Many labs have equipment that runs directly from battery power or uses batteries as a backup source of energy in the event of a power failure. Many of these batteries contain toxic, heavy metals and therefore must be managed in a safe and environmentally sustainable manner.

The following is a quick guide listing some common batteries and the proper methods of disposal.

**Batteries For General Waste (Trash)**

**Alkaline Batteries**
Alkaline batteries are not rechargeable and do not contain any regulated hazardous materials. From a life cycle and energy management standpoint, recycling an alkaline battery is more environmentally detrimental than disposing of it directly in the trash; i.e., landfilling.

Princeton University follows this guideline and does not recycle alkaline batteries. Please help our Building Services staff and refrain from placing alkaline batteries in the universal waste/recycling pails.

**Batteries For Recycling**

The following batteries are collected for recycling and are prohibited from disposal in the general trash. Building Services provides containers in research buildings on campus for collecting batteries approved for recycling.

**FUN FACT**
Recyclable batteries are categorized by the EPA as *universal waste*, i.e. hazardous but common (other examples include pesticides and mercury lamps). While storage and shipping requirements are less stringent, proper disposal is mandatory.

**Lithium Batteries**
Lithium batteries are typically non-rechargeable and contain lithium, a water reactive alkali metal. They are commonly known as “button cell” batteries due to their small size. They are commonly found in watches, laser pointers, computer motherboards, and other electronic devices that require a power source of small size.

**Nickel/Metal Hydride (Ni-MH) Batteries**
Ni-MH Batteries contain a NiOOH positive electrode and a water reactive, metal alloy forming the negative electrode. Batteries of this type are rechargeable and available in sizes similar to alkaline batteries (size AAA, AA, C, and D).

Nickel/Metal Hydride (Ni-MH) batteries can be identified by the markings “RECHARGEABLE” OR “Ni-MH”.

**Mercury and Silver Oxide Batteries**
Non-rechargeable batteries similar in appearance to the lithium button cell batteries mentioned above. Mercury and silver are toxic...
metals regulated as hazardous waste that should never be disposed in the trash.

Although this type of battery is becoming increasing rare, it may still be found in older equipment.

**Nickel-Cadmium (Ni-Cad) Batteries**

Ni-Cad batteries are a very common rechargeable battery found in many devices, most commonly in cordless power tools. The presence of cadmium, a toxic metal, requires this battery to be recycled. Ni-Cad batteries are available in a host of sizes from large rectangular devices to smaller sizes akin to alkaline batteries.

**Lithium-Ion Batteries**

Lithium-ion batteries are most commonly found in devices that drain a significant amount of power quickly such as cameras, cordless power tools and, most commonly, laptop computers. They come in sizes similar to that of Ni-Cad batteries.

A number of these batteries manufactured by Sony in Dell, Sony, Apple, Lenovo, Panasonic, Toshiba and Sharp laptop computers have been recalled in the past due to possibility of a dangerous short circuit causing the units to become unstable, posing a risk of explosion. These batteries must be recycled as universal waste.

**Lead-Sulfuric Acid Batteries**

Lead-acid batteries are commonly known as car batteries. They contain both a toxic heavy metal (lead) and corrosive liquid (sulfuric acid), both of which are hazardous materials.

Smaller versions of this battery are often found in uninterruptable power supplies (UPS) and emergency lighting systems. They are rechargeable but have a lifespan of 3-5 years.

Due to their size, these batteries are not collected in normal lab recycling containers, but rather large blue plastic drums. Collection drums are located in the following areas: Engineering Quadrangle loading dock, Lewis Thomas Lab loading dock, Carl Icahn Lab loading dock, and Frick Chemistry stockroom.

Contact EHS for more information about recycling batteries.

**FUN FACT**

To prevent short-circuits and potential fire hazard during storage and transport, battery terminals must be taped over prior to placing the battery into the receptacle.