



U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

NOV 4 2009

Mr. C. Michael Hoff
Director Product Safety and Compliance
A123 Systems
10 Avenue E
Hopkinton, MA 01748

Ref. No. 09-0210

Dear Mr. Hoff:

This responds to your September 16, 2009 email requesting clarification of the requirements for lithium-ion batteries contained in equipment under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask whether an uninterruptible power supply (UPS) device containing a lithium-ion battery that has been tested in accordance with § 173.185 must also be tested. You suggest that our March 5, 2008 letter (Ref. No. 07-0198) creates some confusion on this issue.

The answer is no. A UPS, or any other electronic equipment containing a lithium battery, is not subject to the testing requirements for lithium batteries specified in § 173.185.

The interpretation provided in our March 2008 letter responded to questions about nonspillable (wet electric storage) batteries contained in equipment, and secondarily whether a UPS is equipment for purposes of the HMR. Although the § 172.101 Hazardous Materials Table (HMT) includes the hazardous materials description for "Battery-powered equipment," § 172.102(c)(1), Special provision 134 assigned to this description limits the application of this entry to items such as electrically-powered cars, lawn mowers, wheelchairs, and other mobility aids. Thus, for lack of a more appropriate hazardous materials description to describe a nonspillable battery contained in a UPS and to ensure correct referral to authorized packaging for nonspillable batteries in § 173.159 rather than referral to transportation requirements for battery-powered equipment in § 173.220, it is the opinion of this Office that a UPS containing a nonspillable battery could be viewed as a battery and appropriately described by the battery type housed in the UPS.

With respect to a lithium-ion battery contained in a UPS, the § 172.101 HMT includes the hazardous materials description "Lithium batteries, contained in equipment" that appropriately describes lithium-ion batteries contained devices such as a UPS and appropriately refers to authorized packaging in § 173.185. In addition, for the description "Battery-powered equipment," packaging and transport requirements in § 173.220 include specific provisions pertaining to lithium batteries. These requirements include: (1) lithium batteries contained in vehicles or engines must be of a type that have successfully passed tests in the UN Manual of Tests and Criteria as specified in § 173.185; and (2) equipment,

other than vehicles or engines, containing lithium batteries must be transported in accordance with § 173.185. Therefore, the UPS device containing a lithium battery that has successfully passed tests in the UN Manual of Tests and Criteria is not itself subject to testing.

I hope this information is helpful. If you have further questions, please contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read "Charles E. Betts". The signature is written in a cursive style with a large initial "C" and "B".

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

Der Kinderen
 §173.159
 Batteries
 09-0210

Drakeford, Carolyn (PHMSA)

From: INFOCNTR (PHMSA)
Sent: Wednesday, September 16, 2009 1:39 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: Question Regarding Inrpretation of
Attachments: 070189.pdf

From: Michael Hoff [mailto:mhoff@a123systems.com]
Sent: Wednesday, September 16, 2009 12:57 PM
To: INFOCNTR (PHMSA)
Cc: Relerford, Darral (PHMSA)
Subject: Question Regarding Inrpretation of

To whom it may concern,

At one time the DOT interpreted Uninterruptible Power Supplies (UPS's) containing batteries NOT as equipment with batteries, but as a battery itself. I read and attached the letter which makes this assertion.

This letter discusses wet cells, then makes a judgment of battery vs. equipment. This judgment, I believe is relevant to wet cells and does not impact their situation much. The result of this judgment simply places requirements on the packaging and labeling of those devices.

However, this judgment has a significant impact on the situation of UPSs with lithium ion batteries. This judgment forces the following to happen:

1. The UPS vendor will to have to conduct additional UN testing on its products because it is putting the lithium ion batteries into its product.
2. The weight of the UPS is now taken into account when considering such things as "large" vs "small" and acceptability for cargo air, passenger air, etc.

Because the lithium ion batteries are relatively low weight in comparison to the traditional lead-acid batteries, the weight of whole UPS is significantly affected if not DOMINATED by the electronic hardware when equipped with lithium ion batteries.

UPS are often constructed with heavy steel transformers, ferrite inductors, and other bulky electronic components and aluminum heat sinks. It seems completely unfair that the copper, steel, ferrite, aluminum and electronic components involved in the construction of a UPS are considered in the weight of a device considered as a WHOLE to be "hazardous material." If the majority of the UPS were lithium Ion batteries, I could see where it wouldn't matter, but consider the situations where the battery comprises 1/2 or 1/3 or even 1/5 of the weight of the whole UPS.

From a safety standpoint, the added (non-battery) bulk weight adds no danger to the article. Nothing about the UPS makes it more unsafe during transport than if it were another equipment using the same batteries. In fact, it could be safer. More mass contributes to heat absorption in a high temperature situations and reduces accelerations seen in high vibration or shock situations.

I request that the DOT take a new look at the judgment of whether a power supply or UPS with lithium ion batteries is considered a "battery" or "equipment with batteries."

If not, or in the meantime, does the physical connection of the battery internal to the UPS make a difference in this consideration? For example, if the battery were transported packed within the UPS but physically NOT connected to it, would the article then still be considered a battery? In such a case, the UPS would NOT be able to provide power to its output connectors, and would not be able to function as a "power providing device" and therefore functionally could not be considered a battery.

9/16/2009

I would appreciate a response to my queries as soon as you can, since our customer has a tight deadline and needs to make decisions on how to proceed with UN testing, shipping, and packaging conformances, all of which are affected by this decision.

C. Michael Hoff

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Director Product Safety and Compliance, ESG

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