

STANDARD OPERATING PROCEDURE: **STRONG ALKALINES**

PI: _____ Room & Building: _____
Department: _____ Research Group: _____
Date: _____ Pertains to Lab Protocol: _____

DESCRIPTION

An alkali is a basic, ionic salt of an alkali metal or alkaline earth metal element that dissolves in water. A strong alkali is an alkali that ionizes completely when dissolved in water. Chemicals that fall under this SOP (but are not limited to) include:

- Sodium hydroxide (CAS No. 1310-73-2)
- Potassium hydroxide (CAS No. 1310-58-3)
- Calcium hydroxide (CAS No. 1305-62-0)

USE & PROCEDURE

Attach the experimental protocol(s) that involve the use of sodium hydroxide.

POTENTIAL HAZARDS

- Extremely corrosive (causes burns to any area of contact – skin, eyes, mucous membranes)
- Irritant (skin, eyes, and respiratory tract)
- Unlike acids, hydroxides do not coagulate protein which impedes penetration. Metal hydroxide may not be immediately painful during skin penetration, producing severe and slow-healing burns.

ENGINEERING/VENTILATION CONTROLS

All operations involving sodium hydroxide should be carried out in a chemical fume hood with the sash in the down position, between your chest and what you are handling in the hood.

- If the hood's sash cannot be adjusted horizontally, protective eyewear is required (see "Recommended Personal Protective Equipment")

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

- ✓ Chemical splash goggles. Face shield, optional.
 - Only applicable if not working in a fume hood or if the hood's sash is not in the down position.
- ✓ Double nitrile, neoprene or latex gloves
 - Immediately replace with new gloves when contamination occurs.
- ✓ Chemical resistant apron/smock/lab coat (PE or PVC) that covers limbs
 - Avoid using the traditional cotton-polyester white lab coat, which readily collects/absorbs compounds.
- ✓ Closed-toed, impervious footwear

ADDITIONAL PRECAUTIONS

- Avoid heat sources and moisture
- Reaction with aluminum or magnesium generates flammable and potentially explosive hydrogen gas; reaction with nitromethane and nitrophenols produces shock-sensitive explosive salts.
- Do not mix with acids or organic materials
- When mixing with water, always add caustics/alkalines slowly to the water and stir continuously. Never add water in limited quantities to solid hydroxides.

MATERIAL SAFETY DATA SHEETS

MSDSs are available electronically via EHS Department's Web page:

http://www.uos.harvard.edu/ehs/onl_msd.shtml. An option, but consider collecting in a binder the MSDSs that arrive with each order.

DECONTAMINATION

Wipe any residual sodium hydroxide off of balance after use. Neutralize contamination, as necessary. Regular or intermittent use of strong alkalines warrants on-site supplies – neutralizing powder or liquid, absorbent powder, personal protective equipment/garb. Also, see neutralizing powder in the spill clean-up kit located in your building.

WASTE

Refer to the *Harvard Longwood Laboratory Waste Guide* at

http://www.uos.harvard.edu/ehs/longwood/HarvardLongwoodLabWasteGuide_v1.0.pdf

EMEGENCY PROCEDURES

Refer to the emergency flip chart titled "*EHS Procedures and Response Guidelines*," posted in each laboratory and found on EHS's webpage at http://www.uos.harvard.edu/ehs/lerg_main.shtml

Chemical Spill:

- For small spills, follow chemical spill response guidelines above. Don protective clothing and carefully apply neutralization powder or liquid, whichever is most appropriate, to the spill. Allow time to neutralize, and then apply liquid absorbent pellets or powder.