

Managing Hazardous Waste



Tom Hodges

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334-703-7511

<https://cws.auburn.edu/rms/pm/environmentalManagement>

Who to Call

RMS Main Office
Ginger Vedder
334-844-4870

Hazardous Waste Technicians

Michael Freeman
freemms@auburn.edu
334-740-1267

Billy Cannon
cannobm@auburn.edu
334-703-0419

Pathological & Medical Waste Technician

Steven Nolen
scn0005@auburn.edu
334-703-3859



- For safety assistance, you may call anyone at RMS.
- These people are frequently called for hazardous materials questions or to report emergencies.

For all chemical containers, but **especially** waste containers, make sure they are:

CLEAN – No residual drips or smudges on outside of container

CLOSED – Secure closure on container, i.e., **threaded caps**

LABELED – Container contents **clearly marked**

Avoid “Legacy Chemicals”

See the **[Hazardous Waste Management Guide](#)** for more information.



- Legacy Chemicals are those materials left behind by a previous lab worker, graduate student, retiring professor, or just simply forgotten about when a new PI or student takes over the lab.
- Prime locations for these waste violations are drawers, cabinets and refrigerators.
- No matter what container you have, each must be CLEAN, CLOSED and LABELED at all times.

Multiple violations
Fines up to \$2,500.00 per violation PER DAY



- Multiple violations that could result in a fine of \$2,500 per violation PER DAY.
- There are at least 3 violations, and if the inspector wishes, she may calculate the amount of fines for any length of time she likes.
- For example, the inspector may apply \$2,500 for each violation over a period of 6 months.
- That proposed fine would be approximately \$440,000, all for a single neglected container.



*At the end of my process, will
my waste stuff be a
regulated hazardous waste?*

- Three steps to managing your chemical waste.

STEP ONE:

List of Chemicals Considered Nonhazardous for Disposal

(aka, the “Non Haz List”)



- Check this list on the RMS web site if you are not sure if your waste is regulated hazardous waste or not.
- If it is on this list, then it is non-hazardous and can be disposed of in the lab or work area.

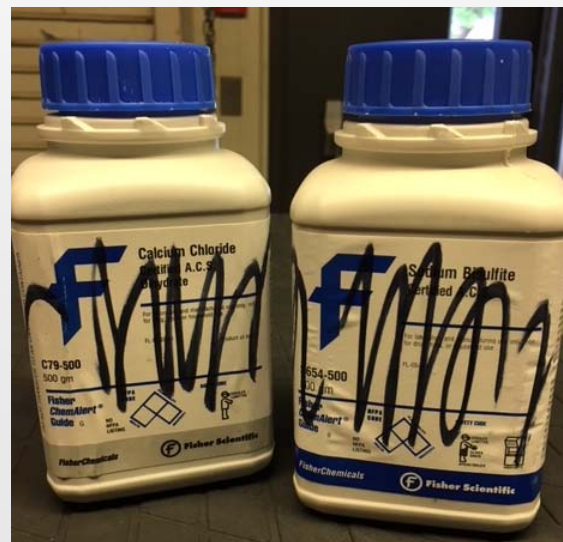
NON-HAZARDOUS CHEMICALS

May Be Disposed Of Via Sanitary Sewer or Solid Waste

BACTO-SENSITIZED KAHN ANTIGEN
BACTO-WORT AGAR
BALSAM
BALSAM TOLU
BAS 292 03 I
BAYFOLAN PLUS
BAY OIL
BCIP/NBT PHOSPHATEASE SUBSTRATE
BEHENIC ACID
BENEDICTS QUALITATIVE SOLUTION
BENTONITE
BENZA-ALPHA-PURINE
BENZALKONIUM CHLORIDE
BENZIL MONOXIME
BENZOIC ACID
BENZOIC ACID SODIUM CRYSTALLINE
BENZOIN ETHYL ESTER 10%
BENZOYLCHOLINE CHLORIDE
BENZOYL-DL-METHIONINE
BENZOYL-L-TYROSINE ETHYL ESTER
BENZYL IODIDE
BENZYL MALONIC ACID
BENZYL PENCILLIN
BENZYL SALICYLATE
BENZYL SULFOZIDE
BERBERINE HYDROCHLORIDE
BERI-VER IV
BERKSHIRE SAND
BETA-ALANINE
BETA-AMINOPYRIDINE

1. Deface the label
2. **Liquids:** pour down the sanitary sewer *
3. **Solids:** place in trash

** NO STINKERS!*



- The “Non-Haz List” is in alphabetical order by common name.
- If an otherwise non-hazardous chemical is found to be noxious and distracting in the lab, it would be best to submit that particular waste the way you would submit a request for pick up of hazardous waste rather than affect a floor or an entire building with stench.
- Use common sense.

