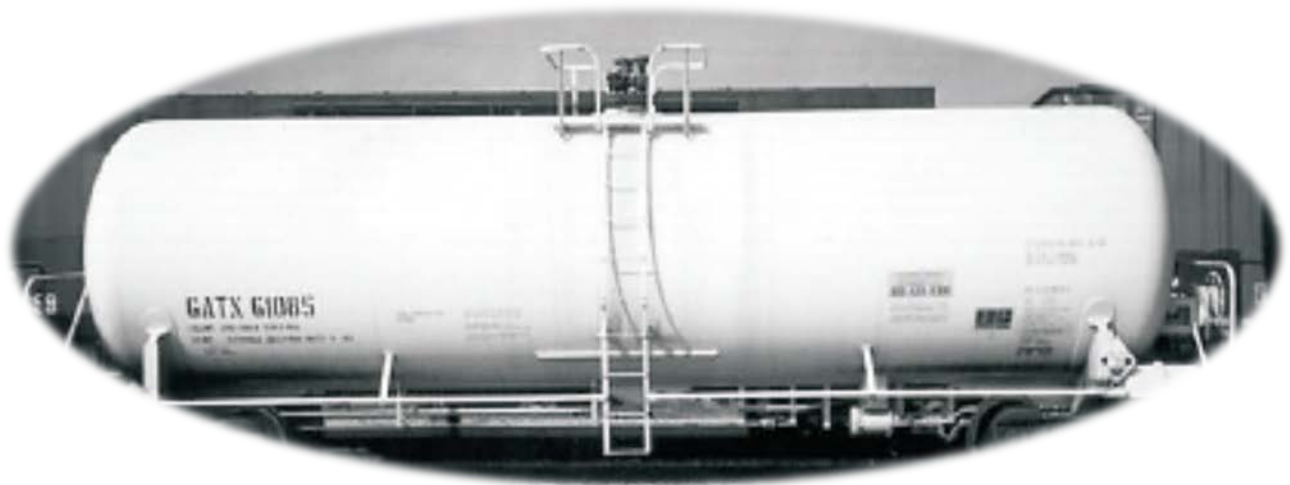


Illinois Commerce Commission

2023 Annual Report on Accidents/Incidents

Involving Hazardous Materials on

Railroads in Illinois





STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

527 East Capitol Avenue
Springfield, Illinois 62701

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March 21, 2024

The Honorable Don Harmon
Senate President

The Honorable John Curran
Senate Republican Leader

The Honorable Emanuel "Chris" Welch
House Speaker

The Honorable Tony McCombie
House Republican Leader

Dear Honorable Members of the Legislative Leadership,

The Illinois Commerce Commission submits the attached report in compliance with 625 ILCS, Section 5/18c-1204, which directs the Commission to *"prepare and distribute to the General Assembly.....a report on railway accidents in Illinois which involve hazardous materials."*

As required by Illinois law, this report includes the location, substance involved, amounts involved, and the suspected reason for each accident. The report also provides the rail line and point of origin of the hazardous material involved in each accident.

Additionally, the report contains the following related information:

- Details regarding events where hazardous material was involved, but no release occurred;
- An overview of ICC activities relative to the transportation of hazardous materials by rail within the state; and,
- A history of the railroad hazardous materials program.

Should you have questions, or need clarification about any of the information presented, please contact Sarah Ryan, Director of Governmental Affairs, at (217) 785-2449.

Sincerely,

A handwritten signature in cursive script that reads "Douglas P. Scott".

Douglas P. Scott
Chairman

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1. INTRODUCTION

This report has been prepared by the staff of the Illinois Commerce Commission's Railroad Safety Section in accordance with the provisions of 625 ILCS 5/18c-1204. The law directs the Illinois Commerce Commission (ICC) to "*prepare and distribute to the General Assembly ... a report on railway accidents in Illinois which involve hazardous materials.*" The law also provides that "*the report shall include the location, substance involved, amounts involved, and the suspected reason for each accident,*" as well as "*the rail line and point of origin of the hazardous material involved in each accident.*"

Additionally, this report contains the following related information:

- Details regarding events where hazardous material was involved, but no release occurred.
- An overview of Commission activities relative to the transportation of hazardous materials by rail within the State.
- Review of the transportation of nuclear and radioactive materials by rail within the State.

