



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

JUN 29 2017

Jennifer Trock  
Baker & McKenzie LLP  
815 Connecticut Avenue NW  
Washington, DC 20006

Reference No. 17-0010

Dear Ms. Trock:

This letter is in response to your February 3, 2017, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to exceptions for non-spillable batteries. You indicate the following information:

- You are shipping by cargo aircraft a Cargo Filter System secured in a cargo container.
- The Cargo Filter System is comprised of an air circulation device and a transportation data logger intended to ensure a clean environment for a piece of equipment also contained in a cargo container.
- The air circulation device includes a small electric air pump, powered by a non-spillable battery.
- The data logger is powered by two 9V dry cell batteries that are excepted from the regulations.
- The Cargo Filter System is intended to be activated during transportation.
- The Cargo Filter System contains no hazardous gas.

Specifically, you ask if the Cargo Filter System as described would be excepted from the HMR.

The answer is yes. Non-spillable batteries are excepted from the HMR in accordance with § 173.159a(d). To meet this exception, the non-spillable batteries must conform to the following:

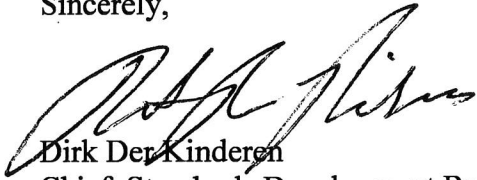
- 1) Comply with § 173.159a(c);
- 2) At a temperature of 55 °C (131 °F), the battery must not contain any unabsorbed free-flowing liquid, and must be designed so that electrolyte will not flow from a ruptured or cracked case;
- 3) For transport by aircraft, when contained in a battery-powered device, equipment or vehicle must be prepared and packaged for transport in a manner to prevent unintentional activation in conformance with § 173.159(b)(2) of the HMR; and

- 4) For transport by aircraft, must be transported as cargo and may not be carried onboard an aircraft by passengers or crewmembers in carry-on baggage, checked baggage, or on their person unless specifically excepted by § 175.10.

Note that the third condition listed above, which is found in § 173.159a(d)(2), does not apply because the Cargo Filter System is intentionally activated during the course of transportation. However, the non-spillable battery must still be transported in a manner which protects against a fire, violent rupture, explosion, or dangerous evolution of heat. See § 173.159a(c)(1) regarding a battery necessary for operation of equipment. Additionally, as a piece of equipment intended to be operated during a flight, the Cargo Filter System must comply with Federal Aviation Administration requirements.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dirk Der Kinderen', written in a cursive style.

Dirk Der Kinderen  
Chief, Standards Development Branch  
Standards and Rulemaking Divisio

Nickels  
§ 173.159(a)  
Exceptions  
17-0910

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U.S. DOT  
PHMSA Office of Hazardous Materials Standards  
Attn: PHH-10  
East Building  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001

Re: Request for Interpretation under 49 C.F.R. § 173.159a

We are writing to request PHMSA clarification regarding the requirements for shipment of certain cargo containers containing equipment and an independent and automatic air circulation and filtration device powered by non-spillable batteries excepted from the Hazardous Material Regulations ("HMR") under 49 C.F.R. § 173.159a(d) ("Cargo Filter Systems"). It is our understanding that the Cargo Filter Systems would be excepted from the HMR pursuant to 173.159a and that no UN classification would apply for shipment aboard cargo aircraft. As such, we also understand that they would not be subject to FAA certification requirements for shipment by air.

These Cargo Filter Systems include simply-designed devices used to circulate and clean air within a barrier bag in a shipping crate also containing equipment sensitive to ambient contaminants (e.g. humidity and particles), and a transportation data logger. The circulation devices include a small electric air pump (e.g., 12 VDC, 4 watts, 2 liters per minute), passive filters/purifiers, humidity sensors, and battery voltage sensors. Some models may have a low power status and interface panel installed in the container wall. The devices also include a battery charger, which is not connected or active during transport, for use in operating the device on the ground (e.g. long term storage.). The systems are not pressurized, and the bag contains a flappy valve that allows air to flow freely from the inside to outside of the bag. The circulation device is secured in the cargo container with the equipment being shipped, but does not power that equipment. The circulation device is enclosed in a thick metal box inside, or as a fixed add-on to, the equipment, all of which is contained in several layers of protective plastic and placed within the crate for shipping.

