CI Initiatives in Emergency Preparedness and Transportation

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FRA Hazmat Seminar

Billings, MT

September 17-19, 2013

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- Technical trade association focused on improving industry safety and security performance through technical guidance and regulatory advocacy since 1924
- Membership (195) – Primarily North American chlorine producers, distributors, users, and suppliers to the industry

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- Products of focus:
  - **Chlorine**
  - Caustic (sodium hydroxide and potassium hydroxide)
  - **Hydrochloric acid**
  - Bleach (sodium hypochlorite)
  - Anhydrous hydrogen chloride
- Areas of focus:
  - Health, Environment, Safety and Security (fixed facility)
  - Customer Stewardship
  - **Emergency Preparedness**
  - **Transportation**

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CI EMERGENCY PREPAREDNESS TRAINING & OUTREACH

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Emergency Preparedness

- Objective: Minimize the impact of release by enabling the first responders to react in an effective manner
- Achieved through:
  - CHLOREP
  - Various emergency preparedness training events
  - Investigate advancements in emergency response techniques and equipment
  - Presentations at various hazmat conferences
  - Individual CI member outreach and training

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Chlorine Emergency Plan (CHLOREP)

- Mutual Aid System – All CI members who ship chlorine are participants (bulk and non-bulk)
- Usually activated through CHEMTREC
- US & Canada divided into sectors – Teams have responsibilities for certain sectors
- Provide technical assistance by telephone or on-site, as appropriate
- Teams often available to assist with local training needs

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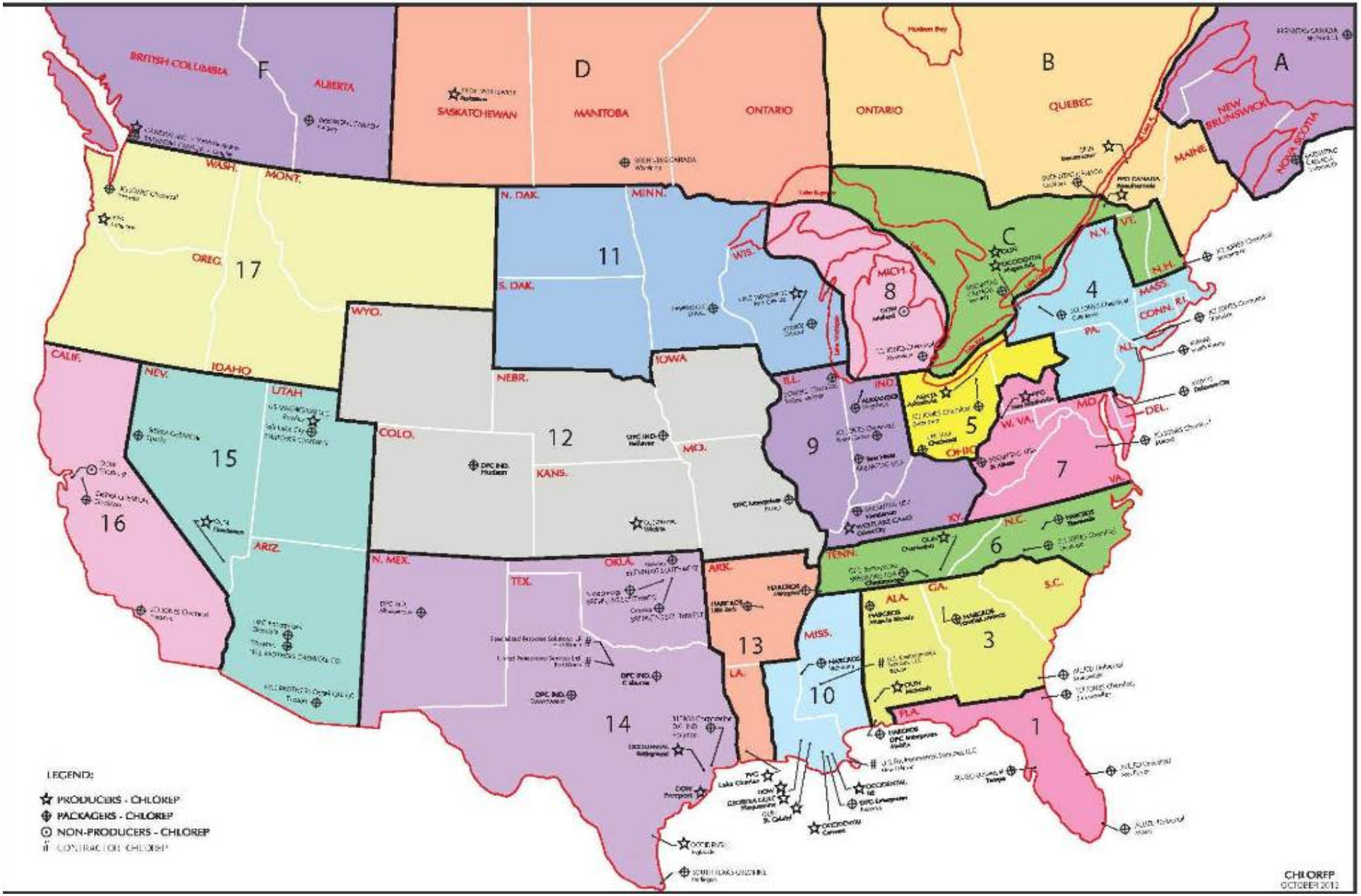

