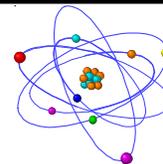


# LABORATORY SAFETY FACT SHEET #21



## Ethidium Bromide Safety



Ethidium bromide is a potent mutagen that has been used for many years as a nucleic acid stain. This material fluoresces a red-orange color under ultraviolet light and with increased fluorescence when 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.

The powder form is considered an irritant to the upper respiratory tract, 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.

### Personal Protection

Wear a lab coat, eye protection, and nitrile gloves when working with ethidium bromide. Leave lab coats, gloves, and other PPE in the lab, when your work is complete, to prevent the spread of this or other chemicals outside of the lab.

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. When Ethidium Bromide is added to gels it may be useful to add a protective layer of saran wrap on gel box.

### Work Practices

When working with ethidium bromide, 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.

### Spills

All labs should have a spill kit available. 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. Request a waste pickup from EH&S.

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.

### Waste Disposal

All ethidium bromide waste must be disposed of according to UCSB hazardous waste disposal procedures. Website is <http://ehs.ucsb.edu>. Under Programs select Hazardous Waste.