The pump is powered by a battery that has been tested and determined to meet the requirements of 173.159a(d). The data logger is powered by two 9V consumer batteries, which are also excepted from the HMR. No hazardous gas or other materials are part of the circulation device, which is independent and automatic, nor are any hazardous gas or materials part of the co-packaged equipment. This circulation device is intended to remain active during transportation to ensure a clean air environment for the equipment within the cargo container.

Under 49 C.F.R. § 173.159a, non-spillable batteries that meet the requirements of 173.159a(d)<sup>1</sup> must meet the incident reporting requirements of 173.159a(b), but are otherwise excepted from the HMR. We are aware of an interpretation involving similar systems but with temperature-controlled features not present in the Cargo Filter System, PHMSA determined that when such excepted batteries are used to power a device in a cargo container in an active state as would be the case here, the batteries were excepted from the HMR, under the conditions specified in 173.159a(d), described above.<sup>2</sup> Likewise, other PHMSA determinations have confirmed that non-spillable batteries when excepted from the HMR under 173.159a(d), are not "batteries in equipment" within the meaning of 173.220.<sup>3</sup> As such, it is our understanding that

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<sup>1</sup> The 173.159a(d) requirements include requiring that the non-spillable battery is: (i) securely packed; (ii) prepared and packaged to prevent a dangerous evolution of heat, short circuits, damage to terminals, and to avoid unintentional activation; (iii) properly marked along with the outer packaging (e.g. NON-SPILLABLE); (iv) does not contain unabsorbed free flowing-liquid at a temperature of 55° C; (v) designed so that electrolytes will not flow from a ruptured or cracked case; and (vi) carried onboard as cargo.

<sup>2</sup> See Letter from H. Mitchell, Chief, Regulatory Review and Reinvention, Office of Hazardous Materials, to K. Broussard (Dec. 12, 2008) (determining that a non-spillable battery used to power a temperature control system inside of a cargo container are excepted from the requirements of the HMR under the conditions specified in 173.159(d)). In 2009, 173.159(d) was recodified in 173.159a(d), maintaining the same category for exemptions. 74 Fed. Reg. 2258 (Jan. 24, 2009). This particular container also included a refrigerant that was subject to the HMR. PHMSA suggested that they contact the FAA for applicable certification requirements of the device. The PHMSA letter makes no mention of PHMSA ULD requirements or the regulation dealing with battery-powered equipment (173.220).

<sup>3</sup> See Letter from D. Billings, Chief, Standards Development, Office of Hazardous Materials Standards, to S. Marasco (Nov. 30, 2001) (confirming that a non-spillable battery contained in a forklift was not subject to 173.220); Letter from H. Mitchell, Chief, Regulatory Review and Reinvention, Office of Hazardous Materials Standards, to A. Romach (Apr. 12, 2004) (confirming that fuel cell vehicles containing non-spillable batteries meeting the requirements of 173.159(d) were exempted from the HMR); Letter from E. Mazzullo, Director, Office of Hazardous Materials Standards, to F. Wybenga (Mar. 5, 2008) (confirming that the marking requirements of 173.159(d) apply to non-spillable batteries contained in equipment placed in an outer packaging and a non-spillable battery packed with equipment placed in outer packaging; confirming that an uninterrupted power supply (UPS)

the Cargo Filter Systems need only meet the requirements of 173.159a(d) for shipment on aircraft for purposes of the HMR.

**Please see the following pages of attachments to assist in your determination.**

We seek your confirmation that the Cargo Filter System, as described above, would be excepted from the HMR under the provisions of 173.159a(d). If not, we would appreciate additional guidance as to the applicable HMR requirements.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Trock". The signature is stylized with a large, looped initial "J" and a cursive "Trock".

