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Chlorine Institute Briefing Paper

Emergency Kit "C": Proven Equipment for Chlorine Tank Car/Truck Emergency Response

Introduction

Fittings (i.e. pressure relief device and valves) leaks on chlorine tank cars and tank trucks rarely occur. Should a leak occur, prompt corrective action is required by trained, competent personnel. The first steps a responder should take are identifying the source of the leak and determining the proper course of action. Most often a leak can be stopped by simply ensuring all valves are completely closed. However, if a leak cannot be stopped by simpler mitigation techniques, a properly trained responder will need special equipment to stop the leak until the contents can be unloaded safely. A proven and widely accepted package of equipment that meets this critical need and has been used for more than 40 years is the Chlorine Institute (CI) Emergency Kit "C" (or C-Kit), which is specifically designed for use with standard U.S. Department of Transportation (DOT) compliant chlorine tank cars and cargo tanks.

What is in an Emergency Kit "C"?

The C-Kit contains devices and tools to stop leaks in and around the pressure relief device and angle valves used to load chlorine into and unload it from the tank. These valves are located within a steel enclosure (housing) mounted on top of the chlorine tank car or tank truck. The C-Kit is the chlorine emergency kit for chlorine tank cars and tank trucks that is manufactured to design recommendations of The Chlorine Institute. Since being introduced in the late 1960s, more than 5,500 C-Kits have been supplied to emergency responders all over North America by Indian Springs Manufacturing Co. (www.indiansprings.com), Baldwinsville, N.Y.

Who Typically Uses the C-Kit and How Are These Personnel Trained?

Public- and private-sector emergency response organizations own C-Kits and are trained to use them. Public-sector responders typically include fire departments, while private-sector responders would include CHLOREP (Chlorine Emergency Plan) teams, from Chlorine Institute member companies, or hazardous materials emergency-response contractors (ER contractors). The Chlorine Institute periodically provides free training for both public- and private-sector responders on C-Kit use through both TRANSCAER® (Transportation Community Awareness and Emergency Response) sessions and individual member outreach. For example, in 2011 the Chlorine Institute in cooperation with the Union

Pacific Railroad trained over 400 emergency responders in Los Angeles and Chicago how to deal with a chlorine emergency, including how to apply a C-Kit.

If a particular emergency situation permits, it is recommended to activate the CHLOREP Network, because these responders are typically the most knowledgeable and experienced in chlorine tank car release mitigation. If the situation presents an imminent risk to public safety, it is crucial that public responders on the scene are trained on proper use of the C-Kit. For public responder organizations that feel they need C-Kit training (either first time or a refresher) and are not located near a location planned for a TRANSCAER® training event, contact The Chlorine Institute for help coordinating a C-Kit training session. Individual training sessions will typically be provided by CI member companies. TRANSCAER® participating organizations conduct training nationwide on hazardous materials emergency response. For more information, refer to the TRANSCAER® website - http://www.transcaer.com/.

The Chlorine Institute also has a video, "How to Use the Chlorine Institute Emergency Kit "C" for Chlorine Tank Cars and Tank Trucks," and an instruction booklet, *Chlorine Institute Emergency Kit "C" for Chlorine Tank Cars & Tank Trucks*. These training materials are both available via the CI Web site – www.chlorineinstitute.org – for free to all emergency responders. In addition to specific instruction on the C-Kit, CI has a general first responders video, "*Chlorine Emergencies: An Overview for First Responders*," which is provided free to all upon request via email or the CI website.

Can You Provide More Information about the CHLOREP Program?

The Chlorine Institute has divided the United States and Canada into regional sectors, each with a CHLOREP team from plants that produce, package and consume chlorine. These sectors are arranged primarily along state or provincial boundaries. When a CHLOREP team is dispatched to an incident, it will come from within the region and from the closest team resource (plant or contractor), or the team that can reach the incident fastest. The CHLOREP system is set up to provide technical assistance to first responders. That assistance may be provided by phone or a team sent to the site of the emergency, if the incident commander deems it to be necessary. If a CHLOREP team is dispatched to an incident, it arrives with the appropriate emergency kit to deal with the situation, as well as protective gear to enter a potentially hazardous area. You can learn more about the CHLOREP program by visiting www.chlorineinstitute.org. In the United States, CHLOREP teams are activated through CHEMTREC (Chemical Transportation Emergency Center), www.chemtrec.com, which is administered by the American Chemistry Council. In Canada, CHLOREP assistance can be coordinated through Canutec, www.tc.gc.ca/eng/canutec/menu.htm.

