

WORK PRACTICES FOR EMERGENCY RESPONSE PERSONNEL

1854

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Section 1854 has been adapted from: Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health-Care and Public-Safety Personnel A publication of the U. S. Department of health and Human Services February 1989.

I. General Work Practices

The guidelines listed in this section on Work Practices for Emergency Response Personnel are derived from the U.S. Department of Health and Human Services, Centers for Disease Control's *Guidelines for Prevention of Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Health Care and Public Safety Workers*. These guidelines are intended for use by a technically informed audience. Therefore, they shall only be used as a supplement to the basic infectious disease training.

Universal precautions were originated for application to blood or other potentially infectious body fluids or substances containing visible blood. For the purposes of this document they apply to any body fluid capable of transmitting an occupational infectious disease.

The following precautions shall be followed routinely.

A. Hand Washing

Hands and other skin surfaces shall be washed immediately and thoroughly if contaminated with blood, other body fluids, or potentially contaminated articles. Hands shall always be washed after gloves are removed, even if the gloves appear to be intact. Hand washing shall be completed using the appropriate facilities, such as utility or restroom sinks. Waterless antiseptic hand cleanser shall be provided on responding units to use when hand washing facilities are not available. When hand washing facilities are available, wash hands with warm water and soap. When hand washing facilities are not available, use a waterless antiseptic hand cleanser. The manufacturer's recommendations for the product shall be followed.

B. Mucous Membranes

Mucous membranes shall be flushed with water immediately or as soon as possible following contact with blood or other potentially infectious materials.

C. Needle and Sharps Disposal

All personnel shall take precautions to prevent injuries caused by needles, scalpel blades, and other sharp instruments or devices during procedures, when cleaning used instruments, during disposal of used needles, and when handling sharp instruments after procedures. To prevent needle-stick injuries, needles shall not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items shall be placed in puncture-resistant containers for disposal; the puncture-resistant containers shall be located as close as practical to the use area (e.g., in the ambulance or, if sharps are carried to the scene of victim assistance from the ambulance, a small puncture-resistant container shall be carried to the scene as well.) Reusable needles shall be left on the syringe body and shall be placed in a puncture-resistant container for transport to the reprocessing area.

D. Personal Precautions

Eating, drinking, smoking or applying cosmetics or lip balm is prohibited in work areas where there is reasonable likelihood of occupational exposure.

E. Cleaning, Disinfecting, and Sterilizing

Health and Safety Procedures Handbook, Methods of Disinfection/Sterilization, [{see exhibit}](#) presents the methods and applications for cleaning, disinfecting, and sterilizing equipment and surfaces in the prehospital setting. Medical devices or instruments that require sterilization or disinfection shall be thoroughly cleaned before being exposed to the germicide, and the manufacturer's instructions for the use of germicide shall be followed. It is important that the manufacturer's specifications for compatibility of the medical device with chemical germicides be closely followed. Information on specific label claims of commercial germicides can be obtained by writing to the Disinfectants Branch, Office of Pesticides, Environmental Protection Agency, 401 M Street, SW Washington, D.C. 20460.

In addition to commercially available chemical germicides, a solution of sodium hypochlorite (household bleach) prepared daily is an inexpensive and effective germicide. Concentrations ranging from approximately 500 ppm (1:100 dilution of household bleach, 1/4 cup of bleach to 1 gallon of water) sodium hypochlorite to 5000 ppm (1:10 dilution of household bleach) are effective depending on the amount of organic material (e.g., mucous) present on the surface to be cleaned and disinfected. Commercially available chemical germicides may be more compatible with certain medical devices that might be corroded by repeated exposure to sodium hypochlorite, especially to the 1:10 dilution.

When cleaning contaminated equipment and/or environmental surfaces one shall wear gloves and goggles. If the possibility of splashing is great, an impervious gown or apron shall also be used.

F. Housekeeping

Environmental surfaces such as walls, floors, and other surfaces are not associated with transmission of infections. Therefore, extraordinary attempts to disinfect or sterilize these environmental surfaces are not necessary. However, the worksite will be maintained in a clean and sanitary condition.

