



SWP-001

**BLOODBORNE PATHOGEN
RESPONSE AND EXPOSURE
CONTROL PLAN**

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BLOODBORNE PATHOGEN RESPONSE & EXPOSURE GUIDELINES

1. Purpose

This guideline is to provide work practices and control techniques for personnel to follow when responding or handling items, materials, or when there is potential exposure to pathological waste, blood, or other potentially infectious materials (OPIM). It is intended to comply with state and federal OSHA standards (29 CFR 1910.1030) for occupational exposure to bloodborne pathogens.

2. Scope

These guidelines apply to all activities where contact and potential contact with pathological waste, blood, or other potentially infectious materials (OPIM) could be present. This can include landfill operations, wastewater operations, and emergency response to include first aid and medical assistance when human body fluids are present. The Bloodborne Pathogens Standard is applicable to "...all occupational exposure to blood or other potentially infectious materials [OPIM] as defined by paragraph (b) ..." of the standard [29 CFR 1910.1030(a)]. As such, coverage of the standard is not triggered solely by the actual presence of pathogens, but by the presence or reasonably anticipated presence of blood or OPIM. Generally, raw sewage and wastewater do not contain blood.

Urine, feces, and other reasonably anticipated biological components comprising human wastes in sewage are not included in the definition of "other potentially infectious materials" unless "...visibly contaminated with blood..." [29 CFR 1910.1030(b)]. Therefore, OSHA, while recognizing that contact with wastewater and raw sewage poses a number of health hazards, does not generally consider that contact with diluted raw sewage not originating directly from a health care facility or other source of bulk blood or OPIM is covered by the Bloodborne Pathogens Standard. A copy of this plan will be made available to employees or their representatives in accordance with 29 CFR 1910.1020(e).

2.1. Exemptions

These guidelines are not intended to be used to manage "Special Waste From Health Care-Related Facilities" (SWFHCRF).

3. Definitions

Antiseptics: Destroy microorganisms on living tissue.

Alcohol Based Hand Rub (ABHR): An alcohol based hand rub

Applicator (Liquid):

Blood: Human blood, human blood components are products made from human blood.

Bloodborne Pathogens: Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV).

Body Fluids: Blood and other body fluids containing visible blood; semen and vaginal secretions; tissues and the following fluids: cerebrospinal (CSF), synovial, pleural, peritoneal, pericardial, and amniotic; Any unfixed tissue or organ (other than intact skin) from a human (living or dead); HIV-containing cell or tissue cultures, organ cultures, and Human immunodeficiency virus (HIV) or Hepatitis B virus (HBV) - containing culture medium or other solutions; and blood, organs, or other tissue from experimental animals infected with HIV or HBV.

***NOTE:** the following are not considered "Body Fluids": feces, nasal secretions, sputum, sweat, tears, urine, and vomit unless they contain visible blood.*

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

Contaminated Laundry: Laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

The Contamination Reduction Zone (CRZ): Transition area between the contaminated area and the clean area. This zone is designed to reduce the probability that the Support Zone will become contaminated or affected by site hazards. The distance between the Exclusion and Support Zones provided by the CRZ, together with decontamination workers and equipment, limits the physical transfer of hazardous substances into clean areas. This is the area that equipment and personnel decontamination takes place.

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 or item is rendered safe for handling, use or disposal.

Disinfectants: Disinfection is generally a less lethal process than sterilization. It eliminates nearly all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial spores) on inanimate objects. Disinfection does not ensure an "overkill" and therefore lacks the margin of safety achieved by sterilization procedures.

Exclusion Zone: This is the area when all the contamination is located and isolated. Only qualified and authorized employees with proper PPE are allowed within this area. Any potentially contaminated clothing, equipment and samples must remain in the CRZ until decontaminated.

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

Fog/Fogger: A fog is an atomized dispersion of a liquid. The droplets size of a fog range from 5 – 30 microns. A fogger is an apparatus for dispersing a fog.

Hand washing Facilities: A facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.

HBV: Hepatitis B virus.

HCV: Hepatitis C virus.

HIV: Human immunodeficiency virus.

Licensed Health Care Professional (LHCP): An individual whose legally permitted scope of practice allows him or her to independently perform the activities of Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

Mist/Mister: A mist is a fine, gentle, dispersed spray of liquid. The droplets size of a mist on average is 50 microns. A mister is an apparatus for dispersing a mist.

Occupational Exposure: 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 (OPIM): (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any bodily fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); (3) HIV-containing cell or tissue cultures, organ cultures and HIV or HBV-containing culture medium or other solutions; and, blood, organs or other tissues from experimental animals infected with HIV or HBV.

Parenteral: Piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts and abrasions.

Regulated Waste: A liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Sanitizing: Reduces the number of microbes to a safe level.

Sterilization: Any item, device, or solution is considered to be sterile when it is completely free of all living microorganisms and viruses. The definition is categorical and absolute (i.e., an item is either sterile or it is not). A sterilization *procedure* is one that kills all microorganisms, including high numbers of bacterial endospores.

Sharps: Any discarded health care article that may cause punctures or cuts, including but not limited to needles, scalpel blades, and broken glass that may be contaminated with blood.

Site Safety Officer (SSO): Designated SSO will be responsible for evaluating the potential for exposure incidents. In cooperation with the project supervisor, SSO's will select engineering controls and personal protective equipment. Any site-specific training on bloodborne pathogens will be conducted by the SSO.

Special Waste: A solid waste which if improperly treated or handled may serve to transmit an infectious disease(s) and which is comprised of the following:

- Animal waste;
- Bulk blood, bulk human blood products, and bulk human body fluids;
- Microbiological waste;
- Pathological waste; and
- Sharps.

Sterilization: Kills all microbes.

Support: The Support Zone is the location of the administrative and other support functions needed to keep the operations running smoothly. Any function that need not or cannot be performed in a hazardous or potentially hazardous area is performed here. The supervisor should be present in the Support Zone. Other personnel present will depend on the functions being performed. Personnel may wear normal work clothes within this zone.

Universal Precautions: That all patients, blood and OPIM is considered infectious for HIV and other bloodborne pathogens. Appropriate PPE and work practices will be implemented.

Work Practice Controls: Controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

4. Responsibilities

4.1. Health/Safety

SET Health & Safety personnel are responsible for assuring the development, distribution, and initial implementation with the Bloodborne Pathogen guidelines in this document. They shall:

- Develop and distribute programs and guidelines.
- Provide technical support, guidance and interpretation of guidelines.
- Audit and evaluate operations and compliance with guidelines.
- Assist local management in conducting site-specific training

4.2. Manager/Service Operations/Project Managers

SET managers are responsible for assuring compliance with the Bloodborne Pathogen guidelines in this document. They shall:

- Inform foremen and supervisors of their responsibilities under these guidelines.
- Ensure availability of resources.
- Enforce compliance with these guidelines.
- Ensure employees are properly trained.
- Identify processes that present a potential exposure
- Audit and evaluate operations and compliance with guidelines.

4.3. Supervisors/Foremen

SET supervisors and foremen are responsible for assuring compliance with the Bloodborne Pathogen guidelines in this document. They shall:

- Read and understand information contained in these guidelines.
- Instruct employees in guidelines.
- Conduct pre-work safety meetings.
- Conduct site evaluations to identify potential BBP exposure issues
- Enforce crew compliance.
- Initiate incident report or exposure reports

4.4. Employees (includes Environmental Technicians, Drivers, Operators, etc.)

All SET personnel are responsible for assuring compliance with the Bloodborne Pathogen guidelines in this document. They shall:

- Read and understand information contained in these guidelines.
- Comply with all section of these guidelines
- Report any issues with the implementation of these guidelines
- Report any potential exposure or needle stick that occurs

5. Training

5.1. Training and Competency

All SET Environmental, Inc. employees responsible for performing the tasks in this SOP will have received:

Notice: Printed hardcopies are for reference only. Any copy made from the electronic version shall be considered an uncontrolled copy. Individuals with uncontrolled copies are responsible for ensuring the use of the current version. Revision levels are controlled electronically.

- Initial 40hr HAZWOPER training and have current annual 8hr refresher (if applicable).
- Bloodborne Pathogen initial and annual refresher training (if applicable)
- Respiratory Protection Training
- PPE Training (Proper Selection, Use, Care and Inspection)
- Hazard Communication Training

Competency will be evaluated by a qualified SET Employee before being permitted to work without a qualified SET Employee. Competency will be reevaluated on a periodic basis to ensure that safety and quality standards are being met. Retraining and competency evaluation will be conducted after any incident that demonstrates noncompliance with this procedure.

All of the above training and competency evaluations must be documented.

5.2. Medical

Medical requirements for employees performing tasks in this SOP include:

- Participating in a medical surveillance program
- Medically cleared for respiratory use
- Annually fit tested
- Hepatitis B Vaccinations (made available to employee)
- Tetanus

6. Applicability

6.1. Hazards

6.1.1. The hazards associated with blood and body fluids involve contact with microorganisms contained in the fluids. Microorganisms that may be contained in pathological waste include, but are not limited to, the following: Hepatitis Virus; AIDS Virus; Tetanus; etc.

6.1.2. The following are tasks conducted by SET personnel that may result in exposure to bloodborne pathogens without regard to use of personal protective equipment:

- First aid and CPR may be performed on SET jobsites. This task is performed voluntarily and on a "Good Samaritan" basis only.
- Personnel may be exposed to bloodborne pathogens while excavating or handling waste materials from former landfills or other hazardous waste sites. Such items may include syringes, razor blades, needles, and other hospital waste. Also included at landfills may be animal carcasses.
- Exposure may be present while performing work associated with wastewater and sewage. This may include work in sewers, at wastewater treatment plants, on septic lines and tile fields.
- Exposure to bloodborne pathogens may also be present while handling debris associated with high public access locations such as beaches and riverbanks.

6.2. Route of Entry

6.2.1. The primary route of entry of the microorganisms into the body is direct injection into the bloodstream. This may occur if sharps (sharp objects) puncture the skin or if contaminated waste

cuts the skin and contacts the blood. A secondary route of entry is contact of bodily fluids or OPIM with open wounds, or mucous membranes (eyes, nose, mouth, etc.) such as in First Aid situations.

6.2.2. Because there are no direct reading monitoring instruments available to detect or determine if a waste contaminated with body fluids contains microorganisms, it is best to avoid any skin contact with a pathological waste. Likewise, there is limited data available on the amount of blood and the duration of contact time needed to result in infection.

6.2.3. In addition to blood or other bodily fluids, any employee observing the presence of hospital or laboratory materials contaminated with body fluids, such as: syringes; needles; instruments (scalpels, clips, and prescription containers); red blood-bags, bags used during the collection of blood; gauze pads; tubing; hospital glassware; human tissue samples; etc. Or the following symbols on containers while performing their work, must immediately notify a supervisor or a health & safety representative, unless specific precautions have already been established for the job.

Obviously, any observation of body fluids indicates blood may be present.



Any of these items must be treated as if known to be contaminated with HIV, HBV, and other bloodborne pathogens.

6.3. Exposure Determination

6.3.1. OSHA requires employers to perform a determination of those employees who may incur an occupational exposure to blood or other potentially infectious materials. This exposure determination is made without regard to the use of personal protective equipment.

6.3.2. Job classification which some employees may have occupational exposure

- A. While all employees in this classification are not expected to incur an exposure to blood or OPIM, the specific tasks and procedures where an exposure may occur are listed below.

Job Classification	Task/Procedures
Project Manager; Foreman/Supervisor; Field Technician Drivers	Emergency response to bloodborne operations/events Gathering potentially contaminated material Disinfecting equipment, structures or components Packaging potentially contaminated materials Handling of Regulated waste Handling of containers having potentially contaminated materials Transporting containers having potentially contaminated materials Decontamination of personnel Incidental exposure during response activities Routine work of medical facilities such as tank & sump cleaning Routine work associated with water & wastewater treatment, septic & sewers
Field Chemist	Disposal of Regulated waste Packaging of blood or OPIM Handling regulated waste containers Transporting containers having potentially contaminated materials
Facility Shipping and/or Receiving TSD Facility Personnel	Handling regulated waste containers

7. Exposure Control Procedures

7.1. Universal Precautions

7.1.1. All blood or other potentially infectious material will be considered infectious regardless of the source. Employees are to avoid contact with blood, bodily fluids, or OPIM. Hand washing with soap and water or antiseptic hand cleaners.

7.2. Engineering Controls

7.2.1. Remote Handling Equipment - This includes shovels, rakes, long handle scrub brushes, skid-load, etc.

7.2.2. Lock-out/Tag-out - Immediately lockout all contaminated equipment, any equipment that requires handling or disinfecting, or any equipment which has moving parts which may startle or injure a person in the vicinity. Equipment should be evaluated for control of electrical, hydraulic, pressure, thermal, pneumatic, mechanical or physical energy.

7.3. Work Practices

7.3.1. Waste Containment - Waste contaminated with blood will be placed in a container designed to prevent contact with the contaminated material, puncture through the container, or leakage. **NOTE:** Also check specific requirements of disposal or receiving facility to whom waste is to be sent

- A. Bio-Hazard ("Red") Bags (Labeled with the Bio-Hazard Marking);
- B. Bio-Hazard Boxes (Labeled with the Bio-Hazard Marking);

7.3.2. Work Area Restrictions - To control the migration or accidental spread of contaminated material from the contaminated areas to clean areas, SET will utilize the site work zone method.

- i. Prior to commencing a bloodborne response operation, the on-site supervisor will establish and delineate the following work locations:
 - I. Exclusion Zone
 - II. Isolation Reduction Zone
 - III. Support Zone

7.3.3. Physical Contact Avoidance - To minimize the potential that an exposure to blood or OPIM will occur, employees engaged in blood borne pathogen waste operations are prohibited from manually handling equipment, materials, spills, etc.

7.3.4. Hand Washing

- A. Although exposure prevention measures are designed to avoid the likelihood of contact with blood or OPIM, hand washing is required by OSHA regulation 29 CFR 1910.1030. Employees will be instructed to wash their hands and any other areas with non-abrasive soap and running water or as indicated below:
 - I. Immediately, or as soon as feasible, after decontamination and doffing of PPE;
 - II. Immediately, or as soon as feasible, following bodily contact with blood or OPIM;
 - III. Immediately, or as soon as feasible, flush mucous membranes with water, should mucous membranes contact occur.
 - IV. Hand washing must be conducted even if gloves appear uncontaminated.
- B. Unavailability of Washing Facilities
 - I. When provisions of hand washing facilities are not feasible, i.e., no running water is available in the immediate vicinity of the operation (see below for explanation of immediate vicinity), then an antiseptic hand cleaner in conjunction with clean cloths/paper towels or antiseptic towelettes may be used.
 - a. Immediate vicinity is considered the same room.
 - b. If this Technique is used, hand washing using running water must be performed as soon as feasible, i.e. before leaving the site and prior to smoking, eating, drinking, etc.

7.3.5. Personal Hygiene

- i. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

7.4. Personal Protective Equipment

7.4.1. Introduction

The PPE collection (as described in Section 6.4.2) was selected based on anticipated exposure to blood or OPIM. The selection of PPE will be considered appropriate only if it does not allow blood or

OPIM to permeate through or contact the employees' clothing, skin, eyes, mouth or other mucous membranes under normal working conditions.

