



STANFORD UNIVERSITY

ENVIRONMENTAL HEALTH & SAFETY

Identifying Mixed Chemical and Radioactive Waste

Mixed waste is: **any waste material containing both radioactive materials and hazardous chemicals**. Many “buffers” contain hazardous materials, and many processes using hazardous chemicals as “wash” solutions may result in a mixed waste.

Examples of commonly used hazardous materials that may result in a mixed waste:

- Alcohols (ethanol, methanol, isopropanol)
- Tri-fluoro Acetic Acid (TFA), Acetic Acid
- Sodium Hydroxide
- Chloroform
- Formamide

Some trademarked reagents and “Kits” may contain hazardous materials. Always review the MSDS to determine if any proprietary material you are using contains hazardous materials.

The first step is to determine if the hazardous materials are present in sufficient concentration to make your waste a regulated mixed waste. Dilute concentrations of hazardous materials may not meet the regulatory definition. Please review the list of non-hazardous materials found at <http://nonhazardouswaste.stanford.edu>.

If your waste contains only non-hazardous wastes as noted on the list, you do not have a mixed waste and it may be managed as a normal radioactive waste.

Researchers must obtain permission from the Radiation Safety Committee to generate mixed waste. Contact your Health Physicist or 723-3201.

If your waste contains materials not listed on the “nonhazardous waste” list, calculations or testing may be necessary to determine if your waste is regulated. For assistance with a “waste determination”, contact EH&S at 725-7529 or send an email to cbarney@stanford.edu

EH&S has developed instructions for management of mixed waste which is available through EH&S and on the web at <http://mixedwaste.stanford.edu>

Mixed Waste Management Procedures

1) Waste containing P32 ($\frac{1}{2}$ life of 15 days).

- Store the mixed waste in your lab for ten $\frac{1}{2}$ lives (150 days)
- During storage, affix a Stanford hazardous waste tag
 - You can create a tag using our on-line system found at <http://wastetag.stanford.edu>
- Also label the waste with Isotope and Activity
- If you add additional radioactive waste after initially dating the container, the hold for decay time is extended, but you cannot change the date on the chemical waste tag.
- Once ten $\frac{1}{2}$ lives have elapsed for all wastes in the container, submit a pickup request to EH&S.
- You must submit a pickup request when the container is no more than 8 months old, and you must hold the waste for ten $\frac{1}{2}$ lives. For this reason, you should not add additional wastes to the container after 100 days have passed since the original waste was added.
 - To submit a pickup request, go to <http://wastepickup.stanford.edu>
 - Please note in the comments section of the request that your waste previously contained radio-isotopes.

2) If you must use long-lived isotopes such as I125, S35, C14 and H3, determine if the hazardous chemical portion can be treated to make it non-hazardous.

- Common treatment methods are neutralization and solidification in cement. In order to conduct this treatment, you must obtain additional training from EH&S, and keep records.
- Please contact the Environmental Protection Program at 725-7529

3) If long-lived mixed waste cannot be treated, you must manage your waste in accordance with both the Chemical Waste and the Radiation Safety requirements including labeling as noted above.

- Due to difficulty of securing disposal options for these wastes, you must submit a pickup request to the Chemical Waste Program within 6 months of generation.
- Again, do not add radioactive waste to the container more than 100 days after the initial waste was generated.