UCR Environmental Health & Safety

Spotlight On Safety

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Ethidium Bromide Safety

Ethidium bromide is a potent mutagen that has been used for many years as a nucleic acid stain. This material looks red-orange under ultraviolet light and increases fluorescence when bound to double-stranded DNA. Ethidium bromide is usually purchased in powder or solution form and is soluble in water. The powder form is considered an irritant to the upper respiratory tract, eyes, and skin. Ethidium bromide is a strong mutagen, causing living cell mutations. There is a high possibility it causes cancer in humans and defects to a fetus.

Personal Protection

- Wear a lab coat, goggles, 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 contamination outside the lab
- Avoid exposing unprotected skin and eyes to intense UV sources. For questions involving the use of UV, please refer to refer to the Non-ionizing Radiation user guide on the EHS website: https://ehs.ucr.edu/sites/g/files/rcwecm1061/files/2020-03/Non-ionizing%20Radiation%20guide.pdf
- If the UV light is aimed upwards, wear a UV protective face shield when you are standing near
- For prolonged work close to UV light boxes or other intense sources, wrap the end of the lab coat sleeves loosely with masking tape to prevent exposure to the wrist. Please refer to the Non-ionizing radiation user guide on the EHS website: https://ehs.ucr.edu/sites/g/files/rcwecm1061/files/2020-03/Non-ionizing%20Radiation%20guide.pdf
- When Ethidium Bromide is added to gels it may be useful to add a protective layer of saran wrap on the gel box

Work Practices

- Where practical, purchase ready-made stock solutions from chemical manufacturers instead of mixing your own solutions
- If you prefer to mix your own solutions of ethidium bromide, do it 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 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 WASTe label and be picked up by EH&S
- The use of a handheld UV lamp to detect traces of ethidium bromide can help check lab practices, but it cannot substitute for good cleanliness and careful contamination control

For more information please visit www.ehs.ucr.edu or call 951-827-5528.