7.4.2. PPE Selection

As described in Section 3.3.3, direct physical contact with the waste is to be avoided. And while remote handling of waste is best work place practice, an additional measurement of protection shall be utilized by all Field Service Crew Personnel removing waste contaminated or potentially contaminated with bloodborne pathogens or OPIM.

A. PPE Components

- i. Inner glove; nitrile (6 – 12 mil)
- ii. Outer glove; PVC; Nitrile; (12 mil or greater)
 - a. If the potential for contacting sharps is inherent then a liquid rated glove with a Level 3 in the EN 388 Mechanical Risk Ratings for abrasion, cut, tear, and puncture resistance rating or a Level 3 in the ANSI/ISEA 105-2000 for abrasion, cut, and puncture resistance rating should be selected.
- iii. Dupont Tyvek QC, Kappler CPF1 or equivalent CPC
- iv. Steel-toe/Steel-shank work boots
- v. Disposable shoe coverings (Rubber over-boots)
- vi. Full Face APR with a HEPA or OV/AG/HEPA cartridge or Full Face face-shield
- vii. Taping of wrist and ankles
- viii. Outer PVC rain gear (as appropriate)
- ix. Other equipment appropriate for the site and associated hazards

7.4.3. Donning of PPE

All operations where blood or OPIM is suspected or know to be present require the use of PPE described in this section. Variations of PPE should be based on site hazards and work activities. Modifications to these PPE guidelines must be pre-approved by health & safety prior to commencing work.

7.4.4. Use of PPE

Should any employee sustain a breach in their PPE, whether confirmed or suspected, during the performance of their work, they shall stop work immediately, proceed to the nearest decontamination station and thoroughly decontaminate their CPC. The breached PPE shall be replaced before re-entering the Exclusion Zone.

7.4.5. Doffing of PPE

Prior to doffing PPE, a thorough decontamination shall be performed. Disposable PPE such as gloves, coveralls, respirator cartridges shall not be reused, but disposed of with all other debris generated on-site. It should be disposed of in approved waste receptacles. All other equipment brought on site that was or could have become contaminated and will be reused, i.e., respirators, face shields, rain suits etc. shall be decontaminated and inspected to verify effectiveness of the decontamination solution and process. Any item that is unable to be thoroughly decontaminated should be discarded with all other site debris.

8. Response Procedures

8.1. Site Specific Plan

- 8.1.1. Complete a Site Specific Health & Safety Plan for the operations. Site specific information such as type of response, hazards, materials involved in the response, response equipment, establishment of Work Zone (Isolation, Contamination Reduction, Support), PPE, work practices, engineering controls, decontamination procedures, work tasks, etc. shall be identified. Each task must be separately identified under the Site Specific Plan.

8.2. Waste Collect Procedures

- 8.2.1. Establish Work Zones; (Isolation, CRZ, and Support)
- 8.2.2. Select decontamination method and establish decontamination stations
 - A. Selection of approved bio-hazard bags, drums, or boxes
 - B. Placement of containers within CRZ

Note:

1. The selection of a decontamination method and the establishment of decontamination stations must be completed prior to entering and performing any work within the "Isolation Zones".
 2. Sharps must be packaged in puncture resistive packaging.
- 8.2.3. Don Personal Protective Equipment (PPE)
 - 8.2.4. Gather waste identified for clean-up and place into approved bio-hazard containers.

Note:

 1. The handling of the waste shall be performed remotely. No waste shall be manually handled, moved, gathered, or packaged.
 2. If possible spread waste with the use of long handled instruments such as rakes, shovels, or power equipment to allow for a visual inspection of the waste.
 - 8.2.5. With the assistance of a shovel or rake, gather a single load, and place into container. To avoid generating any biological aerosols, dust, spillage, or overflow, place container alongside waste and place waste into container. To reduce the potential of a container failure or an overloaded container limit the amount placed within the container. Avoid creating a long drop distance by only lifting waste high enough to clear container.
 - 8.2.6. Continue process until all identified waste has been gathered and placed into containers.
 - 8.2.7. After all identified waste has been properly packaged; wash entire area with decontamination solution.

8.3. Decontamination Procedures

- 8.3.1. Process of Selecting Decontamination Technologies

There is no one perfect decontamination technology. Decontamination strategies are site and scenario specific decision that takes into consideration availability, effectiveness, re-use requirements, material compatibility, and waste disposal implications. Decontamination agents would be selected by the safety of the agent, the effectiveness of the agent with regards to the

contamination, contact time requirements and treatment time constraints, and the possible subsequent damage to decontaminated materials. Different incident scenarios will result in different types of decontamination agents and technologies needed possibly requiring multiple agents and methodologies being utilized on site.

8.3.2. Decontamination Agents

SET crews could use a variety of disinfectants to either inhibit microbial activities and growth or kill the microorganism. The following list of chemical agents could be used, along with specific trade name chemicals listed on the USEPA web site:

- A. Quaternary Ammonium compounds commonly referred to as "QUATs"
- B. Sodium Hypochlorite and water, commonly referred to as "Bleach". Clorox and other household bleach that contains 5-8 % sodium Hypochlorite. SET would follow the CDC guidelines and dilute the household bleach at a 10:1 solution (ten parts water to one part Clorox).
- C. Isopropyl alcohol found in Lysol Spray and other commercially available products.
- D. Glutaraldehyde solutions

8.3.3. Refer to Appendix # 3 for additional information

8.3.4. Area Decontamination Steps

- A. After all identified waste has been properly packaged; wash entire area with decontamination solution.
- B. Due to the wide extent of possible responses to bloodborne pathogen operations, the Supervisor must determine and implement an appropriate decontamination method that is the most effective based on circumstances.
 - i. Considerations should include:
 - a. Location
 - b. Available resources such as running water and lighting
 - c. Surface materials; wood, metals, cloth, rubber, concrete
 - d. Size of contaminated area
 - e. Degree of contamination
 - f. Highly sensitive or inaccessible equipment
- C. Apply decontamination solution to all effective surfaces; allow standing time based on sect. 6.3.1. In general, all surfaces should be sprayed with a low pressure sprayer such as a Hudson hand pump or refillable spray bottles. The surfaces should be scrubbed with hand towels, scrub brushes, towelettes, scrub pads, etc. Application of additional decontamination solution should be performed periodically throughout the process to assure that the disinfecting agent of the solution thoroughly soaks and contacts all the surfaces and materials.
- D. Wipe all surfaces down with clean towels to remove decontamination solution and any potential contaminates.

- E. Apply a rinse solution of mild soap or water to thoroughly rinse and remove any residual material.
- F. All equipment used in the decontamination process such as shovels, rakes, scrub brushes, sprayers will be also be decontaminated before being placed in the CRZ.

8.3.5. Personnel Decontamination Steps

- A. Due to the potential hazards associated with bloodborne biologically contaminated waste the following steps shall be performed to decontaminate all equipment, personal protective equipment, and personnel upon leaving the Isolation Zone.

Note: Individuals performing decontamination at this stage shall be dressed in the same level of protection.

Prior to removing, manipulating or handling contaminated material, thoroughly soak with a disinfecting solution using the following procedures:

- i. Place all tools and equipment used in the decontamination process into a receptacle which contains a decontamination solution.
- ii. Step into a tub or portable disposable pool that contains a decontamination solution
- iii. Spray surfaces evenly and thoroughly with solution; minimize splashing, bounce-back, dripping outside containment, etc.
- iv. Perform a complete wash down using long handles scrub brushes.
- v. Step into second tub to perform a complete rinse
- vi. Step into next stage to remove all outer garments and dispose in appropriate waste containers.
 - 1. Respirators and/or face-shields and inner gloves are to remain on.
- vii. Step into next stage to remove respirator and place into container for further washing. Remove inner gloves at this time and place into appropriate waste container.
- viii. Step out of CRZ and proceed to an area that is established to allow the employees to wash their hands. This step must be performed on-site using either a sink with soap and water or if running water is not available then an acceptable hand-wipe towelette will be provided. **Hand washing must be conducted even if gloves appear to be intact and uncontaminated.**

8.3.6. Laundry

- A. Contaminated Clothing Handling

All contaminated clothing shall be removed immediately. Instructions are provided below for disposable and non-disposable clothing.

 - i. Disposable Clothing

Contaminated disposable clothing, including chemical protective coveralls, leather/cloth boots, and gloves, should be decontaminated with a disinfecting bleach solution prior to removal. Dispose of these materials according to appropriate disposal procedures.
 - ii. Non-Disposable Clothing

Personal clothing or company uniforms, which have become contaminated, may be laundered or disposed. Boots may be brush-scrubbed with soap and hot water to remove contamination. **Clothing which will be laundered should be placed in a bag and soaked with disinfecting bleach solution.** All employees who handle contaminated laundry must utilize proper PPE and handling techniques listed above to prevent contact with blood or OPIM. If laundry is sent off site for cleaning, the contaminated laundry must be placed in bags or containers which are labeled or color-coded in accordance with labeling requirements

9. Vaccinations

Both hepatitis A & B vaccinations will be offered when personnel are determined to be at risk for routine occupational exposure. These vaccinations will be offered at no cost to the employee. The need for vaccinations will be determined by SET's occupational medical physician and information provided in job descriptions. Employees cannot be compelled to submit to the vaccination and, therefore, may decline. Should an employee refuse the offered vaccination; he/she will sign a vaccine waiver. (Appendix 2) This form shall be kept in the employee's personal medical file.

All employees who have been identified as having exposure to or the potential for exposure to blood or other potentially infectious materials will be offered the Hepatitis B vaccine, at no cost to the employee. All unvaccinated personnel who have rendered first aid assistance in any situation involving the presence of blood or OPIM, regardless of whether or not a specific "exposure incident" has occurred, will be offered the full immunization series. If such vaccination is desired, the first shot of the series shall be initiated within 24 hours. Once an employee begins the injections, he/she must complete the series and this must be done within the six-month period.

10. Post Exposure and Follow-up

10.1. Exposure Notification

- 10.1.1. Any SET employee who believes they have come in contact with body fluids or bloodborne pathogens on the job performing a BBP response or by providing first aid assistance must immediately notify their supervisor or SSO. It is the responsibility of the supervisor to initiate an investigation to include the source of exposure, method of contact, and medical follow-up. The extent of the follow-up will be based on the event and the licensed physician, health care professional or medical consultant's recommendations.
- A. An exposure incident must be reported immediately to the on-site supervisor.
 - B. The exposed individual shall be removed from the area
 - C. Perform decontamination procedures
 - D. Initiate first aid procedures if the circumstances warrant medical intervention
 - E. Contact HR or H&S for assistance
- 10.1.2. The site supervisor shall initiate an accident investigation. The following items should be documented
- A. Route of exposure
 - B. Description of event
 - C. Identify and documentation of the source of the blood or OPIM, if possible, unless prohibited by law.
 - D. The source individual's blood will be tested as soon as feasible and after consent is obtained to determine HBV and HIV status. If consent is not obtained, SET Environmental will establish that legal consent cannot be established. If law does not require legal consent, the source individual's blood, if available, will be tested and results documented.
 - E. Results of the testing will be made available to the exposed individual with information regarding disclosure of information.

10.2. Post Exposure Medical Follow-up

- 10.2.1. The following individuals must be offered a medical follow-up

- A. Unvaccinated first aid providers regardless of whether or not the first aid provider had contact with blood or OPIM and regardless of whether PPE was worn
 - B. Vaccinated or unvaccinated individuals who have actual contact with blood or OPIM to eyes, mouth, mucous membranes, broken skin or sustained a puncture
 - C. Vaccinated individuals that have contacted blood or OPIM
- 10.2.2. Time schedule for medical follow-up
- A. Unvaccinated: Within 24 hours
 - B. Vaccinated: As soon as possible (the next business day)
- 10.2.3. The exposed employee will be offered the option of having his/her blood collected for testing HIV/HBV serological status. This decision does not have to be made immediately.
- 10.2.4. The employee will be offered the Hepatitis B vaccination series and/or post-exposure when medically indicated in accordance with the current recommendations of the U.S. Public Health Service. A tetanus booster may also be offered.
- 10.2.5. The employee will be given appropriate counseling as necessary.
- 10.2.6. Post-exposure treatment will be provided when medically indicated by the US Public Health Service and SET's occupational medical physician.

11. Packaging and Disposal

Contaminated medical waste shall be managed as bio-hazardous medical waste. Place all disposable PPE in plastic drum with wipes. Mark or label the container;

“Contaminated Medical Waste”

Wrap large treated items in plastic if they will not fit in containers.

Dispose of treated sharps as follows.

Broken glassware and pipettes may be placed in puncture-resistant packaging and discarded in a Type I or Type IAE municipal solid waste landfill.

Whole hypodermic needles, syringes with attached needles, scalpel blades, and/or razors shall be placed in containers designed for sharps that is marked or labeled as containing medical waste. Sharps placed in containers designed for sharps may be encapsulated by addition of an agent to the container that will solidify and encase the contents of the container with a solid matrix. The agent must completely fill the container. The container and solidified contents must withstand an applied pressure of 40 pounds per square inch without disintegration. The container shall be identified as containing sharps that have been encapsulated in accordance with 30 TAC 330.1219 and may be discarded in a Type I or Type IAE municipal solid waste landfill.

12. Shipping Papers

Describe bio-hazardous medical waste as “Contaminated Medical Waste” (25 TAC 1.136) containing: _____ (e.g., rags, PPE, etc.)

Describe the drained bleach solution as: Non-regulated 1% sodium hypochlorite solution or Non-regulated diluted bleach solution and ship to SET Environmental at 5743 Cheswood Street, Houston, TX 77087.

Treated medical waste that contains whole, nonencapsulated hypodermic needles or syringes or intact red bags that are sent to a landfill for disposal shall be accompanied by a shipping document that includes a statement that the shipment contains whole, nonencapsulated hypodermic needles or syringes or intact red bags, as applicable, and that the medical waste was treated in accordance with 25 TAC §1.136

13. Training

13.1. Initial Training

Initial training for all employees will be conducted prior to initial assignment to tasks where occupational exposure may occur and at least annually thereafter.

Training will include the following:

- A. The OSHA standard for Bloodborne Pathogens; 29 CFR 1910.1030;
- B. An accessible copy of the regulatory text shall be made available;
- C. A general explanation of the epidemiology and symptoms of bloodborne diseases;
- D. An explanation of the modes of transmission of bloodborne pathogens;
- E. An explanation of the "Exposure Control Plan" -- i.e., points of the plan, lines of responsibility, how the plan will be implemented, etc.; and an accessible copy of the plan.
- F. Procedures, which might cause exposure to blood or other potentially infectious materials;
- G. Control methods, which will be used to control exposure to blood or other potentially infectious materials;
- H. Personal protective equipment selection;
- I. An explanation of the signs and labels and/or color coding requirements;
- J. Hepatitis B vaccine program;
- K. Post-exposure procedures, medical evaluation, and follow-up;

13.2. Annual Training

- 13.2.1. Annual training for all employees shall be provided within one year of the previous training.

14. Recordkeeping

14.1. Medical Records

- 14.1.1. Medical records will be established and maintained in accordance with 29 CFR 1910.1020.

- 14.1.2. The records shall include

- A. The name and social security number of the employee;
- B. A copy of the employee's hepatitis B vaccination status including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by the standard;
- C. A copy of all results of examinations, medical testing, and follow-up procedures;
- D. The employer's copy of the healthcare professional's written opinion;
- E. A copy of the information provided to the healthcare professional

- 14.1.3. Record Maintenance

- i. Medical records, specified in this section, must be kept through the employee's date of termination from the company plus an additional 30 years in accordance with 29 CFR 1910.1020.

