U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

NOV 2 5 2009

Mr. Ronald B. Johnstone
Consulting Engineer
251 Rodonovan Drive
Santa Clara, CA 95051-6605

Ref. No. 09-0219

Dear Mr. Johnstone:

This responds to your September 14, 2009 letter requesting further clarification of the applicability of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to the transport of discarded household batteries.

According to your letter, the city of Santa Clara has a battery recycling program which requests homeowners to tape the positive terminal of household batteries prior to placing them in plastic bags for curbside battery recycling. In your letter, you state this program of taping the positive terminal is due to overzealous interpretation of the requirements of § 173.21(c) and subsequent interpretations on the transportation of batteries. You assert that few households will take the time to tape the batteries for recycling and batteries will again be placed in general household garbage for disposal.

In your letter, you also reference a letter issued by this Office on June 23, 2009 (Ref. No. 09-0090) in which we provide interpretation that spent 1.5-volt alkaline dry cell batteries are not subject to regulation under the HMR when transported by highway or rail because they are not likely to generate a dangerous quantity of heat nor are they likely to short circuit or create sparks when they are transported in a packaging with no other battery types or chemistries present. You suggest that we broaden this interpretation to include all discarded household batteries of 1.2-1.5 volt AAA, AA, C, D and 9-volt of any chemistry because you believe such batteries are safe for transport.

The HMR govern the safe transportation of hazardous materials in commerce. A local government agency that transports hazardous materials (e.g., transporting discarded household batteries as part of a government recycling program) using its own personnel is not engaged in transportation in commerce and, therefore, is not subject to the HMR. However, if the local government agency transports hazardous materials for a commercial purpose, utilizes contract personnel to transport the materials, or offers a hazardous material for transportation to a commercial carrier, then the HMR apply.

Under § 173.21(c), the HMR prohibit the transportation of electrical devices that are likely to create sparks or generate a dangerous quantity of heat, unless the devices are packaged in a manner that precludes such an occurrence. Certain dry battery chemistries such as dry, sealed batteries are subject to limited regulation under the HMR while other batteries such as lithium batteries are more fully regulated under the HMR because of different risks in transportation associated with different battery chemistries. Thus, this Office disagrees that discarded household batteries of any chemistry and marked voltage as you describe are safe for transport without protection against short circuiting or damage to terminals.

However, after further consideration and analysis of dry, sealed battery chemistries and based on information available to us, it is the opinion of this Office that used or spent dry, sealed batteries of both non-rechargeable and rechargeable designs, described as "Batteries, dry, sealed, n.o.s." in the Hazardous Materials Table in § 172.101 of the HMR and not specifically covered by another proper shipping name, with a marked rating up to 9-volt are not likely to generate a dangerous quantity of heat, short circuit, or create sparks in transportation. Therefore, used or spent batteries of the type "Batteries, dry, sealed, n.o.s." with a marked rating of 9-volt or less that are combined in the same package and transported by highway or rail for recycling, reconditioning, or disposal are not subject to the HMR. Note that batteries utilizing different chemistries (i.e., those battery chemistries specifically covered by another proper shipping name) as well as dry, sealed batteries with a marked rating greater than 9-volt may not be combined with used or spent batteries of the type "Batteries, dry, sealed, n.o.s." in the same package. Note also, that the clarification provided in this letter does not apply to batteries that have been reconditioned for reuse.

I hope this information is helpful. If you need further assistance, please contact this Office.

Sincerely,

Charles E. Betts
Chief, Standards Development
Office of Hazardous Materials Standards

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§173.21(c)
Forbidden Materials
09-0219

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Re: DOT Regulations Section 173.21(c)

Currently, somewhat overzealous safety people are interpreting this regulation as a flat prohibition of the transportation of unprotected spent household batteries. There was a viable household battery recycling program in place where spent batteries could be placed in a sealed plastic bag for separate pickup along with general household garbage and trash by cities. Now, because of this regulation and later interpretations, cities are demanding that each battery have its positive terminal sealed with tape before it may be collected. The result is that few people will take the time to do this and batteries will instead again be hidden in garbage for illegal disposal.

You have somewhat addressed this problem in your PHMSA Interpretation #09-0090, where you have exempted spent 1.5 volt alkaline dry cell batteries from the transportation regulation.

The answer would be to broaden the interpretation to include all discarded general household batteries, 1.2-1.5 volt AAA, AA, C, D and 9 volt radio, of any chemistry as exempt from the requirements of the main regulation.

This would be entirely reasonable as such batteries are quite safe to transport. It is only when you get into the more exotic battery packs that are now being used in electric vehicles where many batteries are electrically connected together in series to yield a combined high voltage will you encounter any real danger. Such battery packs should indeed be regulated, but it is because of the high connected output voltage of the pack that may spark or burn, not simply because they are batteries.

Please clarify this transportation situation so that household recycling can again be made viable and therefore beneficial to the environment.

Sincerely,

Ronald B. Johnstone
September 14, 2009

Most Common Batteries

Most Common Name	Other Common Names	IEC 60086 Name	ANSI/NEDA Name	Typical Capacity (mAh)	Nominal Voltage (V)
AAA	Micro Microlight MN2400 MX2400 Type 286 (Soviet Union/Russia)	LR03 (alkaline) R03 (carbon–zinc) FR03 (Li–FeS2)	24A (alkaline) 24D (carbon–zinc) 24LF (Li–FeS2)	1200 (alkaline) 540 (carbon–zinc) 800–1000 (Ni–MH)	1.5 1.2 (NiMH and NiCd)
AA	Pencil-sized Penlight Mignon MN1500 MX1500 Type 316 (Soviet Union/Russia)	LR6 (alkaline) R6 (carbon–zinc) FR6 (Lithium–FeS_2) HR6 (Ni-MH) KR157/51 (NiCd) ZR6 (Ni-Mn)	15A (alkaline) 15D (carbon–zinc) 15LF (Lithium–FeS_2) 1.2H2 (NiMH) 10015 (NiCd)	2700 (alkaline) 1100 (carbon–zinc) 3000 (Lithium–FeS_2) 1700–2900 (NiMH) 600–1000 (NiCd)	1.5 1.2 (NiMH and NiCd)
C	MN1400 MX1400 Baby Type 343 (Soviet Union/Russia)	LR14 (alkaline) R14 (carbon–zinc) KR27/50 (NiCd)	14A (alkaline) 14D (carbon–zinc)	8000 (alkaline) 3800 (carbon–zinc) 4500–6000 (NiMH)	1.5 1.2 (NiMH)
D	U2 (In Britain until the 1970s) Flashlight Battery MN1300 MX1300 Mono Type 373 (Soviet Union/Russia)	LR20 (alkaline) R20 (carbon–zinc)	13A (alkaline) 13D (carbon–zinc)	12000 (alkaline) 8000 (carbon–zinc) 2200–12000 (NiMH)	1.5 1.2 (NiMH)
9-Volt	PP3 Radio battery MN1604 Square(sic) battery Krona (Soviet Union/Russia)	6LR61 (alkaline) 6F22 (carbon–zinc) 6KR61 (NiCd)	1604A (alkaline) 1604D (carbon–zinc) 1604LC (Lithium) 7.2H5 (NiMH) 11604 (NiCd)	565 (alkaline) 400 (carbon–zinc) 1200 (lithium) 175 (NiMH) 120 (NiCd) 500 (Lithium polymer rechrg)	9 7.2 (NiMH and NiCd) 8.4 (some NiMH and NiCd)