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[Notices]
[Page 58503-58504]
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DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

Notice of Safety Advisory 2005-04

AGENCY: Federal Railroad Administration (FRA), DOT.

ACTION: Notice of Safety Advisory 2005-04.

SUMMARY: FRA is issuing Safety Advisory 2005-04 advising shippers, consignees, and railroads of the dangers of allowing cars of ``time-sensitive'' chemicals to remain undelivered beyond their anticipated date of placement and to recommend enhanced procedures to avoid such occurrences. This action is being taken to improve the safety and reliability of hazardous materials shipments by railroad.

FOR FURTHER INFORMATION CONTACT: Thomas A. Phemister, Railroad Safety Specialist (Hazardous Materials), Hazardous Materials Division, Office of Safety Assurance and Compliance, Federal Railroad Administration, U.S. Department of Transportation, 1120 Vermont Avenue, NW., Washington, DC 20590-0001 (telephone: (202) 493-6050; e-mail: tom.phemister@fra.dot.gov).

SUPPLEMENTARY INFORMATION:

Background

At 6:40 p.m. EDT on August 28, 2005, in Cincinnati, OH, fire department personnel responded to a report of smoke coming from a tank car in a railroad yard (Linwood Yard \1\) operated by the Indiana and Ohio Railway Company (IORY). As shipped, tank car PLCX 224841 contained 23,543.97 gallons of styrene monomer, stabilized (170,966.7 pounds at the loading temperature of 60[deg] F.). Styrene monomer, stabilized, is a class 3 (flammable liquid) material. As a result of the release residents were evacuated within a 1 mile radius, later reduced to a \1/2\ mile radius and, by the end of the fourth day, the exclusion zone was reduced further to the immediate area around the car. The Environmental Protection Agency's Pollution Report indicates that, initially, 800 people were evacuated. In addition, four schools closed, and the Ohio River was closed to traffic for a short time. The incident lasted approximately 5 days.

\1\ Linwood Yard on the Indiana & Ohio Railway is also known as Undercliff Yard.

FRA's preliminary investigation indicates that the cause of the incident was a polymerization of the styrene monomer in the tank car due to the deterioration of the inhibiting agent (para-tertiary butylcatechol) as a result of the extended time in transportation. The shipment consisted of 99.91% Styrene Monomer and .09% of other components (the largest identifiable component was the inhibiting agent) and was offered into transportation on December 30, 2004 by Westlake Styrene, Sulphur, LA, and consigned to Queen City Terminals, Cincinnati, OH, under bill of lading number 80435877. Movement records show that the car made a normal trip to the IORY, arriving at interchange between the Norfolk Southern Railway Company and the IORY (at Sharonville, OH) on January 21, 2005. IORY records show the car was moved from the interchange yard to McCullough Yard where it stayed for approximately 5 or 6 weeks before it was moved to Linwood Yard on March 12, 2005. From the time the car was interchanged to IORY until smoke was observed on August 28, 2005, FRA has found no records indicating that the IORY attempted to contact Queen City Terminals to arrange for delivery of the car.

Time-Sensitive Commodities

Each year, America's railroads safely transport more than 1.7 million hazardous materials shipments to their destinations. Certain hazardous materials pose particular risks if not transported, and delivered, promptly. Among these are cryogenic materials, which must be transported, and maintained, at very low temperatures. Federal hazardous materials regulations (49 CFR 173.319(a)(3)) require that:

The shipper shall notify the Federal Railroad Administration whenever a tank car containing any flammable cryogenic liquid is not received by the consignee within 30 days from the date of shipment. Notification to the Federal Railroad Administration may be made by e-mail to Hmassist@fra.dot.gov or telephone call to (202) 493-6229.\2\

\2\ A similar requirement, applicable to compressed gases in tank cars and multi-unit tank cars, appears at 49 CFR 173.314(g)(1).