- 14.1.4. Confidentiality

- A. The employer shall ensure that employee medical records are:
- B. Kept confidential; and

- C. Not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by this section or as may be required by law.

14.2. Training Records

14.2.1. Training records shall include the following information:

- A. The dates of the training sessions;
 B. The contents or a summary of the training sessions;
 C. The names and qualifications of persons conducting the training; and
 D. The names and job titles of all persons attending the training sessions.
 E. Training records shall be maintained for 3 years from the date on which the training occurred.

15. Document Record of Change

Written by:	Paul Bloom		
Reviewed by:	Steve Pavlovich		
Approved by:	Steve Pavlovich	Approval Date:	9/13/13

Rev. No.	Revision Date	Reviewed by / Description of Change
01	9-13-2013	Replaced SET Bloodborne Pathogens Exposure Control Plan (last revised 6/29/10)
02	11-05-2014	Revised to include procedures for Ebola decontamination. (Paul Bloom)
03	02-12-2016	Reviewed plan, revised document number. Minor format changes. (Steve Pavlovich)
04	3-16-2020	Added Coronavirus Response Plan; Appendix 8 & 9 (Paul Bloom)
05	3-20-20	Revised definitions. Revised Coronavirus Response Plan (Paul Bloom)

APPENDIX 1: HEPATATITIS A & B VACCINE WAIVER

Hepatitis B

I understand that, due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline Hepatitis B vaccination at this time. I understand by declining this vaccine I continue to be at risk of acquiring hepatitis B. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I elect to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

SET Environmental Employee Signature

Date

Witness

Date

Hepatitis A

I understand that, due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis A virus (HAV) infection. I have been given the opportunity to be vaccinated with Hepatitis A vaccine, at no charge to myself. However, I decline Hepatitis A vaccination at this time. I understand by declining this vaccine I continue to be at risk of acquiring hepatitis A. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I elect to be vaccinated with Hepatitis A vaccine, I can receive the vaccination series at no charge to me.

SET Environmental Employee Signature

Date

Witness

Date

APPENDIX 2: Notice of Nonviable or Incomplete Disinfection

As a result of the inability of disinfecting the following equipment, materials, locations, etc., due to sensitive equipment, limited access, location, material, inability or limitation of the disinfectant, heavily laden contamination, etc., SET Environmental, Inc. wishes to notify you that:

- The equipment, materials, locations, etc. was disinfected to the extent feasible utilizing a suitable disinfectant;
- The equipment, materials, locations, etc. was not disinfected due to the materials, sensitive equipment limited access, location, material, inability or limitation of the disinfectant, or heavily laden contamination;

A Label was attached to the equipment where applicable or a sign was affixed if a location or material, indicating the suspect portion that potentially remains contaminated;

The equipment, materials, locations, etc. may still be contaminated with bloodborne pathogens and/or chemical contamination; therefore, appropriate precautions should be taken in accordance with OSHA's Bloodborne Pathogens standard, 29 CFR 1910.1030 and OSHA's Toxic and Hazardous Substances standard, 29 CFR 1910.1000 Table Z-1.

Listed Equipment, Materials, Locations, etc.:

Attempted Disinfected	Not Disinfected
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____	_____	_____
SET Representative (Print)	SET Representative (Signature)	Time/Date

Company: _____ Title: _____

_____	_____	_____
Receiving Representative (Print)	Receiving Representative (Signature)	Time/Date

APPENDIX 3: Decontamination Technologies

1. Decontamination of non-porous surfaces

(e.g., glass, metal, painted surfaces, plastics)

- A. Clean the surface of loose debris, fluids and caked material using soapy water. (See surface preparation section above.)
- B. Spray the surface with disinfectant and let stand for 10-30 minutes. Ensure the surface remains visibly wet for at least 10 minutes. During this time, a disinfectant saturated media (i.e., sponge, rag, wipe) can be used to gently spread the disinfectant across and around the surface.
- C. Wipe clean with a moistened towel or sponge and let dry. Repeat if disinfectant residue is apparent.

2. Decontamination of porous surfaces

(e.g., removed clothing, bedding, mattresses, seat cushions, floor coverings)

- A. Decontamination will require a decision as to whether the item will be reutilized.
 - i. Items with porous surfaces that WILL NOT be reutilized:
 - a) Shall be saturated with disinfectant and place into a leak-proof biohazard bag and secured for disposal.
 - ii. Items with porous surfaces that WILL BE reutilized:
 - a) Remove debris and free liquids/solids from the item and place in a leak-proof biohazard bag, saturate with disinfectant, and dispose as described below.
 - b) Immerse the items in disinfectant for 10-30 minutes depending on the size and volume of the item being disinfected.
 - c) Remove the items from the disinfectant and allow excess fluids to drain.
 - d) Immerse the items in clean rinse water and allow sufficient time to remove excess disinfectant. One or more rinses may be required depending on the absorbent qualities of the material.
 - e) Remove the items from the rinse water and allow to dry.

NOTE: *If the item is such that it cannot be immersed due to size or detached from a mount, the item will need to be saturated with disinfectant in place. The item would then be rinsed in the same manner one or more times to remove disinfectant residuals.*

3. Encapsulation

This method requires encapsulating an item, or area to be decontaminated, within a sealed enclosure whereupon all items within the enclosure are subjected to treatment. This form of treatment should only be used in those instances where surface decontamination or disposal of the contaminated item is not feasible due to the total area requiring treatment, when contamination is not limited to the surface, and/or when the cost to replace the item is excessive. Specialized equipment for dispersing reagents, PPE, and controlling the environment will be required.

Note: *The drawback to encapsulation is the potential for the treatment itself to adversely impact sensitive items contained within the enclosure (i.e., corrosion of electronics, melting of plastics, chemical residues).*

Treatment may be in the form of heating, vaporized chemical oxidizers (e.g., hydrogen peroxide vapor, chlorine dioxide), or disinfectant bombs/fogs (e.g., formaldehyde/paraformaldehyde fumigation). The

amount of time required to effectively decontaminate the area depends on the concentration used, the contact time, environmental controls (maintaining the temperature and/or concentrations), the size of the space (this will be a factor for reaching the desired concentration), and the integrity of the encapsulation (maintained positive pressure, sealed, and so forth). Failure of any one of these may compromise the decontamination process. Additionally, it will be necessary to validate the treatment process to demonstrate all locations within the enclosed area were adequately subjected to the particular treatment used.

4. Disposal of rinsate

Although decontamination is intended to destroy or inactivate bloodborne pathogens, it is possible that wastewater from the decontamination process could still contain some active virus. Disposing of the rinsate through sanitary sewers is only a good option if additional disinfection occurs as part of the wastewater treatment process. Check with local jurisdictions to confirm available disposal options of rinsate.

Solutions

- A. Sodium Hypochlorite and water. Clorox (or other household bleach that contains 5-8 % sodium Hypochlorite) diluted with water to a 10:1 solution (ten parts water to one part Clorox).

Note: The decontamination of living persons should not use straight liquid bleach. Most authorities recommend the 0.5% bleach solution for use on skin. Never let the solution come in contact with eyes. Never mix bleach with ammonia as a very dangerous gas may be produced. For decontamination of property such as glasses and jewelry use a 5% bleach solution. Make sure with any bleach solution that it is allowed to sit for at least fifteen minutes (15 min) before it is removed. This contact time is necessary to kill the germs and spores.
- B. Larger quantities of bleach solutions can best prepared using commercial pool products. Follow the directions on the individual products for mixing. If no instructions is available mix a 25 Lb. pail of calcium hypochlorite to about 60 gallons of water to give you an approximately 4% bleach solution. Like with liquid bleach allow proper contact time.
- C. A 5% aqueous solution of a phenolic germicidal detergent (e.g. industrial strength Lysol, Amphyl, or other commercial decontamination solution). All surfaces should be thoroughly wet with the solution. Allow the solution to stand for at least twenty minutes (20 min) before it is removed.
- D. A 70% Isopropyl Alcohol. While effective as a disinfectant, alcohol can present a very significant fire hazard. Elimination all potential ignition and heat sources must be completed before deploying isopropyl alcohol as a cleaning solution. Also when used in a poorly ventilated area consideration must be given to worker exposure.
- E. Betadyne Solution - Is a broad range of povidone-iodine (PVPI) topical antiseptics produced and distributed by various manufacturers. While effective as a disinfectant, it is not appropriate for large scale decontamination more so as a localized antiseptic for needle sticks, broken skin and in the event of mucous membrane contact.. Betadyne, is available in two formulations:
 - i. A 10 % solution, sold over-the-counter (OTC) for cleaning minor wounds

- ii. Used in hospitals to prepare a patient's skin prior to surgery. Solutions are 10% povidone-iodine in water.
- F. Quaternary Ammonium compounds commonly referred to as "QUATs"
- G. Glutaraldehyde solutions

APPENDIX 4: EBOLA RESPONSE

1. Background

Ebola hemorrhagic fever (EHF) (sometimes called Ebola Virus Disease, or EVD) is the disease caused by infection with an Ebola virus. It is a type of viral hemorrhagic fever (VHF) brought on by any of several strains of viruses in the Ebola virus group.

Ebola Hemorrhagic Fever (EHF) was first identified in 1976 following simultaneous outbreaks in Sudan and Zaire (now the Democratic Republic of Congo, or DRC) in Africa. Though both outbreaks were attributed at the time to the same virus, two separate viruses were later identified as having caused the outbreaks. EHF, and subsequently the EBOV strain, was named after the Ebola River in Zaire near the village where it was isolated.

In areas of Africa where Ebola viruses are common, suspected reservoirs include primates, pigs and bat populations. However, the natural host of the pathogen is unknown. While there are no known animal reservoirs of the disease in the U.S., there is concern related to possible spread of EHF among human populations due to the availability and reach of global travel.

2. Hazard Recognition

Naturally-occurring EHF outbreaks are believed to start with contact with infected wildlife (alive or dead), and then spread from person to person through direct contact with body fluids such as, but not limited to, blood, urine, sweat, semen, breast milk, vomit, and feces. The infection can be spread when body surfaces that can easily absorb blood-borne pathogens, such as open cuts, scrapes, or mucous membranes (e.g., lining of mouth, eyes, or nose) come into direct contact with infectious blood or body fluids.

Ebola viruses are capable of causing severe, life-threatening disease. EHF is usually marked by fever, muscle pain, headache, and sore throat. Symptoms typically appear abruptly, within 2-21 days (8-10 days is most common) following exposure to the virus. Thus, individuals exposed while living, working, or traveling in areas experiencing an ongoing outbreak or where EHF is endemic could develop symptoms up to three weeks after exposure. However, EHF is believed to be contagious only once an individual begins to show symptoms.

3. Medical

3.1. Information:

The most common routes of transmission of Ebola viruses are:

- Contact of the eyes or other mucous membranes with blood or body fluids of a person or animal with Ebola Hemorrhagic Fever (EHF).
- Contact with contaminated equipment or other objects; and
- Ingestion of infectious blood or body fluids.

Ebola virus is believed to be viable outside of the body for several days. An evaluation of the persistence of certain Category A select agents in the environment suggests that the virus may remain stable for 4 – 10 days in dried blood.

Symptoms of Ebola typically appear within 2-21 days (8-10 days is most common) following infection, and the illness runs its course within 14-21 days of symptom onset. The illness progression includes nausea, vomiting, diarrhea, and impaired organ function as the blood loses its ability to coagulate and blood vessel membranes become more permeable. In some cases, internal and/or external bleeding, may occur. Ebola patients ultimately die from diffuse bleeding and hemorrhagic shock.

EVD is not transmitted through the air unless there is exposure to body fluid droplets from an infected person (e.g., coughing, sneezing or spitting).

EVD is not transmitted from persons who don't have symptoms of infection (see below for symptoms of EVD infection).

3.2. Care and Treatment:

There is currently no treatment, antiviral therapy, or approved vaccine for EHF virus. Supportive hospital care for patients with EHF (like other viral hemorrhagic fevers) includes fluid and blood replacement. Maintaining stable blood pressure, and treating other medical conditions (i.e., other injuries or infections) as appropriate.

Individuals who may have come into contact with Ebola virus may be quarantined at the discretion of the public health officials. Isolate suspected and confirmed cases of EHF to prevent transmission of the disease to other individuals. Suspected and confirmed of Ebola should be isolated to prevent transmission of the disease to other individuals. If possible, isolate suspected cases separately from confirmed cases also may help prevent transmission.

4. Applicable Standards

4.1. Information:

OSHA's Bloodborne Pathogens standard 29 CFR 1910.1030 covers exposure to Ebola virus. Ebola is among the subset of contact-transmissible diseases to which the Bloodborne Pathogens standard applies, as it is transmitted by blood or other potentially infectious materials as defined in the standard.

Depending on the specific work task, setting, and exposure to biological or chemical agents, additional OSHA standards, including the following, may also apply:

- OSHA's Personal Protective Equipment standard 29 CFR 1910.132
- OSHA's Respiratory Protection standard 29 CFR 1910.134.
- OSHA's Hazardous Communication standard 29 CFR 1910.1200

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5. Control and Prevention

5.1. Information:

Currently, most workers in the U.S. are unlikely to encounter Ebola virus or individuals with Ebola Hemorrhagic Fever (EHF). However, exposure to the virus or someone with EHF may be more likely in certain sectors, including the healthcare, mortuary/death care, airline servicing industries, and clean-up crews. Workers who interact with people, animals, goods, and equipment arriving in the U.S. from foreign countries with current EHF outbreaks are at the greatest risk for exposure.

Precautionary measures for preventing exposure to the Ebola virus depend on the type of work, potential for Ebola-virus contamination of the work environment, and what is known about other potential exposure hazards. Infection control strategies may have to be modified to include additional selections of personal protective equipment (PPE), administrative controls, and/or safe work practices.

5.2. Prevention:

Workers tasked with cleaning surfaces that may be contaminated with Ebola virus must be protected from exposure. Employers are responsible for ensuring that workers are protected from exposure to Ebola and that workers are not exposed to harmful levels of chemicals used for cleaning and disinfection.

Employers must train workers about the sources of Ebola exposure and appropriate precautions. Employers must train workers required to use personal protective equipment on what equipment is necessary, when and how they must use it, and how to dispose of the equipment. In addition where workers are exposed to blood or other potentially infectious materials, employers must provide the training required by the Bloodborne Pathogens standard, including information about how to recognize tasks that may involve exposure and the methods to reduce exposure, including engineering controls, work practices, and personal protective equipment.

In all settings, avoid using compressed air or water when cleaning surfaces, as it might cause droplets containing infectious material to become airborne (i.e., create a bioaerosol).

5.3. Response:

Safe and diligent environmental cleaning, disinfection, and handling of potentially contaminated materials is of paramount importance, as blood, sweat, vomit, feces, urine and other body secretions represent potentially infectious materials. All responses and clean-ups should be done following established infection control protocols. And while a prompt response is necessary to clean up and perform a decontamination of areas in the event of public safety and exposure another option is to isolate and quarantine the affective areas. An evaluation of the persistence of certain Category A select agents in the environment suggests that the virus may remain stable for 4 – 10 days in dried blood. Isolating and quarantining the areas allows for sampling and verification of potential exposure. It also allows for the natural degradation and final destruction of a potential Ebola virus.

If isolate and quarantine is an available option then the following steps should be implemented.