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Emergency Preparedness Training & Outreach

- CHLOREP Team Training - annual week long training at Miss. Fire Academy
- Summer 2013 Short line tour funded partially through FRA grant in 4 regions
- 2013 – 2014 National Chlorine TRANSCAER Tour
- Offer sessions at various hazmat conferences

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Emergency Preparedness Training

Typical Learning Modules:

- Chlorine safety (general information)
- Chlorine Workshop & Training Car (hands-on with equipment)
- Caustic/Bleach (tank car and cargo tank)
- Hydrochloric acid (tank car and cargo tank)
- A-Kit workshop (150-lb chlorine cylinder)
- B-Kit workshop (chlorine ton container)
- C-Kit and Midland Kit workshop (chlorine tank car and cargo tank)
- Railroad emergency response

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CI EP Resources Available

- Instructions booklets and DVD's for Emergency A-, B- and C-Kits
- Various CHLOREP Bulletins
- Emergency response guidelines for aqueous HCl and anhydrous HCl
- DVD "Chlorine Emergencies: An Overview for First Responders" (free)
- Guidance documents and DVD available for free download at www.chlorineinstitute.org

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CI TRANSPORTATION SAFETY INITIATIVES

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Transportation

- Objective: Maintain ability to transport chlorine and other mission chemicals in a safe/secure manner and eliminate transportation releases (i.e. NARs)
- Achieve through enhancing already strong safety record:
  - Industry best practices for container securement and transport
  - Standardization and enhancements in containers/fittings design
  - Work with government/industry partners to enhance rail safety (operation, design, procedures)
    - Member on AAR Tank Car Committee
    - Active participant in research initiatives
    - Comments and petitions to DOT

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Transportation – Rail Initiatives

- Industry standardization of tank car and fittings design
  - Manway arrangements (chlorine and HCl)
  - New chlorine dual valves
  - Interim TIH tank car
- TIH tank car research initiatives
  - CI initiated puncture resistance research
  - Engaged in NextGen railcar project
  - Participate in Advanced Tank Car Collaborative Research Program (industry & govt)

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Transportation – Rail Initiatives

- Reviewed TGO Technologies' secondary containment housing design
  - Not approved for use under DOT regulations
  - Concerns with design
    - Sealed housing
    - Two PRD's in series
  - C-Kit (and similar emergency kits) continues to be the safest and most effective means for mitigating chlorine releases from tank car valves – TGO design is NOT a safe replacement as it is marketed

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Transportation – Rail Best Practices

- Pamphlets for safe handling of chlorine, caustic and HCl tank cars
  - General product information
  - Regulatory requirements
  - Emergency response
  - Tank car design and valve arrangements
  - Loading/Unloading practices
  - Best practices to reduce NARs
  - Security measures
  - Checklists

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Transportation – Training Tools

- NEW – DVD on reducing NARs by properly securing residue chlorine railcars
  - Now available
  - FREE through CI bookstore
  - Primary focus on best practices for valve securement
- Currently developing similar HCl railcar securement DVD – similar format to chlorine DVD
- Future – develop similar DVD for caustic railcars

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CI Resources Available

- Pamphlets with recommendations on design and use of chlorine, HCl, and caustic railcars and tank trucks
- New DVD " Preventing Non-Accident Releases from Chlorine Railcars"
- Pamphlets and DVD available for free download at www.chlorineinstitute.org

