**Union County Fatality Management CBRN Guidance**

9-1-2017

1. **Overview**

This guidance was developed to serve as a guide for responders managing mass fatality incidents that involve remains contaminated with chemical, biological, radiological/nuclear (CBRN) hazards. Three protocols have been developed to provide guidance on the following operations of mortuary team(s):

* General Handling
* Autopsy
* Burial
* Cremation

This documents provide general guidance for handling contaminated human remains. An incident specific safety analysis must be completed prior to recovery and mortuary operations. The following ICS forms can be used to assemble safety information for the event.

* ICS form 208, Safety Message: The ICS 208 is an optional form that may be included and completed by the Safety Officer for the Incident Action Plan (IAP).
* ICS form 215a, Incident Action Plan Safety Analysis: When the safety analysis is completed, the form is distributed to the Resources Unit to help prepare the Operations Section briefing. All completed original forms must be given to the Documentation Unit. The 215a may be incorporated into the incident IAP.

1. **Potential Agents**

The Centers for Disease Control and Prevention has developed a list of critical chemical and biologic agents that may be used by terrorists.

* Chemical agents (Refer to Emergency Response guide for additional information)

• Nerve agents: Tabun, Sarin, Somon, GF, and VX

• Blood agents: Hydrogen cyanide and cyanogens chloride

• Blister agents: Lewisite, nitrogen and sulfur mustards, and phosgene oxime

• Heavy metals: Arsenic, lead, mercury

• Volatile toxins: Benzene, chloroform, trihalomethanes

• Pulmonary agents: Phosgene, chlorine, vinyl chloride

• Incapacitating agents: BZ (3-quinuclidinyl benzilate), pesticides, dioxins, furans, PCBs

• Explosives: Ammonium nitrate combined with fuel oil

• Flammable gases and liquids: Gasoline, propane

• Poisonous industrial gases, liquids, solids: Cyanides, nitriles

• Corrosive industrial acids and bases: Nitric acid, sulfuric acid

* Biologic Agents:

• Category A (High-level risk): Smallpox, anthrax, plague, botulism, tularemia, Filoviruses such as Ebola and Marburg causing hemorrhagic fevers, and Arenaviruses such as Lassa and Junin causing hemorrhagic fevers

• Category B: Q Fever, brucellosis, glanders, alphaviruses causing encephalitis, ricin toxin, epsilon toxin from Clostridim perfringes, Staphylococcus enterotoxin B, Salmonella species, Shigella dysenteria, E Coli O157:H7, Vibrio cholerae, and Cryptosporidium parvum

• Category C: NipahVirus, Hantavruses, Tickborne hemorrhagic fever and encephalitis viruses, Yellow Fever virus, multidrug-resistant TB.

1. **Storage of contaminated remains**

Remains will typically be stored in the same manner as non-contaminated remains due to the need for refrigeration. Refer to protocols for guidance on general handling of contaminated remains.

1. **Concept of Operations**
   1. Complete incident situational assessment and develop common operating picture of mass fatality aspects of the incident.
   2. Coroner work with Safety Officer to complete incident specific safety analysis prior to recovery and mortuary operations.
   3. Provide ICS Planning Chief with fatality management incident objectives for IAP.
   4. Coordinate with operations chief to develop tactics for accomplishing fatality management incident objectives.
   5. Conduct operations to recover remains and complete mortuary activities.
2. **Burial Authorities**

ORC 4717.12, Exemptions

A.1 An officer or employee of the department of health or any board of health, who, in compliance with rules or orders of the department of health or board of health, is preparing the body of a person whose death was caused by a virulent communicable disease

B.4 The conducting of funerals and the burial of dead human bodies in accordance with the ceremonies or rights described in division (B) of this section without the use, employment, or supervision of a licensed embalmer or funeral director, except when the body is that of a person whose death was caused by a virulent communicable disease, in which case the rules of the department of health or board of health having territorial jurisdiction shall apply.

ORC 4717.23, Prohibited acts by operator of facility prior to cremation.

A.1 A period of at least twenty-four hours has elapsed since the decedent's death as indicated on a complete, nonprovisional death certificate filed under section [3705.16](http://codes.ohio.gov/orc/3705.16) of the Revised Code or under the laws of another state that are substantially equivalent to that section, unless, if the decedent died from a virulent communicable disease, the department of health or board of health having territorial jurisdiction where the death of the decedent occurred requires by rule or order the cremation to occur prior to the end of that period;

1. **Attachments**:

* CBRN Mass Fatality Protocol – Chemical Contamination Guidance
* CBRN Mass Fatality Protocol – Biological Contamination Guidance
* CBRN Mass Fatality Protocol – Radiological/Nuclear Contamination Guidance

