Common Violations and Problems Found at Hospitals

- Failure to use properly trained and accredited asbestos personnel.
- Failure to notify EPA of asbestos removal projects and to keep required documentation/record keeping.
- Failure to properly dispose of asbestos debris.
- Failure to close lids on parts washers when not in use.
- Failure to include spray paint booths and parts degreasers in air permit.

- Improper disposal of chemotherapy drugs.
- Failure to perform or improper HW determinations.
- Improper management of expired pharmaceuticals, paints, etc.
- No or inadequate HW manifests.
- Lack of contingency plan.
- Lack of or inadequate training of employees in HW management.
- Failure to ensure that HW meets Land Disposal Restrictions.
- No Spill Prevention Control and Countermeasure plan.
Common Violations and Problems Found at Hospitals

- Improper or lack of hazardous waste (HW) labeling.
- Improper consolidation of wastes from nearby facilities.
- No or infrequent weekly inspections of HW storage/satellite areas.
- Open containers of HW.
- Throwing HW down the drain.
- Failure to upgrade or close underground storage tanks (USTs) by 12/22/98.
- No or inadequate secondary containment of storage tanks. Malfunctioning leak detection systems on USTs.
- Failure to notify residents of lead paint in building or lack of knowledge of any lead hazard.
- Failure to provide EPA's pamphlet, "Protect Your Family from Lead in Your Home."
- No permit for or noncompliance with wastewater discharges.

EPA & NY DEC Inspections of Albany Medical Center

New York State Department of Environmental Conservation
Office of Environmental Quality, Room 4
375 Washington Avenue, Albany, NY 12234-4040
Phone: (518) 474-6600
Fax: (518) 474-6602
Website: www.dec.ny.gov

August 30, 2001

Kathleen M. Urschel, Executive Director
Albany Medical Center, Environment and Safety
51 New Scotland Avenue, 4A
Albany, NY 12208

Re: Albany Medical Center - TIN ID No. NY00000000
Albany Medical Center Hospital - EPA ID No. NY051000

Dear Kathleen M. Urschel,

In order to determine compliance with the New York State Industrial Pollution Prevention Act (the “Act”) and the regulations promulgated thereunder, the New York State Department of Environmental Conservation (the “Department”) conducted an inspection at your facility on the date indicated above.

During the inspection, we noted the following non-compliance. No violations of the New York State Hazardous Waste Regulations were observed by the inspectors as the inspection data referenced above. A copy of the Inspection Report is attached for your records.

Please be advised that the facility’s order for remaining compliance in compliance with all the provisions of the Act and the regulations promulgated thereunder may be amended if your facility is unable to continue to comply with the regulations. If your facility is unable to continue to comply with the regulations, it may be subject to additional enforcement actions, including monetary penalties.

Please send this letter to your address or any facility that you may have to any regulatory fine and hazardous waste compliance fee.

Sincerely,

Tim Killeen,
Chief
Hazardous Waste Compliance Section

[Signature]

[Name]

Regional Director of Environmental Engineering

EPA & NY DEC Inspections of Albany Medical Center

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Chief
Hazardous Waste Compliance Section

[Signature]

[Name]

Regional Director of Environmental Engineering
Approach

- JCAHO
- EoC – Environment of Care
- Hazardous Materials & Waste Management
- EC 3.10 Defines Hazardous Wastes as Nuclear (Radioactive), Chemical (RCRA) & Biological (RMW)……..UNITARY NBC SYSTEMS APPROACH!!!!!!!!!!!!!
### Waste Prevention Opportunity

#### Patient Care Source Separation Program

- **Waste segregation**
- **Hazard minimization**
- **Promotes recycling**
- **Improves internal environment**
- **Reduces space demands**
- **Reduces elevator usage**
- **Improves quality**
- **Reduces costs**

