**Signs and symptoms:**
- A cough that lasts 3 weeks or longer
- Pain in the chest
- Coughing up sputum and/or blood
- Weakness or fatigue
- Weight loss
- No appetite
- Chills
- Fever
- Night sweats

**Pre-exposure prophylaxis:**
BCG vaccine is available but not used routinely in the United States.

**CSU TB Surveillance:** All personnel with the potential for occupational exposure to the MTB complex must be enrolled in the TB Surveillance Program. This consists of routine tuberculin skin testing every 6 or 12 months, depending on risk.

**Diagnosis:**
- TB Tuberculin Skin Test: Consists of injecting a small amount of tuberculin fluid (purified protein derivative of TB) under the skin to check for an inflammatory reaction (induration). Test must be read 48 to 72 hours by a trained health care professional.
- Blood test: Interferon-Gamma Release Assay (IGRA) may be used and is often done on individuals that are TB skin test positive or BCG vaccinated to determine if the skin reaction could be specific to tuberculosis.
- Chest X-Ray
- Culture of sputum
- Direct smear microscopy for acid fast bacilli
- Genetic methods (PCR, DNA probes, DNA fingerprinting)

**Treatment:**
- **Post-Exposure Prophylaxis**
  - Prophylactic antibiotic regimen may be initiated, depending on the strain involved and the nature of the exposure.
  - Skin testing is performed the day of the incident, then 10 weeks later and patient is monitored for symptoms.
- **Treatment of clinical cases:**
  - Persons who develop latent infection are offered treatment (usually isoniazid for 9 months). Treatment for active disease due to tuberculosis is dependent on the antibiotic susceptibility of the strain of \textit{M. tuberculosis}. 

**Disclaimer**
This document is for informational purposes ONLY. This document should not be used in lieu of professional medical attention, and medical professionals should seek appropriate resources for diagnosis and treatment.**
Treatment could be a combination of isoniazid (INH), rifampin (RIF), ethambutol (EMB) and pyrazinamide (PZA) if the strain is fully susceptible.

**WHAT TO DO IF AN EXPOSURE OCCURS**

**Employees, Graduate Students, Work Study**

1. Employee notifies Biosafety (970-491-0270) and/or Occupational Health Program Coordinator (970-420-8172) to inform where medical attention will be sought and if transportation is needed.
   - The Principal Investigator/Supervisor must also be notified
2. Employee goes to an Authorized Treating Physician.
3. After the visit, individual fills out the following forms:
   - Workers’ Compensation (within 4 days or as soon as possible): [http://www.ehs.colostate.edu/WWorkComp/Home.aspx](http://www.ehs.colostate.edu/WWorkComp/Home.aspx)
4. Employee follows up as directed.

**Student Not Paid by CSU**

1. Contact supervisor/PI
2. Student or supervisor contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed.
3. Student goes to CSU Health Network (Formerly Hartshorn Health Services)

**Volunteers and Visitors**

1. Contact supervisor/PI
2. Contact Biosafety (491-0270) or Occupational Health (420-8172) to inform where attention is being sought, and to arrange transportation if needed.
3. Individual goes to their personal physician, or as otherwise directed by their physician

**REFERENCES**

- MMWR Recommended Treatment of Exposed Individuals: [http://www.cdc.gov/mmwr/preview/mmwrhtml/00031296.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/00031296.htm)
- MMWR Recommended Treatment of Infected Individuals: [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm)
- Sanger Institute: [http://www.sanger.ac.uk/resources/downloads/bacteria/mycobacterium.html](http://www.sanger.ac.uk/resources/downloads/bacteria/mycobacterium.html)
CONTENT REVIEW

This document has been reviewed by:

- CSU subject matter experts: Drs. Karen Dobos and Mary Jackson