- a. Identify area of contamination without exposing anyone to potential exposure issues.
- b. Restrict access to area
- c. Secure ventilation and air condition control system through the HVAC system.
- d. If the area is small enough to encapsulate, such as an automobile, then wrapping the vehicle with plastic.

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6. PPE

6.1. Selection

As described in Section 3.3.3, direct physical contact with the waste is to be avoided. And while remote handling of waste is a best work place practice, an additional measurement of protection shall be utilized by all Field Service Crew Personnel performing area cleaning or removing waste contaminated or potentially contaminated with Ebola bloodborne pathogens or OPIM.

The following procedures provide detailed guidance on the types of personal protective equipment (PPE) to be used and on the processes for donning and doffing PPE for all workers.

- H. PPE Components
 - i. Inner glove; nitrile (6 – 12 mil)
 - ii. Second inner glove; nitrile (6 – 12 mil)
 - iii. Outer glove; Neoprene or Nitrile; (18 mil or greater)
 1. A minimum of a 14 inch cuff
 2. If the potential for contacting sharps is inherent then a liquid rated glove with a Level 3 in the EN 388 Mechanical Risk Ratings for abrasion, cut, tear, and puncture resistance rating or a Level 3 in the ANSI/ISEA 105-2000 for abrasion, cut, and puncture resistance rating should be selected.
 - iv. Dupont Tyvek SL, Kappler Zytron 200, Lakeland ChemMax 2, or equivalent CPC
 1. Welded or taped seems
 2. Storm flap over zipper opening
 3. Attached hood with elastic around hood opening
 4. Elastic around sleeve cuff openings
 5. Elastic around pant leg cuffs
 - v. Steel-toe/Steel-shank chemical/liquid impermeable boot
 - vi. Disposable shoe coverings (Rubber over-boots)
 - vii. Full Face APR with a HEPA or OV/AG/HEPA cartridge
 - viii. Taping of wrist and ankles with chem. tape
 - ix. Other equipment appropriate for the site and associated hazards

For workers who may spend extended periods of time in PPE, safety and comfort are critical. Standardizing attire under PPE (e.g., surgical scrubs or disposable garments and dedicated washable footwear) facilitates the donning and doffing process and eliminates concerns of contamination of personal clothing.

6.2. Donning

Donning PPE, Full-face Air Purifying Respirator (FF APR) – This donning procedure incorporates the use of a NIOSH approved FF APR. An established protocol facilitates training and compliance. Use a trained observer to verify successful compliance with the protocol.

1. **Engage Trained Observer:** The donning process is conducted under the guidance and supervision of a trained observer who confirms visually that all PPE is serviceable and has been donned successfully. The trained observer will use the written checklist (*See Appendix 10 & 11*) to confirm each step in donning PPE and can assist with ensuring and verifying the integrity of the ensemble. No exposed skin or hair of the clean-up crew worker should be visible at the conclusion of the donning process.
2. **Remove Personal Clothing and Items:** Change into machine washable or disposable garments and dedicated washable (plastic or rubber) footwear in a suitable, clean area. No personal items (e.g., jewelry, watches, cell phones, pagers, pens) should be carried beyond this point.
3. **Inspect PPE Prior to Donning:** Visually inspect the PPE ensemble to be worn to ensure it is in serviceable condition, all required PPE and supplies are available, and that the sizes selected are correct for the worker. The trained observer reviews the donning sequence with the worker before the worker begins and reads it to the worker in a step-by-step fashion.
4. **Perform Hand Hygiene:** Perform hand hygiene with an alcohol based hand rub (ABHR). When using ABHR, allow hands to dry before moving to next step.
5. **Donn Boots:** Donn Steel-toe/Steel-shank chemical/liquid impermeable boot
6. **Donn Inner Gloves:** Donn first pair of approved nitrile inner gloves.
7. **Donn CPC:** Ensure coverall is large enough to allow unrestricted freedom of movement. Ensure cuffs of inner gloves are tucked under the sleeve of the CPC and the pant leg cuffs are outside the boots.
8. **Tape sleeve to glove:** Using approved chemical tape to secure sleeve to glove (Provide tab to assist during doffing procedures).
9. **Put on Boot Covers.** While sitting in chair donn liquid impermeable boot covers.
10. **Tape leg cuff to boot:** Using approved chemical tape to secure pant cuff to boot (Provide tab to assist during doffing procedures). Then pull liquid impermeable boot cover over CPC pant leg cuff and secure with tape.
11. **Donn respirator:** Don FF APR respirator. Complete a user seal check.
12. **Place hood of CPC over head:** Pull hood over head and bring hood opening up to FF APR.
13. **Close front of CPC with zipper and secure flap:** Secure self adhering flap over front zipper. Secure with chemical tape. (Provide tab to assist during doffing procedures).

14. **Tape hood to FF APR:** Place tape along edge of hood to completely seal hood to APR mask. (Provide tab to assist during doffing procedures).
15. **Don 2nd Inner Gloves:** Don second pair of approved nitrile inner gloves. (Provide tab to assist during doffing procedures).
16. **Tape glove to sleeve:** Using approved chemical tape to secure glove to sleeve (Provide tab to assist during doffing procedures).
17. **Put on Outer Gloves:** Put on third pair of gloves (with extended cuffs). Ensure the cuffs are pulled over the sleeves of the coverall.
18. **Verify:** After completing the donning process, the integrity of the ensemble is verified by the trained observer. The worker should be comfortable and able to extend the arms, bend at the waist and go through a range of motions to ensure there is sufficient range of movement while all areas of the body remain covered.

6.3. Doffing of PPE

Doffing PPE, Full-face Air Purifying Respirator (FF APR) – The purpose of this step is to prepare for the removal of PPE. Before entering the Contamination Reduction Zone (CRZ), inspect and disinfect (using an *EPA-registered disinfectant wipe) any visible contamination on the PPE. Verify that the trained observer is available in the CRZ before entering and beginning the PPE removal process. Use a trained observer to verify successful compliance with the protocol.

Doffing PPE, Full-face Air Purifying Respirator (FF APR) – PPE doffing is performed in the Contamination Reduction Zone (CRZ) with all contaminated PPE waste being placed into leak-proof infectious waste containers.

1. **Equipment Drop:** All equipment, supplies, and cleaning tools will be placed into an established Equipment Drop area prior to beginning proceeding into the decontamination process.

Engage Trained Observer: The doffing process is conducted under the supervision of a trained observer, who reads aloud each step of the procedure and confirms visually that the PPE has been properly removed. Prior to doffing PPE, the trained observer must remind workers to avoid reflexive actions that may put them at risk, such as touching their face. Post this instruction and repeat it verbally during doffing.

2. **Inspect CPC and Decontaminate Boot Cover & Outer Gloves:** Step to next stage and inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly

contaminated, then wash using an *EPA-registered decontamination solution focusing on visibly contaminated areas. Wash the entire CPC paying close attention to the outer-gloved hands and boot covers with either an *EPA-registered disinfectant wipe or solution.

3. **Boot cover & Outer Glove Rinse:** Step to next stage and rinse CPC, boot covers and outer gloves of decontamination solution.
4. **Remove Tape:** Step to next stage and remove tape around liquid impermeable boot cover and CPC pant legs. Then remove tape at wrist between outer gloves and CPC sleeve cuffs.
5. **Remove Boot Covers:** Step to next stage and while sitting down, remove and discard liquid impermeable boot covers.
6. **Remove Outer Gloves:** Step to next stage and wipe outer-gloved hands with either an *EPA-registered wipe or solution. Remove and discard outer gloves taking care not to contaminate inner gloves during removal process.
7. **CPC and Boot Decontamination:** Step to next stage and wash CPC and boots with either an *EPA-registered disinfectant wipe or solution. Wash from top down paying close attention to the soles of the boots, arms, lower abdomen, behind knees, and elbows.
8. **CPC and Boot Rinse:** Step to next stage and rinse CPC and boots of decontamination solution. Wash from top down.
9. **CPC and 1st Inner Glove Decontamination:** Step to next stage and wash CPC and 1st pair of inner gloves with either an *EPA-registered disinfectant wipe or solution. Wash from top down paying close attention to arms, lower abdomen, behind knees, elbows, and wrists.
10. **CPC and 1st Inner Glove Rinse:** Step to next stage and rinse CPC and 1st pair of inner gloves of decontamination solution. Wash from top down.
11. **CPC and 1st Inner Glove Removal:** Inspect the CPC and 1st inner gloves' outer surfaces for visible contamination, cuts, or tears. If an inner glove or CPC is visibly soiled, cut, or torn, then disinfect the glove or CPC with either an *EPA-registered disinfectant wipe or solution. Then remove the CPC and 1st pair of inner gloves, perform hand hygiene with solution on 2nd pair of inner gloves. If no visible contamination, cuts, or tears are identified on the inner gloves or CPC, then remove and discard the CPC.
 - a. To remove coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out.
 - b. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the coverall. Avoid contact of scrubs or disposable garments with outer surface of gown during removal.
12. **APR Removal: Remove FF APR:** Step to next stage and disinfect the inner glove with either an *EPA-registered disinfectant wipe or solution. Remove respirator by loosening the lower clips with index finger,

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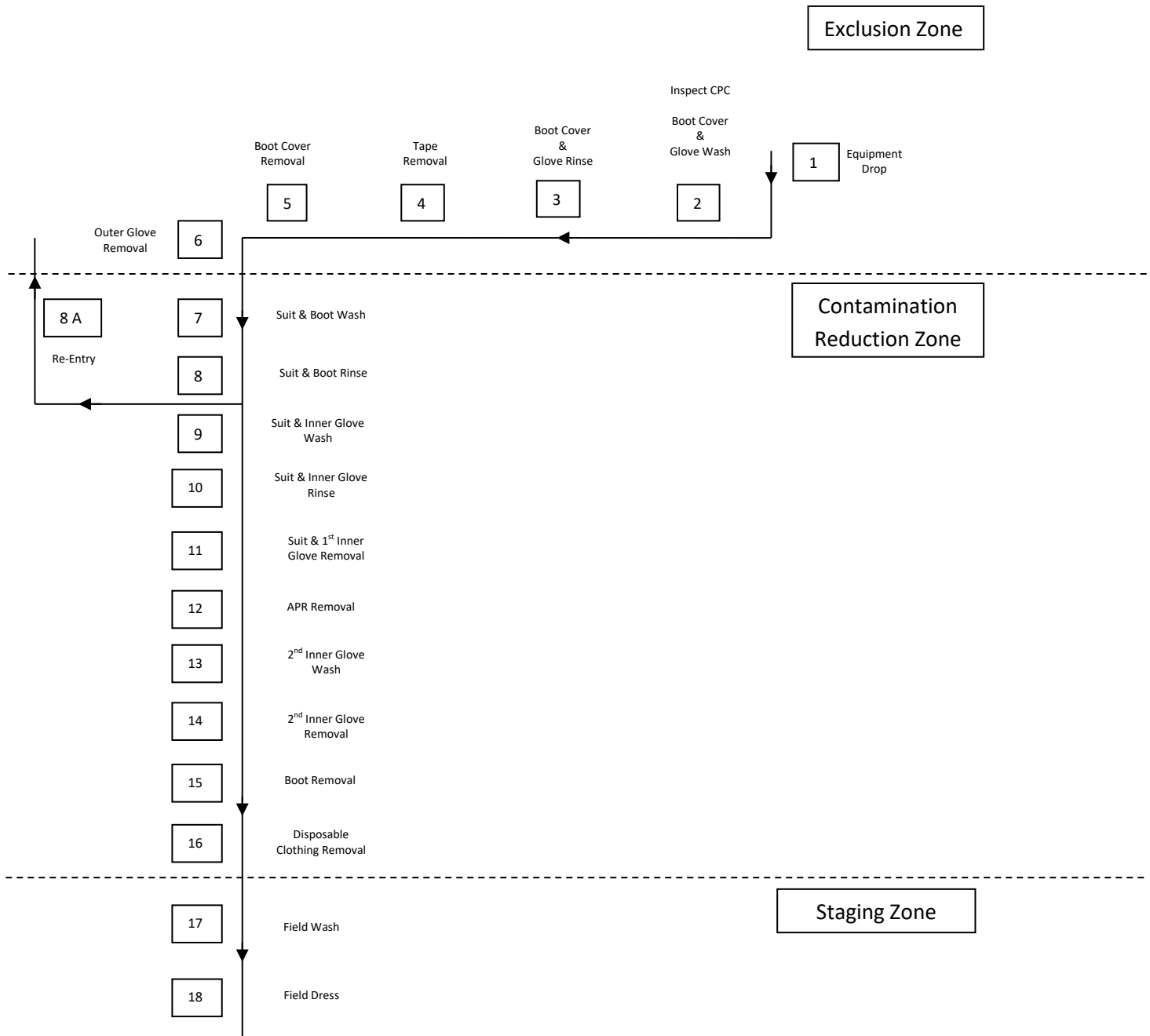
Date printed: March 20, 2020

grasping the APR by the cartridge and remove without touching the front of the respirator. Remove cartridges from APR and dispose. Place reusable APR in designated area for decontamination.

13. **Disinfect 2nd Pair of Inner Gloves:** Step to next stage and disinfect 2nd pair of inner gloves with either an *EPA-registered disinfectant wipe or solution.
14. **Remove 2nd pair of Inner Gloves:** Remove and discard gloves taking care not to contaminate bare hands during removal process. Perform hand hygiene with alcohol based hand rub (ABHR). Don a new pair of inner gloves.
15. **Inspect, Remove Boots and Underclothing:** Perform a final inspection of worker for any indication of contamination of the surgical scrubs or disposable garments. If contamination is identified, immediately inform health and safety representative or their designee before exiting the CRZ. Change out underclothing.
16. **Field Wash/Shower:** Showers are recommended at each shift's end for workers performing high risk work (e.g., exposed to large quantities of blood, body fluids, or excreta).
17. **Scrubs:** Worker can leave CRZ wearing dedicated washable footwear and surgical scrubs or disposable garments.
18. **Protocol Evaluation/Medical Assessment:** The designated health and safety representative or their designee should meet with the worker to review activities performed to identify any concerns about protocols and to record worker's level of fatigue.

