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Transportation Information Bulletin

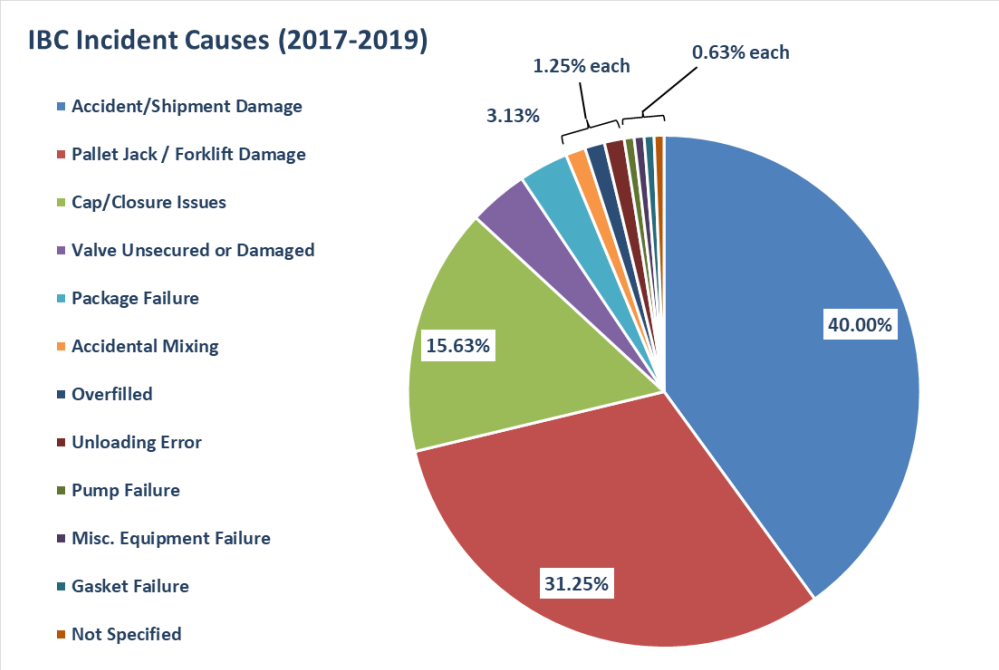
Issue Date: December 18, 2020

Subject: Best Practices for Load Securement of Intermediate Bulk Containers

Background: CI's Transportation Issue Team (TRN IT) continually analyzes transportation incident data involving CI mission chemicals[1] to identify areas of improvement in order to achieve the long-term goal of zero mission chemical releases during transportation. In 2020, the TRN IT established a goal that focuses specifically on analyzing and reducing the number of transportation incidents involving intermediate bulk containers (IBCs) used to transport mission chemicals. The purpose of this information bulletin is to highlight recommended best practices for securing IBC loads that were previously developed by the TRN IT.

What does the IBC transportation incident data show?

The TRN IT downloads transportation incident data from DOT's publicly available Form 5800.1 hazardous materials transportation incident reporting database.[2] The following chart represents IBC-related incidents pulled from the DOT database involving the transport of caustic (sodium hydroxide and potassium hydroxide), hydrochloric acid, and sodium hypochlorite (bleach) during 2017-2019. This data reflects that the largest portion of reported IBC releases were caused by issues with securing the load that resulted in damage which occurred during an accident, normal shipment or pallet jack/forklift handling (collectively 71.25% of incidents).



[1] CI's mission chemicals: chlorine, sodium and potassium hydroxides, sodium hypochlorite, the distribution of vinyl chloride monomer (VCM), and the distribution and use of hydrogen chloride.
[2] PHMSA Incident Statistics website: https://www.phmsa.dot.gov/hazmat-program-management-data-and-statistics/data-operations/incident-statistics

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What best practices can help prevent IBC indents caused by load securement issues?

Included in CI's guidance document for safely handling IBCs, the following best practices are recommended for preventing incidents caused by load securement issues.

- Effective and periodic competency-based training of employees on safely handling IBS, including loading onto and unloading from trucks.
- Truck lift gates should not be used for supporting an IBC for a period of time.
- Pallet Jack/Forklift Handling
  - Effective and period training for driving pallet jacks and forklifts. For forklift operators, following OSHA training requirements in 29 CFR 1910.178.
  - Ensure the IBC is centered on the forks (i.e., balanced center of gravity).
  - Only use pallet jacks and forklifts as they are intended. Do not use forks or other parts of the equipment to push containers into place.
  - For forklifts having forks that extend beyond the container, ensure forks do not puncture adjacent IBCs.
  - Follow facility speed limits and other traffic rules.
  - Avoid unnecessary obstacles, such as slopes and uneven or damaged surfaces.
- Blocking and Bracing
  - Follow DOT regulations for securing (49 CFR 177.834(a)) and segregating (49 CFR 177.848) IBCs onto a truck.
  - Ensure that all securement straps/chains/bars, etc. are in good condition and are rated for the load being secured.
  - Avoid over-tightening securement straps.
  - Use caution when pushing IBCS on truck floor by avoiding protrusions from the floor (buckles, nails, etc.) and pushing packages against each other.
  - Place IBCs in a manner that ensure adequate spacing from other objects and materials that could cause damage during transport.
  - Follow container manufacturers' recommendations for stacking IBCs (based on stack testing performed in accordance with 49 CFR 178.815). Avoid stacking full IBCs.
  - For less than full loads, maintain the center of gravity on the truck.
  - Ensure that truck axle weights are not exceeded.

Where can I find related CI resources that are focused on the transport of IBCs?

More comprehensive guidance on safely handling IBCs can be found in CI's guidance document titled, "Practice Guidance for the Safe Handling of Intermediate Bulk Containers (IBCs)." This guidance document also has been or will be incorporated into the following CI pamphlets:

- Pamphlet 88, *Recommended Practices for Handling Sodium Hypochlorite Solution and Potassium Hydroxide Solution (Caustic) Cargo Tanks* (incorporate in next edition)
- Pamphlet 96, *Sodium Hypochlorite Manual* (incorporated in Edition 5)
- Pamphlet 150, *Recommended Practices for Handling Hydrochloric Acid in Bulk Highway Transports* (incorporated in Edition 4)

Additional guidance may be available through the IBC packaging manufacturer. U.S. and Canadian requirements can be found in U.S. DOT's 49 CFR Parts 171-180, Transport Canada's *Transportation of Dangerous Goods Regulations*, and Canadian General Standards Board's IBC standard CAN/CGSB-43.146