



Handling of Human Remains from Natural Disasters

FACT SHEET 37-032-0917

1. **BACKGROUND.** Natural disasters usually lead to fatalities due to trauma. Human remains resulting from these types of disasters are generally no more likely than the local population to have acute infections or rare diseases. As the remains cool they begin to decompose, with the internal and external environment of the remains determining the speed of decomposition. However, as the decomposition progresses, bloodborne pathogens and other potentially chronic infectious agents (e.g., gastrointestinal and respiratory pathogens) may continue to persist. Personnel in direct contact with human remains must take precautions to protect themselves from chronic infectious hazards, which may include hepatitis B virus, hepatitis C virus, human immunodeficiency virus (HIV), enteric pathogens, and *Mycobacterium tuberculosis*.

2. **POTENTIAL HEALTH HAZARDS.** Blood and body fluids, feces, and gastrointestinal toxins pose the most concern for personnel in direct contact with human remains. Exposures on intact skin pose little risk. Transmission is relatively inefficient for diseases, requiring percutaneous exposure (from a needle stick or exposure from a sharp penetrating object); direct contact with mucous membranes (such as eyes, nose, or mouth); or direct contact with non-intact skin (abraded, chapped, inflamed, or with visible wounds or traumas). Exposure occurs through direct contact with the victim's remains and soiled clothes, and transmission can occur via the fecal-oral route. Contamination of equipment and vehicles used to transport the remains may also pose a hazard.

Water Supply Contamination. Human remains in contact with local potable water systems have rarely been associated with transmission of bacterial or viral gastrointestinal diseases. Water supplies in affected regions are much more likely to be contaminated due to extensive damage to sanitation systems.

3. **PROTECTIVE EQUIPMENT AND OTHER PRECAUTIONS.** Personnel handling human remains should treat all body fluids as if they are potentially infectious. Personal protective equipment (PPE) and universal/standard precautions can greatly reduce the risk of exposure to gastrointestinal toxins and other aerosolized agents.

Gloves. When handling human remains, workers should wear gloves (fluid proof – polyvinyl chloride (PVC), vinyl, rubber, latex) especially if the remains

are badly damaged. 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 remains 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.

Alternatively, double gloving with a waterproof glove under a heavy work glove will protect the hands from both cuts and scrapes and exposure to fluids and/or floodwater. Personnel should also practice good personal hygiene after handling remains.

Masks and Eyewear. Other PPE, such as surgical masks and eyewear, are only required where large quantities or splashes of blood are anticipated and are probably not necessary when handling human remains following a natural disaster. The use of a face mask is rarely considered to be necessary. Since masks limit ventilation and the workers tire more easily, using them can slow down the tasks of moving, storing, and preparing human remains. Gases and strong odors are the most unsettling aspect, and when necessary, covering the nose and mouth is sufficient.

Outer Clothing. Disposable clothing is available and is recommended for many situations. In other cases, traditional fabrics are preferable owing to their strength especially when lifting remains. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids. Closed, boot-style shoes are also recommended in these instances. Wear rubber boots or appropriate shoe covers where there is potential for footwear to become grossly contaminated. Rain gear is also useful in case of storms.

Human Remains Pouches. Human remains pouches will further reduce the risk of infection and are useful for the transport of human remains that have been badly damaged. Place pouches containing human remains in a cool or refrigerated location to keep the remains cool and to slow decomposition.

Washing/Cleansing. After handling remains, wash hands with antiseptic hand soap and clean, potable water. Always do this before smoking and before eating. Use of sanitizing hand rub is encouraged.

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Vaccinations. In addition to routine adult vaccinations recommended by the Advisory Committee on Immunization Practices (ACIP) and approved by the CDC, the vaccinations against the following diseases are strongly recommended: Hepatitis A, Hepatitis B, Typhoid, and Tetanus. A Tuberculin skin test (TST) or interferon-gamma release assay (IGRA) should be obtained after handling of human remains if working in an area where tuberculosis is endemic or if the cause of death is suspected to be tuberculosis. These tests should be completed 5 weeks or more after exposure for most accurate results. A prior vaccination with bacilli Calmette-Guérin (BCG) should not be considered protective against tuberculosis.

4. DISPOSAL OF PPE. Remove used gloves and place them in a bag designated for disposal of PPE. (In some States, these items are classified as regulated medical waste. Check your local regulations for appropriate guidelines.) Where non-disposable gloves or PPE are used, place them in a separate bag for appropriate treatment (e.g., steam sterilization, chemical disinfection) to render them non-infectious. Clean, disinfect, and dry all reusable items between uses. To avoid cross-contamination, do not use personal items, such as pens or combs, while wearing soiled gloves. Change out gloves as often as necessary to minimize the risk of contaminating personal items. Make gloves readily available during the removal and processing of human remains so that personnel can quickly and easily replace soiled gloves.

5. DISINFECTING EQUIPMENT. Wear PPE appropriate for the disinfectant being used. Equipment disinfectants are too harsh for skin exposure. Carefully wash all equipment, including clothes, stretchers, and vehicles used in the handling of remains with an EPA-approved disinfectant after use or before reuse (listing available at: <http://www.epa.gov/oppad001/chemregindex.htm>). Place contaminated reusable PPE and clothing into leak-resistant bags or containers immediately upon removing the articles. 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 (71° C) and detergent for 25 minutes, or with chemicals at the proper concentration for low temperature washing. 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. Place contaminated disposable PPE and clothing that is saturated, dripping, or caked with dried blood into a regulated medical waste container for appropriate disposal.

6. PERSONAL EFFECTS. Leave personal effects on the remains. (Alternatively, place all items in a plastic bag and secure them to the remains.) Mortuary affairs personnel should use the appropriate forms to inventory personal effects. Safeguarding personal effects for final processing is just as critical as safely and carefully handling the human remains. Follow local regulatory guidance to ensure blood-soaked or soiled personal effects are appropriately treated, disinfected and processed along with the remains.

7. SAPONIFICATION. Human remains found in water or moist soil readily undergo saponification (the hydrolysis of fat and other soft tissues into adipocere, or mortuary wax). This occurs when the amount of fatty tissue is high, the

surrounding environment is alkali, and there is an absence or minimal presence of agents of decomposition. Under these conditions, personnel handling remains must wear PPE and be extremely careful when handling remains as skin slippage may occur.

8. TRAINING. The Occupational Safety and Health Administration (OSHA) establishes personal protective and training guidelines in 29 CFR 1910.1030. Under this regulation, mortuary affairs personnel handling human remains must receive bloodborne pathogen training within 90 days of employment. This training should include appropriate precautions for these persons, use of personal protective gear (e.g., gloves, Tyvek-type suits, and respirators), use of human remains pouches, and vaccinations for hepatitis B and tuberculosis.

9. REFERENCES. Worker health and safety risks are likely to vary among specific locations, and a trained health and safety professional should be consulted to create site specific worker health and safety plans. Worker health and safety risks are likely to vary among specific locations, and a trained health and safety professional should be consulted to create site specific worker health and safety plans. It should be consulted to create site specific worker health and safety plans.

10. The following references were reviewed and incorporated into this fact sheet, and may prove useful for further review.

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