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BEST PRACTICES FOR REDUCING NARS FROM CHLORINE AND HCL TANK CARS

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CI Railcar Securement DVD's

- New chorine DVD and future DVD's cover:
  - Definition of an NAR
  - DOT reporting requirements
  - Emphasize difference between empty car and residue car
  - Emphasize shipper of record is responsible
  - Costs incurred due to an NAR – fees and intangible costs
  - **Incident data**
  - **Best practices for proper securement**
  - **Available resources**

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CI 2013 Transportation Incident Goals

Product and Mode	2013 Incident Goals (3-yr average)
Chlorine (bulk hwy and rail)	< 6
Caustic (bulk highway)	< 33
Caustic (rail)	< 30
HCl (bulk highway)	< 16
HCl (rail)	< 46

- Long range goal of zero incidents
- Currently on track to meet all 2013 rail goals by far

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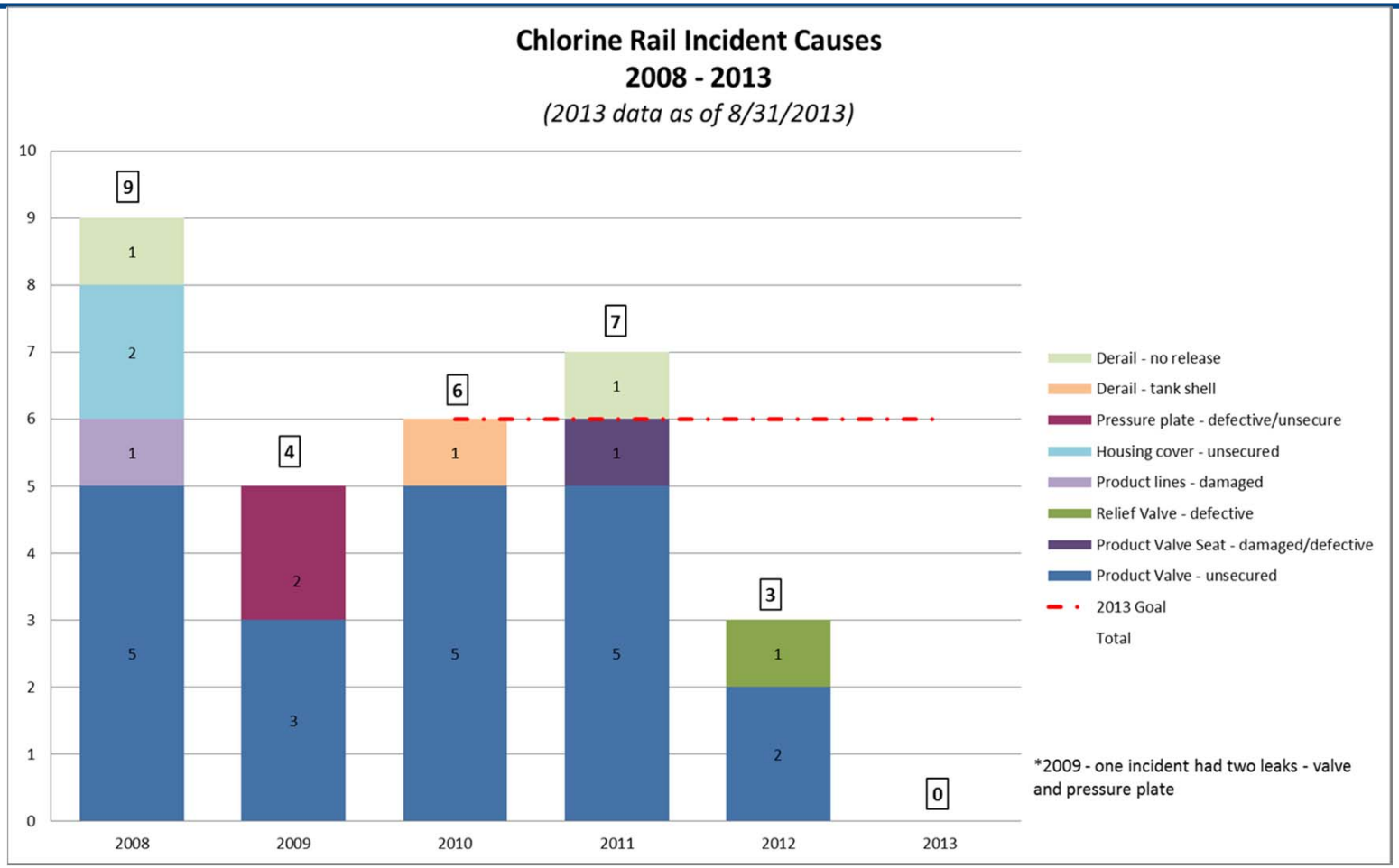
Chlorine Rail Incident Data