Another group of chemicals are time-sensitive because they are shipped with a stabilizing or inhibiting chemical that retards the chemical's natural tendency to polymerize. Polymerization is a chemical reaction in which a large number of relatively simple molecules combine to form complex chains of macromolecules, often times with the evolution of heat and, in closed containers like tank cars, pressure. Of interest here, this process is how styrene monomer becomes the useful polystyrene that is so easily colored, molded, and fabricated.\3\ Of course, polymerization is not intended to occur while the material is being transported, which is why it is shipped with an inhibiting agent.

\3\ Adapted from Hawley's Condensed Chemical Dictionary, 14th edition, (copyright) 2001, John Wiley & Sons, New York.

The members of the Association of American Railroads (AAR) and the American Short Line and Regional Railroad Association have adopted the recommendations contained in AAR's Circular OT-55-H, ``Recommended Railroad Operating Practices for Transportation of Hazardous Materials.'' \4\ This package of recommended procedures includes

suggestions for time-sensitive materials. It places responsibility on the railroads for monitoring these shipments and escalating their response as necessary when any car with a time-sensitive product is delayed in transit. The circular includes a list of 20-day time-sensitive products and a list of 30-day time-sensitive products. Products with a 20-day time-in-transit limit include Ethylene, refrigerated liquid; Hydrogen, refrigerated liquid; Chloroprene, stabilized; Methyl Methacrylate Monomer, uninhibited; and Hydrogen Chloride, refrigerated liquid. Products with a 30-day time-in-transit limit include Styrene monomer, stabilized and Recycled Styrene.

\4\ The AAR's Circular No. OT-55-H was issued August 25, 2005, and became effective September 1, 2005, replacing Circular No. OT-55-G.

Recommendations

1. FRA strongly encourages all railroads to develop procedures that conform to AAR Circular OT-55-H and to assure that railroad employees responsible for the movement of time-sensitive chemicals are familiar with and clearly understand these procedures. Such actions will help ensure that these materials reach their destinations in a timely way. We note that, in accordance with the Hazardous Materials Regulations (HMR; 49 CFR parts 171-180), rail carriers must make every effort to expedite hazardous materials shipments.\5\

\5\ 49 CFR 174.14.

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2. FRA recommends that shippers and consignees monitor the progress of time-sensitive materials that they have shipped and ordered. While the railroads have the primary responsibility to monitor the movement of freight along their tracks, close attention by shippers and consignees will provide an additional level of safety. A shipper sending a time-sensitive load to a consignee should call the consignee (or use fax or e-mail) and let that party know a car is on the way and should arrive before the expiration of an appropriate number of days. As the due date approaches, either the shipper or the consignee, or both, should contact the railroad(s) involved for a report on how the car is moving. Some shippers and receivers have enough volume of railroad traffic to warrant the installation of automated car monitoring equipment or to hire car monitoring services. FRA is not prescribing how this extra involvement should take place, but the agency will evaluate this activity to determine the need for any future regulatory or other agency action.

3. The HMR require each person who offers a hazardous material for transportation in commerce to class and describe that material correctly.\6\ While the AAR's OT-55-H includes a list of time-sensitive materials, and 49 CFR 173.314 and 173.319 regulate specific sub-sets, there are many other products shipped as ``stabilized'' or ``inhibited.'' Each of these has a chemical added, an inert gas blanket applied, or a shipping condition (such as cooling) utilized to promote product stability, purity, and safety. FRA recommends that shippers and consignees work with the railroads to explore ways to reduce the risks in transporting the full range of time-sensitive materials. One good start would be to apply the recommendations in this notice and the concepts in the industry's circular to such materials. FRA will be monitoring hazardous materials movements to ensure that those who offer

for transportation and transport such chemicals in commerce work together to minimize the safety risks associated with the movement of time-sensitive materials.

\6\ 49 CFR 173.22.

FRA's investigation into the styrene incident in Cincinnati is not yet complete, but the fact that a car of time-sensitive material, carrying an inhibitor, was apparently allowed to languish on the same railroad for seven months is not acceptable. Enhanced efforts by the chemical producers, users, and carriers to monitor their shipments appropriately will further reduce the already low likelihood of a similar occurrence happening again.

Issued in Washington, DC, on September 29, 2005.

Daniel C. Smith,

Associate Administrator for Safety.

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