Disinfectant-detergent formulations registered by EPA can be used for cleaning environmental surfaces, but the actual physical removal of microorganisms by scrubbing is dependent on the cleaning agent used.

G. Cleaning and Decontaminating Spills of Body Fluids and Substances.

All spills or splashes of blood or other potentially infectious body fluids or substances shall be promptly cleaned up using an EPA approved germicide or a 1:100 solution of household bleach in the following manner while wearing gloves. Visible material shall first be removed with disposable towels or other appropriate means that ensure against direct contact with the substance. If splashing is anticipated, protective eyewear shall be worn along with an impervious gown or apron which provides an effective barrier to splashes. The area shall then be decontaminated with an appropriate germicide. Shoes and boots that become contaminated with body fluids shall be cleaned using the methods previously described. Hands shall be washed following removal of gloves. Soiled cleaning equipment shall be cleaned and decontaminated or placed in an appropriate container and disposed of according to Health and Safety Procedures Handbook Section 1852.6, Decontamination Procedures [{see exhibit}](#). Plastic bags shall be available for removal of contaminated items from the site of the spill. A plastic bag to be used for disposal of contaminated items shall be included in the tool or materials kit which is to be used for the disposal of contaminated items. Extra plastic bags and disposable gloves shall be stored in the emergency response vehicle.

A solution of sodium hypochlorite (1:100) in a spray bottle can be used for cleaning the interior of emergency responder vehicles. It shall be appropriately labeled. A new solution shall be made daily since the concentration of bleach in water deteriorates considerably in a period of 24 hours.

Alcohol is not a good germicide.

Back-boards used in patient transport shall be cleaned in a sink or utility tub which has been designated as a "dirty" or decontamination sink. Never clean any type of emergency response equipment in the kitchen or bathroom sink or shower.

H. Laundry

There are no rigid procedures and specifications; hygienic storage and processing of clean and soiled linen are recommended. Laundry facilities and/or services shall be made routinely available. Soiled linen shall be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. Gloves shall always be used when handling contaminated linen. All soiled linen shall be bagged at the location where it was used when possible. Linen soiled with blood or body fluids and/or substances shall be placed and transported in bags appropriate for infectious waste. Normal laundry cycles shall be used according to the washer and detergent manufacturer's recommendations.

All safety clothing will be washed in the station. Under no circumstances will protective clothing be washed at home. This is to protect the employee's family from both infectious and chemical exposures.

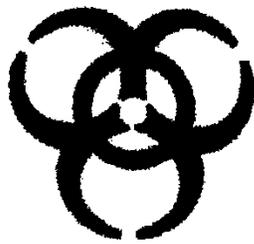
I. Decontamination and Laundering of Protective Clothing

Protective work clothing contaminated with blood or other potentially infectious body fluids or substances to which universal precautions apply shall be removed immediately or as soon as possible and placed and transported in bags or containers that prevent leakage. Protective clothing and station and work uniforms shall be washed and dried according to the manufacturer's instructions. Boots and leather goods may be brushed-scrubbed with soap and hot water to remove contamination. Personnel involved in the bagging, transport, and laundering of contaminated protective clothing shall wear gloves and goggles.

J. Infective Waste

The selection of procedures for disposal of infective waste is determined by the relative risk of disease transmission and application of local regulations, which vary widely. **In all cases, local regulations shall be consulted prior to disposal procedures and followed.** Infective waste, in general, shall either be incinerated or shall be decontaminated before disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions and secretions may be carefully poured down a drain connected to a sanitary sewer, where permitted. Sanitary sewers may also be used to dispose of other infectious wastes capable of being ground and

flushed into the sewer, where permitted. Sharp items will be placed in puncture-proof containers. Other blood- and body fluid-contaminated items shall be placed in leak-proof, appropriately color-coded, and labelled plastic bags for transport to an appropriate disposal location. Bags used to contain hazardous waste will be red and/or marked with the universal biohazard label.



Prior to the removal of protective equipment, personnel remaining on the scene after the patient has been cared for shall carefully search for and remove contaminated materials. Debris shall be disposed of as noted above.

