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*Guidelines for  
Protecting Mortuary Affairs Personnel  
from Potentially Infectious Materials*

*TG 195  
October 2001*

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*U.S. Army Center for Health Promotion and Preventive Medicine  
Aberdeen Proving Ground, Maryland 21010-5403*

*Approved for public release; distribution unlimited*

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## **PREFACE**

Contact with whole or part human remains carries potential risks associated with pathogenic microbiological organisms that may be present in human blood and tissue. Infectious conditions and pathogens in the recently deceased include -

- bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), hepatitis E virus (HEV) and human immunodeficiency virus (HIV);
- tuberculosis;
- group A streptococcal infection;
- gastrointestinal organisms;
- agents that cause transmissible spongiform encephalopathies such as Creutzfeldt-Jakob disease; and
- possibly meningitis and septicemia (especially meningococcal).

Each exposure poses its own risks depending on the virulence of the pathogen, the size of the dose delivered, the route of exposure, and the exposed individual's susceptibility. Since a single exposure may cause infection, the best way to reduce risk is to prevent exposures from occurring. The primary ways to protect personnel who handle human remains against infectious diseases are -

- use of appropriate personal protective equipment,
- observance of safety, industrial hygiene, and infection control practices described in this TG, and
- proper handling and disposal of regulated medical waste.

**USACHPPM Technical Guide 195**

**Guidelines for Protecting Mortuary Affairs Personnel  
from Potentially Infectious Materials**

1. **PURPOSE.** This technical guide (TG) is designed to educate mortuary affairs personnel about the safety measures for protection against bloodborne pathogens (BBP) and mycobacterium tuberculosis (MTB) associated with handling human remains. This TG does not address microbiological warfare agents. Additional guidance on this topic may be obtained from Joint Pub 4-06, Joint Tactics, Techniques, and Procedures for Mortuary Affairs in Joint Operations.
2. **AUDIENCE.** This TG is for Commanders (including Commanders of combat units), logistical staff officers, and personnel involved in or responsible for search, recovery, evacuation, and identification of human remains.
3. **USING THIS TG.**
  - a. USACHPPM TG 190 is the definitive reference for detailed guidance for protection from BBP and other potentially infectious materials. Therefore, this TG should be used as a supplement to U.S. Army Center for Health Promotion and Preventive Medicine TG 190, Guide to Managing Occupational Exposure to Bloodborne Pathogens.
  - b. The design of this TG allows for many different uses. The separate fact sheets contained within lend themselves for use in training sessions. The entire TG may also be used to develop standing operating procedures, or for general guidance.
  - c. The fact sheets present information that is useful to both personnel and management and distinguish between the responsibilities of each. While the general directives are geared towards informing personnel, management must also be knowledgeable of recommended safety precautions to ensure work is carried out safely.

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# *Just the Facts...* **Bloodborne Pathogens – Exposure Determination, Job Hazard Analysis, and Accidents and Exposure Incidents**

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## ***Exposure Determination***

### **Organizations must -**

- Review work procedures for each job classification to identify personnel who are occupationally exposed. Exposure must be determined without regard to use of personal protective equipment (PPE).
- Develop and maintain a list of the job classifications, duties, or procedures that might involve occupational exposure. These exposure determinations should be documented in the exposure control plan.

### ***Exposure Control Plan***

If all personnel within a Military Occupational Specialty (MOS) or job classification have occupational exposure, list the MOS or job classification in the exposure control plan (e.g., 92 M, Mortuary Affairs Specialist).

If some of the personnel within an MOS or Job Classification have occupational exposure, list the MOS or job classification and the specific task(s) and procedures involving occupational exposure (e.g., 92Y, Unit Supply Specialist, decontaminating reusable equipment).

- Review and update the Exposure Control Plan as necessary and at least annually.

### ***Job Hazard Analysis***

Supervisors may use a technique called job hazard analysis as a means of identifying MOSs, job classifications, and tasks and procedures involving occupational exposure. Job hazard analysis requires analysis of each job or task to identify potential for exposure. Together, supervisors and personnel should-

- Divide jobs into major tasks and list every step required for each task in its order of occurrence.

- Examine each job step to determine existing or potential hazards, actions, or conditions that could lead to an accident or illness.
- Assess the environmental conditions under which the job is performed.
- Document the analysis, including the MOS or job title, location, date, each job step and its associated hazard, the cause of the hazard, and recommended preventive measures. A sample Job Hazard Analysis form is provided in Appendix C.
- Implement safety controls to protect personnel from the identified occupational exposures. Controls may include universal precautions, engineering controls, work practice controls, PPE, education and training, proper housekeeping, proper handling and disposals of regulated medical waste, and ergonomic controls.
- Evaluate controls periodically to determine their effectiveness, and replace them with more effective controls whenever necessary.