2. BACKGROUND

Illinois is a key hub in the nation's transportation system. With a railroad network of approximately 7,400 miles, Illinois' rail system is the country's second largest. The Chicago and St. Louis terminal switching districts are the two key points of interchange between eastern, western, northern, and southern rail systems and handle over 30,000 rail cars on a typical weekday.

According to the Association of American Railroads (AAR), approximately 7.9 percent of all rail traffic involved the movement of hazardous materials⁽¹⁾. Analysis of Illinois hazardous materials shipping data indicates Illinois has a slightly higher percentage of traffic comprised of hazardous materials at 11.1% of Illinois rail traffic. In 2022 (latest year for which data is available), railroads in Illinois originated 118.9 million tons of total freight and 4,002,900 carloads of freight⁽²⁾. Of this total, HM shippers in Illinois originated approximately 13.2 million tons of hazardous materials (or 444,440 carloads).

The U.S. Department of Transportation (USDOT) classifies approximately 3,500 substances as hazardous⁽³⁾. Many of these substances, ranging from mild irritants to poisonous and radioactive materials, are routinely transported by rail through populous regions of the country and can have the potential to severely impact the environment and public health, if inadvertently released into the environment. Individual shipments can range in quantity from packages as small as a pint that may be carried inside a highway trailer or container on a flat car, to as much as 42,000 liquid gallons carried in a tank car. Appendix 1 provides a list of the top 50 HM commodities shipped in the United States.

Under federal law (49 CFR Part 212) individual states are authorized to participate in the Railroad Hazardous Material Inspection Program administered by the USDOT. The program is under the supervision of the Federal Railroad Administration (FRA). FRA certifies state inspectors so that they may have the same legal and administrative authority as federal inspectors in assuring the safe transport of hazardous material through inspection and investigation. The ICC currently has two full-time federally certified Hazardous Material inspector positions responsible for all of Illinois.

The ICC Hazardous Material (HM) inspectors, in cooperation with FRA inspectors, focus the majority of their efforts in the field conducting inspections at railroad yards and the industrial facilities of shippers and consignees of hazardous materials. The inspectors are also responsible for maintaining inspection data, responding to complaints from rail employees and the public, and for providing information concerning the transport of hazardous material within Illinois to other state, regional and local agencies.

In 2023, the ICC HM inspectors inspected 9,004 rail cars. Since 1981, when three ICC HM inspectors found violations in 12 percent of all inspections, compliance has improved to the point that inspectors found violations in only 0.8 percent of all inspections in 2023.

3. ILLINOIS COMMERCE COMMISSION HAZARDOUS MATERIALS SAFETY PROGRAM

The ICC's Hazardous Materials Safety Program is comprised of four main components:

- Inspection of railroad equipment and shipper/consignee facilities;
- The provision of technical assistance to shippers/consignees and rail carriers;
- The inspection and escort of nuclear materials; and
- Education and outreach activities to shippers/consignees, rail carriers, emergency responders and the general public.

3.1 Inspection of Rail Equipment and Shipper/Consignee Facilities

Four types of inspections are made by ICC HM inspectors: stationary railroad equipment such as tank cars at a yard or plant; railroad equipment in transit in the consist of a through or yard train known as a "roll-by" inspection; analysis of shipping papers and related documentation; and inspection of facilities that either ship or receive hazardous commodities.

3.1.1 Railroad Equipment

Hazardous material equipment inspections are performed on a stationary hazardous material rail car. Normally, this type of inspection occurs within a railroad yard or at the loading or unloading terminal within a shipper's facility. The inspection assures that the cars are affixed with the required placards identifying

the hazardous commodities being transported. Appendix 2 provides examples of the various placards and the information they provide, which is of critical importance to emergency response personnel. Appendix 3 provides response information from the USDOT Emergency Response Guide (ERG). The ICC HM inspectors verify that the rail car's markings, stenciling, tank and valve test dates, and mechanical safety features are in compliance with federal regulations.

3.1.2 Roll-By

A roll-by inspection involves monitoring an entire train while in motion. The location of loaded hazardous material cars, as well as those cars that have been unloaded, but that still contain residue of the commodity transported, are observed in relation to the locomotives, other hazardous material cars, and certain other types of cargo cars. Specific types of hazardous material cars are required to be spotted at particular locations within a train. Should the ICC HM inspectors determine that cars are not correctly located within the train's consist, they may require the rail carrier to stop the train and order the cars to be correctly placed.

