

DANGER!



Duke OESO Guidelines for Safe Use of



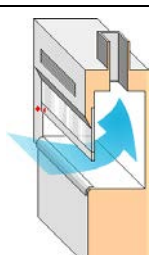


BLEACH

(sodium hypochlorite solution)



DANGER!



Hazards	Potential Hazards	<ul style="list-style-type: none"> • Destroys tissue at site of contact (usually skin or eyes). May cause respiratory irritation. • In contact with acids may release toxic chlorine gas. • Contains sodium hypochlorite, an oxidizer. • Incompatible with many chemicals found in labs. (See page 2.) • See Safety Data Sheet (SDS) for specific hazard information.
	Selection & Purchase	<ul style="list-style-type: none"> • Purchase at the lowest concentration & volume practical.
Hazard Controls	Storage & Transportation	<ul style="list-style-type: none"> • Tightly recap bleach bottle for storage. • Label bleach solutions with expiration date (one week after preparation). • Store below eye level but not on the floor. • Do not store with incompatibles. (See Page 2.) • If storing in or on metal cabinets/shelves, use secondary containment or other means to keep bleach off the metal (causes corrosion over time). 
	Engineering Controls	<p>For solutions with > 2% sodium hypochlorite:</p> <ul style="list-style-type: none"> • Eyewash required in immediate work area. Eyewash-drench hose preferred. • Safety shower may be required when using large quantities.  <ul style="list-style-type: none"> • Work in a chemical fume hood if toxic gases may be created or to limit irritation when using large quantities of bleach. 
	Work Practice Controls	<ul style="list-style-type: none"> • Never mix bleach with an unknown compound or mixture. • Avoid pouring bleach down metal sinks (causes corrosion over time). • Always check chemical compatibility on the SDS (and/or page 2) before adding bleach.
	Personal Protective Equipment (PPE)	<p>Minimum PPE:</p> <ul style="list-style-type: none"> • Fastened lab coat • Safety goggles • Nitrile or powder-free latex gloves  <p>Risk of splash/use of large quantity, ADD:</p> <ul style="list-style-type: none"> • Face shield • Impervious apron and sleeves (or coverall)  <p><i>Consult the manufacturer's glove guide for glove effectiveness with the chemical you are using.</i></p>
	Emergencies	See Emergency Response Flip Chart and/or lab specific chemical hygiene plan.
Other	Waste	Follow above storage guidelines. See lab-specific chemical hygiene plan, Lab Chemical Waste Management Practice , and Drain Disposal Practice .
	Training	Sign signature page in lab-specific plan to indicate review.
	Questions	Contact OESO Laboratory Safety at 919-684-8822.

Bleach Incompatibility Information

Incompatible Chemicals and Agents	Possible Results of Mixing with Bleach
<p><u>Hydrogen Peroxide</u></p>	<ul style="list-style-type: none"> • Violent reaction producing oxygen
<p><u>Acids and Acidic Compounds</u> such as:</p> <ul style="list-style-type: none"> • Hydrochloric Acid • Sulfuric Acid • Hydrofluoric Acid • Fluorosilicic Acid • Phosphoric Acid • Aluminum Sulfate • Aluminum Chloride • Ferrous or Ferric Chloride • Ferrous or Ferric Sulfate (Including chlorinated solutions) 	<ul style="list-style-type: none"> • Release of toxic chlorine gas (reaction/release may occur violently)
<p><u>Ammonia-containing compounds</u> such as:</p> <ul style="list-style-type: none"> • Ammonium Hydroxide • Ammonium Chloride • Ammonium Silicofluoride • Ammonium Sulfate • Quaternary Ammonium Salts 	<ul style="list-style-type: none"> • Formation of chloramine compounds (toxic and potentially explosive)
<p><u>Organic chemicals</u> such as:</p> <ul style="list-style-type: none"> • Organic solvents • Organic polymers • Amines • Ethylene Glycol • Formic acid • Insecticides • Fuels and fuel oils • Propane • Methanol 	<ul style="list-style-type: none"> • Formation of explosive compounds • Release of toxic chlorine gas • Formation of chlorinated organics which may be toxic or carcinogenic.
<p><u>Metals</u> such as:</p> <ul style="list-style-type: none"> • Cobalt • Copper • Nickel • Iron • Avoid piping and equipment containing aluminum, carbon steel, stainless steel, and other metals 	<ul style="list-style-type: none"> • Release of oxygen which could cause overpressurization and rupture of a closed system
<p><u>Reducing agents</u> such as:</p> <ul style="list-style-type: none"> • Sodium Bisulfite • Sodium Hydrosulfate • Sodium Sulfate • Sodium Thiosulfate 	<ul style="list-style-type: none"> • Production of heat from reaction may cause boiling/splashing
<p><u>Guanidine Salts</u> (found in many lysis buffers) such as:</p> <ul style="list-style-type: none"> • Guanidine Hydrochloride • Guanidine Thiocyanate 	<ul style="list-style-type: none"> • Release of toxic gases which can include chloramines, chlorine, and hydrogen cyanide