

## ENVIRONMENTAL CLEANING AND DISINFECTION FOR PANDEMIC INFLUENZA EXPOSURE CONTROL

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(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

### Introduction

Influenza A viruses have been responsible for past pandemic flu events. This type of virus is also associated with seasonal flu. The difference is related to the specific subtype of virus. The subtype can develop into a pandemic flu virus when: the subtype is new to humans; humans have developed little immunity; and the virus is effectively and efficiently transmitted between humans.

At present, public health agencies are concerned about a specific subtype of influenza A virus circulating in some bird populations in Africa, Europe, and Asia. This particular virus is highly contagious among birds, and can be deadly to them. Although some human infections have occurred, they have been isolated to individuals with very close contact with infected bird populations. At present, it is not known whether this specific virus will change in a manner to allow for efficient human-to-human transmission, thus becoming a potential source for the next pandemic flu event. Regardless, most experts agree that another pandemic flu event will occur; but they are not certain what specific virus will be involved or when the next event will occur.

### Scope

Unlike bacteria and fungi, viruses require a living host. In general, influenza A virus can survive in the environment only for short periods of time (up to many hours), depending on a number of environmental factors (i.e., temperature, humidity, exposure to sunlight, etc.). Human infection can occur through contact with contaminated surfaces where a virus remains viable enough to invade host cells. Therefore, it is important to regularly and routinely disinfect potentially contaminated work surfaces to minimize potential exposures.

The information in this SOP is primarily intended for the general campus community and UNL employees who are not health care providers. UNL health care employees should follow the specific guidance and procedures established by their department for their facility.

General information regarding exposure control, including engineering and administrative controls and personal protective equipment, is provided in the EHS SOP, ***Minimizing Potential Employee Exposures During a Pandemic Flu Event***. This SOP does not address disposal of infected animal carcasses. Such procedures would be situation dependant and developed by EHS after consultation with the Nebraska Departments of Environmental Quality and Agriculture.

### Information Sources

This SOP summarizes current recommendations from public health agencies, available in the public domain. WHO, CDC, OSHA, and other public health agencies may modify recommendations based on specific attributes of a specific pandemic flu virus. Additional UNL-

specific information during a pandemic event will be available on the UNL Emergency Planning and Preparedness website (<http://emergency.unl.edu/>).

### **Infection Materials**

Depending on the specific type, viruses have the potential to be present in all body secretions (saliva, nasal fluid), fluids (blood, cerebrospinal fluid), and eliminated wastes (feces).

Environmental surfaces can harbor viruses when contaminated with a body fluid/secretion from an infected host (animal or human).

### **Suitable Disinfectants**

Soap and hot water is an effective viral disinfectant. In addition, influenza A viruses are susceptible to the classes of disinfectants listed below. In any case, a product should be registered with EPA if it is marked as having anti-microbial properties.

- Phenolics.
- Quaternary ammonia.
- Hydrogen peroxide.
- Sodium hypochlorite\*.
- Ethyl alcohol (95% ethanol hand disinfectant have greater activity than isopropyl alcohol hand disinfectants).

When selecting a disinfectant:

- Consider the surfaces to be cleaned (porous or non-porous).
- Follow the manufacturer's recommendations for use, dilution, and contact time.
- To ensure efficacy of disinfectant, surfaces must first be cleaned to remove any organic matter. This may be accomplished by using a cloth or mop saturated with disinfectant. Once cleaned, the surfaces must be fully disinfected using the method recommended by the manufacturer.
- See the EHS SOP, ***Disinfectants for Biohazardous Materials*** for more information on disinfectants.

\*Additional information for bleach (sodium hypochlorite):

- Inactivated by organic material (body secretions, vomit, blood, feces). Surfaces must be cleaned before decontaminating.
- Use a 1% to 10% solution (50,000ppm of available chlorine) with a contact time of at least 10 minutes.
- Must consider available chlorine in purchased bleach (household bleach sold in 2.5% and 5% containers)
- Bleach solutions degrade over time and must be made fresh daily.
- Do not use bleach with acidic detergents.
- Use in well ventilated area.

### **General Disinfection/Cleaning Considerations**

- Employ techniques to minimize potential contamination – e.g., avoid common use items/objects, cover porous surfaces likely to contact infected hosts with impermeable materials (i.e., plastic over seats used in vehicles to transport ill persons), use disposable items (i.e., paper towels rather than linen towels) when feasible, etc.
- Do not spray (fog) rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit
- Do not clean with dry dusting or sweeping as this may create aerosols. Use damp cleaning methods.

- Clean floors and other horizontal surfaces such as window sills, countertops, and shelves.
- Clean frequently touched items such as door knobs, telephones, equipment buttons, faucet handles, etc.
- Change mop heads, rags, and similar items and disinfectant solutions frequently during the decontamination procedure. Consider disposable cleaning items. Work from areas of light contamination to areas of heavier contamination.
- Use a double bucket method (one bucket for cleaning solution, one for rinsing).
- Clean, disinfect, and dry equipment used for cleaning after each use.
- Use appropriate personal protective equipment and in the proper manner. See EHS SOP, ***Minimizing Potential Employee Exposures During a Pandemic Flu Event***. Consult EHS to determine if the proposed cleaning/disinfection process/area places an employee at increased risk of infection and/or necessitates certain medical surveillance, training, or other safety requirement.

### Specific Disinfection/Cleaning Guidance

- ***Dishes and Eating Utensils*** – Food service employees should wear gloves when handling potentially contaminated eating utensils and dishes (used by a known or suspected infected host). Effective decontamination of non-disposable items is achieved by washing in a properly functioning dishwasher at recommended temperatures and quantities of detergent. Disposable items can be discarded as ordinary refuse.
- ***Linens and Laundry*** – Clothing, bedding and towels should not be shaken or otherwise handled in a manner that may generate aerosols. Bag securely before removing from and potentially contaminated areas. Laundry may be washed in standard washing machine using warm water and detergent. Bleach may be added. Personnel handling potentially contaminated laundry should wear disposable gloves when handling potentially contaminated laundry.
- ***Carpeting and Cloth Furnishings*** – Use a HEPA vacuum, followed by wet vacuuming with disinfectant. It may be difficult or impossible to disinfect cloth furnishings.
- ***Visibly or Known Contaminated, Non-Porous Surfaces*** – Select an EPA-registered disinfectant and apply in accordance with manufacturer's recommendations, including recommended contact time.
- ***Potentially Contaminated, Non-Porous Surfaces*** (i.e., telephones, door knobs, window sills, toilets, floors, etc.) – Wipe generously with an EPA-registered disinfectant.

### Frequency

Areas and items known or likely to be contaminated should be disinfected at least daily.