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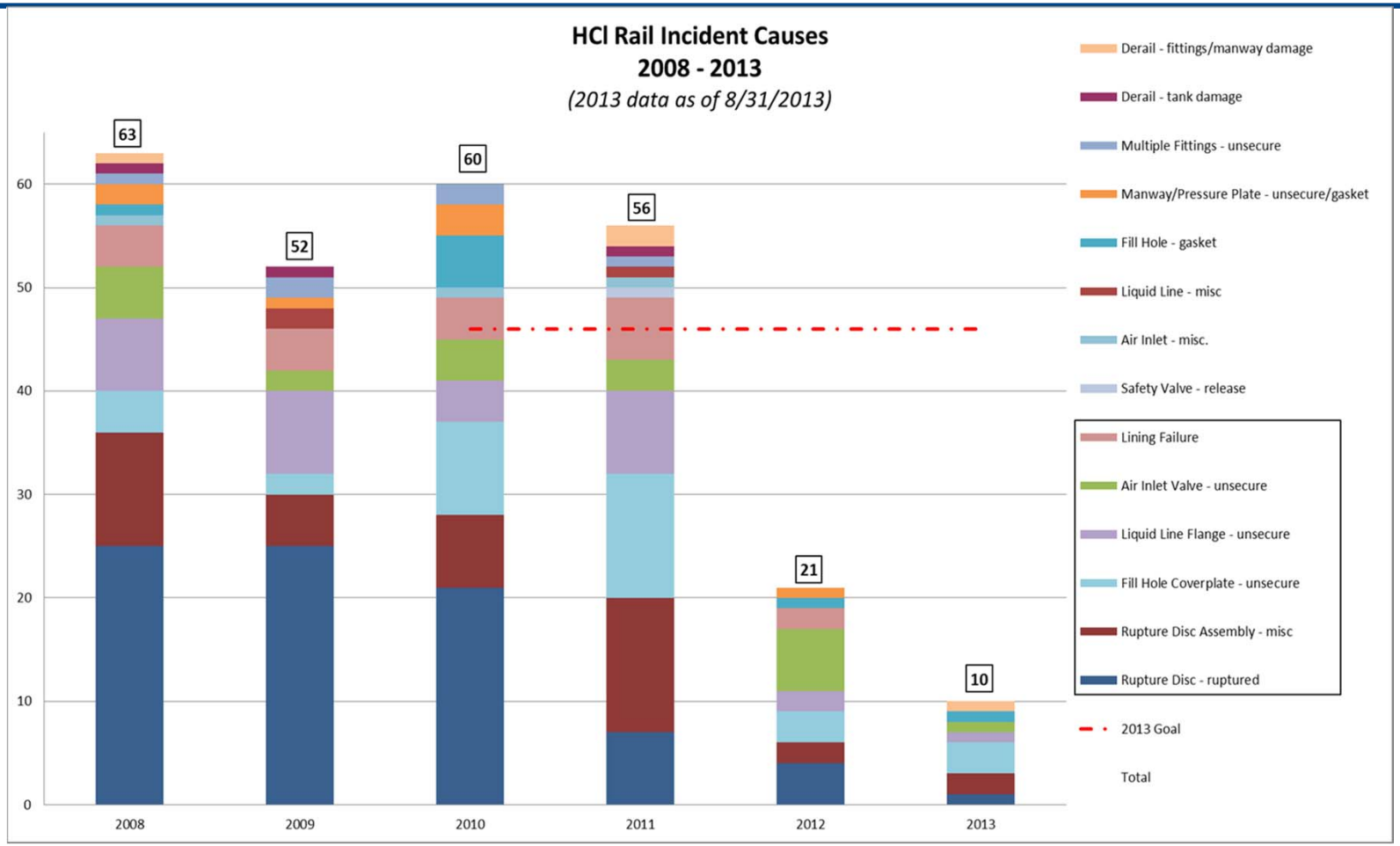
HCl Rail Incident Data



