MANAGEMENT OF BATTERIES
FACT SHEET 12012010B

Batteries used by the University community come in different configurations, sizes, and voltages. Some, but not all batteries contain hazardous constituents requiring management as Universal Wastes under USEPA regulations. For management of spent batteries, they can be considered in three categories, **alkaline**, **lead acid batteries,** and **non-alkaline** (lithium ion, nickel metal hydride and nickel – cadmium). The management guidelines discussed in this document consider the Universal Waste requirements, the available technology, and the net environmental impact. A brief discussion of each category of battery and the expected management practice for each follows.

Alkaline Batteries

Alkaline batteries are primary or non-rechargeable batteries. Since approximately 1993 these batteries have contained no hazardous constituents requiring management as Universal Waste and are considered non-hazardous by the USEPA. They typically consist of common metals such as steel, zinc, and manganese with a small amount of alkaline electrolyte. Currently there are no proven cost effective and environmentally safe recycling methods for these batteries and indeed some literature indicates that recycling of these types of batteries is a net energy loss.

Therefore, alkaline batteries should be separated from the rechargeable batteries and disposed of as normal trash.

Lead Acid Batteries

Lead acid batteries are found in Uninterruptible Power Supply (UPS) units and vehicles. These batteries have a lead anode, a lead dioxide cathode and an aqueous solution of sulfuric acid. Due to their composition, these batteries qualify as a hazardous waste under the Universal Waste rules if they are intended to be disposed. However, instead of disposing these batteries and in contrast to the alkaline line of batteries, the recycling of lead-acid batteries has been the environmental success story of our time. More than 97% of all battery lead is recycled and a typical new lead-acid battery contains 60% to 80% of recycled lead and plastic.

Lead batteries should be recycled through the Campus Recycling Department. Contact Tom Gregory, Recycling Program Coordinator at 257-8788 or tom.gregory@uky.edu for further instructions. The following general guidelines will be used:

- ☒ Deliver the used lead batteries to the location designated by the Recycling Department at the Peterson Service Building.
- ☒ Lead batteries should be accumulated pursuant to Universal Wastes standards (labeled with the words “Universal Waste – Batteries” and dated).
- ☒ Batteries should be stored such that terminals do not contact each other.
- ☒ Batteries will be delivered by the Recycling Department to a local recycler for processing and the University will receive a small reimbursement for each battery.

Non-Alkaline Batteries

This category of batteries consists of lithium-ion, nickel metal hydride, and nickel-cadmium batteries. Many of these battery types are marked with the word “Rechargeable” but lithium button batteries are also included. The designation is based on the type of chemistry present in the battery. For example, lithium-ion batteries contain lithium, manganese dioxide, and an organic solvent; nickel metal hydride batteries contain nickel and a rare earth alloy to absorb hydrogen; and nickel-cadmium batteries contain nickel and cadmium metal as well as an alkaline solution. Due to their composition, these batteries qualify as a hazardous waste under the Universal Waste rules if they are intended to be disposed. However, effective recycling technologies exist and should be fully utilized. The University has chosen to partner with the Rechargeable Battery Recycling Corporation (RBRC) in a program known as Call2Recycle for management of rechargeable batteries. RBRC is a national non-profit organization affiliated with and funded by the manufacturers and marketers of rechargeable batteries to provide a no cost national battery recycling program.

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Non-alkaline batteries should be recycled using the following guidelines:

Place the Call2Recycle box in designated location in the building. Several buildings have boxes to collect the non-alkaline batteries or they may be brought to the Environmental Quality Management Center (EQMC), **building 0490** or the Environmental, Health, and Safety office **building 0314.**

Be sure to write the Accumulation Start Date in the space provided when the box is placed.

Place the individual battery into an individual plastic bag (supplied with the Call2Recycle box) or tape the terminals with non-conductive tape.

Place the batteries into one of the Call2Recycle boxes located at strategic locations around campus or bring them to the Environmental Quality Management Center (EQMC). **DO NOT MAIL THE BATTERIES THROUGH CAMPUS MAIL.**

When the Call2Recycle box is full, close it and give the sealed box to the UPS driver who is making deliveries in the building.

The collected batteries are shipped to and processed at a recycling center contracted by RBRC.

The recovered materials from the recycled batteries are used in further manufacturing processes including that for new batteries.

Contact the Environmental Management Department at 323-6280 or ron.taylor@uky.edu for further information.