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| **CBRN Mass Fatality Protocol - Chemical Contamination Guidance** | | | | | |
|  | **Chem Agent** | **General Handling** | **Autopsy** | **Burial** | **Cremation** |
| **1** | Chemical is known | * A safety assessment must be completed by the ICS Safety Officer with subject matter experts to determine the safest course of action. * +PPE:   (Minimum level C PPE is recommended)   * + Respiratory: NIOSH approved full-face piece air purifying respirator with a P-100 or High Efficiency Particulate Air (HEPA) filter, PAPR, or SCBA   + Dermal:     - Coveralls with hood     - Gloves – inner pair     - Gloves – outer pair     - Boot covers     - Personal radiation dosimeter on each worker although one for the work area or team may be sufficient based on the type of radiation.     - The type of incident and chemical will dictate if Level A and Level B PPE is required. * Decontamination   + Mortuary Workers: decontaminate following fire department standard decon procedures.   + Decedent: Decontaminate remains thoroughly to remove external contamination. | * A safety assessment must be completed by the ICS Safety Officer with subject matter experts to determine the safest course of action. * +PPE:   (Minimum level C PPE is recommended)   * + Respiratory: NIOSH approved full-face piece air purifying respirator with a P-100 or High Efficiency Particulate Air (HEPA) filter, PAPR, or SCBA   + Dermal:     - Coveralls with hood     - Gloves – inner pair     - Gloves – outer pair     - Boot covers     - Personal radiation dosimeter on each worker although one for the work area or team may be sufficient based on the type of radiation.     - The type of incident and chemical will dictate if Level A and Level B PPE is required. | * Contact with corpses should be limited to personnel wearing PPE * Package in leak-proof containers * Avoid embalming * Bury without reopening | Recommended |
| **6** | Chemical is unknown | A safety assessment must be completed by the ICS Safety Officer with subject matter experts to determine the safest course of action. | A safety assessment must be completed by the ICS Safety Officer with subject matter experts to determine the safest course of action. |  |  |
| * \* Information source: US Dept of Health and Human Services, Chemical Hazards Emergency Medical Management. <https://chemm.nlm.nih.gov/deceased.htm#managing> * +US Army, Mass Fatality Management for Incidents involving Weapons of Mass Destruction, <https://www.ecbc.army.mil/hld/dl/MFM_Capstone_August_2005.pdf> | | | | | |

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| **CBRN Mass Fatality Protocol - Biological Contamination Guidance** | | | | | |
|  | **Bio Agent** | **General Handling** | **Autopsy** | **Burial** | **Cremation** |
| **1** | Anthrax | * Standard precautions * Additional respiratory PPE when performing activities that generate aerosols | * Wear additional respiratory PPE * Bio-Safety Level (BSL) 3 practices when performing activities with high potential for aerosols. * Regulated by 42 Code of Federal Regulations (CFR) | * Contact with corpses should be limited to personnel wearing PPE * Package in leak-proof containers * Avoid embalming * Bury without reopening | Recommended |
| **2** | Botulinum Toxin | * Standard precautions * Additional respiratory PPE when performing activities that generate aerosols | * Wear additional respiratory PPE * Bio-Safety Level (BSL) 3 practices when performing activities with high potential for aerosols. * Regulated by 42 Code of Federal Regulations (CFR) | * Recommended no embalming | No Restrictions |
| **3** | Plague | * Standard precautions * Additional respiratory PPE when performing activities that generate aerosols | * Wear additional respiratory PPE * Bio-Safety Level (BSL) 3 practices when performing activities with high potential for droplet or aerosols or working with antibiotic resistant strains. * Regulated by 42 Code of Federal Regulations (CFR) | * Contact with corses should be limited to personnel wearing PPE * Recommended no embalming | No Restrictions |
| **4** | Tularemia | * Standard precautions * Additional respiratory PPE when performing activities that generate aerosols | * Wear additional respiratory PPE * Bio-Safety Level (BSL) 3 practices when performing activities with high potential for aerosols. * Regulated by 42 Code of Federal Regulations (CFR) | * Contact with corpses should be limited to personnel wearing PPE * Recommend no embalming | No Restrictions |
| **5** | Viral Hemorrhagic Fever | * Standard precautions * Additional respiratory PPE | * Wear additional respiratory PPE * BSL 4 * Negative pressure rooms * Autopsies should be performed only if absolutely indicated * Regulated by 42 CFR | * Minimize handling by all personnel, even in PPE * Package in leak-proof containers * Avoid embalming * Bury without reopening | Recommended |
| **6** | Smallpox | * Standard precautions * Additional respiratory PPE * Personnel should be under a fever watch or vaccinated | * Wear additional respiratory PPE * BSL 3 * Autopsies should be performed only if absolutely indicated * Regulated by 42 CFR * Personnel should be vaccinated | * Minimize handling by all personnel, even in PPE * Package in leak-proof containers * Avoid embalming   Bury without reopening | Recommended |
| **7** | All other diseases/Novel Diseases | When other diseases (to include novel) occur, general handling, autopsy, burial, and cremation protocols will be developed as part of the incident action planning process. Subject matter experts that will participate in the planning include: coroner, health commissioner, public health preparedness coordinator, epidemiologist emergency management, law enforcement, fire departments, and hospital/healthcare providers. In addition, guidance from the Ohio Department of Health and Centers for Disease Control will be used to develop fatality management aspects of the incident action plan. | | | |
| Items 1-6: Chart information compiled from the following sources:   * US Army, Mass Fatality Management for Incidents involving Weapons of Mass Destruction, <https://www.ecbc.army.mil/hld/dl/MFM_Capstone_August_2005.pdf> * Centers for Infectious Disease Research & Policy (CIDRAP). 26 Nov 2002. “Bioterrorism Preparedness, Planning & Response.” Bioterrorism/Planning. 1-18. * Federal Initiatives: Local and State Planning; Hospital Preparedness; Protection of Building Environments, Etc. 18 June 2003 <http://www.cidrap.umn.edu/> * “Medical Examiners, Coroners, and Biologic Terrorism: A Guidebook for Surveillance and Case Management.” MMWR 2004 Jun 11: 53(RR08):1-36/   Item 7 was locally developed to provide guidance on other diseases. | | | | | |