II. Work Practices Specific to Fire and Emergency Medical Services

The guidelines that appear in this section apply to fire and emergency medical services. This includes structural fire fighters, paramedics, emergency medical technicians, and advanced life support personnel. Fire fighters often provide emergency medical services and therefore encounter the exposures common to paramedics and emergency medical technicians. Job duties are often performed in uncontrolled environments which, due to lack of time and other factors, do not allow for application of a complex decision-making process to the emergency at hand.

The general principles presented here have been developed from existing principles of occupational safety and health in conjunction with data from studies of healthcare personnel in hospital settings. The basic premise is that workers must be protected from exposure to blood or other potentially infectious body fluids or substances in the course of their work activities. However, there is a lack of data concerning the risks these employees face which complicates development of control principles. Thus, the guidelines presented below are based on principles of prudent public health practice.

Fire and emergency medical service personnel are engaged in delivery of medical care in the prehospital setting. The following guidelines are intended to assist these personnel in making decisions concerning use of personal protective equipment and resuscitation equipment, as well as for decontamination, disinfection and disposal procedures.

A. Personal Protective Equipment

Appropriate personal protective equipment shall be made available routinely by the employer to reduce the risk of exposure as defined above. For many situations, the chance that the rescuer will be exposed to blood or other potentially infectious body fluids or substances to which universal precautions apply can be determined in advance.

Therefore, if the chances of being exposed to blood or other potentially infectious body fluids or substances is high (e.g., CPR, IV insertion, trauma, delivering babies), the worker shall put on protective clothing and equipment before beginning patient care. See Health and Safety Procedures Handbook [{see exhibit}](#) for examples of recommendations for personal protective equipment in the prehospital setting; the list is not intended to be all-inclusive.

1. Gloves

Disposable gloves shall be a standard component of emergency response equipment and shall be put on by all personnel prior to initiating any emergency patient care tasks involving exposure to blood or other potentially infectious body fluids or substances to which universal precautions apply. Extra pairs shall always be available. Considerations in the choice of disposable gloves shall include dexterity, durability, fit and the task being performed. Thus, there is no single type or thickness of glove appropriate for protection in all situations. For situations where large amounts of blood or other potentially infectious body fluids or substances are likely to be encountered, it is important that gloves fit tightly at the wrist to prevent blood contamination of hands around the cuff. For multiple trauma victims, gloves shall be changed between patient contacts if the emergency situation allows.

Greater personal protective equipment measures are indicated for situations where broken glass and sharp edges are likely to be encountered, such as extricating a person from an automobile wreck. Structural fire fighting gloves that meet the Federal OSHA requirements for fire fighters' gloves (as contained in 2 CFR 1910.156 or National Fire Protection Association Standard 1973, "Gloves for Structural Fire Fighters") shall be worn in any situation where sharp or rough surfaces are likely to be encountered.

While wearing gloves, avoid handling personal items such as combs and pens that could become soiled or contaminated. Gloves that have become contaminated with blood or other potentially infectious body fluids or substances to which universal precautions apply shall be removed as soon as possible, taking care to avoid skin contact with the exterior surface. Contaminated gloves shall be placed and transported in bags that prevent leakage and shall be disposed of or, in the case of reusable gloves, cleaned and disinfected properly.

2. Masks, Eyewear, and Gowns

Masks, eyewear, and gowns shall be present on all emergency vehicles that respond to or could potentially respond to medical emergencies or victim rescues. These protective barriers shall be used in accordance with the level of exposure encountered. Minor lacerations or small amounts of blood or other potentially infectious body fluids or substances do not merit the same extent of barrier use as required for exsanguinating victims or massive arterial bleeding. Management of the patient who is not bleeding, and who has no blood or other potentially infectious body fluids or substances present, should not routinely require use of barrier precautions.

Masks and eyewear (e.g., safety glasses) shall be worn together, or a face shield shall be used by all personnel prior to any situation where splashes of blood or other potentially infectious body fluids or substances to which universal precautions apply are likely to occur. Gowns or aprons shall be worn to protect clothing from splashes of blood. If large splashes or quantities of blood or other potentially infectious body fluids or substances are present or anticipated, impervious gowns or aprons shall be worn. An extra change of work clothing shall be available at all times.

