U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

NOV 6 2009

Mr. Aubrey R. Campbell
Baker Petrolite Corporation
12645 West Airport Blvd.
P.O. Box 5050
Sugarland, TX 77478-5050

Ref. No. 09-0229

Dear Mr. Campbell:

This responds to your October 2, 2009 letter requesting clarification of the requirements under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) for the transportation of cryogenic liquids in tank cars. Specifically, you request clarification concerning whether the pressure test requirements for class DOT 113 tank cars under § 173.319(e) apply to tank cars containing the residue of a cryogenic liquid.

According to your letter, your company offloads refrigerated liquid ethylene from DOT 113 tank cars to a minimal amount considered to be empty by industry standards. The empty tank cars containing a residue of refrigerated liquid ethylene are then returned to the supplier. Based on its understanding of the requirements for empty packagings in § 173.29, which requires an empty packaging containing only the residue of a hazardous material to be transported in the same manner as when it previously contained a greater quantity of hazardous material, the supplier, in accordance with § 173.319(e), monitors the average daily pressure rise in the empty tank cars and conducts follow-up thermal integrity testing on the empty tank cars if the average daily pressure rise exceeds 3 psig (0.2 Bar). You ask if the requirements in § 173.319(e) apply to a tank car that is empty except for a residue of the hazardous material it previously contained.

The answer is no. DOT 113 tank cars containing the residue of a cryogenic liquid are not subject to the requirements of § 173.319(e). Monitoring of the average daily pressure is used to gauge whether energy is being transferred to the lading through the insulation of the tank car, thus indicating a potential problem with the insulation and the need for follow-up thermal integrity testing. Monitoring of DOT 113 tank cars containing residue amounts is not effective for this purpose because the same amount of energy input will cause a greater increase in temperature and vaporization of a small amount of liquid than a large amount of

liquid. The resulting increase in pressure in a tank car containing a residue does not provide an accurate indication of potential insulation problems.

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

Sincerely,

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

Baker Petrolite

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§173.29
§173.319
Empty Packagings
09-0229

October 2, 2009

Office of Hazardous Materials Standards
Pipeline and Hazardous Materials Safety Administration, (PHMSA)
Attn: PHH-10
U.S. Department of Transportation
East Building, 1200 New Jersey Avenue, SE
Washington, DC 20590-0001

Re: Letter of Interpretation

Dear Office of Hazardous Materials Standards:

Baker Petrolite Corporation (BPC) requests a letter of interpretation regarding the provisions specified in Title 49 Code of Federal Regulation (CFR) Part 173.29(a), Empty Packages, Part 173.319(a)(4)(iii), 173.319(b)(2), and 173.319(e)(1)(2), Cryogenic liquids in tank cars.

BPC supplier Equistar offers for transportation by rail a hazardous materials described as UN1038, Ethylene, refrigerated liquid, 2.1, in DOT 113 tank cars. BPC owns and operates the rail cars; and is responsible to monitor each shipment to ensure the average daily pressure rise in the **loaded** tank car does not exceed 0.2 Bar (3 psig) during the loaded run or in a 24 hour period. Additionally, the supplier's loading procedure ensures the microns are at or below 75 microns of mercury and the pressure reduced to less than 10 psig before the tank car is released in interchange. Therefore, we iterate that we experience no problems transporting this material in loaded tank cars.

At destination, BPC offloads the Ethylene to a minimal amount, which is considered "empty" or "residue last contained" by industry standards. Furthermore, BPC procedure is to reduce the pressure in the empty tank cars to less than 5 psig and most often to zero prior to offering the empty tank car for interchange back to the supplier. According to 173.29(a), except as otherwise provided in this section, an empty package containing only the residue of a hazardous materials shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material. Based on this requirement, the supplier makes available to BPC the average daily pressure rise on the returning empty cars with the readings occasionally exceeding 3 psig. Additionally, the supplier making the information available to BPC conducts a micron test on the empty tank cars and reports to BPC when the reading exceeds 75 microns of mercury.