



**USAID** | **DELIVER PROJECT**  
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# GENERAL INSTRUCTIONS

## SURVEILLANCE BIOSECURITY (SBS) KIT

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# **GENERAL INSTRUCTIONS**

## **SURVEILLANCE BIOSECURITY (SBS) KIT**

**USAID | DELIVER PROJECT, Task Order 2**

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# CONTENTS

- Acronyms..... v
- Acknowledgments ..... vii
- Introduction ..... 1
- Intended Use of the Kit..... 3
- Intended Users of the Kit..... 5
- Framework for Kit Deployment..... 7
- Kit Deployment and Utilization..... 9
  - Premobilization..... 10
  - OnSite..... 11
  - Demobilization ..... 12
  - End of Day ..... 14
- Donning The SBS Kit PPE ..... 15
  - Safety precautions..... 15
  - Materials and Equipment Required..... 15
  - Instructions..... 15
- Doffing The SBS Kit PPE ..... 17
  - Safety precautions..... 17
  - Materials and Equipment Required..... 17
  - Instructions..... 17
- Preparing the Cleaning Solution..... 19
  - Safety precautions..... 19
  - Materials and Equipment Required..... 19
  - Instructions..... 19
- Purifying Water for Use with the Disinfectant..... 21

**Figures**

- 1. General Outbreak Area ..... 8
- 2. Summary Deployment of Surveillance Biosecurity Kit ..... 9

**Appendices**

- A. Donning the SBS Kit PPE ..... 15
- B. Doffing the SBS Kit PPE..... 17

C. Preparing the Cleaning Solution.....	19
D. Purifying Water for Use with the Disinfectant.....	21

# ACRONYMS

3-D Kit	Depopulation, Decontamination, and Disposal (3-D) Kit
AI	avian influenza (bird flu)
AIIS	Avian Influenza International Stockpile
EU	European Union
FAO	Food and Agriculture Organization
H5N1	influenza A virus subtype
OIE	World Organization for Animal Health
PPE	personal protective equipment
SBS	Surveillance Biosecurity Kit
SOP	standard operating procedure
USDA	U.S. Department of Agriculture
USAID	U.S. Agency for International Development



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# INTRODUCTION

To support the containment of and response to a highly pathogenic avian influenza outbreak in recipient countries throughout the globe, the U.S. Agency for International Development (USAID) maintains the Avian Influenza International Stockpile (AIIS). The stockpile contains personal protective equipment (PPE) kits, decontamination kits, and laboratory specimen collection kits. In response to the recommendations from the USAID AIIS Commodity Review Meeting in September 2007 and the USAID Decontamination Kit Review Meeting in April 2008, the USAID Avian Influenza (AI) Unit is replacing the current decontamination kit with two new kits for responding to and containing an avian influenza outbreak: the Depopulation, Decontamination, and Disposal (3-D) Kit and the Surveillance Biosecurity Kit (SBS).

In August 2008, to ensure consistency with the expert panel's recommendations and to maintain the technical integrity of the new kits—the USAID | DELIVER PROJECT, Task Order 2, implemented by John Snow, Inc.; and with support from USAID's Avian Influenza Unit; and partners, the Academy for Educational Development (AED) and the Development Alternatives, Inc. (DAI)—hosted a kit instructions development workshop. At the workshop, biohazard response experts, who had participated in previous focus groups, developed step-by-step instructions on how to use the 3-D and SBS Kits, based on the deployment approach outlined in USAID Decontamination Kit Review. In addition to step-by-step instructions, the biohazard response experts prepared standard operating procedures (SOPs) and operational checklists for correctly deploying the kits.



# INTENDED USE OF THE KIT

USAID developed the Surveillance Biosecurity (SBS) Kit to prevent the unintended spread of disease to humans, animals, and geographical areas during a highly pathogenic avian influenza outbreak. The kit provides equipment for team members to protect themselves while they are conducting surveillance and taking a census of susceptible species that are adjacent to the infected areas. It also enables them to practice effective biosecurity while they are surveying potentially infected areas.