## **Accidents and Exposure Incidents**

### **Supervisors must -**

- Investigate all accidents and exposure incidents.
- Document
  - The route of exposure (e.g., inhalation, skin contact, mucous membrane contact, percutaneous injury).
  - The circumstances under which the exposure occurred (e.g., the engineering controls in use, work practices followed, a description of any devices in use, PPE worn, work area location, procedure being performed, personnel's training).
- Evaluate the policies and control measures in place for both accidents and exposure incidents for effectiveness.
- Document the evaluations, establish corrective actions, and monitor the effectiveness of these actions.

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## *Just the Facts...*

### *Bloodborne Pathogens – Written Exposure Control Plan*

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#### ***Publication***

To comply with 29 CFR 1910.1030, organizations must develop a written exposure control plan designed to prevent or minimize occupational exposures. This plan may be a separate document or part of an existing document, such as the unit's safety regulation.

If the exposure control plan is part of an existing program document, the organization should develop and publish a policy letter to state the goals of the exposure control plan and inform personnel where they can obtain a copy of the plan.

#### ***Review and Update***

Organizations must review and update their exposure control plan at least annually and whenever necessary to reflect new or modified tasks with occupational exposure, introduction and use of new technology (e.g., safer sharps devices) designed to minimize risk, and MOSs and job classifications with occupational exposure.

#### ***Contents***

Organizations must include the following in the written exposure control plan:

- Documentation of the exposure determinations. (See the fact sheet entitled "Bloodborne Pathogens - Exposure Determination, Job Hazard Analysis and Accidents and Exposure Incidents.")
- A schedule and method of implementation for the elements of the program. This may be accomplished by annotating a copy of the OSHA Bloodborne Pathogen Standard.
- Procedures for evaluating accidents and exposure incidents. (See the fact sheet entitled "Bloodborne Pathogens - Exposure Determination, Job Hazard Analysis and Accidents and Exposure Incidents.")

For further details, see USACHPPM TG 190.

# *Just the Facts...*

## *Bloodborne Pathogens – Work Practice Controls*

### **Personnel must-**

#### ***Practice universal precautions***

- Treat all human blood and other potentially infectious materials (OPIM) as if contaminated with bloodborne pathogens.
- Wear appropriate personal protective equipment (PPE).
- Wash hands and skin with warm water and soap immediately after
  - Any contact with blood or OPIM.
  - Removing gloves, even if gloves appear to be intact.
- Use waterless antiseptic hand cleansers when handwashing facilities are not available, and wash hands immediately when warm water and soap do become available.

#### ***Avoid mucous membrane and skin contact***

- Avoid touching skin, mouth, nose, eyes, or any skin lesions or cuts with contaminated gloves, fingers, or other contaminated items or surfaces.
- Cover cuts, abrasions, or other skin lesions with an appropriate bandage prior to donning PPE.

#### ***Contain and confine blood and OPIM***

- Place human remains and disassociated portions in plastic burial pouches or ziplock bags.
- Avoid, or at least keep to a minimum, splashing, splattering, and generation of aerosols.

#### ***Manage sharps properly***

- Be alert for sharp objects, such as bones, broken glass, metal, knives, etc.
- Store reusable sharps in a manner to prevent lacerations or puncture wounds.
- Use mechanical means to clean up broken glass and other sharp objects.

#### ***Disinfect contaminated equipment and environmental and working surfaces***

- Use protective covers on equipment and work surfaces that are difficult to decontaminate.
- Disinfect all interior and exterior surfaces of reusable equipment and regulated medical waste (RMW) containers between uses.
- Maintain a cleaning schedule, which requires the cleaning of work surfaces, equipment surfaces, and waste containers:
  - After completion of procedures.
  - Immediately or as soon as possible when surfaces become overtly contaminated.
  - After any spill of blood or OPIM.
  - At the end of the work shift.

#### ***Handle contaminated PPE and clothing properly***

- Wear protective gloves and other appropriate PPE, including gowns, aprons, eye protection, disposable head covers, disposable shoe covers as needed to prevent exposure when handling contaminated PPE.

- Never wear contaminated PPE and clothing outside of the work area.
- Remove and replace PPE and underlying clothing immediately or as soon as possible when they become damaged or penetrated by blood or OPIM.
- Remove contaminated PPE and clothing in a manner to avoid contact with skin, mucous membranes, and underlying clothing.
- Place contaminated reusable PPE and clothing into leak-resistant bags or containers immediately upon removing the articles.
- Use bags and containers that are either color-coded red or labeled with the fluorescent orange or orange-red biohazard warning symbol.
- Never wash contaminated PPE and clothing with personal laundry.
- Wash and dry reusable PPE and clothing according to the instructions on their labels, in hot water at least 160°F and detergent for 25 minutes, or with chemicals at the proper concentration for low temperature washing.
- Place contaminated disposable PPE and clothing that is saturated, dripping, or caked with dried blood into a RMW container.
- Use an EPA-approved disinfectant to decontaminate reusable gloves, protective eyewear, face shields, and similar PPE. Follow the manufacturer's recommendations for disinfectant concentrations and contact times.
- Brush scrub contaminated boots and leather goods with soap and hot water.