7. Blank

APPENDIX 5: EBOLA CONTAMINATION REDUCTION CORRIDOR



APPENDIX 6: EBOLA DECONTAMINATION GUIDELINES

Transport Vehicles

Guidelines for Cleaning of Transport Vehicles after Transporting a Patient with Suspected or Confirmed Ebola

The following are general guidelines for cleaning transport vehicles and equipment after transporting a patient with suspected or confirmed Ebola or other potentially infectious materials (OPIM):

- A blood spill or spill of other body fluid or substance (e.g., feces or vomit) should be managed by trained personnel wearing correct PPE, through removal of bulk spill matter, cleaning the site, and then disinfecting the site. For large spills, a chemical disinfectant with sufficient potency is needed to overcome the tendency of proteins in blood and other body substances to neutralize the disinfectant's active ingredient. Contaminated reusable porous patient care equipment (e.g., glucometer, blood pressure cuff) should be placed in biohazard bags (triple-bagged) and labeled for cleaning and disinfection according to agency policies. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions by trained personnel wearing correct PPE. Avoid contamination of reusable porous surfaces that cannot be made single use.
- An preapproved disinfectant for viruses that share some technical similarities to Ebola (such as, norovirus, rotavirus, adenovirus, poliovirus)⁴ and instructions for cleaning and decontaminating surfaces or objects soiled with blood or body fluids should be used according to those instructions. After the bulk waste is wiped up, the surface should be disinfected as described below.
- Clean-up crew personnel performing cleaning and disinfection should follow the response and PPE guidelines. There should be the same careful attention to the safety of the clean-up personnel during the cleaning and disinfection of the transport vehicle as there is during the care of the patient.
- Non-porous surfaces (including stretchers, railings, medical equipment control panels, and adjacent flooring, walls and work surfaces), as well as stretcher wheels, brackets, and other areas are likely to become contaminated and should be cleaned and disinfected after each transport.
- Special cleaning of upholstery, carpets, or storage compartments is not indicated unless they are obviously dirty from blood or other body fluids. Porous material that has been determined to be contaminated should be removed for proper clean or disposal.
- To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non-fluid-impermeable pillows or mattresses as appropriate.
- **Do NOT use compressed air, pressurized water or similar procedures, which might create droplets of infectious materials.**

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The Ebola virus is a Category A infectious substance regulated by the U.S. Department of Transportation's (DOT) Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180). Any item transported for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance must be packaged and transported in accordance with the HMR. This includes medical equipment, sharps, linens, and used health care products (such as soiled absorbent pads or dressings, kidney-shaped emesis pans, portable toilets, used PPE, [e.g., gowns, masks, gloves, goggles, face shields, respirators, booties] or byproducts of cleaning) contaminated or suspected of being contaminated with a Category A infectious substance

Aircraft

Guidelines for Cleaning of Aircraft after Transporting a Patient with Suspected or Confirmed Ebola

The following are general guidelines for cleaning aircraft and associated equipment contaminated after a flight with a sick traveler who may be suspected or confirmed Ebola or other potentially infectious materials (OPIM).

When cleaning aircraft or any contaminated areas after a flight with a sick traveler use a preapproved cleaner/disinfectant that has been tested and approved for use by the airplane manufacturers.

- A preapproved disinfectant for viruses that share some technical similarities to Ebola (such as, norovirus, rotavirus, adenovirus, poliovirus) and instructions for cleaning and decontaminating surfaces or objects soiled with blood or body fluids should be used according to those instructions. After the bulk waste is wiped up, the surface should be disinfected as described below.
- Clean-up crew personnel performing cleaning and disinfection should follow the response and PPE guidelines. There should be the same careful attention to the safety of the clean-up personnel during the cleaning and disinfection of the aircraft and ancillary equipment as there is during the care of the patient. Non-porous surfaces (including tray tables, video monitor, light and air controls, and adjacent walls and windows), as well as overhead compartment storage, beverage cart, lavatories should be cleaned and disinfected.

-

Use disposable protective equipment while cleaning the passenger cabin and lavatories. If working with reusable equipment, properly clean and disinfect it after use.

Clean affected areas

- Lavatory surfaces: door handle, lock, faucet, sink, walls, counter, and toilet seat.
 - Sick traveler's seat and the seats around it, seat backs, armrests,
 - If a seat cover or carpet is obviously dirty from blood or body fluids, it should be removed and discarded by the methods used for biohazardous material.
- If surfaces are contaminated with large amounts of body fluids (such as blood, vomit, feces), clean off the material before applying disinfectant.

Special considerations

- Special cleaning of upholstery, carpets, or storage compartments is not indicated unless they are obviously dirty from blood or other body fluids.
- Special vacuuming equipment or procedures are not necessary.
- **Do NOT use compressed air, pressurized water or similar procedures, which might create droplets of infectious materials.**

Packages or luggage should not pose a risk. Ebola virus is spread through direct contact with blood or body fluids (like feces, saliva, urine, vomit, and semen) from an infected person.

- Don't handle packages visibly dirty from blood or body fluids.
- Clean-up crew personnel performing cleaning and disinfection should follow the response and PPE guidelines. There should be the same careful attention to the safety of the clean-up personnel during the cleaning and disinfection of the transport vehicle as there is during the care of the patient.
- A blood spill or spill of other body fluid or substance (e.g., feces or vomit) should be managed by trained personnel wearing correct PPE, through removal of bulk spill matter, cleaning the site, and then disinfecting the site. For large spills, a chemical disinfectant with sufficient potency is needed to overcome the tendency of proteins in blood and other body substances to neutralize the disinfectant's active ingredient. Contaminated reusable porous patient care equipment (e.g., glucometer, blood pressure cuff) should be placed in biohazard bags (triple-bagged) and labeled for cleaning and disinfection according to agency policies. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions by trained personnel wearing correct PPE. Avoid contamination of reusable porous surfaces that cannot be made single use.
- To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non-fluid-impermeable pillows or mattresses as appropriate.

Hotels and Living Areas

Guidelines for Cleaning of hotels, private residencies, and living quarters that has housed an individual with Suspected or Confirmed Ebola.

The following are general guidelines for cleaning hotel, private residencies, and living quarters of a patient with suspected or confirmed Ebola or other potentially infectious materials (OPIM):

- Isolate the affective area and establish work zones;
 - Isolation Zone
 - Contamination Reduction Zone
 - Staging Zone
- A blood spill or spill of other body fluid or substance (e.g., feces or vomit) should be managed by trained personnel wearing correct PPE, through removal of bulk spill matter, cleaning the site, and then disinfecting the site. For large spills, a chemical disinfectant with sufficient potency is needed to overcome the tendency of proteins in blood and other body substances to neutralize the disinfectant's active ingredient.
- An preapproved disinfectant for viruses that share some technical similarities to Ebola (such as, norovirus, rotavirus, adenovirus, poliovirus)⁴ and instructions for cleaning and decontaminating surfaces or objects soiled with blood or body fluids should be used according to those instructions. After the bulk waste is wiped up, the surface should be disinfected as described below.
- Clean-up crew personnel performing cleaning and disinfection should follow the response and PPE guidelines. There should be the same careful attention to the safety of the clean-up personnel during the cleaning and disinfection of the affected areas as there is during the care of the patient.
- Contaminated reusable porous items (e.g., bed linens, clothing, and carpet) should be placed in biohazard bags (triple-bagged) and labeled for cleaning and disinfection according to agency policies. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions by trained personnel wearing correct PPE. Avoid contamination of reusable porous surfaces that cannot be made single use.
- Special cleaning of upholstery, carpets, or storage compartments is not indicated unless they are obviously dirty from blood or other body fluids. Porous material that has been determined to be contaminated should be removed for proper clean or disposal.
- Non-porous surfaces (including counter tops, bathroom surfaces, tile flooring, and walls), as well as electronic devices, washes and dryers and other areas are likely to become contaminated and should be cleaned and disinfected.
- To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non-fluid-impermeable pillows or mattresses as appropriate.
- **Do NOT use compressed air, pressurized water or similar procedures, which might create droplets of infectious materials.**

The Ebola virus is a Category A infectious substance regulated by the U.S. Department of Transportation's (DOT) Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180). Any item transported for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance must be packaged and transported in accordance with the HMR. This includes medical equipment, sharps, linens, and used health care products (such as soiled absorbent pads or dressings, kidney-shaped emesis pans, portable toilets, used PPE, [e.g., gowns, masks, gloves, goggles, face shields, respirators, booties] or byproducts of cleaning) contaminated or suspected of being contaminated with a Category A infectious substance

APPENDIX 7: CORONAVIRUS RESPONSE

1. Background

Coronavirus disease was first described in 1931, with the first coronavirus isolated from humans in 1965. Until 2003, coronaviruses attracted little interest beyond causing mild upper respiratory tract infections. This changed dramatically in 2003 with the zoonotic SARS-CoV and the more recent emergence of MERS-CoV has confirmed the coronaviruses as significant causes of severe respiratory disease.

Coronaviruses are a large family of viruses that are common throughout the world. These viruses can live in animals, such as camels, cats and bats. While they are commonly found in animals, there are seven coronaviruses that are zoonotic, meaning they can jump from animals to humans.

Coronaviruses (CoV) are a group of viruses that affect humans, causing a range of different symptoms from the common cold to Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). These viruses are particularly dangerous because they can be carried and transmitted between different species, which increases their potential of spreading out to a global scale.

Human coronaviruses spread just like the flu or a cold—through the air by coughing or sneezing; through close personal contact, like touching or shaking hands; by touching an object or surface with the viruses on it; and occasionally, through fecal contamination. This has occurred previously with the Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS) outbreaks.

Coronavirus that was first detected in China and which has now been detected in almost 70 locations internationally, including in the United States. The virus has been named “SARS-CoV-2” and the disease it causes has been named “coronavirus disease 2019” (abbreviated “COVID-19”).

2. Source

The SARS-CoV-2 virus is an enveloped virus of zoonotic origin (between animals and humans), like MERS-CoV and SARS-CoV. All three of these viruses have their origins in bats. The sequences from U.S. patients are similar to the one that China initially posted, suggesting a likely single, recent emergence of this virus from an animal reservoir.

3. Symptoms

Usually, symptoms are mild, similar to a common cold including: headache, coughs, sore throat, difficulty breathing, fever, general lethargy.

More severe symptoms may include:

- Pneumonia
- Kidney Failure
- Severe Acute Respiratory Syndrome (SARS)

As with all viruses, it is the most vulnerable: the elderly and the chronically ill seem to be at greater risk of serious illness. In fact, many of the patients who have died during the initial outbreak, had underlying health conditions including cirrhosis of the liver, hypertension, heart disease, lung disease and diabetes.

Personnel involved in a known or potential COVID-19 must be aware of the symptoms and notify their supervisor at once if they are exhibiting any signs or symptoms.

4. Risk

At the writing of this document, there is no cure for the coronavirus because it is so new.

- For most of the American public, who are unlikely to be exposed to this virus at this time, the immediate health risk from COVID-19 is considered low.
- People in communities where ongoing community spread with the virus that causes COVID-19 has been reported are at elevated, though still relatively low risk of exposure.
- Close contacts of persons with COVID-19 also are at elevated risk of exposure.
- Travelers returning from affected international locations where community spread is occurring also are at elevated risk of exposure.
- Despite the low risk of exposure in most job sectors, some workers in the United States may have exposure infectious people, including travelers who contracted COVID-19 abroad. Workers with increased exposure risk include those involved in:
 - Healthcare (including pre-hospital and medical transport workers, healthcare providers, clinical laboratory personnel, and support staff).
 - Deathcare (including coroners, medical examiners, and funeral directors).
 - Airline operations.
 - Waste management.
 - Travel to areas, including parts of China, where the virus is spreading.
- In assessing potential hazards, employers should consider whether or not their workers may encounter someone infected with COVID-19 in the course of their duties. Employers should also determine if workers could be exposed to environments (e.g., worksites) or materials (e.g., laboratory samples, waste) contaminated with the virus.
- Depending on the work setting, employers may also rely on identification of sick individuals who have signs, symptoms, and/or a history of travel to COVID-19-affected areas that indicate potential infection with the virus, in order to help identify exposure risks for workers and implement appropriate control measures.

5. Response Criteria

5.1. Control and Prevention

5.1.1. Information

At this time, the U.S. Centers for Disease Control and Prevention (CDC) emphasizes that, while the novel coronavirus, COVID-19 poses a potentially serious public health threat, the risk to individuals is dependent on exposure. For most people in the United States, including most types of workers, the risk of infection with COVID-19 is currently low. Employers and workers in operations where there is no specific exposure hazard should remain aware of the evolving outbreak situation. Changes in outbreak conditions may warrant additional precautions in some workplaces not currently highlighted in this guidance.

Measures for protecting workers from exposure to, and infection with, the novel coronavirus, COVID-19 depend on the type of work being performed and exposure risk, including potential for interaction with infectious people and contamination of the work environment. Employers should adapt infection control strategies based on a thorough hazard assessment, using appropriate combinations of engineering and administrative controls, safe work practices, and personal protective equipment (PPE) to prevent worker exposures. Some OSHA standards that apply to preventing occupational exposure to COVID-19 also require employers to train workers on elements of infection prevention, including PPE.

5.1.2. Prevention

Workers tasked with cleaning surfaces that may be contaminated with COVID-19 virus must be protected from exposure. Employers are responsible for ensuring that workers are protected from exposure to COVID-19 and that workers are not exposed to harmful levels of chemicals used for cleaning and disinfection.

In all workplaces where exposure to the COVID-19 may occur, prompt identification and isolation of potentially infectious individuals is a critical first step in protecting workers, visitors, and others at the worksite.

- Immediately isolate people suspected of having COVID-19. For example, move potentially infectious people to isolation rooms and close the doors. On an aircraft, move potentially infectious people to seats away from passengers and crew, if possible and without compromising aviation safety. In other worksites, move potentially infectious people to a location away from workers, customers, and other visitors.
- Take steps to limit spread of the person's infectious respiratory secretions, including by providing them a facemask and asking them to wear it, if they can tolerate doing so. Note: A surgical mask on a patient or other sick person should not be confused

with PPE for a worker; the mask acts to contain potentially infectious respiratory secretions at the source (i.e., the person's nose and mouth).

- If possible, isolate people suspected of having COVID-19 separately from those with confirmed cases of the virus to prevent further transmission, including in screening, triage, or healthcare facilities.
- Restrict the number of personnel entering isolation areas, including the room of a patient with suspected/confirmed COVID-19.
- Protect workers in close contact* with the sick person by using additional engineering and administrative control, safe work practices and PPE.

**CDC defines "close contact" as being about six (6) feet (approximately two (2) meters) from an infected person or within the room or care area of an infected patient for a prolonged period while not wearing recommended PPE. Close contact also includes instances where there is direct contact with infectious secretions while not wearing recommended PPE. Close contact generally does not include brief interactions, such as walking past a person.*

Train all workers with reasonably anticipated occupational exposure to COVID-19 (as described in this document) about the sources of exposure to the virus, the hazards associated with that exposure, and appropriate workplace protocols in place to prevent or reduce the likelihood of exposure. Training should include information about how to isolate individuals with suspected or confirmed COVID-19 or other infectious diseases, and how to report possible cases.

Workers who conduct cleaning tasks must be protected from exposure to blood, certain body fluids, and other potentially infectious materials covered by OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) and from hazardous chemicals used in these tasks. In these cases, the PPE (29 CFR 1910 Subpart I) and Hazard Communication (29 CFR 1910.1200) standards may also apply.

Do not use compressed air or water sprays to clean potentially contaminated surfaces, as these techniques may aerosolize infectious material.

5.1.3. Response

5.1.3.1. Environmental Cleaning and Disinfectant

Cleaning and disinfection of environmental surfaces are important components of routine infection control. Although little is known about the extent of environmental contamination after persons suspected/confirmed to have COVID-19 have been in, epidemiologic and laboratory evidence suggests that the environment could play a role in transmission. Therefore, cleaning and disinfection are critical to the control of COVID-

19 transmission. Environmental cleaning and disinfection for COVID-19 follows the same principles generally used in healthcare settings.

Cleaning refers to the removal of dirt and impurities, including germs, from surfaces. Cleaning alone does not kill germs. But by removing the germs, it decreases their number and therefore any risk of spreading infection.

Disinfecting works by using chemicals to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs. But killing germs remaining on a surface after cleaning further reduces any risk of spreading infection.