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BEST PRACTICES - GENERAL

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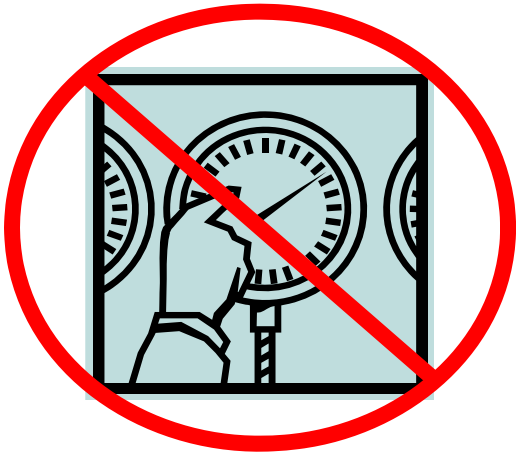
Best Practices for Proper Railcar Securement

General:

1. Reduce pressure in railcar as low as possible
   - Extra pressure increases possibility of NAR
   - Common practice is:
     - Less than 50 psig for chlorine cars
     - Zero for general purpose non-pressure cars



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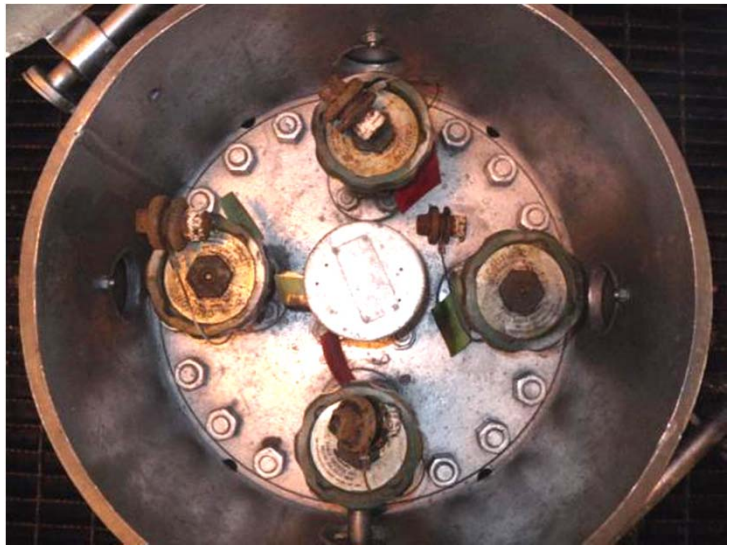
Best Practices for Proper Railcar Securement

General:

2. Verify that all product valves and fittings are closed - even valves/fittings not used during unloading



(chlorine)

(HCl)

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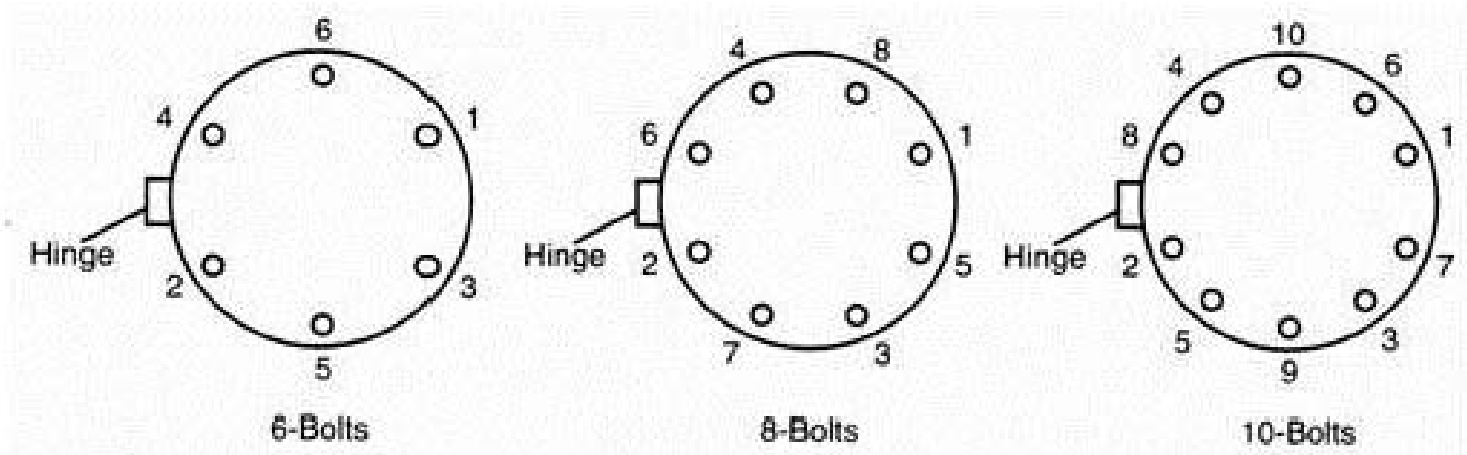
Best Practices for Proper Railcar Securement