Proper placement of hazardous material cars within a train's consist is of great importance to the train crew who could be severely injured if a derailment were to occur. For example, hazardous material cars containing liquefied petroleum gas (LPG), as well as other highly flammable commodities, may not be positioned next to the locomotive.

3.1.3 Documentation

Documentation inspections involve examining waybills and bills of lading to verify that the documents were completed correctly. Such inspections normally occur at the office of the shipper or consignee, or at the yard office of the rail carrier. The bill of lading is a document providing a description of the type and quantity of commodities being transported. Appendix 4 provides a sample Waybill; Appendix 5 provides a sample Bill of Lading and Appendix 6 provides a sample train consist.

The bill of lading must include a 24-hour emergency response telephone number clearly visible, in order to facilitate the appropriate response by emergency providers in case of an accident or derailment. The ICC HM inspectors examines the bill of lading to verify that the correct shipping name, hazard class, 4-digit commodity identification number, and weight are all present and correctly stated.

Emergency responders rely on the provision of this shipping information in the case of a spill or other type of incident concerning the shipment. Depending upon the particular substance being transported; incorrect or incomplete information, can result in injury or death to responders, rail employees and the public in the event of a derailment that could cause an inadvertent release.

3.2 Technical Assistance Program to Shippers, Consignees and Emergency Responders

ICC HM inspectors respond to railroad related collisions/incidents involving hazardous material. The Commission's role is to provide technical assistance to emergency response personnel. The assistance provided is that of determining if the documentation and information provided by the rail carrier or shipper to the emergency responder, is correct and adequate to permit the responder to safely handle the incident. The ICC HM inspectors will also advise the emergency response team as to proper mitigation and clean up procedures and requirements. The ICC HM inspectors assist in investigation of the incident in order to identify the cause, as well as any violations that may have contributed either directly, or indirectly in causing the incident. The ICC HM inspectors are on-call 24-hours a day to respond to any incident.

3.3 Low-Level Radioactive Material & Escort of High-Level Nuclear Material in Illinois

The movement of nuclear material in or through the State of Illinois by rail occurs infrequently. The current protocol for the shipment of nuclear material requires that the train be stopped and inspected prior to entering Illinois. When they do occur, nuclear material shipments will be escorted by the ICC HM inspectors, as well as the ICC track inspectors, who verify that the rail line to be traveled is in suitable condition.

Radioactive material is probably the most controversial and least understood class of hazardous material being transported by rail in Illinois today. Widespread concern on the part of the public due to safety and security issues, warrant the careful planning and inspection of all high-level radioactive material shipments traveling over the Illinois rail network. Since 1998 when annual reporting was first required, there have been no incidents involving the transport of high-level radioactive material. For low-level radioactive waste there was an incident in 2020 and one other in 2022 as documented in the associated annual reports. For any event involving radioactive material, the Illinois Emergency Management Agency's Nuclear and Radiation Safety Team is lead in monitoring the response and clean-up with ICC Inspectors supporting.

3.4 Education and Outreach Activities

According to 625 ILCS 5/18c-7404, ICC inspectors facilitate training for local law enforcement and emergency response personnel. The training is intended to acquaint participants with railroad car marking and placarding requirements and emergency response manuals and guide books. Fire departments are provided with instruction and training concerning tank car structure and damage assessment. The ICC HM inspectors also educate railroad company personnel and shippers on the interpretation and application of federal and state hazardous materials regulations.

4. ILLINOIS COMMERCE COMMISSION HAZARDOUS MATERIAL SAFETY INSPECTION PROGRAM ACTIVITY 2014 TO 2023

Summary of **STATE** Inspections Conducted by ICC HM Inspectors: 2014 through 2023. (Source: ICC)

Year	ICC Staff Inspections	Units Inspected	Defects Identified	Defects per Unit	Staff (Full - Time)
2014	142	10,186	199	0.020	1.0
2015	127	8,065	195	0.024	1.0
2016	268	16,294	361	0.022	2.0
2017	295	18,223	331	0.018	2.0
2018	303	17,209	270	0.016	2.0
2019	215	8,355	90	0.011	1.5
2020	244	8,745	91	0.010	2.0
2021	304	11,884	96	0.008	2.0
2022	272	8,549	110	0.013	2.0
2023	281	9,004	73	0.008	2.0
Total	2,451	116,514	1,816	0.016	