- **Labor**
- **Packaging**
- **Transportation**
- **Disposal**

### Anatomy of a Hazardous Waste Stream:

#### Regulated Medical Waste

<table>
<thead>
<tr>
<th>Category</th>
<th>Source Separation</th>
<th>Handling Unit</th>
<th>Packaging</th>
<th>Transportation</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulated Medical Waste</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Red Bag Waste</strong></td>
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<tr>
<td><strong>Red Bag, Labelled</strong></td>
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<tr>
<td><strong>Sharps</strong></td>
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<tr>
<td><strong>Sharps, Contained</strong></td>
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</tr>
<tr>
<td><strong>Sharps Contained</strong></td>
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</tr>
<tr>
<td><strong>Sharps, Labelled</strong></td>
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<tr>
<td><strong>Chemical Waste</strong></td>
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<tr>
<td><strong>Chemical Waste, Large Quantity</strong></td>
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<tr>
<td><strong>Chemical Waste, Small Quantity</strong></td>
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<td></td>
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<tr>
<td><strong>Chemical Waste, Small Quantity</strong></td>
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<tr>
<td><strong>Chemo Waste</strong></td>
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<td></td>
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<tr>
<td><strong>Chemo Waste, Large Quantity</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chemo Waste, Labelled</strong></td>
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</tr>
<tr>
<td><strong>Chemo Spill Kit</strong></td>
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</tr>
<tr>
<td><strong>Shipped to Pharmacy</strong></td>
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</tr>
<tr>
<td><strong>Pharmacy</strong></td>
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</tr>
<tr>
<td><strong>Contaminated Glassware</strong></td>
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</tr>
<tr>
<td><strong>Annual Weight avoided by source separation</strong></td>
<td>5 million pounds</td>
<td></td>
<td></td>
<td></td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>
Hazardous Materials & Waste Management

- Hazardous chemical wastes = low volumes but high risk and high cost!
- Energy recovery system incinerator shut down = offsite disposal of solvent wastes at high costs.
- Storage of hazardous materials = high risk from accidental release, fire or impermissible exposures.

ANATOMY OF A HAZARDOUS WASTE STREAM:

**Chemical Waste**

- Laboratory of Chemical Process Evaluation
  - Product substitution
  - Waste of undesired chemical disposal

- Apply Prudent Practices
  - Minimize Toxicity / Hazard of Chemical Wastes
  - Minimize Quantity of Hazardous Waste

- Hazardous Waste Manifest
  - AMC Waste Label Applied

- Department of Environmental Health & Safety Notified

- HMS Waste Pick-up
  - Lab PPE Quantity

- Pour Off of liquid wastes
  - Consolidation of solids

- Commercial waste notified
  - Chemists pack & ship out

- Hazardous Waste Manifest Reused
Chemical Recycling

The Albany Medical Center's Chemical Reclamation Facility is the largest such facility in the Eastern US. It consists of 3 research grade spinning band distillation units, a formalin recycler, a simple column distillation unit and a self contained dedicated xylene/alcohol recycler.

Construction costs $75,000; Equipment costs $75,000.

At present we recycle ethyl alcohol, methyl alcohol, 2-propanol, xylene, formalin and paint thinner.

Since November of 1995, we have reclaimed 141 tons of solvents worth $1001,251 and avoiding $1.7 million in costs.

CFC Recovery

• Since 1994, 721 pounds of the refrigerants R22, R12, R502, R302, MP 39 and R500 are recovered from old equipment and reused.
• The Ozone depleting refrigerants R22 (Freon 22) and Freon 12 (R12) account for 99% of the total recovered CFC’s
Battery Recycling

- Since 1994, AMC has generated over 100,000 pounds of used batteries representing an estimated hazardous waste disposal cost of $250,000.
- The batteries are from computers; telecommunications devices, such as radios, cell phones and pagers; flashlights; various diagnostic instruments, such as otoscopes, ophthalmoscopes, thermometers, blood pressure monitors and heart rate indicators; and scientific instruments. They range in size from small AA batteries to large lead-acid 12-volt units used in floor polishers and fork lifts.

Chemo – Pharmacy Waste

- Residual – RCRA
- Characteristic of hazardous waste.
- Visible drug remaining in container.
- Trace – RMW
- Characteristic of medical waste (blood, Sharp)
- RCRA “empty”
- APPLIES TO U LISTED WASTES ONLY!!!!!!!!!!!!!
Pharmacy Waste

- U listed wastes:
- Residual – RCRA
- Characteristic of hazardous waste.
- Visible drug remaining in container.