Jennifer Trock

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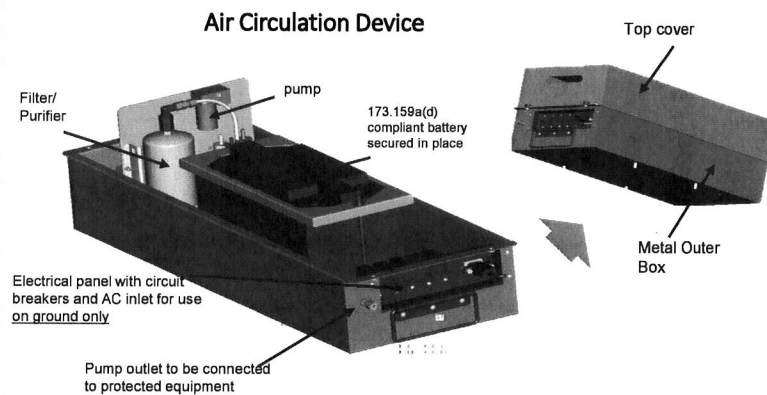
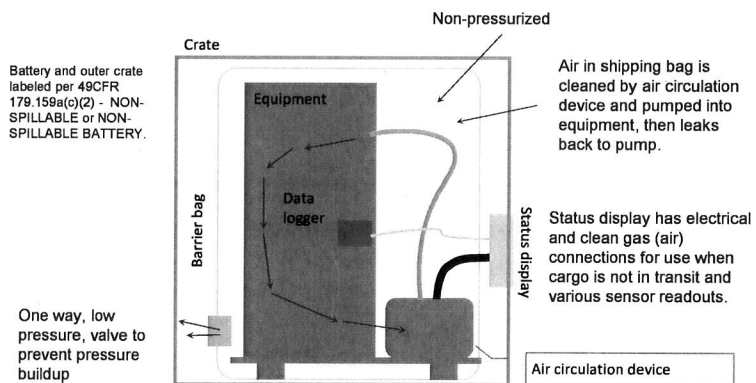
battery was not equipment, but instead used to power equipment and properly labeled as an individual battery).

### **Cargo Filter System Overview**

- Consists of a large crate/box with equipment and circulation system
  - Inside the crate is a system of simply-designed devices to circulate air within a barrier bag
  - System is not pressurized, and the barrier bag contains a valve that allows air to flow freely from inside to outside of the bag
  - Contains no refrigerants or other hazardous gasses as part of the circulation device
- Circulation system inside of the crate/box is primarily made up of a small electric pump, passive air filters, sensors, and a battery
  - Circulation device is independent and automatic; contains no hazardous gas or materials
  - Intended to remain active during transport
  - Also includes a battery charger (inactive during transport) for use on the ground
- Purpose is to protect equipment that is sensitive to ambient contaminants (e.g. dust particles)

### **Battery Overview**

- Data logger powered by 2 9V consumer batteries (excepted from the HMR)
- Small electrical pump, which is housed in metal container independent of other equipment in the shipping crate, is powered by battery that has been independently certified to meet the requirements of 173.159a(d), including:
  - The battery is packed and braced to prevent damage/short circuits in transit, and other material is secured to prevent contact with the battery, and as part of the equipment, it is securely fastened in the battery holder (e.g. the circulation device). [173.159a(c) ]
    - **See Attached Diagram** The battery and outer package is marked as indicated in paragraph (c).
  - At a temperature of 55C, Contains no free-flowing liquid and designed electrolyte will not flow from a ruptured or cracked case; [179.159a(d)(1)]
  - For transport by aircraft, when contained in a battery-powered device, equipment or vehicle must be prepared and packaged for transport in a manner to prevent unintentional activation in conformance with § 173.159(b)(2) of this Subpart. [179.159a(d)(2)]
    - **See Attached Diagram** – packaging prevents leakage and restricts access to battery; battery is active during transportation
  - The container would be shipped as cargo only [179.159a(d)(3)]





# Sample Battery Used in Container



## 4.7 Shipping Classification

Chairman® AGM batteries have been tested and determined to be in compliance with the vibration and pressure differential tests in accordance with DOT 49 CFR 173.159(d) and Special Provision A67 of the International Air Transport Association (IATA) Dangerous Goods regulations. As such, they are classified as a "NONSPILLABLE BATTERY" and can be shipped as non-hazardous material by any means. To comply with DOT shipping regulations, the battery must be packaged to protect against short circuits and the battery and outer packaging must be plainly and durably marked "NONSPILLABLE" or "NONSPILLABLE BATTERY".



## 2.2 Battery with Cut Away View