5. DATA DESCRIBING ACCIDENTS AND/OR INCIDENTS IN ILLINOIS IN 2023

Specific data required by 625 ILCS 5/18c-1204 is shown in tabular form on the following pages. The applicable section states: *“The staff shall prepare and distribute to the General Assembly, in April of each year, a report on railway accidents in Illinois which involve hazardous material. The report shall include the location, substance involved, quantity involved, and the suspected reason for each accident. The report shall also reveal the rail line and point of origin of the hazardous material involved in each accident.”*

The remainder of this report provides four tables and several Appendices.

Ten Year Summary Table

Table A shows railroad derailments where hazardous material was being transported in the derailed railroad equipment and a hazardous material release occurred.

Table B shows railroad derailments where hazardous material was being transported in the train and the railroad equipment derailed; however, there was no release of any hazardous material.

Table C shows hazardous material releases from railroad equipment where no derailment was involved.

Table: Ten Year Summary of Hazardous Material Related Incidents: 2014 – 2023.

Type of Incident	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
A. Hazardous Materials Physically Involved in Derailment and Hazardous Materials Release Occurred	2	4	4	2	1	6	4	4	5	2
B. Hazardous Materials Physically Involved in Derailment Where No Hazardous Materials Release Occurred	36	27	14	14	8	6	7	31	29	30
C. Hazardous Materials Released From Rail Cars Where No Derailment Occurred	84	69	65	69	55	33	46	29	49	31
Total	122	100	83	85	64	45	57	64	83	63

Information was obtained for the table above and Tables A, B and C from reports filed by the railroads with the Illinois Emergency Management Agency (IEMA) and Commission. These reports were then cross referenced with monthly data reports available from the Pipeline and Hazardous Material Safety Administration (PHMSA) identifying where leaks occurred. Federal Railroad Administration (FRA) monthly reports were also reviewed. Appendix 7 provides further discussion on the reporting requirements, along with IEMA, FRA, and PHMSA data sources.

Three categories of information contained in this report not specifically required by law have been added to make the report more useful. The first category is “Amount Released.” This distinction is important in order to differentiate the “Amount Involved” required by the General Assembly, from the more significant quantity of “Amount Released.” The “Amount Involved” is simply the quantity of commodity that was being transported; the “Amount Released” into the environment by accident is far more critical.

The second category added is the “Type of Equipment” involved. The final additional category is the date of the incident. In the tables, the railroad companies are identified by their FRA reporting marks; for example NS is the Norfolk Southern Railway. A listing of the complete names is provided in Table D.

Table A. Hazardous Materials Physically Involved in a Derailment Where Hazardous Materials Release Occurred.

City	County	Railroad Involved	Substance Involved	Point of Origin	Suspected Reason for Incident	Amount Involved	Amount Released	Type of Equipment	Date
Bedford Park	Cook	BRC	Asphalt	Chicago, IL	Unknown derailment	23,460 gals.	2,000 gals.	Tank car	2/24/2023
Northlake	Cook	UP	Diesel fuel	Northlake, IL	Unknown derailment	8,000 gals.	2,000 gals.	Locomotives	3/23/2023

Table B. Hazardous Materials Physically Involved in a Derailment
No Hazardous Materials Release Occurred.