The USAID SBS Kit provides the following:

- It complies with the U.S. Department of Agriculture (USDA) best practices, the European Union (EU), and the World Organization for Animal Health (OIE) guidelines, as well as the rapid response section outlined in the Food and Agriculture Organization (FAO) document titled “Preparing for a Highly Pathogenic Avian Influenza.”
- It supports the health and safety of a two-person surveillance team.
- It enables the investigation of possible additional disease occurrences in up to five locations in a safe, controlled manner, while preventing the spread of the disease.
- It allows for the safe containment and disposal of suspect material.
- It provides for the effective cleaning and disinfecting of potentially contaminated equipment, personnel, and vehicles.

The USAID SBS Kit should be deployed using best practices in worker safety, zoning or quarantine protocol, biosecurity methods, depopulation techniques, and cleaning and disinfecting principles.



# INTENDED USERS OF THE KIT

The primary users of the SBS Kit will be the first responders who are designated to perform active surveillance within the designated 10 kilometer (km) zone of the outbreak site so they can (a) detect additional suspected cases, (b) conduct rapid diagnostic tests, and (c) collect samples from poultry for further testing.

Other users of the SBS Kit include personnel staffing the road and intersection checkpoints, government officials, animal health professionals, or other personnel who have a legitimate reason for accessing the 10 km zone. The kit is intended to support a team of two professionals who perform the interviewing and sampling tasks. A third individual should remain back at the SBS team vehicle to control any interested onlookers who may want to follow the interviewing and sampling activities, thus resulting in potential spread of the virus.

All personnel using the SBS Kit must strictly adhere to personal protective equipment (PPE) donning and doffing procedures and decontamination protocols. Further, access to the 10 km zone will be allowed only after the personnel have received a brief training on the PPE protocols and decontamination procedures. This requirement will ensure that biosecurity will be maintained and that accidental spread of the virus to other animals and humans will be prevented.