STEP TWO:



HAZARDOUS WASTE CONTAINER

Contents: (no formulas or abbreviations)

METHANOL	20 %
WATER	50 %
ACETONITRILE	30 %

Hazards: (check all hazards that apply)

<input checked="" type="checkbox"/> Flammable	<input checked="" type="checkbox"/> Toxic	<input type="checkbox"/> Corrosive (pH ___)	<input type="checkbox"/> Reactive
<input type="checkbox"/> Oxidizer	<input type="checkbox"/> W	<input type="checkbox"/> Air Reactive	<input type="checkbox"/> (Other) _____

Created By: T. HODGES

If creating label for waste pickup, use the website <https://chematix.auburn.edu/Chematix/>.

1. Use this label on each container while stored in the SAA.
2. You must indicate the hazards within.
3. Do NOT overfill containers! Leave headspace!



- New Hazardous Waste regulations for 2018 REQUIRE the words “Hazardous Waste” and other indication of the hazards associated with the waste. Therefore, RMS developed labels that eliminates any confusion about proper, required labeling. These editable labels are available for the main RMS web page and can be printed on Avery label 5163 or equivalent.
- **EACH WASTE CONTAINER BEING ACCUMULATED IN YOUR SAA MUST HAVE THIS LABEL or a CHEMATIX waste card. THIS IS NOT OPTIONAL.**
- In any case and with any waste container, do NOT overfill the container! A 1” to 2” head space is required for each waste container!

HAZARDOUS WASTE CONTAINER

Contents: (no formulas or abbreviations)

_____%
_____%
_____%

Hazards: (check all hazards that apply)

Flammable Toxic Corrosive (pH____) Reactive
 Oxidizer W Air Reactive (Other)

Created By: _____

If creating label for waste pickup, use the website <https://chematix.auburn.edu/Chematix/>.

HAZARDOUS WASTE CONTAINER

Contents: (no formulas or abbreviations)

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 Oxidizer W Air Reactive (Other)

Created By: _____

If creating label for waste pickup, use the website <https://chematix.auburn.edu/Chematix/>.

1. Download these labels from the RMS web site.
2. Print on Avery labels (10/sheet)
3. Complete the label.
4. Attach to EACH WASTE CONTAINER.
5. Place in the SAA until ready for a pick up.

STEP THREE:

When container is full and
you are ready for a pick up,
use Chematix[®]



2018 CHEMATIX Haz Waste Card

AT A MINIMUM

Like the SAA labels,

Waste containers must be marked with:

- “Hazardous Waste”
- Indication of hazards
- Full chemical name
 - *Percentage or volume of separate constituents*

HAZARDOUS WASTE			
EPA, Alabama Department of Environmental Management, and Auburn University regulations prohibit improper disposal.			
If found, contact AU Hazardous Materials Management at (334) 703-7511 or hodgetf@auburn.edu.			
 AUW000J98			
UN Code:		DOT Code: To be reviewed	
EPA Code:		Current Location: AA_M1702/103/EHS Storage Facility/Undefined	
		Received Date:	
Created By:		Principal Investigator	
Hodges, Thomas		Hodges, Thomas	
Department	Building Name	Room No.	Phone
Environmental Health and Safety	Environ Bldg No.1 (AA_M1702)	103	334-703-7511
Chemical Name		CAS #	%
Water		7732-18-5	60.0
Phenol		108-95-2	25.0
Chloroform		67-66-3	15.0
<input type="checkbox"/>	Corrosive	<input type="checkbox"/>	Flammable
<input type="checkbox"/>	Reactive	<input checked="" type="checkbox"/>	Toxic
Signature: 		Container Size:	2.5 L
Hazardous Waste Contact: Michael Freeman, CHMP 334-740-1267			



