



Environmental Health and Safety

(1620 Standley Drive)
MSC 3578
New Mexico State University
P.O. Box 30001
Las Cruces, NM 88003-8001
575-646-3327, fax: 575-646-7898
nmsu.edu/~safety/

January 4, 2013

TO: NMSU Personnel Who Use Ethidium Bromide
FROM: Drew Kaczmarek, Assistant Director, EH&S
SUBJECT: **Ethidium Bromide Disposal Procedures**

Ethidium bromide is a highly toxic chemical, and probable mutagen, frequently used to identify DNA. The following are procedures that should be followed for the proper disposal of ethidium bromide waste to protect public health and the environment.

- 1. Solid ethidium bromide waste (for example gels) should be collected in closed, labeled containers and turned in to EH&S for disposal by incineration via our hazardous waste contractor.**
- 2. Liquid ethidium bromide waste with a concentration less than 1.0 $\mu\text{g/ml}$ should be filtered via AMRESCO Destaining Bags** (which look like standard tea bags). The destaining bags are **VERY SIMPLE** and **CHEAP** to use. Simply drop a destaining bag into your solution, periodically swirl it around a few times, and let it stand overnight. In the morning, remove the bag and collect it as solid ethidium bromide waste. Then perform a spot check of the solution using a **UV transilluminator** to see if it fluoresces. If it does not, approximately 99% of the ethidium bromide has been removed and the solution is now safe to pour down the drain—provided no other hazardous chemicals are present. Attached to this memo is a one page Technical Bulletin by AMRESCO outlining the destaining bags capabilities and limitations. AMRESCO's phone number and web address are also provided.
- 3. Liquid ethidium bromide waste with a concentration equal to or above 1.0 $\mu\text{g/ml}$ should be collected in closed, labeled containers and turned in to the Safety Office for disposal by incineration via our hazardous waste contractor.** This is due to the fact that the destaining bags have a more limited effectiveness at higher concentrations of ethidium bromide and this waste poses a larger hazard to health and the environment.
- 4. If it is possible to use a less hazardous chemical for the identification of DNA, please do so.** Some experiments may allow the use of “**Sybr Safe**” or “**EZ-Vision**” produced by AMRESCO and other chemical supply companies. Overall, other disposal procedures for the removal/neutralization of ethidium bromide should not be performed. A common past practice of oxidizing ethidium bromide with household bleach has shown to produce compounds that are even more hazardous.
- 5. If you have any questions concerning this memo, or waste disposal in general, please do not hesitate to contact the Environmental Health and Safety Office at 646-3327, e-mail: Kaczmare@nmsu.edu, or visit our web site at www.nmsu.edu/~safety.**

PRODUCT INFORMATION

AMRESCO Destaining Bags (E732)

Remove Ethidium Bromide and other dyes from solutions safely, easily.

Ethidium Bromide is an extremely useful, easy-to-use dye for visualizing nucleic acids in solution and in agarose electrophoresis. Although the recent introduction of ethidium bromide solutions into the marketplace has eliminated many of the hazards of using the powdered dye for these applications, researchers are still faced with the difficult and unpleasant task of disposing of this toxic stain. The result is that many researchers neglect to remove ethidium bromide from their staining and electrophoresis buffers before disposing of them down the drain, which contaminates municipal waste-water with this toxic, mutagenic, carcinogenic substance.

AMRESCO now offers a way for you to remove Ethidium Bromide, Coomassie Blue, and other biological dyes and stains from solution for easy, safe disposal. AMRESCO Destaining Bags effectively extract milligram quantities* of ethidium bromide from solution without exposing research personnel to corrosive agents or contaminated substrates. The special adsorbent mixture retains dye molecules in a convenient bag for removal and incineration.

AMRESCO Destaining Bags are made with materials that can be safely disposed in incinerated trash.

- A 0.05 µg/ml solution of ethidium bromide has an A_{285} of approximately 0.01 at a 1X concentration.
- A 1 µg/ml solution of ethidium bromide has an A_{285} of approximately 0.1 at a 1X concentration.
- Changing bags during destaining will increase the rate of destaining and yield faster results.
- Destaining rates are independent of salt concentration.

* Each bag will extract up to 5 mg of ethidium bromide from solution during an overnight treatment.

ORDERING INFORMATION:

CODE	SIZE
E732	25 bags

Related Products:

Ethidium Bromide Dropper Bottle, Code E406
 Ethidium Bromide 10 mg/ml Solution, Code X328
 Ethidium Bromide High Purity Powder, Code 0492
 Coomassie Brilliant Blue G-250, Code 0615
 Coomassie Brilliant Blue R-250, Code 0472

Performance Evaluation with Typical Results:

Starting Concentration (µg/ml) 1 liter of solution	Beginning A_{285}	A_{285} at 1 hour (% removed)	A_{285} at 2 hours (% removed)	A_{285} at 4 hours (% removed)	A_{285} after overnight incubation (% removed)
0.05	0.0089	0.0061 (32%)	0.0025 (72%)	N/A	0.0008 (92%)
0.5	0.0586	0.0205 (65%)	0.0142 (76%)	N/A	0.0001 (99%)
1.0	0.1186	0.0443 (63%)	0.0291 (75.5%)	0.0113 (89%)	0.0025 (98%)
8.8	0.8908	0.0692 (92%)	0.0464 (95%)	0.0413 (95%)	N/A

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AMRESCO, Inc. (USA)
 30175 Solon Industrial Pky. • Solon, OH 44139
 TEL: 800-829-2805 • INTL.: 440-349-1313 • FAX: 440-349-1182
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amresco-inc.com

EMAIL: (info@amresco-inc.com)

Website: www.amresco-inc.com