#### ***Clean up spills of potentially infectious materials***

- Clean up spills immediately.
- Remove visible material with absorbent disposable towels.
- Decontaminate the area using clean towels and an appropriate EPA-approved disinfectant, such as a 1:100 solution of bleach and tap water (approximately 1/4 cup bleach per gallon of tap water).
- Allow area to air dry.
- Dispose of absorbent towels and other waste in an appropriate RMW container.
- Wear appropriate PPE.
- Wear disposable latex, polyvinyl chloride (PVC), or vinyl gloves.

- Wear eye and face protection, and an impervious gown or apron if splashing is likely.
- Wear shoe covers when cleaning up large spills.
- Keep a commercial or domestic spill kit available. This kit should contain-
  - One pair of splash-proof safety goggles.
  - One disposable face mask.
  - Two pairs of disposable latex gloves.
  - One disposable apron.
  - One pair of disposable shoe covers.
  - Absorbent disposable towels.
  - Disinfectant (and its material safety data sheet).
  - Two red plastic bags with twist ties.
  - A scoop or scraper.
  - Waterless antiseptic hand cleanser.

#### ***Practice good personal hygiene***

- Never consume food or beverages in areas where exposure to blood or OPIM exists.
- Never store food and beverages in an area where they or their containers may become contaminated with blood or OPIM.
- Refrain from handling personal items, such as pens and combs, to prevent soiling or contamination.

#### ***Use chemicals safely***

- Follow the chemical manufacturers' directions on the chemical's warning label and material safety data sheet for safe handling, storage, and use.

#### ***Supervisors must-***

- Whenever possible, provide handwashing facilities stocked with soap, tepid water, and paper towels.
- Make provisions for laundering contaminated clothing and disinfecting PPE.
- Ensure adequate supplies such as RMW containers, laundry bags, disposable PPE, disinfectants, and spill clean up materials are readily available
- Oversee that personnel adhere to recommended safe work practices.

For further details, see USACHPPM TG 190.

## *Just the Facts...*

### *Bloodborne Pathogens – Decontamination Procedures for Chemical Disinfectants*

#### *General Principles*

- Decontamination involves routine cleaning and disinfection of instruments, devices, and environmental surfaces to minimize the risk of cross-contamination and bloodborne disease.
- Decontamination procedures range from removal of visible material with soap and water to disinfection and sterilization procedures.
- Factors to consider when selecting a decontamination procedure are the desired degree of microorganism removal, type of surface to be decontaminated, expense, and ease of disinfectant use.

#### *Chemical Disinfection*

- Always wear appropriate personal protective equipment (PPE) to avoid contact with hands, eyes, face, etc. when using a chemical disinfectant.
- Use disinfectants in well-ventilated areas.
- Thoroughly remove visible contamination (blood, body fluids, and other potentially infectious materials) with soap and water before using a chemical disinfectant.
- Select disinfectants most suited to the activity and always read the disinfectant's label and material safety data sheet (MSDS).
- Follow the manufacturers' directions on the disinfectant's warning label and MSDS for safe handling, storage, and use.
- Open, disassemble, and completely submerge instruments to ensure direct contact between all surfaces and disinfectant.
- Thoroughly rinse and dry all items after disinfecting, taking care not to recontaminate items.

#### *Hazard Communication*

Organizations must comply with 29 CFR 1910.1200, Hazard Communication, when personnel are required to use hazardous chemicals. This standard requires a written hazard communication program, hazardous chemical inventories, appropriate hazard warnings, MSDSs, and an employee information and training program.

# Just the Facts...

## Bloodborne Pathogens – Chemical Disinfectants

### Chlorine compounds

#### *Characteristics:*

- Universally active against all microorganisms.
- A 1:100 dilution [500 parts per million(ppm)] of household bleach (approximately 1/4 cup of bleach to 1 gallon of tap water) effectively disinfects blood spills containing human immunodeficiency virus (HIV) or hepatitis B virus(HBV).

*Application:* A 1:100 dilution of household bleach and tap water can be used to disinfect equipment and work surfaces.

*Concentration:* 3% concentration of active ingredients.

*Shelf-life:* Less than 1 week.

*Health hazards:* Toxic and corrosive at 10,000 ppm.

*Personal protection:* Splash-proof safety goggles and vinyl or latex gloves for repeated or prolonged use.

*Examples:* Clorox<sup>1</sup>, Purex<sup>2</sup>, and Chlorox.

### Iodophor compounds (iodine)

#### *Applications:*

- General disinfectant when mixed with other substances.
- Commonly used as a skin disinfectant.

*Concentration:* 2% concentration of active ingredients.

*Shelflife:* Greater than 1 week.

*Personal protection:* None required.

*Example:* Wescodyne.<sup>3</sup>

### Alcohols

*Application:* General surface disinfectant.

*Concentration:*

- 70% concentration of active ingredients for ethyl alcohol
- 85% concentration of active ingredients for isopropyl alcohol

*Shelf-life:* Greater than 1 week for both ethyl and isopropyl alcohol.