- At a school, daycare center, office, or other facility that does not house people overnight:
- At a health care facility, living centers, hotels that does house people overnight:
- Transportation vehicles, planes, public transportation, ambulances, private vehicles
- Cleaning an area that **NO CONFIRMED or SUSPECTED** COVID-19 cases have been identified:
 - Diluted household bleach solutions or other approved disinfectant surfactants can be used for these applications if appropriate for the surface.
 - Clean and disinfect high-touch hard surfaces daily in common areas (e.g. tables, hard-backed chairs, doorknobs, light switches, remotes, handles, desks, work stations, restrooms, eating & food prep areas, and meeting areas).
 - Also, clean any surfaces that may have blood, stool, or body fluids on them.
 - Linens, Clothing, and Other Items That Go in the Laundry
 - Do not shake dirty laundry; this minimize the possibility of dispersing virus through the air.
 - Wash items as appropriate in accordance with the manufacturer's instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely. Dirty laundry that has been in contact with an ill person can be washed with other people's items.
 - Clean and disinfect hampers or other carts for transporting laundry according to guidance above for hard or soft surfaces.
 - No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soil. Soft surface items; curtains, cushion covers, area throw rugs can be placed in bags and sent for outside cleaning.

- Cleaning an area with **CONFIRMED or SUSPECTED** COVID-19 cases have been identified:
 - It is recommended to **close off areas used by the ill persons and wait as long as practical before beginning cleaning and disinfection** to minimize potential for exposure to respiratory droplets. **Open outside doors and windows to increase air circulation in the area.** If possible, wait up to 24 hours before beginning cleaning and disinfection.
 - The use of an EPA-registered approved hospital disinfectant shall be used for these applications if appropriate for the surfaces.
 - It is recommended to close off areas used by the ill persons and wait as long as practical before beginning cleaning and disinfection to minimize potential for exposure to respiratory droplets. Open outside doors and windows to increase air circulation in the area. If possible, wait up to 24 hours before beginning cleaning and disinfection.
 - Clean and disinfect all surfaces that were in contact with the patient or may have become contaminated during patient care.
 - Clean and disinfect high-touch hard surfaces daily in common areas (e.g. tables, hard-backed chairs, doorknobs, light switches, remotes, handles, desks, work stations, restrooms, eating & food prep areas, and meeting areas).
 - Also, clean any surfaces that may have blood, stool, or body fluids on them.
 - Linens, Clothing, and Other Items That Go in the Laundry
 - Do not shake dirty laundry; this minimize the possibility of dispersing virus through the air.
 - Wash items as appropriate in accordance with the manufacturer's instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely. Dirty laundry that has been in contact with an ill person can be washed with other people's items.
 - Clean and disinfect hampers or other carts for transporting laundry according to guidance above for hard or soft surfaces.
 - Soft surface items; curtains, cushion covers, area throw rugs can be placed in bags and transported to be laundered.

Do not spray (i.e., fog) occupied rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

Cleaning staff and others should clean hands often, including immediately after removing gloves and after contact with an ill person, by washing hands with soap and water for 20 seconds. If soap and water are not available and hands are not visibly dirty, an alcohol-based hand sanitizer that contains 60%-95% alcohol may be used. However, if hands are visibly dirty, always wash hands with soap and water.

5.1.3.2. Medical Waste

Medical waste has not been implicated in the transmission of SARS-CoV. Therefore, no special handling procedures are recommended for SARS-CoV-contaminated medical waste.

- Contain and dispose of SARS-CoV-contaminated medical waste in accordance with facility-specific procedures and/or local or state regulations for handling and disposal of medical waste, including used needles and other sharps.
- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

5.1.3.3. Textile (Linen and laundry)

Contact with textiles has not been implicated in the transmission of SARS-CoV.

Therefore, no special handling procedures are recommended for linen and laundry that may be contaminated with SARS-CoV.

5.1.3.4. Dishes and Eating Utensils

Dishes and eating utensils have not been implicated in SARS-CoV transmission.

Therefore, no special precautions, beyond those for Standard Precautions, are recommended for dishes and eating utensils used by a patient with known or possible SARS-CoV disease.

5.1.3.5. Patient-care Equipment

Follow standard practices for handling and reprocessing used patient-care equipment, including medical devices. Wear gloves when handling and transporting used patient-care equipment.

Wipe heavily soiled equipment with an EPA-approved hospital disinfectant before removing it from the patient's room. Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.

Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with an EPA-approved hospital disinfectant upon removal from the patient's room.

5.1.3.6. Wastewater

There is no evidence to suggest that additional, COVID-19-specific protections are needed for employees involved in wastewater management operations, including those at wastewater treatment facilities. Wastewater treatment plant operations should ensure workers follow routine practices to prevent exposure to wastewater, including using the engineering and administrative controls, safe work practices, and PPE normally required for work tasks when handling untreated wastewater.

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6. PPE

6.1. Selection

As described in Section 3.3.3, direct physical contact with the waste is to be avoided. And while remote handling of waste is a best work place practice, an additional measurement of protection shall be utilized by all Field Service Crew Personnel performing area cleaning or removing waste contaminated or potentially contaminated with COVID-19 pathogens or OPIM.

The following procedures provide detailed guidance on the types of personal protective equipment (PPE) to be used and on the processes for donning and doffing PPE for all workers.

PPE Components

Inner glove; nitrile (6 – 12 mil)

Second inner glove; nitrile (6 – 12 mil) (optional)

Outer glove; Neoprene or Nitrile; (18 mil or greater)

A minimum of a 14 inch cuff

If the potential for contacting sharps is inherent then a liquid rated glove with a Level 3 in the EN 388 Mechanical Risk Ratings for abrasion, cut, tear, and puncture resistance rating or a Level 3 in the ANSI/ISEA 105-2000 for abrasion, cut, and puncture resistance rating should be selected.

Dupont Tyvek SL, Kappler Zytron 200, Lakeland ChemMax 2, or equivalent CPC *

Welded or taped seams**

Storm flap over zipper opening

Attached hood with elastic around hood opening

Elastic around sleeve cuff openings

Elastic around pant leg cuffs***

Steel-toe/Steel-shank chemical/liquid impermeable boot
Disposable shoe coverings (Rubber over-boots)
Full Face APR with a HEPA or OV/AG/HEPA cartridge
Taping of wrist and ankles with chem. tape
Other equipment appropriate for the site and associated hazards

For workers who may spend extended periods of time in PPE, safety and comfort are critical. Standardizing attire under PPE (e.g., surgical scrubs or disposable garments and dedicated washable footwear) facilitates the donning and doffing process and eliminates concerns of contamination of personal clothing.

****While different variation to the Level C ensemble may be allowed, changes must be permitted on a case by case situation with both Operations and Health & Safety approval.***

*****Bound seams are not acceptable for wet decontamination process***

******Elastic cuffs are advisable but not mandated however, taping is required.***

6.2 Donning

Donning PPE, Full-face Air Purifying Respirator (FF APR) – This donning procedure incorporates the use of a NIOSH approved FF APR. An established protocol facilitates training and compliance. Use a trained observer to verify successful compliance with the protocol.

- 1. Engage Trained Observer:** The donning process is conducted under the guidance and supervision of a trained observer who confirms visually that all PPE is serviceable and has been donned successfully. The trained observer may use the written checklist (See Appendix 10 & 11 of the Bloodborne Pathogen Response & Exposure Control Plan SWP-001) to confirm each step in donning PPE and can assist with ensuring and verifying the integrity of the ensemble. No exposed skin or hair of the clean-up crew worker should be visible at the conclusion of the donning process.
- 2. Remove Personal Clothing and Items:** Change into machine washable or disposable garments and dedicated washable (plastic or rubber) footwear in a suitable, clean area. No personal items (e.g., jewelry, watches, cell phones, pagers, pens) should be carried beyond this point.
- 3. Inspect PPE Prior to Donning:** Visually inspect the PPE ensemble to be worn to ensure it is in serviceable condition, all required PPE and supplies are available, and that the sizes selected are correct for the worker. The trained observer reviews the donning sequence with the worker before the worker begins and reads it to the worker in a step-by-step fashion.

4. **Perform Hand Hygiene:** Perform hand hygiene with alcohol based hand rub (ABHR). When using ABHR, allow hands to dry before moving to next step.
5. **Donn Boots:** Donn Steel-toe/Steel-shank chemical/liquid impermeable boot.
6. **Donn Inner Gloves:** Donn first pair of approved nitrile inner gloves.
7. **Donn CPC:** Ensure coverall is large enough to allow unrestricted freedom of movement. Ensure cuffs of inner gloves are tucked under the sleeve of the CPC and the pant leg cuffs are outside the boots.
8. **Tape sleeve to glove:** Using approved chemical tape to secure sleeve to glove (Provide tab to assist during doffing procedures).
9. **Put on Boot Covers.** While sitting in chair donn liquid impermeable boot covers.
10. **Tape leg cuff to boot:** Using approved chemical tape to secure pant cuff to boot (Provide tab to assist during doffing procedures). Then pull liquid impermeable boot cover over CPC pant leg cuff and secure with tape.
11. **Donn respirator:** Don FF APR respirator. Complete a user seal check.
12. **Place hood of CPC over head:** Pull hood overhead and bring hood opening up to FF APR.
13. **Close front of CPC with zipper and secure flap:** Secure self-adhering flap over front zipper. Secure with chemical tape. (Provide tab to assist during doffing procedures).
14. **Tape hood to FF APR:** Place tape along edge of hood to completely seal hood to APR mask. (Provide tab to assist during doffing procedures).
15. **Don 2nd Inner Gloves:** Don second pair of approved nitrile inner gloves. **(Optional)**
16. **Tape glove to sleeve:** Using approved chemical tape to secure glove to sleeve (Provide tab to assist during doffing procedures).
17. **Put on Outer Gloves:** Put on third pair of gloves (with extended cuffs). Ensure the cuffs are pulled over the sleeves of the coverall.
18. **Verify:** After completing the donning process, the integrity of the ensemble is verified by the trained observer. The worker should be comfortable and able to extend the arms,

bend at the waist and go through a range of motions to ensure there is sufficient range of movement while all areas of the body remain covered.

6.3 Doffing of PPE

Doffing PPE, Full-face Air Purifying Respirator (FF APR) – The purpose of this step is to prepare for the removal of PPE. Before entering the Contamination Reduction Zone (CRZ), inspect and disinfect (using an *EPA-registered disinfectant wipe) any visible contamination on the PPE. Verify that the trained observer is available in the CRZ before entering and beginning the PPE removal process. Use a trained observer to verify successful compliance with the protocol.

Doffing PPE, Full-face Air Purifying Respirator (FF APR) – PPE doffing is performed in the Contamination Reduction Zone (CRZ) with all contaminated PPE waste being placed into leak-proof infectious waste containers.

1. **Equipment Drop:** All equipment, supplies, and cleaning tools will be placed into an established Equipment Drop area prior to beginning proceeding into the decontamination process.

Engage Trained Observer: The doffing process is conducted under the supervision of a trained observer, who reads aloud each step of the procedure and confirms visually that the PPE has been properly removed. Prior to doffing PPE, the trained observer must remind workers to avoid reflexive actions that may put them at risk, such as touching their face. **These instruction can be posted and read out loud during doffing to assist.**

2. **Inspect CPC and Boot Cover & Outer Glove Wash/Wipe:** Step to next stage and inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then wash using an ***EPA-registered decontamination solution or suitable alternative** focusing on visibly contaminated areas. Wash the outer boots and outer gloves. An initial wipe down of the CPC may be performed at this time.

Note: *A majority of these decontamination activates will be performed in offices, living areas, and medical setting. These decons will be performed with moist cloth or paper wipes and limited water. The decontamination process can be conducted in a similar method. Wipe down the PPE with a moist wipe using an *EPA-registered decontamination solution or suitable alternative. This can be completed without a heavy water wash rinse process.*

3. **Boot cover & Outer Glove:** Step to next stage and remove the boot covers and outer gloves. . Remove and discard outer gloves taking care not to contaminate inner gloves during removal process.

4. **CPC Wash/Wipe:** Step to next stage and wash/wipe CPC with either an *EPA-registered decontamination solution or suitable alternative. Wash from top down paying close attention to the arms, lower abdomen, behind knees, and elbows.
5. **Outer Garment Open:** This stage is intended to open the CPC for modifications or to allow the individual to cool down before preparing to re-enter the Exclusion Zone. This step can be bypassed if the individual is exiting the Exclusion Zone.
6. **Outer Garment Removal:** Inspect the CPC and 1st inner gloves' outer surfaces for visible contamination, cuts, or tears. Begin to remove the CPC and 1st pair of inner gloves, perform hand hygiene with approved solution on 2nd pair of inner gloves. If no visible contamination, cuts, or tears are identified on the inner gloves or CPC, then remove and discard the CPC. a. To remove coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out.
7. **APR Wash/Wipe Removal: Remove FF APR:** Step to next stage and disinfect the inner glove with either an *EPA-registered disinfectant wipe or solution. Remove respirator by loosening the lower clips with index finger, grasping the APR by the cartridge and remove without touching the front of the respirator. Remove cartridges from APR and dispose. Place reusable APR in designated area for decontamination.
8. **Disinfect 1st Pair of Inner Gloves:** Step to next stage and disinfect 1st pair of inner gloves with either an *EPA-registered disinfectant wipe or solution.
9. **Inspect, Remove Boots and Underclothing:** Perform a final inspection of worker for any indication of contamination of the surgical scrubs or disposable garments. If contamination is identified, immediately inform health and safety representative or their designee before exiting the CRZ. Change out underclothing. At this point the worker may change into street shoes as they are exiting from the Contamination Reduction Zone.

Remove 2nd pair of Inner Gloves: Remove and discard gloves taking care not to contaminate bare hands during removal process. Perform hand hygiene with an alcohol based hand rub (ABHR). *Donning a new pair of inner gloves at this time is optional.*
10. **Field Wash/Shower:** Showers are recommended at each shift's end for workers performing high risk work (e.g., exposed to large quantities of blood, body fluids, or excreta).
11. **Scrubs:** Worker can leave CRZ wearing dedicated washable footwear and surgical scrubs or disposable garments.

12. Protocol Evaluation/Medical Assessment: The designated health and safety representative or their designee should meet with the worker to review activities performed to identify any concerns about protocols and to record worker's level of fatigue.

Note: Decon may be performed with a modified Level C to include face-shield and safety glasses as a downgrade from FF APR's.

7. Waste

Waste Containment - Waste generated during the process of decontamination activities will be characterized as RCRA non-hazardous. All waste bulk and non-bulk will be packaged and transported offsite in accordance with applicable regulations for non-hazardous waste. **NOTE:** Also check specific requirements of disposal or receiving facility to whom waste is to be sent.

8. Applicable Standards

Information:

OSHA's Bloodborne Pathogens standard 29 CFR 1910.1030 covers exposure to COVID-19 virus.

