Bleach Standard Operating Procedure

Revision: December 19, 2023

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This standard operating procedure (SOP) outlines the handling and use of bleach. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, personal protective equipment, and disposal techniques when handling bleach. All laboratory workers must read and understand the Laboratory Emergencies SOP prior to commencing any work in a laboratory.

Description [Provide additional information as it pertains to your research protocol]

Bleach is a general term that typically refers to an aqueous mixture that has a primary active ingredient of either Sodium Hypochlorite or Calcium Hypochlorite and usually at concentrations of 3 - 10%. Bleach is used primarily as an oxidizing, cleaning, or a bleaching agent, as a disinfectant or within drinking water and waste water purification systems.

Process [Write the steps for using the chemical in your research protocol]

Potential Hazards [Provide additional information as it pertains to your research protocol]

- Corrosive. May cause severe irritation or damage to eyes or skin. Vapor may irritate eyes and respiratory tract.
- Incompatible with many chemicals/agents. Hazardous gases (including chlorine and chloramines) may be released if bleach is mixed with an incompatible material.
- Exposure to these gases can cause coughing, shortness of breath, irritation to, or burning of the eyes, nose, and throat, chest pain, wheezing, fluid in the lungs, and nausea. Chlorine can also be absorbed through the skin and cause pain, inflammation, swelling, and blistering.
- Strong oxidizer. May initiate or promote combustion in other materials. May intensify fire.

Engineering Controls [Provide additional information as it pertains to your research protocol]

- An eyewash/drench hose combination unit must be available in the immediate work area for any work with corrosive materials, including bleach.
- If large quantities will be used, a safety shower will also be necessary. Contact Environment, Health & Safety (EHS) at (734) 647-1143 for a determination of the need for a safety shower if there is not one available.
- A system of local and/or general exhaust is recommended to keep employee exposures below MIOSHA Permissible Exposure Limits (PEL). Local exhaust ventilation (LEV) is generally preferred because it can

control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Contact EHS at (734) 647-1143 for a determination of the need for an LEV system, if there is not one available.

Work Practice Controls [Provide additional information as it pertains to your research protocol]

- ALWAYS review the SDS of both bleach and any chemicals/agents before mixing them with bleach to ensure compatibility. A general list of incompatible materials and other safe work practices can be found here.
- NEVER mix bleach with an unknown liquid or unknown residue.
- Do not mix bleach with any compound that is incompatible with oxidizers.
- Purchase bleach in the smallest containers that are practical for lab use.
- Work with the smallest practicable amount and lowest practicable concentration.

Personal Protective Equipment [Provide additional information as it pertains to your research protocol]

- Wear a fully buttoned lab coat, safety glasses with side shields (that meet the requirements of ANSI/ISEA Z87.1) or goggles if splashing may occur, and gloves for any work with bleach. Depending on the quantities and concentrations used, a face shield, impenetrable chemical apron and sleeves (or coverall), and neoprene elbow length gloves may be recommended.
- If adequate dilution ventilation or LEV are present, respiratory protection should not be necessary. However, in the absence of these and when MIOSHA PEL, or other published occupational exposures limits (OEL) are anticipated to be exceeded, respiratory protection may be necessary. Contact EHS at (734) 647-1143 for a determination of the need for a respirator.

Transportation and Storage [Provide additional information as it pertains to your research protocol]

- Transport concentrated bleach solutions in secondary containment, preferably a polyethylene or other non-reactive bottle carrier.
- Store in well-ventilated areas with secondary containment, such as a non-reactive plastic bin.
- Store below eye level.
- Store away from metal (unless the metal has a corrosion-proof coating).
- Store away from incompatibles and flammable materials. Always review the SDS of other chemicals in the storage area for compatibility with bleach.
- Avoid storing on the floor. If storing on the floor is necessary, use secondary containment.

Waste Disposal [Provide additional information as it pertains to your research protocol]

If the bleach solution is at a household concentration or less, i.e., a maximum 10% concentration of sodium hypochlorite, and was used for disinfecting, limit discharges down a laboratory sink to less than 1-gallon (approx. 3.8 L). If the concentration was >10% and was used for disinfecting, limit the sink disposal to less than 2-cups (approx. 500 mL) of bleach solution. Also flush the drain with adequate volumes of water.

This does not apply to “waste” bleach, e.g., unused or expired bleach. Any leftover, unused product or expired bleach not used as intended by the manufacturer, or used as a disinfectant, needs to be collected by EHS Hazardous Materials Management (EHS-HMM) for proper disposal. Contact EHS-HMM at (734) 763-4568 for waste containers, labels, manifests, and waste collection. Also, refer to the EHS Hazardous Waste Webpage for more information.

Training of Personnel

All personnel shall read and fully adhere to this SOP when handling bleach

References

- Agency for Toxic Substances and Disease Registry Calcium hypochlorite and Sodium hypochlorite fact sheet
- Calcium hypochlorite and Sodium hypochlorite toxicological profile
- New Jersey Department of Health Hazardous Substance Fact Sheet

Certification

I have read and understand the above SOP. I have received approval from my Lab Director to perform this procedure. I agree to contact my Lab Director if I plan to modify this procedure.

Name	Signature	UMID #	Date

Laboratory Director **Revision Date**

Revision History		
12/19/2023	Annual Revision	Reviewed and updated links. (SMW)
04/14/2022	Partial Revision	Updated safety shower and eyewash placement requirements consistent with current MIOSHA Agency Instruction. Reviewed and updated links.
03/04/2019	Annual Revision	Reviewed and updated
09/13/2018	Annual Revision	EHS name and logo were added, updated the formatting, and revised the content under Exposure/Unintended Content (AKJ).