Masks, eyewear and gowns shall be worn where there is possible exposure to infectious body fluids by spraying (e.g., sneezing, coughing, spitting, etc.). This is especially important in confined spaces such as small rooms, autos, or areas with poor ventilation.

B. Resuscitation Equipment

The risk of salivary transmission of infectious diseases (e.g., Herpes simplex and Neisseria meningitidis) and the potential risk of HIV and HBV transmission during artificial ventilation of trauma victims necessitate disposable airway equipment or resuscitation bags. Disposable resuscitation equipment and devices shall be used once and disposed of or, if reusable, thoroughly cleaned and disinfected after each use according to the manufacturer's recommendations.

Mechanical respiratory assist devices (e.g., bag-value masks and oxygen demand valve resuscitators) shall be available on all emergency vehicles and to all emergency response personnel that respond or potentially respond to medical emergencies or victim rescues.

Pocket mouth-to-mouth resuscitation masks designed to isolate emergency response personnel (i.e., double lumen systems) from contact with victims' blood and blood-contaminated saliva, respiratory secretions and vomitus shall be provided to all personnel who provide or potentially provide emergency treatment.

III. Work Practices Specific to Peace Officers and Fire Suppression Personnel Working with Inmates.

Peace officer and fire suppression personnel working with inmates may face the risk of exposure to blood or other potentially infectious body fluids or substances during the conduct of their duties. For example, at the crime scene or during processing of suspects, peace officers may encounter blood contaminated hypodermic needles or weapons, or be called upon to assist with body removal. CAL FIRE fire suppression personnel supervising inmates may be called on to render first aid to an injured inmate.

The following section presents information for reducing the risk of acquiring HIV, HBV, or other occupational infections by peace officers and fire suppression personnel working with inmates of correctional facilities. There is an extremely diverse range of potential situations which may occur as these employees carry out their duties. The informed judgment of the individual officer is paramount when unusual circumstances or events arise. There is always the potential for injury and exposure to a wide range of occupational infections when working with persons whose behavior may be unpredictable, violent, or psychotic. These recommendations shall serve as an adjunct to rational decision making in those situations where specific guidelines do not exist, particularly where immediate action is required to preserve life or prevent significant injury.

Health and Safety Procedures Handbook, [{see exhibit}](#) contains selected examples of personal protective equipment that may be employed by peace officer and fire suppression personnel.

A. Peace Officer and Fire Suppression Personnel Working With Inmates

1. Fights and Assaults

Peace officer and fire suppression personnel are exposed to a range of assaultive and disruptive behavior through which they may potentially become exposed to blood or other body fluids or substances. Behaviors such as biting, attacks resulting in blood exposure and attacks with sharp objects are of particular concern. Occupational infections may result from a variety of situations that

arise during the performance of a peace officer's duty. Situations such as arrest, routine interrogations, rendering first aid and lockup operations are just a few of the instances when there is a potential for exposure to infectious disease.

Whenever the possibility for exposure to blood or other potentially infectious body fluids or substances exists, the appropriate protection shall be worn if feasible under the circumstances. In all cases, extreme caution must be used in dealing with a suspect or prisoner. When blood is present and a suspect or an inmate is combative or threatening to staff, gloves shall always be put on as soon as conditions permit. In the case of blood contamination of clothing, an extra change of clothing shall be available at all times.

2. Cardiopulmonary Resuscitation

Peace officers, CAL FIRE fire suppression personnel dealing with inmates, and first responders are also concerned about infection with HIV and HBV through administration of cardiopulmonary resuscitation (CPR). Although there have been no documented cases of HIV transmission through this mechanism, the possibility of transmission of other infectious diseases exists. Therefore, agencies shall make protective masks or airways available to officers and provide training in their proper use. Devices with one-way valves to prevent the patient's saliva or vomitus from entering the caregiver's mouth are preferable.

Employees shall always take measures to guarantee their own health including maintaining current immunization to diseases common to institutions, such as measles.