# FRAMEWORK FOR KIT DEPLOYMENT

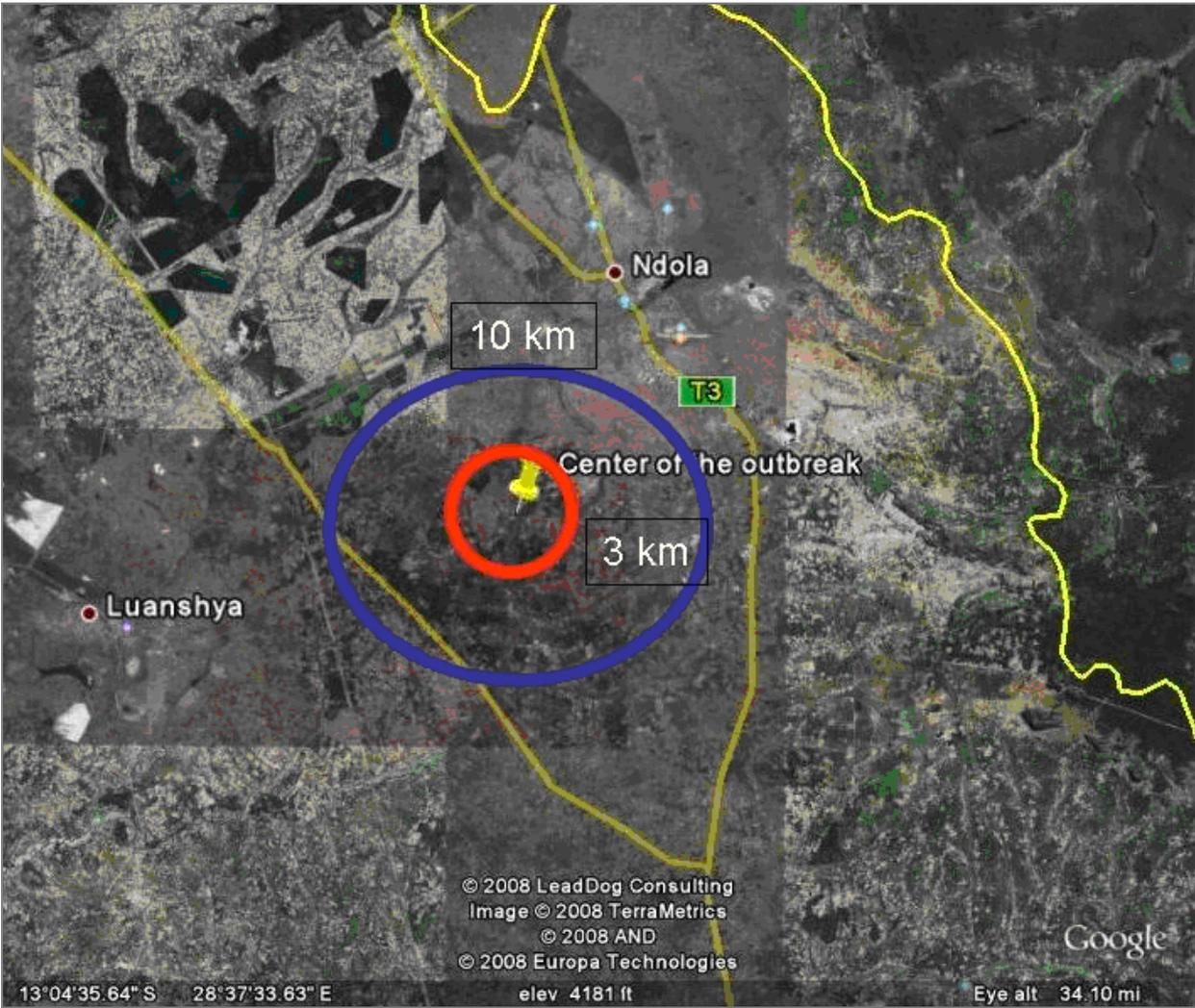
Drawing on the recommended practices and procedures for responding to an identified outbreak of avian influenza, as outlined in the FAO document titled “Preparing for Highly Pathogenic Avian Influenza,” both kits were stocked and configured using the following framework, which is required to support adequate control of the influenza A virus subtype (H5N1). The framework was also used to establish the appropriate actions to ensure that the kits supported such actions. This framework follows the OIE, USDA, and biohazard response industry best practices.

After an outbreak is identified, the outbreak site becomes the center of a series of concentric zones of containment. Those zones control movement in and out of the contaminated area and then delineate the location of disease surveillance, bird depopulation, disposal, and decontamination activities. The activities within the zones are conducted to contain the spread of the virus into neighboring areas. Typically, the outbreak site contains the following zones (see also figure 1):

- an outside perimeter at 10 km from the center of the outbreak site (furthest from the outbreak site)
- another inner perimeter at 3 km from the outbreak center
- a zone within the 1 km radius of the outbreak center (infected area).

(This final zone, or infected area, serves as the location of the actual depopulation and decontamination activities at the outbreak site.)