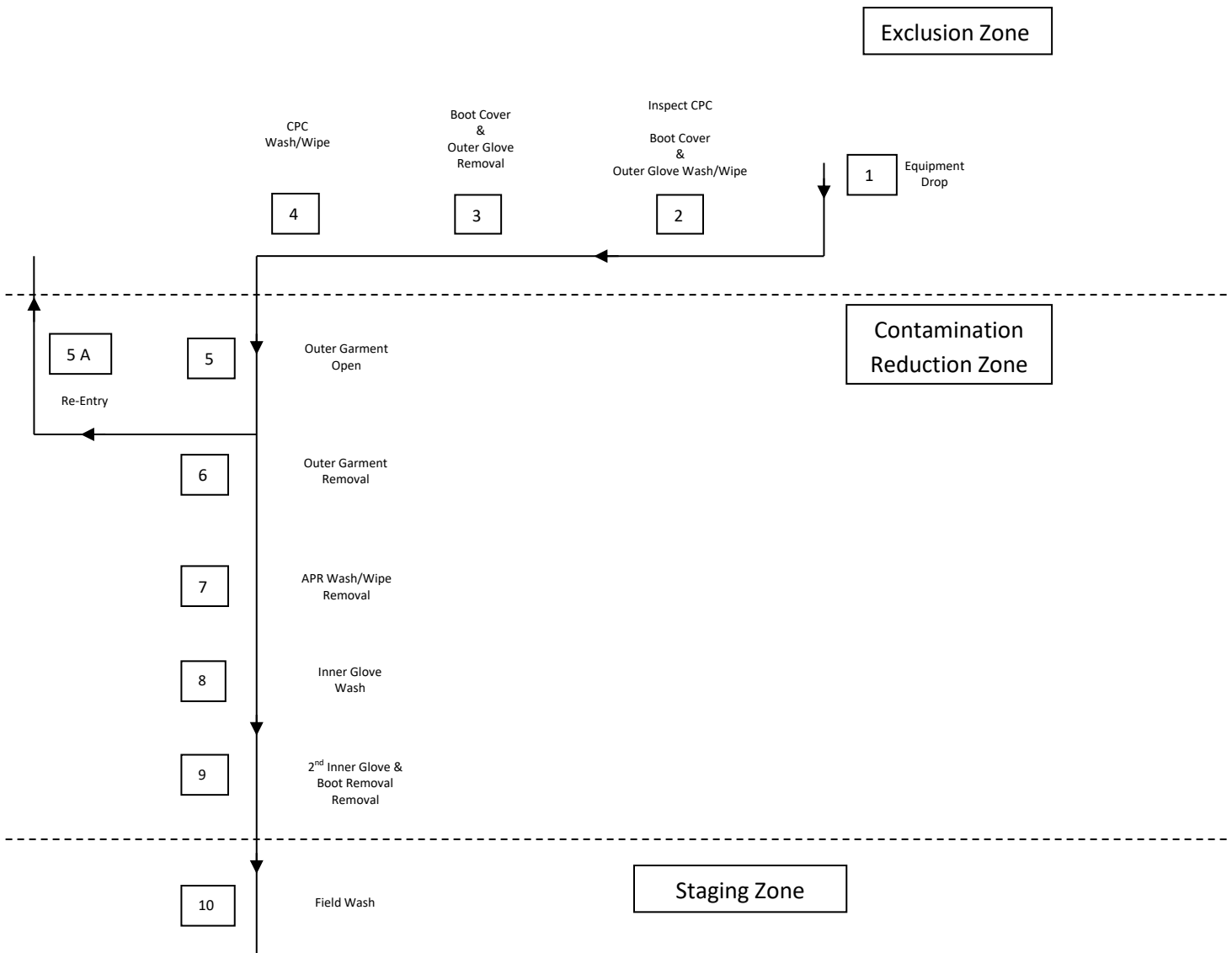
COVID-19 is among the subset of contact-transmissible diseases to which the Bloodborne Pathogens standard applies, as it is transmitted by blood or other potentially infectious materials as defined in the standard.

Depending on the specific work task, setting, and exposure to biological or chemical agents, additional OSHA standards, including the following, may also apply:

- OSHA's Personal Protective Equipment standard 29 CFR 1910.132
- OSHA's Respiratory Protection standard 29 CFR 1910.134.
- OSHA's Hazardous Communication standard 29 CFR 1910.1200

9. Blank

APPENDIX 8: COVID-19 CONTAMINATION REDUCTION CORRIDOR



APPENDIX 9: COVID-19 DECONTAMINATION GUIDELINES

Transport Vehicles

Guidelines for Cleaning of Transport Vehicles after Transporting a Patient with Suspected or Confirmed COVID-19

The following are general guidelines for cleaning transport vehicles and equipment after transporting a patient with suspected or confirmed COVID-19 or other potentially infectious materials (OPIM):

- If no symptomatic passengers were identified during or immediately after the transport:
 - Follow routine operating procedures for cleaning transport vehicles, managing solid waste, and wearing PPE.
- If symptomatic passenger(s) are identified during or immediately after the transport, routine cleaning procedures should be followed, and enhanced cleaning procedures should also be used as follows:
 - Clean porous (soft) surfaces (e.g., cloth seats, cloth seat belts) at the seat and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions.
 - Clean porous (soft) surfaces (e.g. seat cushions and covers) by removing visible contamination if present and using appropriate cleaners that are compatible with surfaces and components in accordance with the manufacturer's instructions. For items that can be laundered, use the warm setting and dry items completely on high heat.
 - Clean non-porous (hard) surfaces (e.g., leather or vinyl seats) at the seat of the symptomatic passenger(s) and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions, including: transport cots, plastic and metal parts of the seats and seatbacks, seat belt latches, compartment doors and handles, adjacent walls.
 - Clean non-porous (hard) surfaces with disinfectant products with EPA-approved emerging viral pathogens claims that are expected to be effective against the virus that causes COVID-19 (SARS-CoV-2) and ensure these products are compatible with vehicle surfaces and components. All products should be used according to label instructions (e.g., concentration, application method and contact time, PPE).
 - Properly dispose of any items that cannot be cleaned (e.g., pillows, blankets and other similar items) or single use items.
- After doffing (taking off) PPE, cleaning staff should immediately clean hands with soap and water for at least 20 seconds. If soap and water not available and hands are not visibly dirty, an alcohol-based hand sanitizer that contains at least 60% alcohol may be used. However, if hands are visibly dirty, always wash hands with soap and water. .
- Cleaning staff should immediately report breaches in PPE (e.g., tear in gloves) or any potential exposures (e.g., contact with blood or body fluids without wearing appropriate PPE) to their supervisor.
- Cleaning staff should dispose of PPE and other disposable items used in cleaning.
- Employers should educate workers to recognize the symptoms of COVID-19 and provide instructions on what to do if they develop symptoms.
 - Cleaning staff should immediately notify their supervisor if they develop symptoms of COVID-19.

Aircraft

Guidelines for Cleaning of Aircraft after Transporting a Patient with Suspected or Confirmed COVID-19

The following are general guidelines for cleaning aircraft and associated equipment contaminated after a flight with a sick traveler who may be suspected or confirmed COVID-19 or other potentially infectious materials (OPIM):

- If no symptomatic passengers were identified during or immediately after the flight:
 - Follow routine operating procedures for cleaning aircraft, managing solid waste, and wearing PPE.
- If symptomatic passenger(s) are identified during or immediately after the flight, routine cleaning procedures should be followed, and enhanced cleaning procedures should also be used as follows:
 - Clean porous (soft) surfaces (e.g., cloth seats, cloth seat belts) at the seat of the symptomatic passenger(s) and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions.
 - Clean porous (soft) surfaces (e.g. seat covers and carpet) by removing visible contamination if present and using appropriate cleaners that are compatible with aircraft surfaces and components in accordance with the manufacturer's instructions. For items that can be laundered, use the warm setting and dry items completely on high heat.
 - Clean non-porous (hard) surfaces (e.g., leather or vinyl seats) at the seat of the symptomatic passenger(s) and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions, including: armrests, plastic and metal parts of the seats and seatbacks, tray tables, seat belt latches, light and air controls, cabin crew call button, overhead compartment handles, adjacent walls, bulkheads, windows and window shades, and individual video monitors.
 - Clean non-porous (hard) surfaces with disinfectant products with EPA-approved emerging viral pathogens claims that are expected to be effective against the virus that causes COVID-19 (SARS-CoV-2) and ensure these products are compatible with aircraft surfaces and components. All products should be used according to label instructions (e.g., concentration, application method and contact time, PPE).
 - Clean lavatories used by the symptomatic passenger(s), including: door handle, locking device, toilet seat, faucet, washbasin, adjacent walls, and counter.
 - Properly dispose of any items that cannot be cleaned (e.g., pillows, passenger safety placards, and other similar items as described below).

General Recommendations during the Enhanced Cleaning Process:

- Ground and cleaning crews should not board the plane until all travelers have disembarked.
- Ventilation systems should be kept running while cleaning crews are working aboard the airplane.
- If visible contamination (e.g., a body substance such as blood or body fluids) is present, routine airline cleaning procedures should be followed based on blood or body substance spill

management according to, 29 CFR 1910.1030.OSHA's Bloodborne Pathogen Standard, 29 CFR 1910.1030.

- Airlines should ensure workers are trained on the hazards of the cleaning chemicals used in the workplace in accordance with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.
- Airlines should train ground and cleaning crews on and require that crew members demonstrate an understanding of when to use PPE, what PPE is necessary, how to properly don (put on), use, and doff (take off) PPE.
- After doffing (taking off) PPE, cleaning staff should immediately clean hands with soap and water for at least 20 seconds. If soap and water not available and hands are not visibly dirty, an alcohol-based hand sanitizer that contains at least 60% alcohol may be used. However, if hands are visibly dirty, always wash hands with soap and water.
 - Airlines should consider providing alcohol-based hand sanitizer to cleaning staff for their personal use.
- Cleaning staff should immediately report breaches in PPE (e.g., tear in gloves) or any potential exposures (e.g., contact with blood or body fluids without wearing appropriate PPE) to their supervisor.
- Cleaning staff should dispose of PPE and other disposable items used in cleaning following the airline's routine procedures. Note that all waste from international flights will also fall under jurisdiction of the U.S. Department of Agriculture/Animal and Plant Health Inspection Service (APHIS).
- Ground crews assigned to wastewater management operations should follow routine procedures.
- Employers should educate workers to recognize the symptoms of COVID-19 and provide instructions on what to do if they develop symptoms.
 - Cleaning staff should immediately notify their supervisor if they develop symptoms of COVID-19.

Hotels, Living Areas and Public Assembly Areas

Guidelines for Cleaning of hotels, private residencies, and living quarters that has housed an individual with Suspected or Confirmed COVID-19.

The following are general guidelines for cleaning hotels, living areas and public assembly areas contaminated from an individual who may be suspected or confirmed COVID-19 or other potentially infectious materials (OPIM):

- If no symptomatic individuals were identified :
 - Follow routine operating procedures for cleaning area, managing solid waste, and wearing PPE.
- If symptomatic individuals(s) are identified, routine cleaning procedures should be followed, and enhanced cleaning procedures should also be used as follows:
 - Isolate the affective area and establish work zones;
 - Isolation Zone
 - Contamination Reduction Zone
 - Staging Zone
 - A blood spill or spill of other body fluid or substance (e.g., feces or vomit) should be managed by trained personnel wearing correct PPE, through removal of bulk spill matter, cleaning the site, and then disinfecting the site. For large spills, a chemical disinfectant with sufficient potency is needed to overcome the tendency of proteins in blood and other body substances to neutralize the disinfectant's active ingredient.
 - An preapproved disinfectant for viruses that share some technical similarities to COVID-19 (such as, SARS-CoV-2, MER-CoV, Norovirus) and instructions for cleaning and decontaminating surfaces or objects soiled with blood or body fluids should be used according to those instructions. After the bulk waste is wiped up, the surface should be disinfected as described below.
 - Clean-up crew personnel performing cleaning and disinfection should follow the response and PPE guidelines. There should be the same careful attention to the safety of the clean-up personnel during the cleaning and disinfection of the affected areas as there is during the care of the patient.
 - Contaminated reusable porous items (e.g., bed linens, clothing, and carpet) should be placed in biohazard bags (triple-bagged) and labeled for cleaning and disinfection according to policies. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions by trained personnel wearing correct PPE. Avoid contamination of reusable porous surfaces that cannot be made single use.
 - Special cleaning of upholstery, carpets, or storage compartments is not indicated unless they are obviously dirty from blood or other body fluids. Porous material that has been determined to be contaminated should be removed for proper clean or disposal.
 - Non-porous surfaces (including counter tops, bathroom surfaces, tile flooring, and walls), as well as electronic devices, washers and dryers and other areas are likely to become contaminated and should be cleaned and disinfected.
 - After doffing (taking off) PPE, cleaning staff should immediately clean hands with soap and water for at least 20 seconds. If soap and water not available and hands are not visibly dirty, an alcohol-based hand sanitizer that contains at least 60% alcohol may be used. However, if hands are visibly dirty, always wash hands with soap and water. .
 - Cleaning staff should immediately report breaches in PPE (e.g., tear in gloves) or any potential exposures (e.g., contact with blood or body fluids without wearing appropriate PPE) to their supervisor.
 - Cleaning staff should dispose of PPE and other disposable items used in cleaning.
 - Employers should educate workers to recognize the symptoms of COVID-19 and provide instructions on what to do if they develop symptoms.
 - Cleaning staff should immediately notify their supervisor if they develop symptoms of COVID-19.

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Date printed: March 20, 2020

- **Do NOT use compressed air, pressurized water or similar procedures, which might create droplets of infectious materials.**

APPENDIX 10: PPE DONNING EVALUATION FORM

Task Being Evaluated: Donning Level C PPE

Individual Being

Evaluated: _____

Evaluator: _____

Print

Date: _____

Signature

Start Time

Finish Time

	STEP	Criteria		Remarks	Status
1	Remove personal clothing and items	Change into machine washable or disposable garments and dedicated washable (plastic or rubber) footwear in a suitable, clean area. No personal items (e.g., jewelry, watches, cell phones, pagers, pens) should be carried beyond this point.			
2	Inspect PPE	Visually inspect the PPE ensemble to be worn to ensure it is in serviceable condition, all required PPE and supplies are available, and that the sizes selected are correct for the healthcare worker. The trained observer reviews the donning sequence with the worker before the worker begins and reads it to the worker in a step-by-step fashion.			
3	Perform Hand Hygiene	Perform hand hygiene with ABHR. When using ABHR, allow hands to dry before moving to next step.			
4	Donn inner gloves	Donn first pair of approved nitrile inner gloves.			
5	Donn CPC	Ensure coverall is large enough to allow unrestricted freedom of movement. Ensure cuffs of inner gloves are tucked under the sleeve of the CPC.			
6	Secure sleeve to inner glove	Using approved chemical tape to secure sleeve to glove (Provide tab to assist during doffing procedures).			

Task Being Evaluated: Donning Level C PPE

Individual Being Evaluated: _____

Evaluator: _____
Print

Date: _____

Signature

Start Time

Finish Time

7	Donn boots	CPC should have an attached sock and boot flap. Fold flap up and place socked foot into boot. Fold down boot flap from suit making sure that the flap covers the tops of both boot and boot cover. Note: (A boot cover can be placed onto boot before donning boot).			
8	Secure pant cuff to boot	Using approved chemical tape to secure pant cuff to boot cover (Provide tab to assist during doffing procedures).			
9	Donn respirator	Don FF APR respirator. Complete a user seal check. Verify all gaskets and components of the respirator are intact.			
10	Place hood over head	Pull hood over head and bring hood opening up to FF APR.			
11	Close front of CPC with zipper and secure flap	Secure self adhering flap over front zipper. Secure with chemical tape. (Provide tab to assist during doffing procedures).			
12	Secure hood to APR mask	Place tape along edge of hood to completely seal hood to APR mask. (Provide tab to assist during doffing procedures).			
13	Secure 2nd pair of inner gloves over CPC	Don second pair of approved nitrile inner gloves. (Provide tab to assist during doffing procedures).			
14	Donn outer gloves	Put on third pair of gloves (with extended cuffs). Ensure the cuffs are pulled over the sleeves of the coverall.			
15	Secure to CPC sleeve	Place tape along edge of glove cuff to sleeve. (Provide tab to assist during doffing procedures) Verify no openings for liquids to enter.			
16	Check all sealed opening	Inspect all sealed opening for any exposed skin.			