*Health hazards:* Isopropyl alcohol and ethyl alcohol are eye and mucous membrane irritants.

*Personal protection:* Splash-proof safety goggles, face shields, and nitrile rubber gloves. NOTE: Neoprene or teflon gloves may also be used for isopropyl alcohol, and butyl rubber or neoprene gloves may be used for ethyl alcohol.

### Phenolic compounds

#### *Characteristics:*

- Effective against a wide range of bacteria including mycobacterium tuberculosis.
- Not readily neutralized by organic materials.
- Stable at dilutions used for disinfection.
- Relatively inexpensive.

*Application:* Disinfection of equipment and work surfaces.

*Concentration:* 1-2% concentration of active ingredients.

*Shelf-life:* Greater than 1 week.

*Health Hazards:* Toxic and somewhat corrosive.

*Personal Protection:* Splash-proof safety goggles and butyl rubber or neoprene gloves. NOTE: Butyl rubber gloves are preferred.

## **Quaternary ammonium compounds**

### *Characteristics:*

- Relatively nontoxic.
- Antibacterial compounds with detergent properties.

*Applications:* Commonly used for general housekeeping and disinfecting environmental surfaces.

*Contraindication:* NOT to be used for disinfecting instruments.

*Concentration:* 2% concentration of active ingredients.

*Shelf-life:* Greater than 1 week.

*Health hazards:* Nasal irritant and can promote contact dermatitis.

*Personal protection:* Polyvinyl chloride (PVC) gloves.

Examples: A-33, Benzalkonium chloride, and Roccal.<sup>4</sup>

## **Aldehydes**

*Application:* Generally used in cold sterilization of instruments.

### *Concentration:*

- 6-8% concentration of active ingredients for formaldehyde.
- 2% concentration of active ingredients for glutaraldehyde.

*Shelf-life:* Greater than 1 week for both formaldehyde and glutaraldehyde.

### *Health hazards:*

- Formaldehyde is a respiratory tract irritant and suspected carcinogen.
- Glutaraldehyde is a skin and mucous membrane irritant and can cause allergic contact dermatitis.

*Personal Protection:* Splash-proof goggles, face shields, and butyl rubber gloves.

*Example:* Cidex.<sup>5</sup>

<sup>1</sup> Clorox is a trademark of Clorox Co., 1221 Broadway, Oakland, California.

<sup>2</sup> Purex is a trademark of Armour-Dial, Inc., Greyhound Tower, Phoenix, Arizona.

<sup>3</sup> Wescodyne is a trademark of West Chemical Products, Inc., Long Island City, New York.

<sup>4</sup> Roccal is a trademark of Winthrop Laboratories Div., Sterling Drug Co., New York, New York.

<sup>5</sup> Cidex is a trademark of Surgikos, Inc., Arlington, Texas.

# Just the Facts...

## Bloodborne Pathogens – Warning Labels and Signs

Always place contaminated articles in –

- Color-coded (red) bags or containers, or
- Containers labeled with the biohazard symbol:



This table provides guidance for labeling containers of contaminated materials.

### Labels and Signs

Item	No Label	Biohazard Symbol	Red Container
Regulated Medical Waste (RMW) Container		X OR	X
Reusable Contaminated Sharps Container		X OR	X
Reusable Contaminated Instruments		X OR	X
Individual Specimen Containers	X <sup>1</sup> OR	X OR	X
Contaminated Equipment Requiring Service		X <sup>2</sup>	
Specimens and RMW Shipped to Another Facility		X OR	X
Contaminated Laundry	X <sup>1</sup> OR	X OR	X

<sup>1</sup>Universal precautions are used for handling specimens or when personnel know the specific use of the container

<sup>2</sup>Plus a label indicating where contamination exists

For further details, see USACHPPM TG 190.

**Source: Department of Labor, OSHA. *Occupational Exposure to Bloodborne Pathogens: Precautions for Emergency Responders.* (OSHA 3130) Washington, DC: GPO, 1992.**

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# *Just the Facts...*     **Bloodborne Pathogens – Personal Protective Equipment (PPE)**

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## **General**

Select PPE types and characteristics based on:

- The procedure(s) that will be performed,
- The type of exposure anticipated,
- The quantity of blood or other potentially infectious materials (OPIM) anticipated to be encountered, and
- Other safety and health hazards that may pose a risk to personnel.

## **Body protection**

- Wear impervious disposable gowns, aprons, jumpsuits, etc. that will prevent blood or OPIM from penetrating and contaminating the PPE's inner surfaces and subsequently underlying clothing and skin.
- Keep an extra change of work clothing on hand at all times.

## **Hand protection**

- Wear polyvinyl chloride (PVC) or vinyl gloves when handling human remains.
- Wear structural fire-fighting gloves that meet the requirements of 29 CFR 1910.156, *Fire Brigades*, for situations where broken glass and sharp edges may be encountered, such as when extricating bodies from wreckages.
- Select gloves that fit tightly around the wrists to prevent contamination of the hands for situations where large amounts of blood are likely to be encountered.