General:

3. Verify that all fasteners are tightened using proper torquing methods (crisscross pattern)

(*below example of hinged and bolted manways for visual purposes*)



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Best Practices for Proper Railcar Securement

General:

4. Leak checks on all valves, fittings and fasteners using aqua ammonia
   - 10-30% lab grade ammonium hydroxide solution
   - Use squeeze bottle with internal tube that extends only into vapor space
   - Always use fumes or fog. Never use liquid – it can make leak worse
   - Wait as long as possible after tightening closures in case any loosen (8-24 hrs suggested if possible)

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Best Practices for Proper Railcar Securement

General:

5. Security measures:
   - Chlorine – cable seals

   - HCl – cable seals and tamper-evident bags

   - Pictures/Video provide additional evidence to confirm securement before leaving plant

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Best Practices for Proper Railcar Securement

General:

6. If leaks occur and cannot be stopped

Do not ship the car

- Mark the location of the leak
- Contact your supplier for further instructions

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BEST PRACTICES - CHLORINE

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Best Practices for Proper Railcar Securement

Chlorine-Specific Tips:

1. Thoroughly inspect and clean threads on valves and plugs
   - Rusty threads can create extra torque before sealing
   - Mark threads in poor condition and contact supplier

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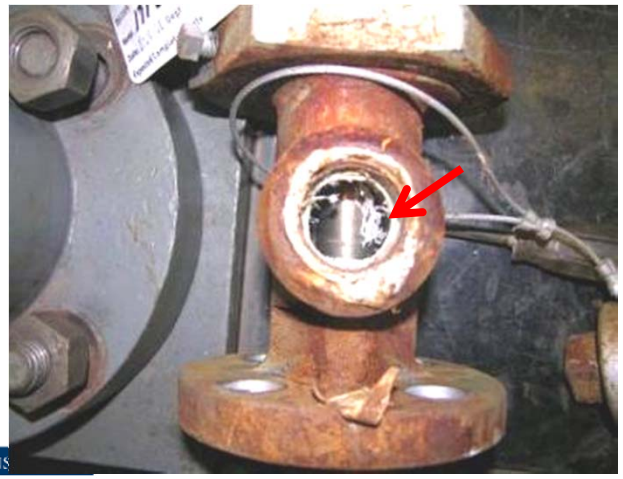
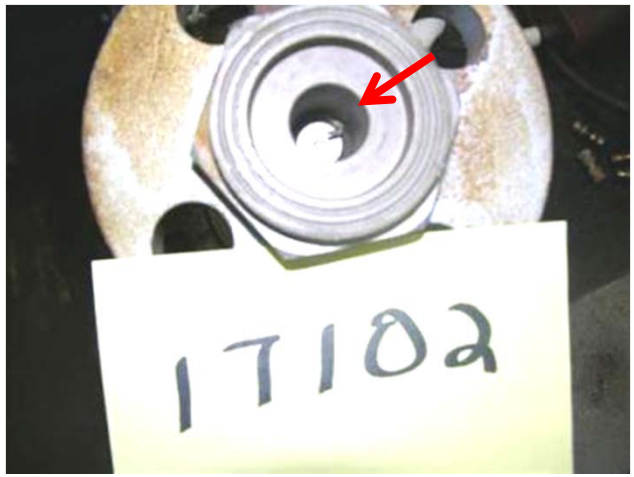
Best Practices for Proper Railcar Securement

Chlorine-Specific Tips:

2. Use of Teflon® tape is generally not recommended
   - Tape debris can get caught in valve and plug threads preventing seal





Best Practices for Proper Railcar Securement

Chlorine-Specific Tips:

Known acceptable sealing lubricants compatible with chlorine:

- ✓Fluorolube® grease grade GR-470 (0 to 300 °F)
- ✓Fluorolube® grease grade GR-362 (-40 to 300 °F)
- ✓ Krytox® grade GPL-205 grease

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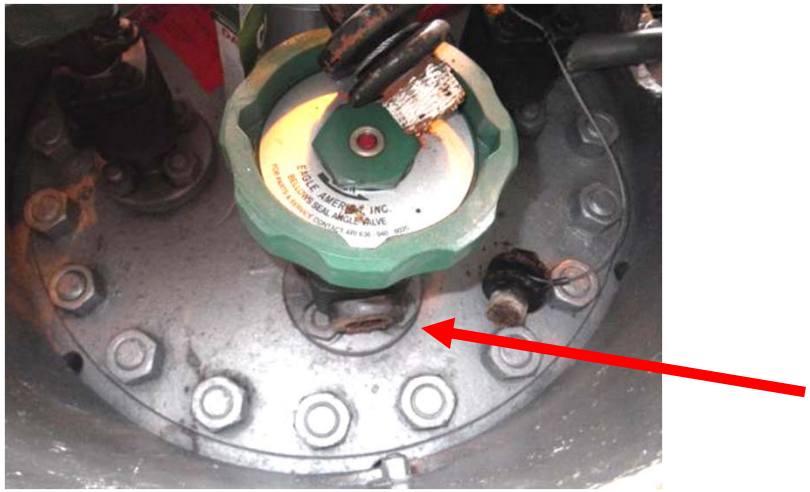
Best Practices for Proper Railcar Securement

Chlorine-Specific Tips:

3. Leak checks with aqua ammonia:
   - Leave valve plugs out during initial check
   - After all valves and fittings have been checked and before shipping car, install valve plugs (tool tight)



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BEST PRACTICES - HCL

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Best Practices for Proper Railcar Securement

HCl-Specific Tips:

1. Wash car down to clean off visible product – to provide evidence that car left plant clean and secure
2. Inspect and clean gaskets and fasteners to ensure proper securement
   - Replacements of segmented washers and gaskets should be the same as what was previously installed.

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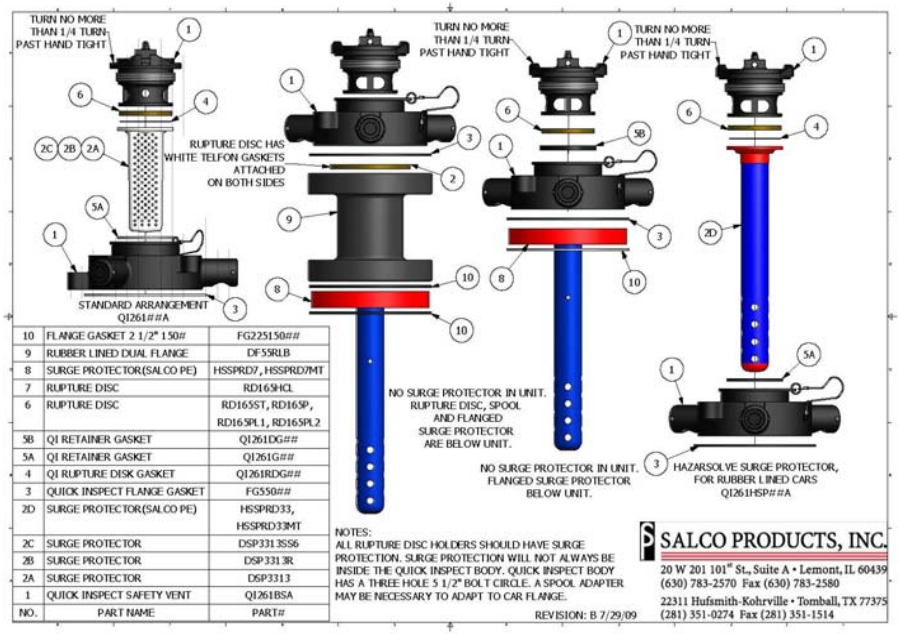
Best Practices for Proper Railcar Securement

HCl-Specific Tips:

