


Ethidium Bromide Use SOP Example

University of Washington

Standard Operating Procedures for Chemicals or Processes	
#1 Process (if applicable)	Ethidium bromide, used in staining DNA.
#2 Chemicals	<p>Ethidium bromide (CAS Registry Number 1239-45-8).</p> <p>The material fluoresces a red-orange color under ultraviolet light, with increased fluorescence when the material is bound to double-stranded DNA. Ethidium bromide is typically purchased in powder or solution form and is soluble in water. The crystal or powder form is odorless and appears dark red in color.</p> <p>The powder form is considered an irritant to the upper respiratory track, eyes and skin. Ethidium bromide is strongly mutagenic, causing living cell mutations. Even though there is no evidence at this time of human carcinogenicity or teratogenicity, this material should be considered a possible carcinogen or teratogen.</p> <p>SybrSafe is a safer alternative to ethidium bromide. While it should be handled and disposed of as ethidium bromide, it is somewhat less mutagenic and therefore safer to handle.</p>
#3 Personal Protective Equipment (PPE)	<p>Lab coat, chemical splash goggles and nitrile gloves are required. Leave lab coats in the lab when your work is complete to prevent the spread of this or other chemicals outside of the lab.</p> <p>When an ultraviolet light source is used in your work with ethidium bromide, added caution is required. As a general rule, avoid exposing unprotected skin and eyes to intense UV sources. If the UV light is aimed upwards, wear a UV protective face shield when you are standing near the source. For prolonged work close to UV light boxes or other intense sources, it may be useful to wrap the end of the lab coat sleeves loosely with masking tape to prevent gaps where the wrist could be exposed. For low-intensity UV sources, the requirement for UV protection can be waived if the exposure to personnel has been measured and shown to be within permissible exposure levels. Contact Radiation Safety at 206-543-0463 if you need measurements of the UV levels in your facility.</p>
#4 Environmental / Ventilation Controls	All operations involving powder or mists of ethidium bromide must be done in a fume hood. Check for proper operation of the fume hood prior to use.
#5 Special Handling Procedures & Storage Requirements	<p>Liquid: Store in the dark and the cold, preferably in a plastic container.</p> <p>Solid: Store at the designated area.</p>
#6 Spill and Accident Procedures	<p>When working with ethidium bromide, try to minimize the potential for spills. Where practical, purchase ready-made stock solutions from chemical manufacturers in lieu of mixing your own solutions. If you prefer to mix your own solutions of ethidium bromide, protect yourself by doing this process in a fume hood. Perform all processes that generate ethidium bromide dusts or mists inside the fume hood to minimize inhalation exposures. Prevent accidents by transporting small quantities of ethidium bromide in a secondary container instead of carrying large quantities.</p> <p>Spills of ethidium bromide solutions should be absorbed and decontaminated with soap and water. Avoid raising dust when cleaning up solid spills by mixing with water and then absorbing the solution. All spill cleanup materials and absorbents should be bagged or placed in a sealed container with a hazardous waste label.</p> <p>Some facilities use a hand held UV lamp to check for residual ethidium bromide contamination following spill cleanup. A reddish-orange fluorescence can be detected under both "long" and "short" UV wavelengths. Users of the hand held lamps should be aware that their ability to detect small spills is not guaranteed. The ease of detection depends upon a variety of factors including the chemical composition of the sample, the wavelength of the UV lamp, and the intensity of the lamp. Use of a hand held UV lamp to detect traces of ethidium bromide may serve as an occasional check of laboratory practices, but it cannot substitute for good cleanliness and careful contamination control.</p>

#7 Waste Disposal	<p>EH&S recommends that ethidium bromide waste be treated using special filters. These filters use ion-exchange resins and activated charcoal to remove the ethidium bromide from solution. There are effective chemical treatments to destroy ethidium bromide, but filtering is an easier and safer choice. See www.ehs.washington.edu/environmental/pollution-prevention for more information.</p> <p>Powders, concentrated solutions, and grossly contaminated items are hazardous waste. Label with Hazardous Waste Label, accumulate according to requirements, and send in Chemical Collection Request or Routine Pickup request, both available online at www.ehs.washington.edu/chemical/hazardous-chemical-waste-disposal</p>	
#8 Special Precautions for Animal Use (if applicable)	*	
Particularly hazardous substance involved?	<u> X </u> YES:	Blocks #9 to #11 are Mandatory
	<u> </u> NO:	Blocks #9 to #11 are Optional.
#9 Approval Required	Approval from PI prior to first use.	
#10 Decontamination	Use copious amounts of soap and water.	
#11 Designated Area	Fume hood at _____. Check that the fume hood is operating properly before starting the procedure.	
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**to be filled in by PI or Supervisor*