## **Eye and face protection**

- Wear a surgical mask (unless respiratory protection is required, then substitute with required respirator) and safety glasses or a face shield where there is potential for splashing or spattering of blood or OPIM or for the generation of airborne particles from dried blood.
- Wear a faceshield or splash-resistant goggles over eye glasses.

## **Foot protection**

Wear rubber boots or appropriate shoe covers where there is potential for footwear to become grossly contaminated.

## **Head protection**

Wear head covers when contact with large quantities of blood or OPIM is anticipated.

## **Respiratory protection**

Respiratory protection is not normally required unless the local medical authority deems it essential to protect personnel from biohazardous materials.

## **Other**

Consider the need for other PPE, such as hardhats and safety shoes, when tasks involve recovery of human remains and personal effects from wreckage.

## **Repair and replacement**

### **Supervisors must –**

- Provide all PPE that is expected to be needed. PPE must be
  - Readily accessible,
  - Appropriate for the specific tasks or procedures,
  - Available in the correct sizes, and
  - Durable under normal conditions of use.
- Require all exposed personnel to use and wear appropriate PPE and to repair or replace PPE as needed to maintain its effectiveness.
- Define work area boundaries and require personnel to remove PPE before leaving the work area.
- Provide designated areas or containers for the storage of contaminated PPE.
- Permit only trained personnel to handle contaminated PPE.

### **Personnel must –**

- Remove PPE and underlying clothing immediately or as soon as possible when PPE is penetrated by blood or OPIM.
- Repair or replace damaged PPE as needed to maintain its effectiveness.
- Properly wear PPE.

## **Personal protective equipment program**

Organizations must develop and implement a PPE program that meets the requirements specified in 29 CFR 1910.132. The program must contain provisions for:

- Identifying and evaluating hazards in the workplace that call for the use of PPE,
- Selecting and maintaining PPE, and
- Training personnel in the use, wear, limitations, proper care, maintenance, and disposal of PPE; the methods for decontaminating reusable PPE; how to obtain replacement PPE; and how to remove contaminated PPE to avoid contact with skin and underlying clothing.

## **Respiratory protection program**

When personnel are required to wear respirators, organizations must comply with 29 CFR 1910.134, *Respiratory Protection*. These requirements include the development and implementation of a respiratory protection program that includes -

- Written standing operating procedures for respirator selection and use,
- Respirator selection based on the type and degree of hazard,
- Employee training,
- Regular cleaning and disinfection of respirators,
- Proper storage of respirators,
- Respirator inspection,
- Surveillance of work conditions and the degree of exposure,
- Program evaluation, and
- Employee medical qualifications for respirator use.

For further details, see USACHPPM TG 190 and AR 11-34.



# Just the Facts...

## Bloodborne Pathogens – Personal Protective Equipment for Specific Tasks

Task or Activity	Gloves	Eyewear	Mask	Gown/ Apron	Head Cover	Shoe Cover
Handling human remains	Yes	No <sup>1</sup>	No <sup>1</sup>	Yes	No <sup>1,2</sup>	No <sup>1,2</sup>
Extricating human remains from wreckage	Yes	No <sup>1</sup>	Yes	Yes	Yes <sup>3</sup>	Yes
Handling clothing and personal effects	Yes	No	No	No <sup>2</sup>	No	No
Extricating personal effects from wreckage	Yes	No	Yes	No <sup>2</sup>	Yes <sup>3</sup>	Yes
Opening bodies/evisceration of organs	Yes	Yes	Yes	Yes	Yes	Yes
Collecting blood, body fluids, tissues	Yes	Yes	Yes	Yes	Yes	Yes
Cosing body cavities	Yes	No <sup>1</sup>	No <sup>1</sup>	Yes	No <sup>1,2</sup>	No <sup>1,2</sup>
X-raying human remains	Yes	No <sup>1</sup>	No <sup>1</sup>	No <sup>2</sup>	No	No
Cleaning floors	Yes	No <sup>1</sup>	No	No <sup>1</sup>	No	No
Cleaning instruments/equipment	Yes	Yes	Yes	Yes	No	No
Cleaning tables	Yes	Yes	Yes	Yes	No	No
Disposing of trash	Yes	No	No	No <sup>2</sup>	No	No
Cleaning	Yes	Yes	Yes	Yes	No	No