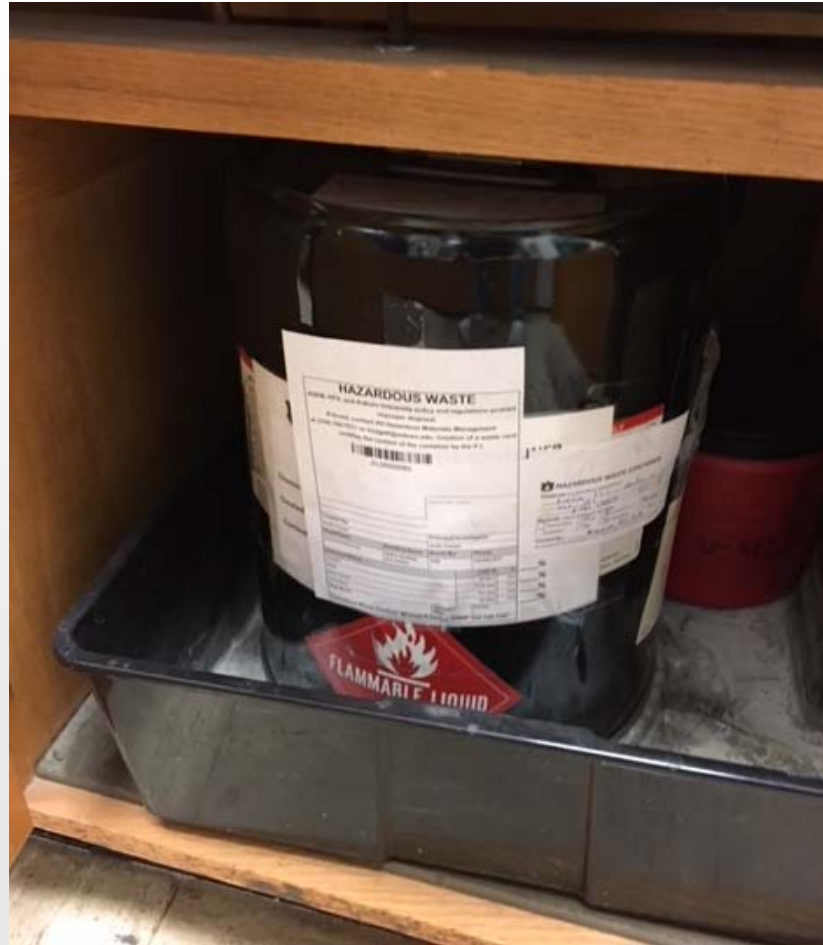
- Like the Hazardous Waste Container labels, the Chematix Waste Card has the required wording “Hazardous Waste”, but **you must MANUALLY check the box** next to the indication of the associated hazards AFTER you print the Waste Card.
- If your waste is a mixture, be as accurate as you can listing the constituents and their percentages.
- Affix the printed Waste card to the appropriate container and submit your corresponding waste pick up worksheet via the “Save and Submit” button in Chematix.
- Your waste will not be picked up until you successfully submit your pick up request.



Satellite Accumulation Area (SAA)

- Your SAA must be clearly marked on the outside and clean on the inside.
- Use secondary containment to store your waste in while in the SAA.
- Some cabinets have built in secondary containment, but inexpensive plastic trays are available at almost department store.
- **ALL** containers must be marked with either the Hazardous Waste Label or CHEMATIX Waste Card while in the SAA. NO EXCEPTIONS.

Secondary Waste Containment



- If your SAA is not designed with built in secondary containment, purchase a plastic tray to use for all of your hazardous waste.

“At or near the point of generation...”

HAZARDOUS WASTE SATELLITE ACCUMULATION AREA
SAA must be AT OR NEAR THE POINT OF GENERATION and UNDER THE CONTROL OF THE GENERATOR.

All containers must be compatible with the waste stored in them. All waste must be compatible with the other wastes in the container.

CLEAN - Keep the outside of each container clean and uncontaminated. No drips, smudges, etc.

CLOSED - Containers must be capped with tight-fitting, screw-on caps except when being filled. Do not leave funnels in containers. No cracked or leaking containers. LEAVE ADEQUATE HEAD SPACE.

LABELED - Label each container with CHEMATIX Waste Card and/or the words “HAZARDOUS WASTE” AND INDICATE the hazards:

Flammable Corrosive Toxic Reactive

Label containers with “HAZARDOUS WASTE CONTAINER LABEL” while in SAA. When ready, affix completed CHEMATIX Waste Card and submit request for pick up.

LIMIT the entire SAA waste volume to less than **55 GALLONS** or **1 KG/QT** of “P-LISTED” waste at any one time.

SEGREGATE containers of incompatible waste to prevent reactions.

