

### SOP Protocol or Procedure

Templates from the EH&S SOP Template Library (<http://sop.ehs.ucla.edu>) must be customized by lab groups using chemicals to include lab-specific information. In particular, the lab must complete the protocol/procedure section of the SOP detailing the use of a chemical so that it can be followed safely and consistently. It is important that this section is written by the most experienced and knowledgeable lab personnel for the various uses of the chemical and reviewed by the PI. SOPs are required in order to work with hazardous chemicals listed as per Cal-OSHA.

### Steps for Writing Protocols/Procedures

- STEP 1** Give a general range of quantities that can be used in a safe and consistent manner. If necessary, provide two procedures to cover a wider range of quantities.
- STEP 2** Outline the conditions under which the procedure applies.
- STEP 3** Provide a step-by-step explanation of a general experimental process covered within the range of quantities. Provide details on engineering controls and hazards associated with the process.
- STEP 4** Include a specific example procedure describing in detail the experiment. This could be an experimental procedure from your lab notebook.
- STEP 5** If quantities or conditions significantly deviate from the SOP be sure to obtain approval from the PI, and include any changes to an updated SOP.

**Protocols/Procedures must include the following components, as illustrated in the example below:**

*Quantities and conditions that the SOP covers, a summary covering each type of use, and an example of the actual use.*



#### Protocol / Procedure

**Quantities covered by this SOP:**

0 - 40 g

**Conditions covered by this SOP:**

0 oC – 50 oC

**General:**

Sodium hydroxide pellets are used to make aqueous solutions that range in concentration from 0.01M to 1M and volume of 10mL to 1L.

The sodium hydroxide pellets are weighed and then slowly added to a beaker of water that is cooled in an ice bath. Caution: **Dissolution of sodium hydroxide is exothermic!** The solution is then stirred until all the sodium hydroxide is dissolved. It is then allowed to warm to room temperature. The final concentration is determined by titration with potassium hydrogen phthalate. (See SOP on Titrations).

**Example:**

To make 1L of a 1M sodium hydroxide solution:

40g of NaOH pellets was weighed out in a plastic weigh boat. Slowly, only a few pellets at a time was added to 1L of water in a 2L beaker equipped with a magnetic stir bar in an ice bath. After the last of the sodium hydroxide was added and dissolved, the 2L beaker was removed from the ice bath and allowed to warm to room temperature before being titrated with potassium hydrogen phthalate. The plastic weigh boat was triple rinsed with water (the first wash being disposed as hazardous waste) before being disposed of in the trash.

**NOTE**

Any deviation from this SOP requires approval from PI.

Sodium Hydroxide (pellets)

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### SOP Template Library

EH&S has developed an SOP Template Library (<http://sop.ehs.ucla.edu>) that includes templates for several hundred chemicals. These templates can easily be customized for your specific operations.

**Contact EH&S:**  
Tel: 310-825-9797  
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