

SOP BIO-009 CLEANING INSTRUMENTS AND MATERIALS USED FOR HANDLING POTENTIALLY PRION INFECTED NEURAL TISSUE

SCOPE

The scope of this SOP is to provide biosafety guidelines and recommendations for the better-suited methods to effectively clean any solid material/instrument or liquid waste that is exposed to potentially prion infected neural tissue. Although prion diseases are rare in the general population precaution when working with human brain and other neural tissue are recommended.

DEFINITIONS

Household Bleach is 5.25% to 6.15% sodium hypochlorite (approx. 60,000 ppm of Chlorine) depending on manufacturer. For decontamination of instruments in contact with potentially prion infected neural tissue, use 50% diluted bleach (1:1 in water) for 30-60 minutes.

Prions are infectious agents mainly composed of abnormal cellular proteins that are responsible for the Transmissible Spongiform Encephalopathies (TSE) commonly known as Prion Diseases⁸ and others⁹ such as Creutzfeldt-Jakob disease, Fatal Familial Insomnia, and Kuru. Furthermore, prions are not destroyed by extreme heat, cold, or autoclaving.

Sodium Hydroxide is a corrosive base.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Safety glasses or goggles, double gloves, disposable gown, surgical mask, and non-opened toe shoes dedicated for laboratory (recommended).

PROCEDURES

Prions are extremely resistant to the common sterilization, decontamination and disinfection methods.

⁸ <https://www.cdc.gov/prions/about/index.html>

⁹ <https://www.cdc.gov/creutzfeldt-jakob/about/index.html>

To Clean Solid Materials and Surgical Instruments

1. Soak in 6M NaOH (6 Molar Sodium Hydroxide)¹⁰ for 24 hours;
2. Thoroughly wash with water;
3. Rinse with distilled water.

To Dispose of Liquid Waste Contaminated with Prions

1. Add NaOH (Sodium Hydroxide) to the liquid waste to have a final concentration of 6M.
2. Place the bottle in Satellite Accumulation Area (SAA) area and call EHS, this liquid waste will be disposed as chemical hazardous waste.

Note: If you transfer the liquid waste from a flask or beaker into a brown bottle, follow the solid material cleaning protocol mentioned above to clean your lab glassware.

Cleaning Heat-Sensitive Instruments and Bench Top Surfaces¹¹

Biosafety in Microbiological and Biomedical Laboratories (BMBL) recommends cleaning all gross contamination of surfaces before the treatment, because the presence of excess organic material will reduce the strength of either sodium hydroxide or sodium hypochlorite solutions.

Keep the hood running while cleaning the BSC. **ONLY** use concentrated bleach in Class II B2 BSC (ducted, 0% air recirculated or 100% exhausted from cabinet). For other Class II A1, A2 (not ducted, 100 % recirculated air), or B1 (60% recirculated air) use Sodium Hydroxide solution at 2N.

1. Prepare 50% sodium hypochlorite solution or 2N NaOH (sodium hydroxide);
2. Spray, and let it sit for at least 60 minutes;
3. Ensure surfaces remain wet for entire 60 minutes;
4. Blot the surface with paper towel;
5. Spray water until well rinsed;
6. Spray with 70% ethanol or 70% isopropanol;
7. Collect and place paper towels in a small red biohazard bag after each blotting;
8. Close the bag close or tie it and dispose the bag containing the paper towels in the red biohazard bag lined-box for incineration.

¹⁰ Warning: Sodium Hydroxide is strong corrosive base.

¹¹ <https://iris.who.int/bitstream/handle/10665/205652/B0057.pdf> This SOP follows the recommendations of the BMBL.

Disposing of Human or Animal Tissues or Cells Possibly Containing Prions

1. Request a specific bucket for human parts disposal. Call EHS at 978-934-2618
2. Carefully and aseptically place the carcass, organs, or tissues in a small red biohazard bag, close or tie the bag.
3. Dispose the bag in a bucket with a lid and marked with the biohazard sign.

If you have any questions or need any supplies, contact EHS at 978-934-2618.