NO BIOHAZARDOUS OR RADIOACTIVE WASTE may be mixed with or stored in the same locations as Hazardous Waste.

Chemical Spill – Simple (1 gallon or less) <ol style="list-style-type: none">1. Wear appropriate PPE.2. Decontaminate.3. Dispose of cleanup as Hazardous Waste.	Chemical Spill – Complex (>1 gal) <ol style="list-style-type: none">1. Evacuate & isolate area.2. Call 911.	Fire, Explosion or Spill threatening life or health <ol style="list-style-type: none">1. Pull Fire Alarm.2. Evacuate.3. Call 911.
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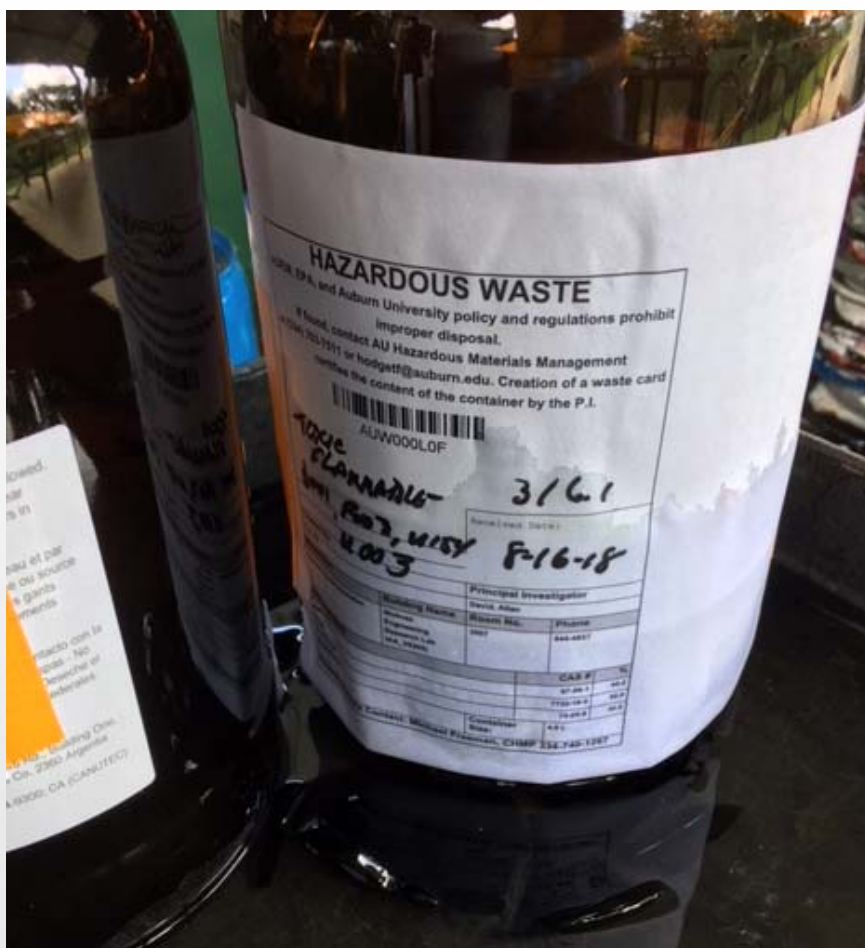
KNOW LOCATION OF YOUR FIRE ALARM, FIRE EXTINGUISHER, SPILL KIT, EMERGENCY SHOWER & EMERGENCY EXITS.

AFTER HOURS EMERGENCIES: CALL 911
Department of Risk Management & Safety (334) 844-4870

SAA sign is available at the RMS web site.



- SAs must be located “at or near the point of generation.”
- In other words, the SAA must be in the same work space where it was generated.
- The SAA can NOT be located in an adjoining room or laboratory and the waste cannot be moved from the point of generation to another location for storage.
- Keep the SAA where your waste is generated at all times.



Do **NOT** overfill
waste containers!

Leave 1" to 2" headspace!



- Remember, do NOT overfill waste containers.
- The short trip from your work space to the EHS waste storage facility involves much handling and jostling of containers and sometimes drastic temperature changes.
- Reactions within waste containers are always possible, so always leave a 1" to 2" head space in your waste containers.