Figure I. General Outbreak Area

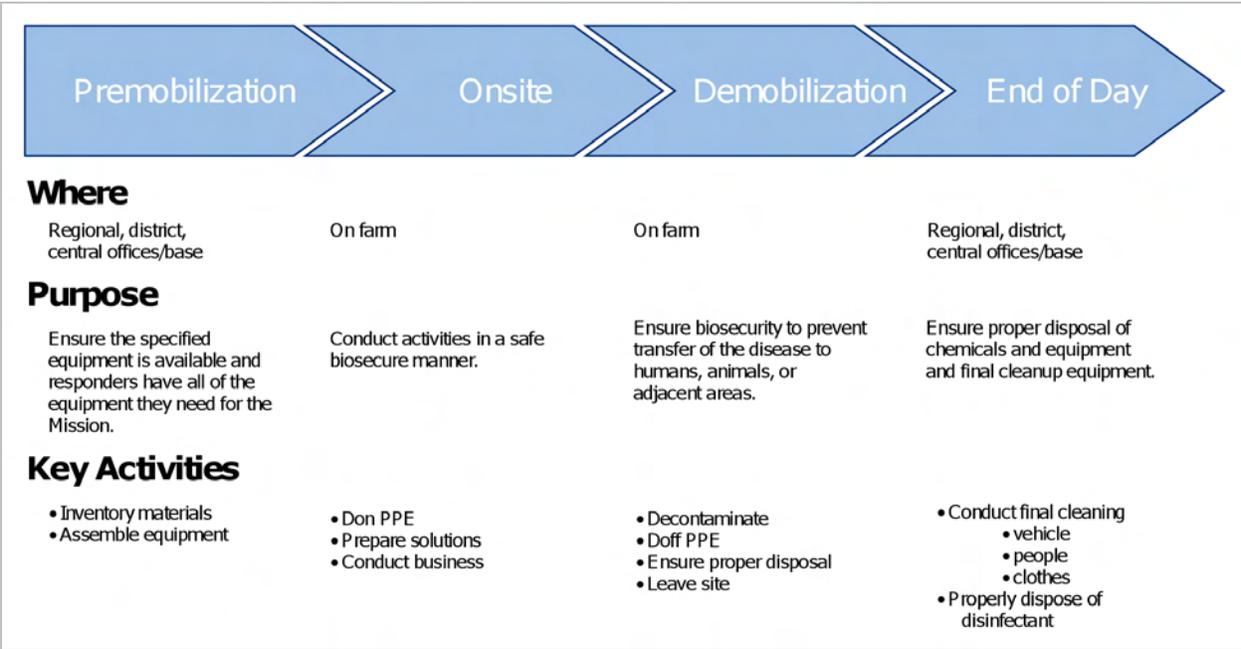


Courtesy of Dr. Thomas Deeb, T&M Associates, May 2008

# KIT DEPLOYMENT AND UTILIZATION

For simplicity, the activities involved in the deployment of the SBS Kit have been divided into four stages: premobilization, onsite, demobilization, and end of day. Figure 2 provides an overview of those stages, where they occur, the purpose of each stage, and an outline of the basic activities within each stage.

**Figure 2. Summary—Deployment of Surveillance Biosecurity Kit**



# PREMOBILIZATION

The purpose of the premobilization activities is to ensure that all of the equipment that is needed to complete the mission is available and in good working order. This task is typically done at the central, regional, or local office before departure to the surveillance site.

## ACTIVITIES

1. Open box.
2. Find and remove the packing list.
3. Remove the insert.
4. Remove each item from the kit, and confirm the quantities that are present,
5. Note any missing items that are identified by the packing list, the insert, or both, and report those items to the proper authorities.
6. Remove booties and alcohol swab packets from the white PPE bags, and place them in the transportation vehicle that will be used.
7. Assemble the 1-gallon sprayer. (Note: See the insert and manufacturer's directions for assembly instructions.)
8. Once the materials are inventoried and the sprayer is assembled, load the transportation vehicle (truck, car, or moped).
9. Travel to the site, and park at a safe distance from the animals and infected premise.

Please note that deployment of the kit requires water. The responders will need about 10 liters of water for each location. If water is not readily available at the surveillance site, the responders may need to take water with them to the site.

# ONSITE

The purpose of these activities is to conduct the necessary surveillance activities (interviews, visual inspection of premises and animals, and sample collection) in a biosecure manner.

## ACTIVITIES

1. Cover footwear with disposable booties before exiting the vehicle.
2. Exit the vehicle, and don PPE according to the standard operating procedure (SOP) titled “Donning the SBS PPE” (Appendix A).
3. If not already obtained, obtain 10 liters of water (preferably drinking water or clear water).
4. Place 1 biohazard bag from the PPE kit on the ground, and assemble the following equipment on the bag: Virkon® tablets, biohazard bags, brush, tape, soap, flocculant (PUR®), sample collection kit (as required), and other surveillance tools as needed.
5. Conduct surveillance activities (interviews, visual inspection of premises and animals, and sample collection).