City	County	Railroad Involved	Substance Involved	Point of Origin	Suspected Reason for Incident	Amount Involved	Amount Released	Type of Equipment	Date
Northlake	Cook	UP	Diesel Fuel	Northlake, IL	Unknown derailment	4,000 gals.	None	Locomotive	1/14/2023
Northlake	Cook	UP	Diesel Fuel	Northlake, IL	Failure to negotiate switch	4,000 gals.	None	Locomotive	1/23/2023
Troy Grove	LaSalle	UP	Diesel Fuel	Troy Grove, IL	Broken switch point	4,000 gals.	None	Locomotive	2/2/2023
Northlake	Cook	UP	Diesel Fuel	Northlake, IL	Unknown derailment	4,000 gals.	None	Locomotive	2/18/2023
Wood River	Madison	KCS	Sulfuric Acid	Unknown	Unknown derailment	Unknown	None	Tank car	4/17/2023
Chicago	Cook	Amtrak	Diesel Fuel	Chicago, IL	Unknown derailment	Unknown	None	Locomotive	4/28/2023
Dolton	Cook	UP	Diesel Fuel	Dolton, IL	Switch derailment	4,000 gals.	None	Locomotive	5/2/2023
Romeoville	Will	BNSF	Di-n-butylamine	Unknown	Unknown derailment	Unknown	None	5 Tank cars	5/13/2023
Joliet	Will	UP	Diesel Fuel	Joliet, IL	Run through derail-switch	4,000 gals.	None	Locomotive	5/30/2023
Melrose Park	Cook	UP	Diesel Fuel	Melrose Park, IL	Switch error	4,000 gals.	None	Locomotive	6/1/2023
East St. Louis	St. Clair	UP	Methanol	Unknown	Unknown derailment	Unknown	None	4 Tanks cars	7/1/2023
Joliet	Will	UP	Diesel Fuel	Joliet, IL	Locomotive ran over derail device	4,000 gals.	None	Locomotive	7/11/2023
East St. Louis	St. Clair	UP	Petroleum Distillates	Unknown	Unknown derailment	Unknown	None	Tank car	7/19/2023
Rock Island	Cook	Metra	Diesel Fuel	Rock Island, IL	Unknown derailment	4,000 gals.	None	Locomotive	8/28/2023
Salem	Marion	UP	Diesel Fuel	Salem, IL	Unknown derailment	4,000 gals.	None	Locomotive	8/31/2023
Cicero	Cook	BNSF	Diesel Fuel	Cicero, IL	Unknown derailment	4,000 gals.	None	2 Locomotives	9/5/2023
Joliet	Will	UP	Diesel Fuel	Joliet, IL	Unknown derailment	4,000 gals.	None	2 Locomotives	9/20/2023
East St. Louis	St. Clair	UP	Diesel Fuel	East St. Louis, IL	Locomotive passing through switch	4,000 gals.	None	Locomotive	9/23/2023
Chicago Heights	Cook	UP	Diesel Fuel	Chicago Heights, IL	Locomotive ran over derail device	4,000 gals.	None	Locomotive	10/1/2023
Dolton	Cook	UP	Diesel Fuel	Dolton, IL	Unknown derailment	4,000 gals.	None	Locomotive	10/5/2023
Blue Island	Cook	IAIS	Ethanol	Unknown	Unknown derailment	Unknown	None	5 Tank cars	10/15/2023
Rochelle	Ogle	UP	Diesel Fuel	Rochelle, IL	Cut of cars fouling a mainline	4,000 gals.	None	Locomotive	10/16/2023
Chicago	Cook	Metra	Diesel Fuel	Chicago, IL	Locomotive ran over derail device	4,000 gals.	None	Locomotive	10/17/2023
Melrose Park	Cook	UP	Diesel Fuel	Melrose Park, IL	Derailment due to shoving operations	4,000 gals.	None	Locomotive	10/22/2023
East St. Louis	St. Clair	UP	Diesel Fuel	East St. Louis, IL	Shoving violation	4,000 gals.	None	Locomotive	11/6/2023
Melrose Park	Cook	UP	Diesel Fuel	Melrose Park, IL	Broken rail	4,000 gals.	None	2 Locomotives	12/9/2023
Northlake	Cook	UP	Diesel Fuel	Northlake, IL	Locomotive ran through switch	4,000 gals.	None	Locomotive	12/10/2023
East St. Louis	St. Clair	UP	Diesel Fuel	East St. Louis, IL	Sideswipe	4,000 gals.	None	Locomotive	12/19/2023
Melrose Park	Cook	UP	Diesel Fuel	Melrose Park, IL	Locomotive ran over derail device	4,000 gals.	None	Locomotive	12/21/2023
Alorton	St. Clair	UP	Diesel Fuel	Alorton, IL	Unknown derailment	4,000 gals.	None	Locomotive	12/23/2023

Table C. Hazardous Materials Released From Rail Cars Where No Derailment Occurred.