Compressed Gas Cylinders and Used Aerosols



**AirGas (Air Liquide)
Cylinders**
AirGas and BOC
Cylinders



Other Cylinders
**Matheson, Scotty,
Aldrich, Rae, Fluka,
Supelco, ACME, etc**
Avoid whenever possible



- Whenever possible, use only AirGas/Air Liquide gases and cylinders.
- AirGas routinely swaps out cylinders when they are empty at no charge. Other cylinder distributors, however, charge expensive shipping fees and, in the case of waste gas cylinders that cannot be returned to the distributor, a hazardous waste disposal fee is charged.
- Small cylinders like the ones in this phot cost the University about \$130 per container to dispose of.
- Larger cylinders and dangerous gases are extremely expensive to dispose of, too. So, use AirGas cylinders whenever possible.

Spill Response

- **Simple Spills**
 - Generally less than 1 gallon
 - Does not spread rapidly
 - Does not endanger people or property
 - Does not endanger environment
- **When in doubt...**
 - **Call 911 !!!**
 - Consult MSDS in all cases



- A simple spill is one in which the chemical is not an inhalation hazard and is usually under 1 gallon in volume.
- Simple spills can be cleaned up immediately by lab personnel or workers present without outside assistance.
- Stop the spread of the spilled material first, then clean up the spill.
- Treat clean up materials contaminated with hazardous chemicals as hazardous waste.
- Follow the procedures for submitting other hazardous waste via CHEMATIX.

Spill Response Kits

- Keep spill equipment stocked and on hand at all times.
- Must be capable of stopping spread of spilled material
 - Heavy duty plastic bags
 - Plastic brush and plastic dust pan
 - Vermiculite
 - Absorbent padding
 - Goggles
 - Chemical resistant gloves
 - Baking soda

Tailor your kit to reflect the hazards you work with.



MEMPHIS
UNIVERSITY

- Commercial spill kits are available from the University's preferred supply vendors, but you can also make up your own spill kits according to the hazards present in your work area.
- Contact RMS if you have any questions about what supplies should be included in your spill kits.



Biohazards



Biohazardous Spill



- **Soak** paper towels in disinfectant and place over spill
 - If glass or sharps are involved, make sure to use tongs or dust pan and brush.
- **Surround** the spill with additional disinfectant, being careful to minimize aerosolization while ensuring adequate contact.
- **Decontaminate** all items within spill area.
- **Allow 20 minutes** contact time to ensure germicidal action of disinfectant.
- **Wipe** equipment with 1:10 part bleach solution, followed by water, and then a 70% alcohol solution.
- **Store** disposable contaminated spill materials in a biohazardous waste container(s) appropriate for autoclaving.



- Know the proper way to clean up biohazardous spills of infectious materials!
- Always use appropriate personal protective equipment (PPE) when working with infectious agents of any kind.

Medical & Pathological Waste

Read and understand the [Medical Waste Management Guide](#).

Medical Waste is anything containing an agent capable of transmitting disease to humans.

- **Contaminated PPE**, human cell lines, body fluids and human disease agents
Store in approved red bags or red containers marked with the Biohazard symbol.

Sharps = needles, scalpels, IV needles and attached tubing, IV catheters with attached tubing, etc.

Must be disposed of in approved **sharps containers**

Pathological Waste must be picked up and managed by EHS

- Animal tissues, carcasses, body fluids
- Cannot transmit disease to humans



- Regulated medical waste must be managed according to the Medical Waste Management Guide available from the RMS web site.
- Currently, medical waste cannot be managed via CHEMATIX so you must call RMS to request a pick up.
- If in doubt about anything regarding medical waste, call RMS.
- Additional training is available upon request.

MEDICAL WASTE SATELLITE ACCUMULATION AREA

REQUIREMENTS for TEMPORARY LABORATORY STORAGE of REGULATED MEDICAL WASTE.

Medical Waste containers must be clearly marked with words “MEDICAL WASTE”, “INFECTIOUS”, “BIOHAZARDOUS” AND/OR the BIOHAZARD SYMBOL

ALL Medical Waste Containers must be **RIGID, SEALED** and **IMPERMEABLE** to moisture.

SHARPS CONTAINERS must be **LEAK PROOF, RIGID, PUNCTURE-RESISTANT** and **SEALED**.

Small Medical Waste containers may be placed inside larger Medical Waste containers consistent with the above requirements.

