

NEMS Guidance Protocol: Specialty Waste Management

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Applicability: All NIH Laboratories, Specialized Facilities, and Certified Environmental Contractors.

Classification & Definition Matrix:

Specialty Waste encompasses high-risk, non-standard hazardous streams that cannot be mixed with routine solvents, bulk waste, or universal waste. Due to severe chemical reactivity or specialized legal frameworks, these items require unique handling protocols.

Waste Sub-Category	Definition & Common NIH Examples	Primary Regulatory Risk
Chemotherapeutic / Antineoplastic	Remnant cancer research drugs, IV bags (contaminated), syringes, and PPE. Examples: Cyclophosphamide, Doxorubicin, Cisplatin.	Highly toxic, mutagenic, carcinogenic. Must be completely incinerated.
Multi-Hazard "Mixed Waste"	Waste(s) contains both a hazardous chemical and a radioactive isotope. Examples: Liquid scintillation vials with Toluene and Tritium (³ H).	Dual-regulated by the EPA (RCRA) and the Nuclear Regulatory Commission (NRC).
Compressed Gas Cylinders	Lecture bottles and small gas cylinders used in equipment calibration or specialized atmospheres. Examples: Carbon monoxide, Arsine, Ammonia cylinders.	Pressurized explosion risk; gas toxicity or pyrophoric (air-reactive) dangers.
Reactive / Explosive Materials	Unstable chemicals susceptible to violent detestation or reaction with water/air. Examples: Aged dry Picric Acid, Sodium metal, old peroxide-forming Ethers.	Extreme shock, friction, or heat sensitivity. Dangerous for standard transit.

Collection & Storage Standards:

Specialty waste requires the highest level of physical containment and administrative controls before removal.

SPECIALTY WASTE - HIGH RISK |

- [X] Chemotherapy: Yellow Rigid Bins |
- [X] Reactive(s): Stored Under Mineral Oil |
- [X] Segregated by Exact Compatibility |



Container Specifications:

Chemotherapy Waste: Must be collected in dedicated, leak-proof **yellow waste containers or heavy-duty yellow bags**. They must be kept entirely separate from standard red biohazard/sharps bins.

- **Reactive Chemicals:** Alkali metals (e.g., Sodium, Potassium) must remain submerged in mineral oil or kerosene inside air-tight glass or metal outer containers.
- **Gas Cylinders:** Lecture bottles must be kept upright and secured in a designated cylinder rack or gas cabinet. Cap protectors must remain on valves when not in use.

Storage and Stabilization:

- **Peroxide Formers:** Chemicals like Ethyl Ether or Tetrahydrofuran (THF) must be tested for peroxides every 6 months. If crystals are visible or test strips show high peroxide levels, the container is classified as an unstable reactive; do not touch or move.
- **No Consolidation:** Contractors and researchers are strictly prohibited from bulking or mixing specialty waste. Every individual bottle or cylinder must remain in its original containment vessel.

Step-by-Step Labeling Protocol:

Because specialty waste is frequently handled by specialized hazardous material technicians, labels must be meticulously detailed.

• Step 1: Color-Coded Identifiers:

Place the following sticker upon each of the corresponding waste(s).

- **Chemotherapy:** Affix an official yellow "Incinerate Only — Chemotherapy Waste" label.
 - **Mixed Waste:** Must bear both the NIH Chemical Waste Tag as well as the NRC Radioactive Waste Tag detailing isotope activity levels.
- **Step 2: Full Chemical Disclosure:** Write out complete chemical names and concentrations. For reactive(s), note the exact chemical state (e.g., "Dry Picric Acid - Explosive when dry").

Step 3: Cylinder Status: All compressed cylinders must be labeled as "EMPTY", "PARTIAL", or "FULL" along with the gas name.

Local Logistics & Specialized Pickup Execution

- **Custom Scheduling Required:** Standard Chemical Waste Service (CWS) daily route trucks cannot accept highly reactive or mixed waste without pre-clearance.
- **Submission Channel:** Submit an electronic request via the online CWS portal, explicitly checking the "Specialty/Reactive" or "Radioactive Mixed" checkboxes.
- **Local Service Tracking:** For Bethesda, Twinbrook, Rockville, and Gaithersburg sites, a specialized DEP Hazardous Materials Specialist will schedule a targeted evaluation within 2 to 3 business days.

- **High-Risk Stabilization:** If a chemical is deemed too unstable to transport (e.g., crystallized ethers), DEP will deploy an emergency bomb-squad or remote-opening explosive ordnance stabilization contractor to safely neutralize the material on-site.

Emergency Response Protocols:

- **Reactive Spill/Fire:** Never use water on a metal or reactive chemical fire (such as Sodium). Use a Class D dry powder extinguisher if properly trained or immediately pull the fire alarm.
- **Gas Leak:** If a toxic or flammable specialty gas cylinder leaks, immediately evacuate the laboratory, pull the fire alarm, and contact the DEP Spill Response Line (301-496- 4451).