City	County	Railroad Involved	Substance Involved	Point of Origin	Suspected Reason for Incident	Amount Involved	Amount Released	Type of Equipment	Date
Kankakee	Kankakee	NS	Diesel Fuel	Kankakee, IL	Fuel line failure	4,000 gals.	50 gals.	Locomotive	1/15/2023
Decatur	Macon	NS	Diesel Fuel	Dupo, IL	Punctured fuel tank	Unknown	75 gals.	Flat bed truck on NS property	1/23/2023
Elwood	Will	BNSF	Diesel Fuel	Elwood, IL	Punctured fuel tank	Unknown	30 gals.	Truck on BNSF property	1/27/2023
East St. Louis	St. Clair	ALS	Diesel Fuel	East St. Louis, IL	Truck backed into locomotive	Unknown	1 gal.	Truck fuel tank	2/5/2023
Dupo	St. Clair	UP	Diesel Fuel	Dupo, IL	Overfill of locomotive	4,000 gals.	50 gals.	Locomotive	2/17/2023
Chicago	Cook	UP	Diesel Fuel	Chicago, IL	material on UP property	Unknown	Under 50 gals.	Unknown	2/17/2023
Chicago	Cook	BNSF	Diesel Fuel	Chicago, IL	Overfill of locomotive	Unknown	80 gals.	Locomotive	2/24/2023
Chicago	Cook	CSX	Diesel Fuel	Chicago, IL	Unknown	120 gals.	50 gals.	Refrigerated ISO container	3/15/2023
Beardstown	Cass	BNSF	Diesel Fuel	Beardstown, IL	Unknown mechanical failure	4,000 gals.	Minimal	Locomotive	3/24/2023
Dupo	St. Clair	UP	Diesel Fuel	Dupo, IL	Overfill of locomotive	4,000 gals.	25 gals.	Locomotive	3/28/2023
Galesburg	Knox	BNSF	Diesel Fuel	Galesburg, IL	Unknown	Unknown	20 gals.	Locomotive retention tank	4/6/2023
East St. Louis	St. Clair	UP	Ethyl Acetate	Seabrook, TX	Liquid valve flange bolts loose	192,122 lbs.	0.5 gals.	Tank car	4/19/2023
Chicago	Cook	NS	Diesel Fuel	Unknown	Compressor failure	Unknown	10 gals.	Refrigerated trailer	4/24/2023
Des Plaines	Cook	UP	Diesel Fuel	Unknown	Truck stuck on tracks	Unknown	250 gals.	Truck on UP property	5/9/2023
Bedford Park	Cook	CSX	Polymeric beads	Unknown	Unknown	Unknown	25 lbs.	ISO Intermodal container	5/27/2023
Galesburg	Knox	BNSF	Monomer, Stabilized	Texas City, TX	Liquid valve flange bolts loose	27,000 gals.	3 gals.	Tank car	5/30/2023
Joliet	Will	UP	Amines, Liquid	Pasadena, TX	Chaffing against adjacent drums	53 gals.	.25 gal.	Steel drum	6/28/2023
Bedford Park	Cook	CSX	Diesel Fuel	Bedford Park, IL	Unknown	4,000 gals.	50 gals.	Locomotive	6/29/2023
Chicago	Cook	NS	Diesel Fuel	Chicago, IL	Side-swipe with rail cars	4,000 gals.	300 gals.	Locomotive	7/5/2023
East St. Louis	St. Clair	CSX	Lithium Ion Batteries	Norfolk, VA	Inadequate blocking and bracing of lading	Unknown	20 lbs.	Intermodal container	7/14/2023
East St. Louis	St. Clair	UP	Diesel Fuel	East St. Louis, IL	Overfill of locomotive	4,000 gals.	400 gals.	Locomotive	7/14/2023
Chicago	Cook	BNSF	Diesel Fuel	Chicago, IL	Unknown	4,000 gals.	30 gals.	Locomotive	7/24/2023
Chicago	Cook	NS	Diesel Fuel	Unknown	Mechanical issue	Unknown	20 gals.	Intermodal container	8/9/2023
Decatur	Macon	NS	Diesel Fuel	Decatur, IL	Equipment failure	Unknown	40 gals.	Fuel pump in yard	9/6/2023
Bluffs	Scott	NS	Diesel Fuel	Bluffs, IL	Equipment failure	4,000 gals.	10 gals.	Locomotive	9/11/2023
Ottawa	LaSalle	CSX	Propane	Little Rock, AR	open 1/8 of a turn with secondary	10 gals.	1 gal.	Tank car	9/19/2023
Chicago	Cook	CN	Amines, Liquid	St. Gabriel, LA	Manway gasket deterioration	28,427 gals.	1 gal.	Tank car	9/28/2023
Chicago	Cook	NS	Diesel Fuel	Chicago, IL	Fueling of locomotive and hose ruptured	4,000 gals.	50 gals.	Locomotive	10/4/2023
Chicago	Cook	BNSF	Diesel Fuel	Chicago, IL	Equipment failure	Unknown	30 gals.	Refrigerated container	10/13/2023
Franklin Park	DuPage	CPKC	Diesel Fuel	Franklin Park, IL	Unknown	Unknown	5 gals.	Above ground storage tank	12/11/2023
Chicago	Cook	NS	Diesel Fuel	Chicago, IL	Fuel truck caught fire	Unknown	200 gals.	Fuel truck in rail yard	12/8/2023

