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Proper Disposal of Bouin's Fixative Solution

This fact sheet is designed to provide clear information on how to dispose of Bouin's fixative solution in histology labs. Guidedance is for commercially pre-made Bouin's solution and is based on federal criteria. State or local regulations may be more stringent. Always check with your local authorities for any specific requirements.

Background

Bouin's fixative solution is used in the histology lab for fixing tissue and staining. It can either be purchased as a commercially pre-made solution or prepared in the laboratory by mixing the appropriate amounts of the required ingredients. Bouin's fixative solution contains—

- Formaldehyde (<10%)
- Acetic acid (5%)
- Methanol (<4%)
- Picric acid (<1%)
- Water

Note: See the material-specific Safety Data Sheet (SDS) as the presence of picric acid varies by manufacturer.

Safety Concerns

- Bouin's fixative is considered hazardous and is subject to the Occupational Safety and Health Act (OSHA) Hazard Communication Standard: Title 29, Code of Federal Regulations, Part 1910, Section 1910.1200 (29 CFR 1910.1200).
- Bouin's fixative solution contains <10% formaldehyde, which is a known carcinogen.

Consult the SDS to determine engineering controls and proper personal protective equipment for handling and/or managing spills/leaks.

Disposal for Used Solutions

1. **Consult the installation Environmental Office or the wastewater treatment plant for approval prior to disharging any solution to the sanitary sewer.**
   A notification of intent to dispose Bouin's fixative solution in the sanitary sewer should be made prior to initiating disposal activity. Coordinate with the installation Environmental Office or the Environmental Health Office in the medical/dental treatment office for assistance with this notification.
2. **Characterize this waste stream prior to disposal according to 40 CFR 261 hazardous waste criteria.**
   Bouin's fixative solution typically does not exhibit the hazardous waste characteristics of ignitability, corrosivity, toxicity, or reactivity. Reference the SDS provided by the manufacturer for assistance with waste characteristic determinations.

   Note: Flashpoint (ignitability) should be determined using approved U.S. Environmental Protection Agency (EPA) test methods specified in 40 CFR 261 if the SDS indicates the solution

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contains greater than 20% methanol. Any solution with greater than 24% alcohol content and a flashpoint less than 140°F is a hazardous waste per 40 CFR 261.21 (a)(1).

3. **Test the pH and adjust accordingly to a neutral range (4.0–9.0) prior to disposal.**

4. **Dispose of the used solution through the sanitary sewer provided the disposal of aldehydes does not violate the wastewater treatment permit.**

When Wastewater Treatment Permit Prohibits Disposal to the Sanitary Sewer
Aldehyde neutralizers can be utilized to render the waste safe for discharge to the sanitary sewer. These products offer test strips to verfiy the chemical reaction has occurred prior to discharge. No permit is required to neutralize a non-hazardous waste per 40 CFR 261 waste characterization criteria.

If discharge is not an option, collect and dispose as non-hazardous waste through the Defense Logistics Agency (DLA) Disposition Services.

Disposal of Expired and Unused Solutions
Evaluate and characterize expired solutions and turn them in to DLA Disposition Services for disposal. Unused quantities that will not be used prior to expiration should be returned to the manufacturer or turned in through Logistics to the DLA Disposition Services as a marketable product.

Question or concerns regarding Boudin's fixative solution made in the laboratory should be directed to the point of contact below.
Defense Logistics Agency (DLA) Disposition Services www.dla.mil/Disposition-Services

References

Code of Federal Regulations. "Hazardous communication," Title 29, Part 1910, Section 1910.1200 (29 CFR 1910.1200).
https://www.ecfr.gov/

CFR. "Identification and Listing of Hazardous Waste," Title 40, Part 261 (29 CFR 261).
https://www/ecfr.gov/

U.S. Environmental Protection Agency (EPA). 2016. *Final Rule: Hazardous Waste Generator Improvements* (cited in 40 CFR 260–262).
https://www.epa.gov/hwgenerators/final-rule-hazardous-waste-generator-improvements