3. If present, ensure that rupture disc assembly is assembled correctly and properly secured



NO.	PART NAME	PART#
10	FLANGE GASKET 2 1/2" 150#	FG225150##
9	RUBBER LINED DUAL FLANGE	DF55RLB
8	SURGE PROTECTOR(SALCO PE)	HSSPRD7, HSSPRD7MT
7	RUPTURE DISC	RD165HCL
6	RUPTURE DISC	RD165ST, RD165P, RD165PL1, RD165PL2
5B	QI RETAINER GASKET	Q1261DG##
5A	QI RETAINER GASKET	Q1261G##
4	QI RUPTURE DISK GASKET	Q1261RDG##
3	QUICK INSPECT FLANGE GASKET	FG550##
2D	SURGE PROTECTOR(SALCO PE)	HSSPRD33, HSSPRD33MT
2C	SURGE PROTECTOR	DSP3313SS6
2B	SURGE PROTECTOR	DSP3313R
2A	SURGE PROTECTOR	DSP3313
1	QUICK INSPECT SAFETY VENT	Q1261BSA

NOTES:
ALL RUPTURE DISC HOLDERS SHOULD HAVE SURGE PROTECTION. SURGE PROTECTION WILL NOT ALWAYS BE INSIDE THE QUICK INSPECT BODY. QUICK INSPECT BODY HAS A THREE HOLE 5 1/2" BOLT CIRCLE. A SPOOL ADAPTER MAY BE NECESSARY TO ADAPT TO CAR FLANGE.

REVISION: B 7/29/09

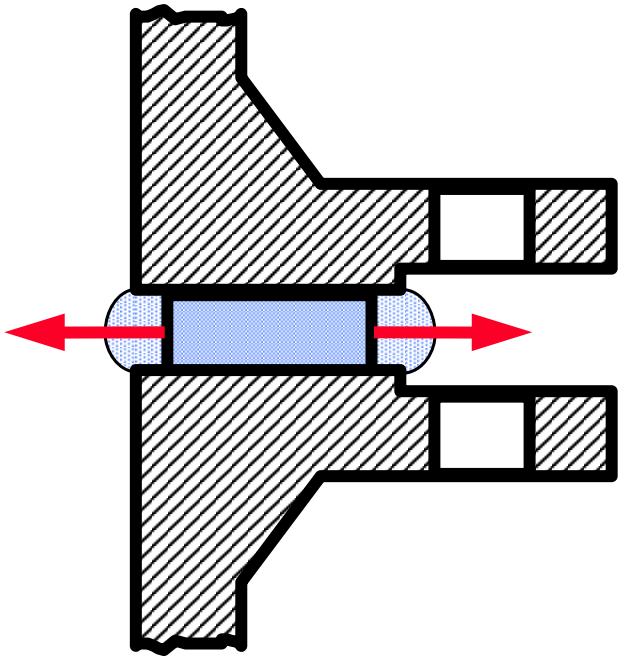
SALCO PRODUCTS, INC.
20 W 201 101st St., Suite A • Lemont, IL 60439
(630) 783-2570 Fax (630) 783-2580
22311 Hufsmith-Kohrville • Tomball, TX 77375
(281) 351-0274 Fax (281) 351-1514

- Ensure disc is installed with proper flow direction (non-unidirectional discs) in cases disc needs to be replaced
- Follow OEM assembly and installation instructions to ensure proper orientation of disc and housing assembly

Best Practices for Proper Railcar Securement

HCl-Specific Tips:

4. When securing fittings, allow for rubber relaxation (creep/cold flow)
   - Typical for newer rubber
   - Tighten multiple times until relaxation no longer appears to be present
   - One final time should be immediately prior to shipping



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Best Practices for Proper Railcar Securement

HCl-Specific Tips:

5. Remove handles if there is no protective housing in place
   - Option to remove handles if protective housing is in place
   - Ensures fittings aren't accidentally opened during transport

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AVAILABLE CI RESOURCES

CI Website: http://www.chlorineinstitute.org/

CI Bookstore:
https://bookstore.chlorineinstitute.org/mm5/merchant.mvc?

Technical Service Inquiries: techsvc@cl2.com

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Available CI Resources

- Chlorine
  - Pamphlet 1 – *Chlorine Basics*
  - Pamphlet 6 – *Piping Systems for Dry Chlorine*
  - Pamphlet 66 - *Recommended Practices For Handling Chlorine Tank Cars*
- HCl
  - Pamphlet 98 – *Recommend Practices for Handling Hydrochloric Acid in Tank Cars*
  - Pamphlet 170 – *Hydrochloric Acid Solution Bulk Transports Emergency Response Guidelines Handbook* (soon to be available)

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QUESTIONS???

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