- Outside of containers must be reasonably **clean**.
 - Do not put trash or other waste into Medical Waste containers.
 - Do not place broken laboratory glassware into a sharps container.
 - Do not accumulate more than 10 large (15 gallon) sharps containers or more than 5 large (15 gallon) and 10 small containers at any one time.
1. Store Medical Waste in a designated Medical Waste Accumulation Area.
 2. Complete a Medical Waste Internal Manifest for each group of Medical Waste containers prior to scheduling a pick up. Attach the manifest to the waste container by a single piece of tape in such a way that it is easily removed.
 3. Call or email for a Medical Waste pick up:

Steven Nolen (334) 703-3859

scn0005@auburn.edu

Billy Cannon (334) 703-0419

cannonbm@auburn.edu

Tom Hodges (334) 703-7511

hodgetf@auburn.edu

Department of Risk Management & Safety (334) 844-4870

[Medical Waste Accumulation Area signs](#) are available at the RMS web site.



- Follow all instructions on the sign.
- When medical waste containers are ready for pick up, place them in the MWAA where this sign is prominently displayed.
- Call RMS to request the pick up.

Broken Glass

Glass = Pasteur pipettes, slides, cover slips, broken glassware, etc.

- Placing in cardboard boxes, plastic jugs, etc. will help prevent puncturing autoclave bags and will help prevent exposure

LAB PERSONNEL are responsible for taking broken glass to the trash.

- **Broken glass is not RMW, unless...**

If contaminated, it must be decontaminated prior to disposal.

Broken Glass boxes are available from the [Scientific Supply Store](#).



- Broken glass is not regulated waste unless it is contaminated with hazardous materials or infectious agents.
- Broken glass should be placed in a box marked BROKEN GLASS, available from the Scientific Supply Store.
- Contracted custodial staff will not handle your broken glass.
- When full, broken glass boxes must be taken by lab personnel to the nearest solid waste receptacle of dumpster.

“Used Oil”

Pump Oil
Mineral Oil
Motor Oil
Cooking Oil
Palm Oil
Jojoba Oil
ANY Oil



- All unwanted oil must be marked with the **exact** words “USED OIL”.
- Store in the SAA just as you would hazardous chemical waste.
- When ready for pick up, use CHEMATIX to create a waste card and pick up worksheet.
- Choose the link called “Oil and Antifreeze”.

Radioactive Waste

The scope of this Hazardous Materials and Waste training does not extend to radioactive wastes. For more information on this topic, call RMS or email RMS's Radiation Safety staff.

Kara Beharry

Sevgi Kucuktas

Steven Price

Universal Wastes

- Fluorescent Lamps
- Batteries
- Mercury-containing Equipment

REMEMBER,

Clean

Closed

Labeled

(and dated)



- Universal waste is regulated hazardous waste, albeit with less strict requirements for management.
- Universal wastes still must be properly marked and labeled while being stored.
- The best management practice (BMP) for universal waste is simply to call RMS for a pick up **immediately** upon generation.
- If not, you must manage universal waste properly.

Universal Waste Labels available from RMS Web Site

<p>AUBURN UNIVERSITY RECYCLES</p> <p>___ Used Lamps (Number ___) ___ Used Batteries DATE _____ ___ Used Mercury-Containing Eqpt (switches, thermostats, etc.) ___ Used Pesticides</p> <p>Environmental Health & Safety Facility 334-844-4870</p>	<p>AUBURN UNIVERSITY RECYCLES</p> <p>___ Used Lamps (Number ___) ___ Used Batteries DATE _____ ___ Used Mercury-Containing Eqpt (switches, thermostats, etc.) ___ Used Pesticides</p> <p>Environmental Health & Safety Facility 334-844-4870</p>
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- These labels are available for containers of universal waste at the RMS web site.
- At a minimum, the container of universal waste must be marked with the words “Used (lamps, batteries, mercury-containing equipment, as applicable) and the date the first piece of waste is placed in the container.
- Again, it is best and easiest to call RMS immediately for a pick up.

Universal Wastes

Fluorescent Lamps

- Facilities changes out whole buildings

However, individual research lamp pickups must be called in to EHS (844-4870):

- Ultraviolet
- Germicidal
- Terrariums
- Aquariums
- Etc.



Store Used Lamps no more than one year.

Better yet, call EHS immediately after changing out lamps.



- The first place an inspector looks during an inspection is on top of equipment where universal waste is likely to be mismanaged.
- Do NOT wait to properly label used lamps.
- Call RMS immediately for a pick up.

