U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue SE
Washington, DC 20590

AUG 22 2011

Mr. Michael Lefenfeld
President & Chief Executive Officer
SiGNa Chemistry
445 Park Avenue, Suite 1010
New York, NY 10022

Ref. No. 11-0124

Dear Mr. Lefenfeld:

This responds to your May 18, 2011 letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) regarding the transportation in carry-on luggage of fuel cell cartridges by aircraft. Specifically, you request confirmation that a portable electronic device powered by a fuel cell cartridge containing sodium silicide (Division 4.3) may be transported under the provisions of § 175.10(a)(19). You indicate that the fuel cell cartridge conforms to the specifications of IEC/PAD 62282-6-1, which is incorporated by reference in the HMR and provides that "the manufacturer may consider fuels, materials, designs or constructions not specifically dealt with in this document. These alternatives shall be evaluated as to their ability to yield levels of safety equivalent to those prescribed by this standard."

Yes. Based on the information you provide in your letter, the fuel cell powered device is eligible for the exception in § 175.10(a)(19). The fuel cell powered device must comply with all requirements in § 175.10(a)(19), including the manufacturer marking "APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY."

I hope this answers your inquiry. If you need additional assistance, please contact this office at (202) 366-8553.

Sincerely,

Ben Supko
Chief, Standards Development Branch
Standards and Rulemaking Division

Winter
§175.10 (a)(19)
Aircraft
11-0124

SiGNa CHEMISTRY

Winner of the 2008 Presidential Green Chemistry Challenge Award

Wednesday, May 18, 2011

Mr. Charles Betts
Director, Office of Hazardous Materials Standards (PHH-10)
U.S. Department of Transportation, PHMSA
1200 New Jersey Ave., SE
Washington, DC 20590

Dear Mr. Betts:

I am writing regarding interpretation of 49 CFR § 175.10 (a) (19), as it pertains to crew and passenger carriage of Fuel Cell Cartridges containing water reactive substances (UN 3476) on passenger aircraft. This provision authorizes passengers and crew to carry fuel cell cartridges onboard passenger aircraft when, among other requirements, they conform to a publicly available specification from the International Electrotechnical Commission, IEC/PAS 62282-6-1. It is my understanding that you or Mr. Pfund received copies of the relevant IEC documents through your participation at the recent Atlantic City ICAO Dangerous Goods Panel Working Group meeting. If this is not the case, I would be happy to provide them to you.

IEC/PAS 62282-6-1, in Annex E of the specification, provides for fuel cell cartridges based on borohydride compound fuel, which typically is a division 4.3, water reactive material. This specification further states (sub-clause 1.2) that, "The manufacturer may consider fuels, materials, designs or constructions not specifically dealt with in this document. These alternatives shall be evaluated as to their ability to yield levels of safety equivalent to those prescribed by this standard."

SiGNa Chemistry is engaged in the development of a fuel cell cartridge that uses a different Division 4.3 fuel, sodium silicide, with chemical reactivity comparable to that of borohydride compound fuel (see picture on p. 2). Because we evaluate these cartridges in a way that demonstrates a level of safety equivalent to that prescribed bit IEC/PAS 62282-6-1 (see test summary, p. 2), and since these fuel cartridges are in compliance with all other requirements of the HMR, it is our position that these fuel cell cartridges are authorized for carriage by passenger and crew on passenger aircraft under § 175.10 (a) (19). Do you see any issues with this position?

Thank you for your attention in this matter.

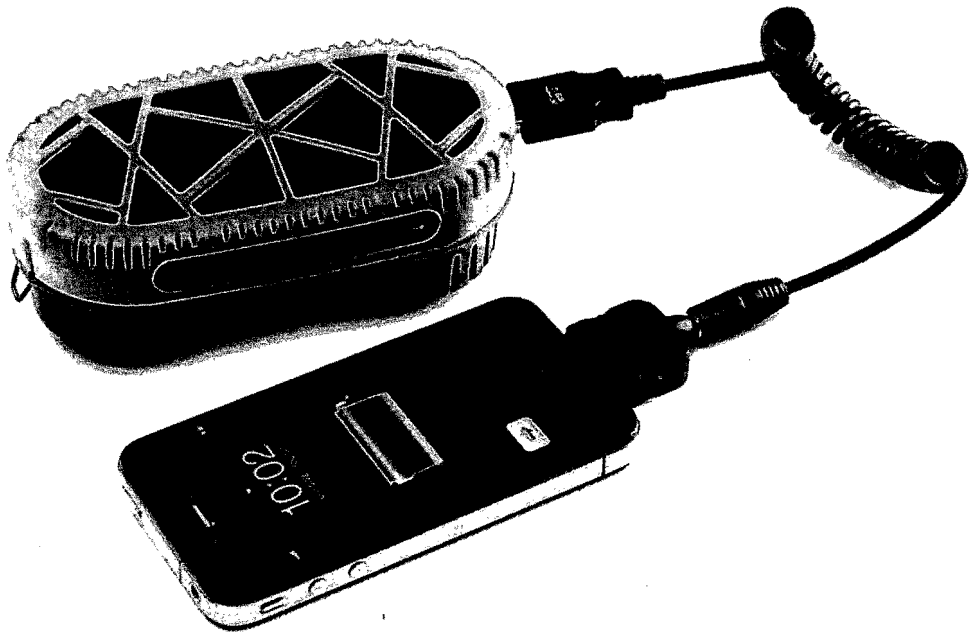
Sincerely,

M Lefenfeld

Michael Lefenfeld - President & Chief Executive Officer, SiGNa Chemistry
445 Park Avenue, Suite 1010
New York, NY 10022
Phone: +1-212-933-4101

Cc: Duane Pfund, PHH-20

Example of FC system using SiGNa Cartridges:



Test Summary

To ensure equivalence as provided by IEC 62282-6-1, sub-clause 1.2,

- SiGNa fuel cell cartridges are tested using the published international standard IEC 62282-6-100 – this is the final international standard that followed IEC/PAS 62282-6-1).
- Testing is also in accordance with the publicly available specification IEC/PAS 62282-6-150, which provides detailed guidance on safety testing tailored to water reactive materials and that establishes levels of safety equivalent to those prescribed by IEC/PAS 62282-6-1.

The validity of using IEC/PAS 62282-6-150 and IEC 62282-6-100 to establish an equivalent level of safety to IEC/PAS 62282-6-1 is supported by the in-progress work of an IEC working group of technical experts to combine all of these standards and specifications into a second edition of IEC 62282-6-100.