### *Decision Point*

- a. If no outbreak is suspected, proceed to **Demobilization Sequence A**.
- b. If outbreak is suspected, proceed to **Demobilization Sequence B**, and follow notification procedures as outlined by your officials.
- c. If samples have been taken but an outbreak has not been confirmed yet, proceed to **Demobilization Sequence B**.

# DEMOBILIZATION

## DEMOBILIZATION SEQUENCE A

Demobilization Sequence A does not require decontamination of the personnel or the vehicle because there is no evidence of an outbreak at the site.

### Activities

1. Transfer all of the materials that were placed on the biosecurity bag back inside the vehicle.
2. Doff the PPE according to the SOP titled “Doffing the SBS PPE” (appendix B).
3. Give the biosecurity bag to the landowner, and ensure disposal in accordance with local regulations or guidelines.
4. Travel to the next location, or move to the end of day activities.

## DEMOBILIZATION SEQUENCE B

Demobilization Sequence B is used if an outbreak is suspected and or when samples have been collected. Given the heightened risk in these situations, all materials, personnel, and vehicles need to be decontaminated to reduce the risk of spreading the disease.

### Activities

1. Place the PPE bag on the ground (the cleaned tools will be placed on this clean surface before being transferred to the vehicle).
2. Fill the bucket 2/3 full with water.
3. Prepare the cleaning solution according to the SOP titled “Preparing the Cleaning Solution” (Appendix C).
4. Dip the scrub brush in the cleaning solution, and clean any of the sample collection equipment. When the sample collection equipment is visually clean, place it on the PPE bag.
5. Dip the scrub brush in the cleaning solution, and scrub the wheels, wheel wells, and undercarriage of the vehicle as needed until they are visually clean. This step may need to be repeated until all of the dirt is removed.
6. Scrub the outside of the bucket with the cleaning solution and scrub brush. When the bucket is visually clean, empty the contents of the bucket in accordance with local guidelines and requirements.
7. Refill the bucket with water (2/3 full).

### *Decision Point*

- a. If the water is visually clear, proceed to **step 8**.
- b. If the water is from a surface source and is murky, discolored, or highly contaminated with organic material, refer to the SOP titled “Purifying Water for Use with the Disinfectant” (appendix D). After purification, proceed to **step 8**.

8. Fill the sprayer with clean water to the 4-liter mark.
9. Add 8 Virkon tablets to the sprayer, and allow the mixture to stand for about 10 minutes. Agitate the solution during the 10 minutes to improve mixing and dissolving of the tablets. Do not put the cap on the sprayer until all of the effervescence (bubbling) has stopped.
10. After 10 minutes, place the cap on the sprayer and lock into place.
11. Pump sprayer handle 20 times.
12. Spray the cleaned equipment and tools with the disinfectant solution.
13. Spray the vehicle tires, wheel wells, and undercarriage of the vehicle with the disinfectant solution.
14. Spray the outside of the bucket with the disinfectant, and place the bucket on the PPE bag.
15. Spray the outside of the sprayer with the disinfectant solution.
16. When application of the disinfectant is completed, place the brush, soap, sprayer, and other items in the bucket, and stow those items safely in the vehicle.
17. Place any remaining items for disposal inside the biohazard bag.
18. Doff the PPE according to the SOP titled “Doffing the SBS PPE” (Appendix B).
19. Seal the biohazard bag, and give it to the landowner. Ensure disposal in accordance with local regulations or guidelines.
20. Use the alcohol packets to wipe hands and steering wheel.
21. Travel to the next location, or move to the end of day activities.

## **END OF DAY**

To help ensure the safety and health of the surveillance team, several activities should occur at the end of each day.

### **ACTIVITIES**

1. Wash the vehicle to remove any dust, grime, and dirt.
2. Dispose of any remaining Virkon solution in accordance with local laws and regulations.
3. Make sure all personnel involved in the surveillance activity take a shower.
4. Make sure all clothing that was worn is now washed.