What Other Steps are being taken to Ensure Safe Bulk Transport of Chlorine?

The U.S. and Canadian governments, chlorine shippers and carriers, and other stakeholders are taking a number of steps to ensure that chlorine can continue to be transported safely and securely throughout North America. Some of these steps include:

- New chlorine valve assemblies have been designed, tested via service trial and are now approved for use on chlorine tank cars. These new valves are designed with spring-loaded check valves that prevent the flow of liquid chlorine or vapor in the event a product valve is broken off or damaged during an accident. This new configuration is intended to reduce the likelihood of any chlorine loss during an accident. The new configuration also is designed to accommodate the use of a C-Kit in the very unlikely event that it might still be needed in an emergency situation.

- Provided input in developing a DOT regulation, which took effect in March 2009, that requires new tank cars containing chlorine and other toxic inhalation hazard materials to have better puncture resistance from side impact by combining thicker inner shells and/or thicker outer jackets. In addition, each end of the tank car must be protected with a full head shield, which was not already mandated by existing regulations. To prevent a chlorine release in a rollover, enhanced protection of valves, top fittings and nozzles used to load or unload a car is also required.

- Committed to significant research exploring the future rail tank car design, with the goal of significantly improving safety and security performance. This is a coordinated effort between both industry and government.

What is Chlorine Rail Transport's Safety Record?

Rail is one of the safest modes of chlorine transportation. In 2010, over 2.75 million tons of chlorine was shipped by rail in North America, typically in 90-ton tank cars. This tonnage amounts to more than 30,000 tank car shipments. Of the more than 1.5 million chlorine tank car shipments since 1965, there have been only 11 breaches of a tank car (incidents where chlorine escaped into the air because of damage from an accident) – 0.00073 percent of all shipments. Overall, accident rates for rail shipments of all hazardous materials, including chlorine, have declined by about 90% percent since 1980.

What is the Chlorine Institute's Position on Calls to Replace the C-Kit?

The Chlorine Institute believes suggestions that the C-Kit could be eliminated in favor of a device that is described as a secondary containment housing which would enclose the valves atop a chlorine tank car are ill-advised and premature. Before considering use of such a product, it is imperative that the potential user ensures that the equipment is compliant with federal DOT hazardous materials regulations and is approved for use on chlorine tank cars by the Association of American Railroads (AAR). Based on information made available to CI, the known product currently being advertised in the market has not been approved by the AAR and is not fully compliant with DOT regulations. It is also crucial for potential users to conduct a thorough review of the design and applicability before determining that this type of equipment is a safer and more acceptable leak prevention/mitigation measure for chlorine tank cars.

The C-Kit has been used successfully since the 1960s on those rare occasions when valves have been damaged due to an accident and resulted in a chlorine release or a potential release. More than 5,500 C-Kits are already in the hands of trained U.S. and Canadian emergency responders. This experience and success with the C-Kit represents that it is a proven technology for this important public safety purpose.

While significant progress has been made in developing an enhanced chlorine tank car and valve assembly, it will take many years before older cars can be retired and replaced with new ones. There are more than 6,000 cars in service with the traditional standard chlorine fittings configuration. Eliminating the C-Kit while these cars remain in service is not a reasonable consideration and would make chlorine emergency response less effective than it is today.

Why Not Just Stop Transporting Chlorine?

Chlorine chemistry is essential to everyday life. The products of chlorine chemistry make possible clean water and safe foods, pharmaceuticals, medical equipment, energy efficient building materials, renewable energy, computers, electronics, automobiles, and much more. For more than 95 percent of these applications, there are no reasonable substitutes for chlorine. While much of the chlorine produced is consumed without having to transport it to a different site, there are many sites throughout North America that are incapable of producing chlorine on site, and accordingly it must be shipped and supplied by a producer site.

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The Chlorine Institute, Inc. (CI) is a 200-member, not-for-profit trade association of chlor-alkali producers worldwide, as well as packagers, distributors, users and suppliers. The Arlington, Va.-based Institute's mission is the promotion of safety and the protection of human health and the environment in the manufacture, distribution and use of chlorine, sodium hydroxide, potassium hydroxide and sodium hypochlorite, plus the distribution and use of hydrogen chloride. The Institute's North American Producer members account for more than 93 percent of the total chlorine production capacity of the United States, Canada and Mexico.