POLLUTION PREVENTION

RECHARGABLE BATTERIES

LEAD ACTIVITY
Naval Air Station North Island (NAS North Island)

STATUS
Active

MISSION
To reduce the overall cost of the purchase and disposal costs of alkaline / dry cell batteries used to support multiple Navy operations.

REQUIREMENT
The regulations for Universal Waste (UW) Management are found in 40 CFR 273 "Standards for Universal Waste Management". This part is also referred to as the Universal Waste Rule (UWR).

The UWR was promulgated on 11 May 1995 by the EPA to establish an alternative waste management program for high volume, low risk HW instead of regulating these wastes under complete HW regulation.

The UWR was created by EPA to accomplish three goals: (1) improve resource conservation by encouraging recycling; (2) improve implementation of the Resource Conservation and Recovery Act (RCRA) HW program by increasing participation of households and conditionally exempt small quantity generators (CESQG); and (3) divert UW from the municipal solid waste stream to recyclers and RCRA Treatment, Storage, and Disposal Facilities (TSDF).

Because the UWR is less stringent than previous regulation, the UWR will not be effective in any RCRA-authorized state until that state adopts the program legislatively. State adoption is optional. Currently the only states which do not have RCRA authorization are Alaska, Hawaii, Iowa, and Puerto Rico. The UWR is effective in these states. Many other states are working to adopt the UWR. States may also add other wastes to the state list of UW without the waste being added at the federal level.
The wastes currently subject to regulation under the universal waste rule are:

- Used batteries described in 40 CFR 273.2,
- Pesticides described in 40 CFR 273.3, and
- Thermostats described in 40 CFR 273.4 (See photo to the right).

Certain exceptions apply to each of these categories of waste. These waste exceptions are regulated under other sections of RCRA or other federal laws. For example,

- lead acid batteries managed under 40 CFR 266;
- batteries that are not HW;
- electrolyte removed from batteries;
- leaking or broken batteries;
- pesticides which are not recalled or collected in a pesticide turn-in program; and
- mercury spill materials or mercury-containing ampules other than thermostats cannot be managed under the UWR.

The UWR is intended to encourage the recycling and/or better disposal of household hazardous wastes and HW generated by CESQG, while placing no regulatory burdens or liabilities on them. These generators are not fully regulated under RCRA. Their wastes are typically part of the municipal solid waste stream. CESQG and generators of household HW exempt from other RCRA Subtitle C regulations (40 CFR 260 - 272) may manage waste under the UWR at the generator's option (40 CFR 273.5). This option would be chosen by these generators to help limit unregulated HW disposal.

DESCRIPTION

Helicopter Squadron – 10 (HS-10) has volunteered to act as a test site for the use of “rechargeable batteries” primarily for the use of flashlights. In addition to the batteries, we will also be using high performance mini & micro-solar panels for recharging NiCad, Nickel Metal Hydride and Gell-Cell Batteries.

BENEFITS

The following is a brief description of the types of batteries and their associated benefits that will be used in this project:

- **SLA Batteries:** These are Sealed Lead Batteries or gel cells which are durable and solid performing. They take and hold a charge very well and can hold a charge in storage for months or years at a time. When SLA batteries are charged and discharged according to recommendations they can reach nearly 1000 cycles. These batteries can be stored for up to 3 years in a fully charged state at room temperature without recharging. Compared to other batteries, SLA’s are a very cost effective way to provide reliable power on a limited budget.

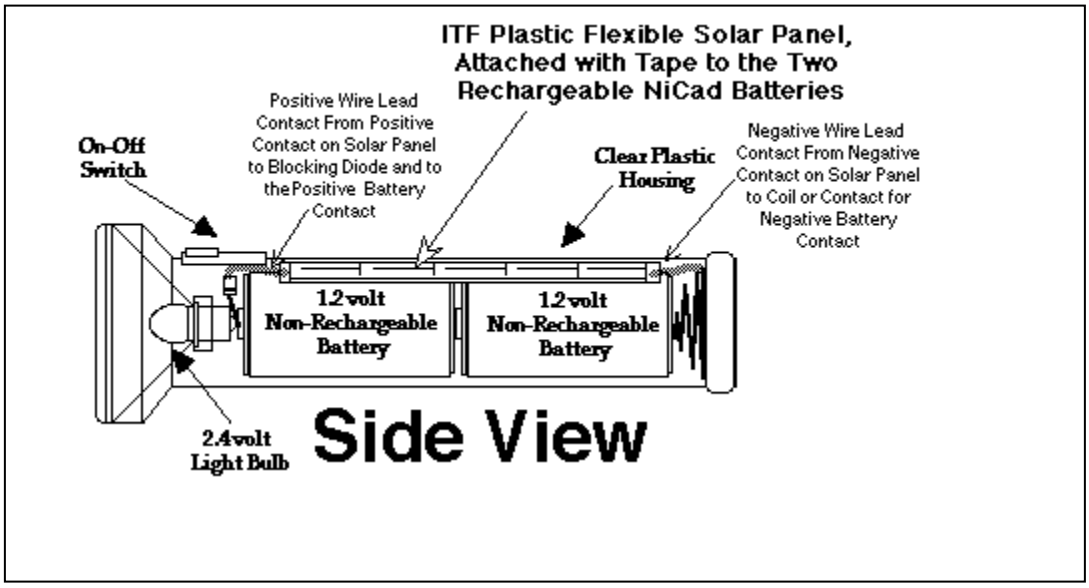
- **Nickel Cadmium Batteries:** They are a high tech option to portable power. NiCads can be found in many applications like camcorders and portable drills. The reason for this is the NiCad’s high-rate of energy discharge and their low maintenance/high performance characteristics. Additionally, the deliver power evenly until 90% of their capacity is exhausted. Appliances, video and audio equipment, power tools, toys and many more. Nickel-Cadmium (Ni-Cd

- **Nickel Metal Hydride Batteries**: These are used in computers, cellular phones, camcorders and more. Nickel-metal hydride (Ni-MH) rechargeable batteries are the most advanced rechargeable battery systems commercially available and offer

several advantages over today's nickel-cadmium (NiCd) rechargeable batteries, including up to 40 percent longer service life. Ni-MH rechargeable batteries are also an environmentally friendlier alternative to Ni-Cd batteries. High capacity Ni-MH batteries can replace Ni-Cd batteries in many devices because they operate on the same voltage; possess similar power and fast charge capabilities, while offering the advantage of greater energy density.

- **Lithium Ion Batteries:** These are typically used in Computers, cellular phones, camcorders and more. Lithium-Ion (Li-Ion) rechargeable batteries have the highest energy density among commercial batteries; two times that of Ni-Cd systems and their self-discharge is very low. Li-Ion's are stable and safe because not metallic lithium is used.

- **Micro-Solar Panels:** Small, powerful, unbreakable solar panels for battery powered flashlights. The mini & micro solar panel lines include CRYSTALLINE, Glass Thin-Film, Plastic Flexible Thin-Film, and "Calculator-Type" Micro-Solar Panels.



ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
JAN 02	Commenced Pilot Project

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
AUG 2002	Pilot Project Complete
OCT 2002	Pilot Project Report Submitted
JAN 2003	Technology exported to various commands

COLLABORATION/TECHNOLOGY TRANSFER
Photon Technologies, Inc.

BIBLIOGRAPHY
None Applicable

RELATED GOVERNMENT INTERNET SITES
None Applicable

RELATED NAVY GUIDEBOOK REQUIREMENTS
None Applicable

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