# APPENDIX A

## DONNING THE SBS KIT PPE

The purpose of this standard operating procedure (SOP) is to delineate the steps required for donning the personal protection equipment (PPE) associated with the Surveillance Biosecurity (SBS) Kit. It is important to note that these instructions were developed specifically for the PPE included with the SBS. Donning instructions for other types and quantities of PPE will vary.

### SAFETY PRECAUTIONS

- Verify that these instructions match the types and quantities of PPE included with the SBS.
- Inspect all items of the PPE ensemble to ensure that no rips, tears, or seam separations are present in the PPE before donning.
- Determine which size suit best fits the worker.
- During work, periodically inspect for rips, tears, punctures, and seam failures.

### MATERIALS AND EQUIPMENT REQUIRED

- TYVEK™ suit with hood and attached booties
- Gloves—a set of blue nitrile and a set of transparent latex
- TYVEK fabric overbooties
- N-95 respirator
- Goggles

### INSTRUCTIONS

1. Insert sandaled or shod feet into TYVEK fabric overbooties, if not already donned.
2. Place overbooties into the attached boot pouches of the TYVEK suit.
3. If the SBS crew is donning the PPE for the purpose of entering a suspected infected premise for sampling, it is advised that an extra set of overbooties be donned or placed over the attached TYVEK boot pouches before leaving the vehicle to take samples. This extra set of overbooties is to be worn throughout the sampling event. Once sampling is completed, it is advised that the crew remove or doff this extra set of overbooties before leaving the suspected infected premise. It is advised that the SBS crew leave that set of now potentially contaminated overbooties at the suspected infected premise in the care of the owner while advising the farmer or owner to secure them so that the overbooties do not leave the premises.

4. Pull TYVEK suit up over legs and torso.
5. Insert arms into sleeves; then place the TYVEK suit hood over head, and adjust the elastic of the hood around face.
6. To reduce billowing of suit, stretch the provided duct tape around the midline of the torso so it functions as a belt.
7. If suit is still too big, use duct tape in the groin area to reduce billowing and to allow easier walking with the suit.
8. Put on transparent latex gloves first.
9. Put on blue nitrile gloves next.
10. Stretch arms out, and wrap duct tape several times, firmly but not tightly, over the sleeve of the suit and in contact with the blue glove at the wrist. Leave an ample end on the final wrap, and fold the end over itself, thereby creating a tab for easier removal later.
11. Place N-95 respirator over nose and mouth, taking the two elastic bands up and over the hood.
12. Stretch lower elastic band at a downward angle across lower neck.
13. Stretch upper elastic band at an upward angle across upper back of head.
14. Pinch nosepiece across bridge of nose to seal comfortably.
15. Place goggles over eyes, and stretch elastic band overhead on the outside of hood. Adjust band to fit snugly.

## **APPENDIX B**

# **DOFFING THE SBS KIT PPE**

The purpose of this SOP is to delineate the steps required for doffing the PPE associated with the SBS Kit. It is important to note that these instructions were developed specifically for the PPE included with the SBS Kit. Doffing instructions for other types and quantities of PPE will vary.

## **SAFETY PRECAUTIONS**

- Verify that these instructions match the types and quantities of PPE included with the SBS Kit.

## **MATERIALS AND EQUIPMENT REQUIRED**

- TYVEK suit with hood and attached boot pouches
- Gloves—a set of blue nitrile and a set of transparent latex
- Fabric overbooties
- N-95 respirator
- Goggles

## **INSTRUCTIONS**

Upon completion of active surveillance activities, workers will doff PPE before entering the vehicle.

1. Open a red biohazard bag provided with the SBS.
2. Have the worker lean over and then reach above his or her head to grab the elastic band and pull it over the hood and straight down toward the ground, thus allowing the goggles' elastic band to slip off the TYVEK hood.
3. Place goggles in the red biohazard bag. If blunt-nose scissors are available, the elastic band can be cut.
4. While the worker is still bent over, have that person use the same action to remove the N-95 respirator. If blunt-nose scissors are available, they should be used to cut the elastic bands.
5. Place the respirator in the red biohazard bag.
6. Using the duct tape tabs, remove the duct tape wraps on both wrists.
7. Using the opposite blue glove, grasp the outside of glove at the wrist and peel the glove off.
8. Hold removed glove in gloved hand.
9. Slide fingers of latex-gloved hand under remaining blue glove at wrist.