<sup>1</sup>Unless splasing is likely

<sup>2</sup>Unless soiling is likely

<sup>3</sup>Hardhats may be required for extrication from wreckage

# Just the Facts...

## Bloodborne Pathogens – Training Requirements

### Organizations must –

- Develop and implement an information and training program for personnel who have occupational exposure to blood or other potentially infectious materials (OPIM). Training should include an explanation or description of the following elements:
  - An explanation of 29 CFR 1910.1030, Occupational *Exposure to Bloodborne Pathogens*.
  - The activity's exposure control plan and instructions for how to obtain a written copy of the plan.
  - The basic epidemiology, modes of transmission, and symptoms of bloodborne diseases.
  - The criteria for the recognition of tasks and other activities in which occupational exposure may occur.
  - The methods that prevent or minimize occupational exposure [i.e., engineering controls, work practice controls, personal protective equipment (PPE)] and their limitations.
  - The selection criteria for PPE and the criteria for equipment availability, use, handling, decontamination, and disposal.
  - The hepatitis B vaccine to include its benefits, efficiency, safety, administration, and availability.
  - The procedures for reporting exposure incidents and the availability of medical treatment and follow-up examinations.
  - The procedures for reporting and cleaning up spills.
  - An explanation of the warning signs, labels, and color-coding systems used.
- Designate an individual(s) to conduct the training. This individual must demonstrate knowledge of the occupational hazards associated with bloodborne pathogens and be familiar with the manner in which the elements in the training program relate to the workplace.
- Train employees at the time of initial assignment and annually thereafter.
- Provide additional training when existing tasks and procedures are modified, and prior to the introduction of new tasks and procedures.
- Maintain training records for at least 3 years. Documentation must include:
  - The dates of the training sessions.
  - A summary of the training contents.
  - The names and qualifications of the individual(s) conducting the training.
  - The names and job titles of all personnel attending the training.

For further details, see USACHPPM TG 190.

## *Just the Facts...*

### *Bloodborne Pathogens – Immunizations and Medical Surveillance*

#### *Standard immunizations*

Immunizations for mortuary affairs personnel should include, as a minimum-

- Those specified for active-duty personnel in AR 40-562
- Hepatitis B
- Tetanus

#### *Other immunizations*

The local preventive medicine authority may determine the need for other immunizations-

- When applicable for the mission or theater of operations.
- When unusual circumstances or threats suggest that personnel may be exposed to biological (infectious) hazards for which standard immunizations provide inadequate protection.

*NOTE: Before modifying the standard immunization regimen, the local preventive medicine authority may consult the following to clarify the nature and level of the infectious threat and available preventive measures:*

Chief, Operational Medicine Division  
U.S. Army Research Institute of Infectious Diseases  
Fort Detrick, MD 21702-5011  
Commercial (301) 619-6045, DSN 343-6045

Disease Control Consultant  
Office of The Surgeon General  
ATTN: HQDA (DASG-PPM-NC)  
5109 Leesburg Pike  
Falls Church, VA 22041-3258  
Commercial (703) 681-3160, DSN 761-3160

#### *Medical surveillance for individuals*

There is no special medical surveillance technique or schedule for mortuary affairs personnel. Standard medical surveillance practices include:

- Screening for tuberculosis by tuberculin skin test (TST) per AR 40-5, para. 4-3. The local preventive medicine authority may increase the frequency of any screening as mission considerations suggest per AR 40-5, para 4-3h.
- Periodic screening for human immunodeficiency virus (HIV) per AR 600-110.
- Periodic review of immunization status to maintain unit readiness for deployment per AR 600-8-1 and AR 600-8-101.
- Periodic (fifth birth anniversary) history and physical exam per AR 40-501 and AR 40-5.

#### *Medical surveillance data for the population*

To allow health care providers to obtain and study medical surveillance data on the entire population of mortuary affairs personnel, personnel should provide their job title to the health care provider when receiving care.

#### *Routine health care*

- Access of all mortuary affairs personnel to routine health care through the sick call process is necessary to medical surveillance.
- Confidential medical evaluation and follow-up must be immediately available for personnel reporting an exposure incident.

For further details, see USACHPPM TG 190.

## *Just the Facts...*

### *Bloodborne Pathogens – Regulated Medical Waste (RMW)*

#### **Safety precautions for handling RMW are -**

- Place RMW in containers or bags that are color-coded (red bags or red containers) or labeled with the fluorescent orange or orange-red biohazard symbol.
- Place sharps in sealable, puncture-resistant, leakproof containers. Replace sharps containers when they are 3/4 full.
- Place blood-soaked, dripping, or blood-caked disposable PPE and waste materials in leakproof plastic bags or impervious containers.
- Close and seal containers and bags prior to removal or replacement to prevent spillage or protrusion of contents during handling, transport, or storage.
- Place containers of RMW in secondary bags or containers if contamination of outside surfaces occurs or if there is potential for leakage.
- Avoid excessive or rough handling to prevent rupture of containers and bags. Never attempt to compact RMW.
- Comply with all policies for RMW as implemented by the organization.

#### **Organizations must -**

- Develop an RMW program or policy.
- Oversee that personnel handle RMW according to the program or policy.
- For transport, place RMW in rigid leakproof, puncture-resistant containers that meet U.S. Department of Transportation and United Nations standards for construction and performance.
- Follow local, state, and Federal regulations for disposal of RMW. Generally, RMW should be incinerated or decontaminated. Treated RMW may be disposed in a sanitary landfill if permitted by local law.

For further information see USACHPPM TG 190 and MEDCOM Regulation 40-35.