Universal Wastes

Batteries of all kinds

- Used Battery boxes throughout campus
- Container **must be labeled “Used Batteries” and the date the first battery was placed inside.**
- Hold Used Batteries no more than 1 year.
- Securely cap all batteries and/or containers
- If charged, cover terminals with electrical or duct tape
(Otherwise store in a manner that prevents any discharge)



Call RMS for a pickup
844-4870

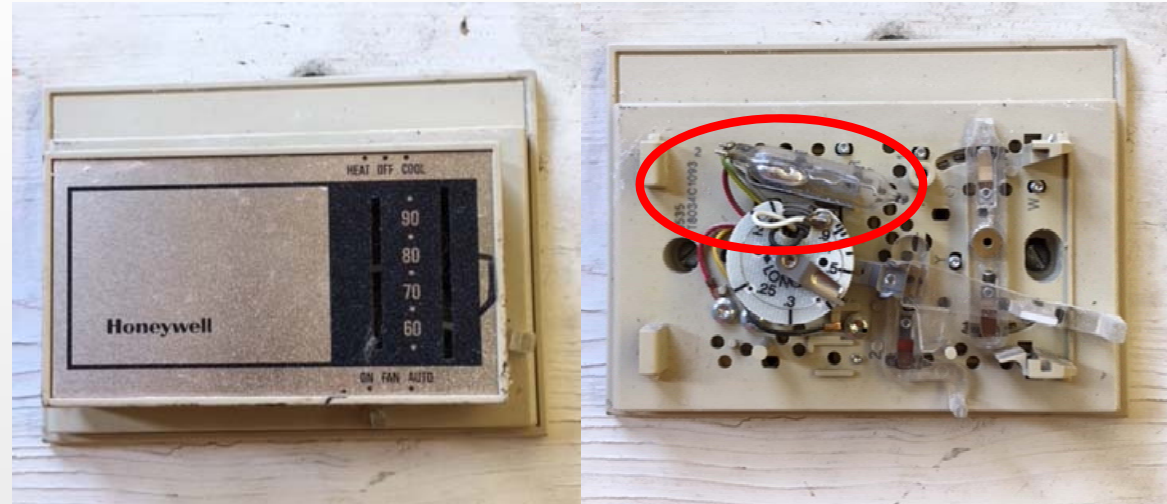


- Used Batteries must be managed much like used lamps: on the box, mark it “Used Batteries” and write the date the first item was placed in it.
- Or simply call RMS to request a pick up of the used batteries.
- Also, if any batteries are leaking or otherwise compromised, contain those in Zip-Loc plastic baggies before mixing with other used batteries.

Universal Wastes

Mercury-containing equipment

- Thermometers
- Manometers
- Mercury switches
- Barometers
- Flow meters



ANYthing with mercury in it

- Mercury-Containing Equipment (MCE) should be placed in spill-proof containers and marked appropriately (“Used MCE” and the date accumulation started).
- Be very careful storing items like mercury thermometers in a single bag and avoid breaking them; once broken, free-flowing mercury is no longer considered Universal Waste and it will cost much more to dispose of as opposed to recycling.
Call RMS as soon as possible for a pick up of used MCE.

Used Electronics

Computer-related items:

- **Call [Surplus Properties](#)** at 844-4984 to arrange for these items to be recycled
- Even newer flat-screen monitors

- **All other used electronics:**

- Call [AU Recycling](#) at 844-9461



- Used electronics (aka E-waste) are basically anything that can be plugged into a wall outlet or with rechargeable batteries.
- These are not largely regulated (yet), but the University manages used electronics as recyclables.
- If there is not a convenient E-waste recycling receptacle nearby, call AU Recycling to let them know.
- They will arrange to have these items picked up.

EHS Contact Information

Environmental Health & Safety

<u>RMS Main</u>	844-4870
<u>Tom Hodges</u>	703-7511
<u>Mike Freeman</u>	740-1267
<u>Billy Cannon</u>	703-0419
<u>Steven Nolen</u>	703-3859
<u>Tom McCauley</u>	703-7184



- The staff of Environmental Health & Safety are at your service, as are all other RMS professionals.
- Take guess work out of your work spaces and be confident that all your waste is being managed properly.
- If in doubt, please do not hesitate to ask questions or make comments. It is better to fix a problem when it arises rather than neglecting it and being served a notice of violation by a regulatory agency.
- RMS stands ready to assist you at any time.
- Thank you for taking time to become more informed about managing hazardous waste at Auburn University. War Eagle!