

# HOW TO DISPOSE OF WASTES

(Joel Scott, 8/29/03)

The following is a quick primer on waste disposal at C-A. The intent is to give simple instructions on routine, and radioactive waste disposal and to show you existing information available on the computer for handling wastes and recycling of materials. At any time your not sure call Joel Scott ext. 7520, digital pager 631-453-5905.

1. Resources
  - A. OPM sections 8.20, 8.20.e,8.20.1,8.20.1a for Hazardous and Industrial waste.
  - B. OPM 8.20.2 for Radioactive waste.
  - C. OPM 8.22 for normal wastes, and recycling
  - D. SBMS subject areas for haz./ind. waste, radioactive waste, mixed waste.
  - E. Environmental & Waste Management Services home page "How Do I Manage This Waste".
  - F. Plant Engineering home Page "Recycling".(click on O&M, Then go to site maint. Recycling program).
2. Hazardous and Industrial Waste
  - A. The SBMS subject areas govern these wastes. The C-A OPM gives you info for how our department meets SBMS requirements.
  - B. Simple rules, Keep all chemicals including oil and solvents in different labeled containers "DO NOT MIX". If you have several different types of oil contact me about bulking them together in a 55 gallon drum.(whenever possible its cheaper waste wise to bulk oil, oily rags etc. in 55 gallon drums for waste disposal not a lot of single bags, or small containers). Note that bags of oily rags should not have loose oil in them add enough absorbent pads to soak up loose oil or dump loose oil into containers. All chemical containers used in field have to be labeled, cans can have manufacturers label, plastic squirt bottles or containers without manufacturers label must have NFPA diamond on them filled out, if containers hold water label them also(many times half full bottles of chemicals are found laying around and if there not labeled chemical analysis costing \$5000 has to be done to identify contents for disposal.

- C. Segregate flammables, toxics, and reactive chemicals into different containers and areas of the satellite area.
  - D. Ensure your training is up to date and fill out paperwork when waste containers are full. All C-A waste forms go to me ext. 7520 Bldg. 911 first, and I'll review them and send them on to waste management. This is done so a central record can be kept, and allows me to monitor our waste volumes and be able to spot areas for waste reduction efforts etc.
  - E. Batteries- Your regular Alkaline AA, AAA, D, C, and alkaline 9V batteries can be discarded in regular garbage. NiCad, Lithium, Mercury, or lead acid batteries are universal wastes and should be collected in separate containers for each battery type. These containers can accumulate batteries for 1 year before being sent out as waste. Any battery accumulation area needs a Universal waste rules sign in area, and a universal waste label on container. If you have one of these areas contact me and I'll get you the signs and labels.
  - F. It's Lab. policy to try and remove, where possible, all mercury from the site. If you have any mercury thermometers or other mercury containing devices try and replace them with non mercury replacements.
  - G. Whenever you're ordering new chemicals (including epoxies, spray paints, lubricants etc.) try to buy something that is not hazardous(chemicals cannot be purchased on credit cards, need to fill out p.o.). If a new project requires use of hazardous materials contact me at 7520 so I can assure it can be used and disposed of properly.
3. Normal Waste and Recycling
- A. The Plant Engineering home page has a section on Recycling and whenever possible clean waste should be recycled to save the Lab. and C-A money.
  - B. Spray cans can be recycled if cans are empty. Place empty spray cans in a container inside a plastic bag, mark container for recycling. Note: Pesticide cans and highly toxic cans are always treated as hazardous waste. If the can is not empty it has to go out as haz. waste with forms and labels.
  - C. Printed circuit boards can be placed in the metal recycling bin as long as any hazardous components are removed( mercury switches and relays, batteries etc.) If components can't be removed board is treated as haz. waste.

- D. Electrical equipment can be sent to PE for recycling after bar code info is transmitted to J. Downing.
  - E. Recycling of metals from non-suspect rad. areas is the same as always. If metal is from a suspect area and HP has cleared it, it has to go to suspect metals yard and this has to be written on Process knowledge form.
  - F. If you have to get rid of large quantities of oil(>250gals.) contact me at 7520 if possible I'll have it burned at steam plant for no cost.
4. Radioactive waste disposal.
- A. There is an SBMS subject area on rad. waste, and C-A OPM 8.20.2 covers what C-A does.
  - B. Put simply all Rad. solid waste is collected and packaged in the 960 waste yard. Waste is separated and sized as much as possible prior to delivery in waste yard and placed in appropriate bins. Steel, aluminum, copper, clean up bags(this is all compactable PPE, paper ,gloves plastic, floor sweepings etc.), filters(water systems dried particulate filters, and air handler filters, all of this is compactable material also), and rubber micarta plastic are segregated into separate bins. Your responsibilities and some good practices follow:
    - Note: Attached (see last page below) is Waste Management's list of items prohibited from normal rad waste packages. Any of these items shall be packaged separately from rest of waste and handled in waste yard for disposal.
1. As much as possible separate waste into categories shown above before bagging.( steel, copper [wire, tubing etc.],aluminum, compactable bags, filter material, rubber micarta plastic). All bags of waste must be labeled with what's in them, where waste came from, and your name, so any questions on waste can be answered. HP must always put responsible persons name on RAM tag.
  2. All metals must be no longer than 4ft. in length or cut to fit. If you have large items contact me at 7520 to work out details.
  3. When sizing copper be aware that all soldered joints and fittings shall be cut out from rest of copper since these items due to lead solder are mixed waste, whereas rest of copper is just rad.(regular rad. waste is \$150 a cuft to dispose of,

mixed waste is \$800 a cuft to dispose of [minimize the amount of mixed waste as much as possible]). For cost and waste minimization reasons the time to cut out lead solder areas of copper is required, and should be done prior to delivery to waste yard.