10. Peel the remaining blue glove off over the first blue glove, thereby creating an enclosure for both gloves.
11. Place both enclosed blue gloves in the red biohazard bag.
12. Peel hood off head, and then remove TYVEK suit by stepping out, being careful to leave TYVEK outer booties on while removing feet from suit boot pouches.
13. Place TYVEK suit in the red biohazard bag.
14. Move to the front of the vehicle. Using great care, sit in vehicle, and remove final outer bootie while not touching the ground with shod or sandaled feet. Place shod or sandaled foot in vehicle.
15. Place the bootie in the red biohazard bag.
16. Using the same technique on the remaining foot, remove and place bootie in the red biohazard bag with the other bootie.
17. Remove latex transparent gloves using same technique as outlined for the blue gloves (see steps 7–11).
18. Place the gloves in the red biohazard bag.
19. Seal the red biohazard bag with duct tape.
20. Open the alcohol packet, and wipe hands and steering wheel. Then properly dispose of the alcohol sachet.

## **APPENDIX C**

# **PREPARING THE CLEANING SOLUTION**

The purpose of this SOP is to outline the steps required to prepare the cleaning solution. It is important to note that these instructions were specifically designed for the soap that is provided in the biosecurity kit. If the materials change, it may be necessary to change the instructions to reflect the change in materials.

This SOP is designed to prepare a 1% solution of cleaning solution with a total volume of 4 liters. Although it is recommended that the water used for this preparation be clean and free of organic materials, that precaution is not required.

## **SAFETY PRECAUTIONS**

- Adhere to the manufacturers' recommendations for PPE at a minimum. Because these solutions are typically being prepared onsite by personnel in full PPE, including eye protection and gloves, this precaution meets the recommend PPE.
- Disposal of materials should be in accordance with local laws and regulations.

## **MATERIALS AND EQUIPMENT REQUIRED**

- 4 liters of water, preferably of drinking water quality
- At least 80 grams of concentrated Tide® with bleach soap (50% active ingredient)
- Bucket or mixing container large enough to hold the water and soap.

## **INSTRUCTIONS**

1. Place the 4 liters of water into the bucket.
2. Add 80 grams of the powdered soap slowly to the bucket while using the brush to stir the solution as the powder is added.
3. Stir for approximately 5 minutes or until all of the solids are dissolved in the solution.



## **APPENDIX D**

# **PURIFYING WATER FOR USE WITH THE DISINFECTANT**

The purpose of this SOP is to outline the steps required to prepare the water for use with the disinfectant. It is important to note that these instructions were specifically designed for the PUR® tablets that are provided in the SBS Kit. If the materials change, it may be necessary to change the instructions to reflect the change in materials.

This SOP is designed to prepare about 10 liters of clean water.

## **SAFETY PRECAUTIONS**

1. Adhere to the manufacturers' recommendations for PPE at a minimum. Because these solutions are typically being created onsite by personnel in full PPE (including eye protection and gloves) this precaution meets the recommend PPE.
2. Disposal of materials should be in accordance with local laws and regulations.

## **MATERIALS AND EQUIPMENT REQUIRED**

1. 10 liters of water
2. 1 packet of PUR
3. Bucket or mixing container large enough to hold the water.

## **INSTRUCTIONS**

1. Place no more than 10 liters of water into the bucket
2. Add 1 packet of PUR.
3. Stir for 5 minutes.
4. Allow the material to settle for 5 minutes.
5. Decant the purified water into the sprayer for use (filtering through a cloth is recommended to prevent premature clogging of the sprayer).



For more information, please visit [deliver.jsi.com](http://deliver.jsi.com).

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