- P listed ACUTELY TOXIC Wastes
- As2O3 – new anti neoplastic drug: P012
- Epinephrine – P042
- Nicotine – P075
- Warfarin – P001

<table>
<thead>
<tr>
<th>Drug</th>
<th>CAS#</th>
<th>RCRA ID number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorambucil</td>
<td>303-03-3</td>
<td>U035</td>
</tr>
<tr>
<td>Chloromaphazine</td>
<td>494-03-1</td>
<td>U026</td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td>50-18-0</td>
<td>U058</td>
</tr>
<tr>
<td>Daunomycin</td>
<td>20830-81-3</td>
<td>U059</td>
</tr>
<tr>
<td>Melphalan (phenylalanine mustard)</td>
<td>148-82-3</td>
<td>U150</td>
</tr>
<tr>
<td>Mitomycin C</td>
<td>50-07-7</td>
<td>U010</td>
</tr>
<tr>
<td>Streptozotocin</td>
<td>18883-66-4</td>
<td>U206</td>
</tr>
<tr>
<td>Uracil Mustard</td>
<td>66-75-1</td>
<td>U237</td>
</tr>
</tbody>
</table>

In 1987, an EPA policy letter clarified that waste contaminated with trace residues of chemotherapy agents would be considered non-hazardous if it meets the “empty container” criteria. OSWER Directive 9441.1987(45) (policy directive from J. Sales, Chief, Regulation Development Section, EPA), U.S. Environmental Protection Agency, June 16, 1987; cited in W. L. Turnberg, loc. cit. “Empty containers” are containers from which chemotherapy agents have been removed and no more than 1 inch of residue or no more than 3% by weight of residue remains in the container. The EPA recommends that materials such as vials, syringes, gloves, etc. contaminated with these chemicals not be handled after use to minimize exposure.
Computer EDP Recycling

- In 1996, laboratory equipment, glassware and research supplies were added for adoption.
- In 1997, computers and EDP equipment were also added. Over $500,000 of monitors, printers, CPU, accessories, etc will be reissued to research labs, faculty offices and patient care areas, annually.
- To the present, 150,000 pounds of scrap computer, EDP, research, diagnostic and patient care equipment (VDT’s, circuit boards, X-ray machines, ECG’s, meters and balances) shipped to a state participating electronics recycler: Waste Management and Recycling Products in Schenectady, NY.

Mercury

EPA has reported that environmental mercury represents a significant health threat. They report that 10 percent of that mercury comes from medical waste incineration.

In response, some 170 health-care organizations have come together in a campaign to “make medicine mercury free,” by phasing out as many sources of mercury from medical practices as possible. Their first targets: mercury-containing fever thermometers and sphygmomanometers (blood pressure “cuffs”).
Mercury

Albany Medical Center has does not incinerate its waste. It is reduced to the smallest amount practicable (less than 5 pounds per patient per day), and sent to a commercial offsite corporation (Stericycle).

Mercury spills from broken equipment are responded to 24/7 by our HAZMAT Team, a HAZWOPR trained response unit. All mercury is recovered and disposed of as hazardous waste or completely recycled.

Batteries as noted earlier are collected and recycled.

Elemental and mercurial salts of economic value are sent for recycling.

Fluorescent bulbs are collected and managed as Universal Wastes. All unbroken bulbs are sent for recycling.

Radioactive Waste

- Generally no viable offsite disposal options available.
- Waste avoidance.
- Waste minimization.
- Onsite storage.
ANATOMY OF A HAZARDOUS WASTE STREAM:
Radioactive Waste

- Radioactive Waste Generated
- Radiation Safety Office Notified
- Radioactive Waste Picked Up
  John Dutcher, Asst RSO
- Pour Off of liquid wastes
  Consolidated to solids
  Hold for Decay (LLRW)
  Ship offsite if permissible?
- Dispose of Decayd Wastes

Residual Chemical Waste Disposed of as Hazardous Chemicals
Residual Biological Waste Disposed of as Regulated Medical Wastes

WR²

- Approved by NYS DOH as an alternative technology “reductive cremation”.
- Biological materials are reacted under heat and pressure with concentrated alkali (50% sodium hydroxide), reducing the proteins to a sterile amino acid soup.
- Aldehydes (cidex, formaldehyde), phenols, infectious wastes and biotoxins (anthrax, botulina) are reduced by this process.
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