4. All equipment with electronic components in them must have electronics removed prior to delivery in waste yard. Any soldered connection is mixed waste, any size or shape of a light bulb, LED and socket for same is a mixed waste, many components on circuit boards are mixed waste. It is imperative that the waste tech. or myself are informed of any electronics or lead etc. in components for waste.
5. Any items coming to waste yard must have HP check with RAM tag affixed, and HP input to allow transport on gov. vehicle to waste yard. If items are contaminated they must be double bagged and contamination levels written on RAM tag as well as activation level. If items are > 100mr/hr special transport paperwork is required, and arrangements have to be made thru me ext. 7520.
6. Waste Resins from water systems are to be dried to extent possible and barrel sampled(a drum thief tube for a representative core sample will be used for sampling), and RAM tagged by HP. Resins will be used as void fill for waste bins. Training is required for sampling COC normally I'll fill them out for you.
7. The following are simple ideas that can save a lot of waste costs for division.
  - A. when doing work in any primary or rad. area bring several waste bags. Any packaging or clean waste you bring in to do work shall go into a separate bag from waste removed from rad. or primary area(this includes extra hardware,tape etc.). Most waste bags have  $\frac{1}{2}$  to  $\frac{3}{4}$  of there volume as clean waste since its packing material and boxes not waste from area. We do go thru bags to separate clean from rad but this should be done at the work site, at the time of disposal.
  - B. Separating metals, hoses, plastic, and hardware from tape and other compactable items can also minimize waste. It's the solid objects that get activated not

necessarily the tape paper and other compactable items in primary areas.

- C. When you or janitors sweep an area prior to bagging floor sweepings go thru pile and remove all metal hardware, light bulbs, fuses etc. and bag them separately. This not only prevents prohibited items entering the waste stream but 95% of the time only these pieces are activated and the rest of the floor sweepings are clean and never have to enter the rad. waste stream.
- D. When leaving primary areas ensure that nothing is left behind to become activated during the next run. It may be convenient to leave some items in area for next time, but this just increases the activation inventory for minimal gain.

C. Radioactive Liquid Wastes.

1. The majority of our liquid wastes are from activated cooling systems controlled by the Water Systems group and their procedures. These wastes are collected in tankers and reused, evaporated as part of anti-freezing protocols, or sent to Waste Management for disposal.
2. Other liquid wastes are collected in satellite areas such as potentially activated oils, AC-500 and water, anti-freeze and water. In all cases these waste are placed in containers(55 or 5 gal. containers). Containers are placed on secondary containment in case of leaks. When containers are full container is sampled with a colowassa tube for a representative sample, and I fill out waste forms, label containers and arrange pickup by waste management. Containers may stay in satellite areas for pickup or be moved to 919 barrel storage area as needed.
3. If you have a liquid source other then what is listed and it is potentially activated then contact me ext. 7520 to ensure its set up properly.

5.General comments.

- A. Its everyone's responsibility to minimize wastes and if you have ideas please let me know.

- B. Always make an effort to replace hazardous cleaners and chemicals with environmentally friendly products if possible. Both myself and CMS group will try and help you with that.
- C. Separating and segregating potentially activated wastes from known clean wastes cuts down on our waste volumes and saves BNL and C-A money.
- D. Its not exciting reading but the SBMS subject areas on haz., rad., and mixed waste, plus spill response, oil and PCB management, transport of haz. and rad., and tanks and storage areas should be read at least once to understand the complexities and requirements we all must adhere to in these areas. These subject areas give you majority of information necessary to comply with the labs. Environmental requirements.
- E. If you're adding or changing a known haz. or rad. process contact me Ext. 7520 or ECR ext. 2905 to review it for compliance.

## **PROHIBITED ARTICLES IN RADIOACTIVE SOLID WASTE PACKAGES, (LLW, compactible, and noncompactible)**

- **Incandescent and Fluorescent Light Bulbs**, flashlight, drop lights, and floodlights
- **Batteries**, flashlight/beeper dry cells and emergency light batteries
- **Lead**, bricks, sheets, fuses, printed circuit boards, computer monitors, televisions, bronze strainers/floor drains/fittings, brass sand-cast elbow/valves, items that would fail TCLP\*\* (i.e., compounds not otherwise specified [NOS])
- **Liquids**, any amount of unabsorbed, nonregulated free liquids (unless asbestos waste 1% free - OK) - sorbent must be added to all final packaging with condensation potential.
- **Aerosol Cans**, \*\*see pollution prevention initiative (e.g., pressurized containers that include aerosol cans, fire extinguishers, and lecture bottles)
- **Mercury**, thermostats, relays, thermometers, and compounds NOS
- **Unauthorized Chemicals/Solvents**, \*\*contact your WMR
- **Combo Respirator Cartridges**, where combos are, mixed wastes exists, there are some combos regulated just by the reagents within them (e.g., ammonia) \*\*
- **Syringes, scalpels, hypodermic needles**, even if nonmedical application\*\*
- **Dismantled circuit boards**, may contain hazardous materials\*\*
- **Drager/Sensodyne tubes**, may contain hazardous materials\*\*
- **Animal waste/animal carcasses**
- **Green or wet vegetation**
- **Oils, fuels, and other organic liquids**, even if absorbed into solid

**Note: Each bulleted item is a separate and distinct waste and should be packaged/labeled accordingly.\*\***

**Questions/path forward for prohibited articles/items considered mixed or State regulated - \*\*ask your Waste Management Representative, or contact the [Radioactive Waste Program Manager](#) or [Mixed Waste Program Manager](#).**