## *Just the Facts...*

### *Mycobacterium Tuberculosis (MTB) – Airborne or Droplet Transmitted Diseases*

When the local medical or infection control authorities determine that personnel are at risk of exposure to MTB, organizations must -

#### **Provide respiratory protection.**

- Provide personnel with National Institute for Occupational Safety and Health (NIOSH)-approved high efficiency particulate air (HEPA) respirators. Filters classified as N95, N99, N100, R95, R99, R100, P95, P99, and P100 meet the NIOSH criteria for TB protection. Filters classified as N95 are the minimum acceptable level when employees perform high hazard procedures.
- Whenever personnel wear respirators to protect themselves against MTB, a complete respirator protection program in accordance with 29 CFR 1910.139 must be in place.

#### **Control the release of infectious aerosols.**

- Temporarily place a surgical mask or disposable cloth over the remains' mouth and nose to contain any aerosols that may be generated when the remains are moved.
- Place human remains and disassociated portions in plastic burial pouches.
- Conduct autopsies in rooms with:

- Biological hazard warning signs posted at the entrance indicating the potential presence of a biohazard, and include the wording "NO ADMITTANCE WITHOUT WEARING A TYPE N95 OR MORE PROTECTIVE RESPIRATOR."

- Negative air pressure with respect to adjacent areas,

- Ventilation that provides at least an airflow of 12 air changes per hour (3 of the air changes should be from the outside),

- Downdraft local exhaust ventilation over the autopsy table, and

- An exhaust system to exhaust air directly to the outside of the building and away from intake vents, personnel, and the general public.

NOTE: Recirculation of HEPA-filtered air within the room or ultraviolet germicidal irradiation may be used to supplement the recommended ventilation requirements.

- Refrigerated body holding rooms should be under negative pressure in relation to adjacent areas with an airflow of 10 air changes per hour.

#### **Use Engineering Controls.**

- Use electric saws equipped with safety devices such as protective guards and vacuum attachments to capture and remove aerosolized contaminants.
- Use slanted autopsy tables with raised edges to capture drainage.

#### **Develop and implement safe work practices for high-risk procedures.**

- Limit access to autopsy rooms to only those personnel necessary to perform the work.
- Keep doors closed.
- Develop and implement schedules and procedures for cleaning and disinfecting work areas. NOTE: Phenolic compounds are preferred disinfectants for necropsy areas because formaldehyde reacts with hypochlorite and produces bis-chloromethyl ether, a carcinogen.
- Ventilate autopsy rooms following high-risk autopsies according to CDC recommendations before allowing personnel to enter the room without respiratory protection.

### **Train workers.**

Personnel must receive information and training to include the hazard of TB transmission, its signs and symptoms, medical surveillance and therapy, tasks and procedures having potential for exposure; site-specific protocols including the purpose and proper use of engineering controls, safe work practices, and PPE; and procedures for reporting exposure incidents and illness.

### **Manage waste.**

Guidance for the classification of waste from handling human remains that are or suspected of being contaminated with MTB (or any other highly contagious disease agent) should be obtained from the nearest infection control official or public health physician. Management of the remains and the waste is dictated by the classification.

### **Implement a medical surveillance program.**

- Conduct screening for tuberculosis by tuberculin skin test (TST) per AR 40-5, para. 4-3. The local preventive medicine authority may increase the frequency of any screening as mission considerations suggest per AR 40-5, para 4-3h. Skin test conversions should prompt and assessment of procedures and protocols.
- Keep records of employee exposures to TB, skin tests, and medical evaluations and treatment.

### **Document infections and disease.**

Tuberculosis infections (positive TB skin test) and tuberculosis disease are recordable illnesses on the OSHA Occupational Injury and Illnesses Log. Tuberculosis (not skin test conversion alone) is reportable to the Army Reportable Medical events System.

## **APPENDIX A**

### **REFERENCES**

#### **Army Regulations**

AR 11-34, Army Respiratory Protection Program, 1990.

AR 40-5, Preventive Medicine, 1990.

AR 40-501, Standards of Medical Fitness, 1995.

AR 40-5621, Immunization and Chemoprophylaxis, 1995.

AR 385-401, Accident Reporting and Records, 1994.

AR 600-8-1, Army Casualty Operations/Assistance/Insurance, 1994.

AR 600-8-101, Department of the Army Personnel Processing (In and Out and Mobilization Processing), 1993.

AR 600-110, Identification, Surveillance, and Administration of Personnel Infected with Human Immunodeficiency Virus (HIV), 1994.

#### **Code of Federal Regulations**

29 CFR 1910.156, Fire brigades.

29 CFR 1910.1200, Hazard communication.

29 CFR 1910.1030, Occupational exposure to bloodborne pathogens.

29 CFR 1910.134, Respiratory protection.

29 CFR 1910.139, Respiratory protection for TB.

## **Occupational Safety and Health Administration Documents**

OSHA CPL 2.106, Enforcement Procedures and Scheduling for Occupational Exposure to Tuberculosis. OSHA Instruction. Labor. CPL 2.106, 9 February 1996.