APPENDIX 11: PPE DOFFING EVALUATION FORM

Task Being Evaluated: Doffing Level C PPE

Individual Being Evaluated: _____

Evaluator: _____
Print

Date: _____

Signature

Start Time

Finish Time

	STEP	Criteria		Remarks	Status
1	Equipment Drop	All equipment, supplies, and tools that will be needed for additional decontamination shall be left within the Isolation Zone and placed in the equipment Drop area before beginning the PPE doffing process.			
2	Inspect PPE & wash CPC	Visually inspect the PPE ensemble to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then wash using an *EPA-registered decontamination solution focusing on visibly contaminated areas. Wash the entire CPC paying close attention to the outer-gloved hands, soles of boot covers with either an *EPA-registered disinfectant wipe or ABHR. Begin washing from top down.			
3	Boot cover & outer glove rinse	Step to next stage and rinse CPC paying close attention to the outer-gloved hands and soles of boot covers.			
4	Remove Tape	Step to next stage and first remove tape around liquid impermeable boot cover and CPC pant legs. Then remove tape at wrist between outer gloves and CPC sleeve cuffs.			
5	Remove Boot Covers	Step to next stage and rinse CPC, boot covers and outer gloves of decontamination solution			
6	Remove Outer Gloves	Step to next stage and wipe outer-gloved hands with either an *EPA-registered wipe or ABHR. Remove and discard outer gloves taking care not to contaminate inner gloves during removal process.			

Task Being Evaluated: Doffing Level C PPE

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Date printed: March 20, 2020

Individual Being Evaluated: _____

Evaluator: _____

Print

Date: _____

Signature

_____ Start Time _____ Finish Time _____

	STEP	Criteria	Remarks	Status
7	CPC & Boot Wash	Step to next stage and wash CPC and boots with either an *EPA-registered disinfectant wipe or ABHR. Wash from top down paying close attention to the soles of the boots, arms, lower abdomen, behind knees, and elbows.		
8	CPC & Boot Rinse	Step to next stage and rinse CPC and boots of decontamination solution. Wash from top down.		
9	CPC & 1 st Inner Glove Wash	Step to next stage and wash CPC and 1 st pair of inner gloves with either an *EPA-registered disinfectant wipe or ABHR. Wash from top down paying close attention to arms, lower abdomen, behind knees, elbows, and wrists.		
10	CPC & 1 st Inner Glove Wash	Step to next stage and rinse CPC and 1 st pair of inner gloves of decontamination solution. Rinse from top down.		
11	CPC & 1 st Inner Glove Removal	<p>Inspect the CPC and 1st inner gloves' outer surfaces for visible contamination, cuts, or tears. If an inner glove or CPC is visibly soiled, cut, or torn, then disinfect the glove or CPC with either an *EPA-registered disinfectant wipe or ABHR. Then remove the CPC and 1st pair of inner gloves, perform hand hygiene with ABHR on bare hands, and don a clean pair of gloves. If no visible contamination, cuts, or tears are identified on the inner gloves or CPC, then remove and discard.</p> <p>a. To remove coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out.</p> <p>b. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the coverall. Avoid contact of scrubs or disposable garments with outer surface of gown during removal.</p>		

Task Being Evaluated: Doffing Level C PPE

Individual Being Evaluated: _____

Evaluator: Print

Date: _____

Signature _____

_____ Start Time

_____ Finish Time

12	APR Removal	Step to next stage and disinfect the inner glove with either an *EPA-registered disinfectant wipe or ABHR. Remove respirator by loosening the lower clips with index finger, grasping the APR by the cartridge and remove without touching the front of the respirator. Remove cartridges from APR and dispose. Place reusable APR in designated area for decontamination.		
13	Wash 2 nd Pair of Inner Gloves	Step to next stage and disinfect 2 nd pair of inner gloves with either an *EPA-registered disinfectant wipe or ABHR.		
14	Remove 2 nd pair of Inner Gloves	Remove and discard gloves taking care not to contaminate bare hands during removal process. Perform hand hygiene with ABHR. Don a new pair of inner gloves.		
15	Inspect, Remove Boots & Underclothing	Perform a final inspection of worker for any indication of contamination of the surgical scrubs or disposable garments. If contamination is identified, immediately inform health and safety representative or their designee before exiting the CRZ. Change out underclothing.		
16	Field shower/Wash	Showers are recommended at each shift's end for workers performing high risk work (e.g., exposed to large quantities of blood, body fluids, or excreta).		
17	Dress into Street Clothing	Worker can leave CRZ wearing dedicated washable footwear and surgical scrubs or disposable garments.		
17	Protocol Evaluation/Medical Assessment	The designated health and safety representative or their designee should meet with the worker to review activities performed to identify any concerns about protocols and to record worker's level of fatigue.		

APPENDIX 12: DECONTAMINATION AND DISINFECTANT

1. Disinfectant Levels

Low-Level: Low-level disinfection inactivates vegetative bacteria, fungi, enveloped viruses (e.g., human immunodeficiency virus [HIV], and influenza viruses), and some non-enveloped viruses (e.g., adenoviruses). Low-level disinfectants include quaternary ammonium compounds, some phenolics, and some iodophors.

Intermediate-Level: Intermediate-level disinfection does not necessarily kill bacterial spores, but it does inactivate *M. tuberculosis* which is substantially more resistant to chemical germicides than ordinary vegetative bacteria, fungi, and medium to small viruses (with or without lipid envelopes). Chemical germicides with sufficient potency to achieve intermediate-level disinfection include chlorine-containing compounds (e.g., sodium hypochlorite), alcohols, some phenolics, and some iodophors.

High-Level: High-level disinfection is accomplished with powerful, sporicidal chemicals (e.g., glutaraldehyde, peracetic acid, and hydrogen peroxide) that are not appropriate for use on housekeeping surfaces. These liquid chemical sterilants/high-level disinfectants are highly toxic. Use of these chemicals for applications other than those indicated in their label instructions (i.e., as immersion chemicals for treating heat-sensitive medical instruments) is not appropriate.

2. Disinfectants

a. Alcohol

- i. Their cidal activity drops sharply when diluted below 50% concentration, and the optimum bactericidal concentration is 60%–90% solutions in water (volume/volume).
- ii. Alcohols tuberculocidal, fungicidal, and virucidal but do not destroy bacterial spores.
- iii. Alcohol-based products require a long dwell time which also may require a cleaning of the surface. They also evaporate rapidly, making extended exposure time difficult to achieve unless the items are immersed.
- iv. Alcohols are flammable and consequently must be stored in a cool, well-ventilated area.
- v. Intermediate-level disinfection

b. Chlorine

- i. Considered an intermediate-level disinfectants
- ii. Hypochlorites, the most widely used of the chlorine disinfectants, are available as liquid (e.g., sodium hypochlorite) or solid (e.g., calcium

hypochlorite). The most prevalent chlorine products in the United States are aqueous solutions of 5.25%–6.15% sodium hypochlorite.

- iii. They have a broad spectrum of antimicrobial activity, do not leave toxic residues, are unaffected by water hardness, are inexpensive and fast acting.
- iv. Disadvantages of hypochlorites include corrosiveness to metals in high concentrations (>500 ppm), inactivation by organic matter, discoloring or “bleaching” of fabrics, release of toxic chlorine gas when mixed with ammonia or acid (e.g., household cleaning agents).

c. Hydrogen Peroxide

- i. Considered an high-level disinfectants
- ii. Published reports ascribe good germicidal activity to hydrogen peroxide and attest to its bactericidal, virucidal, sporicidal, and fungicidal properties.
- iii. Under normal conditions, hydrogen peroxide is extremely stable when properly stored (e.g., in dark containers). The decomposition or loss of potency in small containers is less than 2% per year at ambient temperatures.
- iv. Commercially available 3% hydrogen peroxide is a stable and effective disinfectant when used on inanimate surfaces.
- v. Disinfecting a wider range of microorganisms, faster, safer, and greener.

d. Glutaraldehyde

- i. Glutaraldehyde is a saturated dialdehyde that has gained wide acceptance as a high-level disinfectant and chemical sterilant.
- ii. Only when the solution is “activated” (made alkaline) pH 7.5–8.5 does the solution become sporicidal. Once activated, these solutions have a shelf-life of minimally 14 days.
- iii. Glutaraldehyde is noncorrosive to metal and does not damage lensed instruments, rubber or plastics.
- iv. Glutaraldehyde should not be used for cleaning noncritical surfaces because it is too toxic and expensive.

e. Quaternary Ammonium Compounds

- i. Considered an low-level disinfectants
- ii. The quaternary ammonium compounds are widely used as disinfectants.
- iii. The quaternaries commonly are used in ordinary environmental sanitation of noncritical surfaces, such as floors, furniture, and walls.
- iv. EPA-registered quaternary ammonium compounds are appropriate to use for disinfecting medical equipment that contacts intact skin (e.g., blood pressure cuffs).

f. Surfactants

- i. Cleaning is the necessary first step of any sterilization or disinfection process. Cleaning is a form of decontamination that renders the environmental surface safe to handle or use by removing organic matter, salts, and visible soils, all of which interfere with microbial inactivation. **The physical action of scrubbing with detergents and surfactants and rinsing with water removes large numbers of microorganisms from surfaces.** If the surface is not cleaned before the terminal reprocessing procedures are started, the success of the sterilization or disinfection process is compromised.

3. Dwell Times

Any time a manufacturer releases a new disinfectant, the goal will be to get as short a dwell time as possible, However 30 seconds may be the limit as to how fast disinfectants achieve efficacy. Most dry time for any liquid product that is sprayed on a surface is two to three minutes,

Superbugs: According to the U.S. Centers for Disease Control and Prevention, antibiotic-resistant bacteria cause life threatening diarrhea. It commonly affects people who are already on antibiotics, which have killed the good bacteria in the digestive system, leaving it vulnerable to these bacteria. It often requires a longer dwell time, at least three minutes.

Influenza: Flu is a common virus that is relatively easy to kill. Many facilities target flu, including healthcare, educational and commercial. Kill claims are down to 60 seconds for different types of flu, including bird flu, H1N1 and influenza A.

Norovirus: This extremely contagious group of viruses causes inflammation of the stomach and/or intestinal lining and is a concern in healthcare settings, as well as hospitality settings such as cruise ships. Contact times range from one to five minutes.

MRSA: This antibiotic-resistant staph infection mostly affects the skin, but can also cause life-threatening bloodstream infections in hospital settings. Most types of facilities would want to disinfect to kill MRSA, and kill claims range from one to five minutes.

Human Coronavirus: These usually cause mild respiratory symptoms. SARS, which hit in 2003, was a coronavirus. A novel coronavirus, Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and the new COVID-19 which emerged as a new health threat

in the United States in December of 2019. Many disinfectants target this virus with dwell times of one to five minutes.

4. Decontamination Methods

One of the most common routes of contamination of the COVID-19 Coronavirus is through contact with contaminated surfaces. In other words, the virus can fixate itself on various surfaces and remain latent until in touch with the human body. Some viruses are known for surviving over several days on dry surfaces.

By touching contaminated surfaces and posteriorly touching eyes, mouth, and nose, individuals manually bring the virus into their mucosa, where it then infiltrates the organism. Therefore, keeping surfaces clean and adequately disinfected is of crucial importance to patient's safety and sanitation of office spaces and common areas.

The choice of decontamination method should be related to the infection risk associated with the intended use of the equipment. Other factors to be taken into consideration when choosing a method of decontamination include the nature of the contamination, the time required for processing, the heat, pressure, moisture and chemical tolerance of the object, the availability of the processing equipment and the quality and risks associated with the decontamination method.

Decontamination can be broken down to two groups;

- Those with frequent hand-contact ("high touch surfaces"). High-touch housekeeping surfaces (e.g., doorknobs, light switches, table tops, desks, work stations, lunch areas, wall areas around the toilet).
- Those with minimal hand-contact (e.g., floors, drapes, ceilings, carpet)

Cleaning and Disinfecting

- Perform a gross decontamination of any visible grease, dirt, visible debris. Clean all "high-touch" surfaces, such as counters, tabletops, doorknobs, bathroom fixtures, toilets, phones, keyboards, tablets, and bedside tables as well as floor and any horizontal surface. Also, clean any surfaces that may have blood, body fluids and/or secretions or excretions on them.

- Decontamination will be completed using either a diluted bleach solution (1:10 dilution (~6,000 ppm) or 1.5 cups of standard bleach in a gallon of water) or an “EPA-approved”, hospital grade disinfectant.
- Contact time on any surface should be in accordance with manufacturer recommendation or at least two minutes.
- The CDC advises the use of EPA-registered chemical germicides that provide low or intermediate level disinfection for SARS during general use (surface and noncritical patient-care equipment) because these products inactivate related viruses with similar physical and biochemical properties. CDC's Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 provides information on the effectiveness of germicides on coronaviruses.

There is no single technique to address all kinds of decontamination problems. The selection of technology and procedures depends on:

- The type of facility
- The physical and chemical properties of the contaminants
- Physical properties of contaminated material(s)
 - Stainless
 - Carbon steel
 - Concrete
 - Solid surface
 - Porous
 - Coated surfaces
 - High roughness
- The secondary waste generated
- Cost
- Efficiency
- Objective
 - Return to service
 - Decommission
 - Sterilization
- Safety

a) Physical processes / Mechanical action

The primary methods are with the use of brushes, abrasive pads, and surfactants water. The main disadvantage is the labor required and all surfaces must be accessible.

b) Heating

The oldest and most recognized agent for inactivation of microorganisms is heat.

i. Steam Sterilization

- Of all the methods available for sterilization, moist heat in the form of saturated steam under pressure is the most widely used and the most

dependable. Steam sterilization is nontoxic, inexpensive, rapidly microbicidal, sporicidal, and rapidly heats and penetrates fabrics. Like all sterilization processes, steam sterilization has some damaging effects on some materials including corrosion.

c) Chemical Decontamination

The main disadvantage is the generation of secondary liquid waste (rinsate), environmental, worker exposure. *(See Section 2 of this appendices)*

i. Hydrogen Peroxide (Vaporized)

- Faster cycles provide shorter time for completion
- Excellent efficacy against a range of bacteria
- Low-level health and safety issues
- Environmentally friendly
- Safe for use with electronics and electrical devices

d) Ultraviolet

Studies of the earlier SARS virus, (thought to be similar to SARS-CoV-2), have found UV Disinfection to be highly effective. It is also proven highly effective against other dangerous Viruses such as Ebola, and many harmful bacteria. UV Disinfection is a powerful additional tool to add another layer on top of existing protocols such as hygiene, hand washing and cleaning.

e) Ozone

Ozone is a powerful sanitizer that leaves no residual on the surface of equipment or materials. This limits the corrosive potential of ozone and provides a less harsh or gentle sanitizer than many of the common chemicals used.

Ozone had a strong caustic effect upon rubber materials. Despite these disadvantages, ozone decontamination was demonstrated to be superior to formaldehyde vaporization because of convenience, insignificant inhalation of the disinfectant by the hospital staff, and very rapid expulsion of the gas after ventilation. Because the disadvantages of ozone can be easily controlled, this study suggests that ozone decontamination is a promising method.

APPENDIX 13: Reserved

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