B. Considerations Specific to Peace Officers

1. Searches and Evidence Handling

Peace officers have potential risks of acquiring HBV or HIV infection through exposures which occur during searches and evidence handling. Penetrating injuries are known to occur, and puncture wounds or needle sticks in particular pose a hazard during searches of persons, vehicles, or cells, and during evidence handling. The following precautionary measures will help to reduce the risk of infection:

- An officer shall use great caution in searching the clothing of suspects. Individual discretion, based on the circumstances at hand, should determine if a suspect or prisoner should empty his own pockets or if the officer should use his own skills in determining the contents of a suspect's clothing.
- Ask the suspect if he has needles on his person.
- A safe distance shall always be maintained between the officer and the suspect.
- Wear protective gloves if exposure to blood is likely.
- Wear protective gloves for all body cavity searches.
- If cotton gloves are to be worn when working with evidence of potential latent fingerprint value at the crime scene, they can be worn over protective disposable gloves when exposure to blood or other potentially infectious body fluids or substances may occur.
- Always carry a flashlight, even during daylight shifts, to search hidden areas. Whenever possible, use long-handled mirrors and flashlights to search such areas (e.g., under car seats).
- If searching a purse, carefully empty contents directly from purse, by turning it upside down over a table.
- Use puncture-proof containers to store sharp instruments and clearly marked plastic bags to store other possibly contaminated items.
- To avoid tearing gloves, use evidence tape instead of metal staples to seal evidence.
- Local procedures for evidence handling shall be followed. In general, items shall be air dried before sealing in plastic.

Not all types of gloves are suitable for conducting searches. Vinyl or latex rubber gloves can provide little, if any, protection against sharp instruments, and they are not puncture-proof. There is a direct trade-off between level of protection and manipulability. In other words, the thicker the gloves, the more protection they provide, but the less effective they are in locating objects. Thus, there is no single type or thickness of glove appropriate for protection in all situations. Officers shall select the type and thickness of glove which provides the best balance of protection and search efficiency.

Officers may confront unusual hazards, especially when the crime scene involves violent behavior, such as an injury incident where large amounts of blood or other potentially infectious body fluids or substances are present. Protective gloves shall be available and worn in this setting. In addition, for very large spills, consideration shall be given to other protective clothing, such as overalls, aprons, boots or protective shoe covers. These shall be changed if torn or soiled, and always removed prior to leaving the scene.

Face masks and eye protection or a face shield are required for laboratory and evidence technicians whose jobs entail potential exposures to blood or other potentially infectious body fluids or substances via a splash to the face, mouth, nose, or eyes.

Airborne particles of dried blood may be generated when a stain is scraped. It is recommended that protective masks and eyewear or face shields be worn by laboratory or evidence technicians when removing bloodstains for laboratory analyses.

While processing the crime scene, personnel shall be alert for the presence of sharp objects such as hypodermic needles, knives, razors, broken glass, nails or other sharp objects.

2. Handling Deceased Persons and Body Removal

For any CAL FIRE personnel who may assist in the removal of a body or have to touch a body for any reason, the response shall be the same as for situations requiring CPR or first aid: wear gloves and cover all cuts and abrasions to create a barrier and carefully wash all exposed areas after any contact with blood or other potentially infectious body fluids or substances. The precautions to be used with blood and deceased persons shall also be used when

handling amputated limbs, hands or other body parts. Such procedures shall be followed after contact with blood or other potentially infectious body fluids or substances of **anyone**, regardless of whether they are known or suspected to be infected with HIV or HBV.

3. Autopsies

Should a CAL FIRE peace officer be required to attend an autopsy, protective masks and eyewear (or face shields), laboratory coats, gloves, and waterproof aprons shall be worn when performing or attending all autopsies. All autopsy material shall be considered infectious for both HIV and HBV. Onlookers with an opportunity for exposure to blood or other potentially infectious body fluids or substance splashes shall be similarly protected. Instruments and surfaces contaminated during postmortem procedures shall be decontaminated with an appropriate chemical germicide following recommendations in Health and Safety Procedures Handbook, [{see exhibit}](#) .

Many laboratories have more detailed standard operating procedures for conducting autopsies; where available, these shall be followed.

[\(see next section\)](#)

[\(see HB Table of Contents\)](#)

[\(see Forms or Forms Samples\)](#)