OSHA Instruction 3071, Job Hazard Analysis, 1998.

OSHA Instruction 3130, Occupational Exposure to Bloodborne Pathogen Precaution for Emergency Responders, 1998.

## **Other References**

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Lowbury, E.J.L.; Ayliffe, G.A.J.; Geddes, A.M.; and Williams, J.D.; eds. Control of Hospital Infection. London: Chapman and Hall, 1975. 268-270.

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JTTP 4-06, Joint Tactics, Techniques, and Procedures for Mortuary Affairs in Joint Operations. Joint Chiefs of Staff, Washington D.C.: 1996.

Newsom, S.W.B.; Rowlands, C.; Matthews, J.; and Elliot, C.J. "Aerosols in the Mortuary." Journal of Clinical Pathology. Vol. 36, #2 (1983): 127-132.

Nwanyanwu, O.C.; Tabasuri, T.H.; Harris, G.R. "Exposure to and Precautions for Blood and Body Fluids Among Workers in the Funeral Home Franchises of Fort Worth, Texas." American Journal of Infection Control, Vol. 17, #4 (1989): 208-212.

MEDCOM Regulation 40-35, Management of Regulated Medical Waste (RMW) and Change 1, 22 November 1999.

MIL-HDBK-1191, Department of Defense Medical Military Construction Program Facilities Design and Construction Criteria, Defense Medical Facility Office, 24 May 1996.

NIOSH Publication 89-107. Guidelines for the Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health-Care and Public Safety Workers, 1989.

USACHPPM TG 190, Guide to Managing Occupational Exposure to Bloodborne Pathogens, Draft (update).

### **Obtaining References**

Code of Federal Regulations may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 [(202) 783-3228].

NIOSH publications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

USACHPPM Technical Guides may be obtained from the Commander, USACHPPM, ATTN: MCHP-CS-IPD, Aberdeen Proving Ground, MD 21010-5403.

## **APPENDIX B GLOSSARY**

### **Section I Abbreviations**

**AR**  
Army Regulation

**BBP**  
bloodborne pathogens

**CDC**  
Centers for Disease Control and Prevention

**CFR**  
Code of Federal Regulations

**FM**  
Federal Manual

**HBV**  
hepatitis B virus

**HEPA**  
high-efficiency particulate air

**HIV**  
human immunodeficiency virus

**MOS**  
Military Occupational Specialty

**MTB**  
Mycobacterium Tuberculosis

**NIOSH**  
National Institute for Occupational Safety and Health

**OPIM**  
other potentially infectious materials

**OSHA**

Occupational Safety and Health Administration

**PPE**

personal protective equipment

**PVC**

polyvinyl chloride

**RMW**

regulated medical waste

**TG**

technical guide

**TST**

tuberculin skin test

**USACHPPM**

U.S. Army Center for Health Promotion and Preventive Medicine

**Section II**

**Terms**

**bloodborne pathogens**

Pathogenic microorganisms that are present in human blood and can cause disease in humans.

**contaminated**

The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

**contaminated laundry**

Laundry soiled with blood or other potentially infectious materials.

**decontamination**

The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface item is rendered safe for handling, use, or disposal.

**engineering controls**

Controls (e.g., sharps disposal containers) that isolate or remove the bloodborne pathogens hazard from the workplace.

**exposure incident**

A specific eye, mouth, or other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious material that results from the performance of an employee's duties.

**handwashing facilities**

A facility with an adequate supply of running potable water, soap, and single use towels.

**occupational exposure**

A reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

**other potentially infectious materials**

The following body fluids: semen, vaginal secretions, cerebrospinal fluid, pericardial fluid, peritoneal fluid, amniotic fluid, any body fluid that is visibly contaminated with blood, and all body fluids where it is difficult or impossible to determine the composition of the fluids. In addition to the body fluids described above, any unfixed tissue or organ from a human (living or dead).

**parenteral**

Piercing of the mucous membranes or the skin (i.e., needlesticks, cuts, abrasions, etc.).

**personal protective equipment**

Specialized clothing or equipment worn by an employee for protection against a hazard.

**regulated medical waste**

Waste that is potentially capable of causing disease in man and may pose a risk to both individual or community health if not handled or treated properly. Examples include: human pathological waste, including tissues, organs, body parts, teeth; body fluids; free-flowing blood; items that are saturated or dripping with human blood or body fluids; and contaminated sharps.

**sterilize**

The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**universal precautions**

The practice of treating all human blood and certain body fluids as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

**work practice controls**

Controls that reduce the likelihood of exposure by altering the manner in which a task is performed.

**APPENDIX C**  
**JOB HAZARD ANALYSIS FORM**

**JOB Hazard Analysis Form**

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**JOB TITLE:**

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**DATE OF ANALYSIS:**

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**LOCATION:**

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<b>Major Tasks &amp; Steps</b>	<b>Hazards and Environmental Conditions</b>	<b>Recommended Safety Measures</b>