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| **CBRN Mass Fatality Protocol – Radiological/Nuclear Contamination Guidance** | | | | | |
|  | **Nuc/Rad Agent** | **General Handling** | **Autopsy** | **Burial**√ | **Cremation**√ |
| **1** | Alpha  &  Beta | * †PPE:   (level C PPE is preferred)   * + Respiratory: NIOSH approved full-face piece air purifying respirator with a P-100 or High Efficiency Particulate Air (HEPA) filter, PAPR, or SCBA   + Dermal:     - Coveralls with hood     - Gloves – inner pair     - Gloves – outer pair     - Boot covers     - Personal radiation dosimeter on each worker although one for the work area or team may be sufficient based on the type of radiation. * Decontamination   + Mortuary Workers:   decontaminate following fire department standard decon procedures.   * + Decedent: Decontaminate remains thoroughly to remove external contamination. | * †PPE:   (level C PPE is preferred)   * + Respiratory: NIOSH approved full-face piece air purifying respirator with a P-100 or High Efficiency Particulate Air (HEPA) filter, PAPR, or SCBA   + Dermal:     - Coveralls with hood     - Gloves – inner pair     - Gloves – outer pair     - Boot covers     - Personal radiation dosimeter on each worker although one for the work area may be sufficient based on the type of radiation. | Select a burial container that will delay the release to the environment as long as practicable. Wooden caskets are not sealed. Metal caskets have a seal that will release pressure from inside the casket, but will retard the entry of ground water. Place the body in a metal casket, not a wooden one, and place the casket in a concrete vault lined with plastic. Use the type that has a lid with a butyl compound gasket with a tongue in groove seal. In the cemetery, place the lid on the vault above ground where it can be inspected for a tight fit before lowering into the grave. | * Do not cremate a decedent whose body contains man-made radioactive material. When a decedent is cremated all volatile materials escape up the refractory. After completion of cremation the crematory staff will manually pulverize the ashes before returning the remains to family members. Non-volatile radioactive material poses an airborne respiratory hazard to the crematory staff plus a risk of contaminating the crematorium. Shrapnel or brachytherapy seeds will not be destroyed in the process of cremation. If cremation is desired and the source is shrapnel, brachytherapy seeds, or some other discrete source, surgically remove it. * If the dose rate on the exterior of the vault exceeds 100 counts per minute above background or exceeds 2 x background, burial in the ground and not in an above ground mausoleum is recommended. Sometimes buried bodies must be exhumed because of natural disasters or urban expansion. A discreet radiation warning label on the exterior of the vault indicating dose rate from the body and date and time of the measurement would be prudent. |
| **3** | Gamma | * PPE: PPE cannot protect against exposure from high energy, highly penetrating forms of ionizing radiation such as gamma and neutron. * Time: limit time in area with contaminated remains * Distance: maximize distance to contaminated remains * Shielding: establish shielding between worker and decedent | * PPE does not provide protection from high energy emitting radioactive sources. A safety assessment must be completed by the ICS Safety Officer with subject matter experts to determine the safest course of action. |
| **4** | Other |  | | | |
| Chart information compiled from the following sources:   * √Guidelines for Handling Decedents Contaminated with Radioactive Materials https://emergency.cdc.gov/radiation/pdf/radiation-decedent-guidelines.pdfFederal Initiatives: Local and State Planning; Hospital Preparedness; Protection of Building Environments, Etc. 18 June 2003 <http://www.cidrap.umn.edu/> * †PPE for radiation information from *Personal Protective Equipment (PPE) in a Radiation Emergency*, https://www.remm.nlm.gov/radiation\_ppe.htm#emergencies | | | | | |