Table D. Railroad Companies Identified In The Preceding Tables.

Railroad Involved		2023 Reports
ALS	Alton & Southern Railroad	1
ATK	Amtrak	1
BNSF	BNSF Railway	9
BRC	Belt Railway of Chicago	1
CN	Canadian National Railway	1
CPKC	CPKC Railway	2
CSX	CSX Transportation	5
IAIS	Iowa Interstate Railroad	1
Metra	Northeast Illinois Commuter Rail Corp.	2
NS	Norfolk Southern Railway	9
UP	Union Pacific Railroad	31
Total		63

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- Appendix 1: Top 50 Hazardous Commodities
- Appendix 2: Recognizing and Identifying Hazardous Materials
- Appendix 3: Emergency Response Guide Information
- Appendix 4: Sample Waybill
- Appendix 5: Sample Bill of Lading
- Appendix 6: Sample Train Consist
- Appendix 7: FRA and PHMSA Data Sources

References.

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3. Pipeline and Hazardous Materials Safety Administration. *2020 Emergency Response Guidebook*. U.S. Department of Transportation, Washington, D.C., Revised February 2020. <https://www.phmsa.dot.gov/hazmat/erg/erg2020-english>

Appendix 1: Top 50 HM Commodities in the United States

Rank	Commodity Name	Class	Rank	Commodity Name	Class
1	ALCOHOLS, N.O.S.	3	26	FLAMMABLE LIQUIDS, N.O.S.	3
2	PETROLEUM CRUDE OIL	3	27	PHENOL, MOLTEN	6.1
3	PETROLEUM GASES, LIQUEFIED	2.1	28	ETHANOL	3
4	SODIUM HYDROXIDE SOLUTION	8	29	ETHYLENE OXIDE	2.3
5	ELEVATED TEMPERATURE LIQUID, N.O.S.	9	30	BUTADIENES, STABILIZED	2.1
6	SULFURIC ACID	8	31	PROPYLENE	2.1
7	DIESEL FUEL	3	32	BUTANE	2.1
8	PROPANE	2.1	33	PROPYLENE	2.1
9	HYDROCHLORIC ACID	8	34	DIESEL FUEL	CL
10	SULFUR, MOLTEN	9	35	XYLENES	3
11	CHLORINE	2.3	36	POTASSIUM HYDROXIDE, SOLUTION	8
12	SULFUR, MOLTEN	4.1	37	BENZENE	3
13	PHOSPHORIC ACID SOLUTION	8	38	PETROLEUM CRUDE OIL	CL
14	GASOLINE	3	39	BUTANE	2.1
15	VINYL CHLORIDE, STABILIZED	2.1	40	ELEVATED TEMPERATURE LIQUID, N.O.S.	9
16	AMMONIA, ANHYDROUS	2.3	41	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S.	9
17	FLAMMABLE LIQUIDS, N.O.S.	3	42	HYDROGEN PEROXIDE, STABILIZED	5.1
18	METHANOL	3	43	AMMONIUM NITRATE, LIQUID	5.1
19	AMMONIA, ANHYDROUS	2.2	44	FUEL OIL	CL
20	FUEL, AVIATION, TURBINE ENGINE	3	45	FUEL OIL	CL
21	GASOLINE	3	46	SULFURIC ACID, SPENT	8
22	CARBON DIOXIDE, REFRIGERATED LIQUID	2.2	47	NON-ODORIZED LIQUEFIED PETROLEUM GAS	2.1
23	STYRENE MONOMER, STABILIZED	3	48	ELEVATED TEMPERATURE LIQUID, N.O.S.	9
24	GASOLINE	3	49	DIESEL FUEL	3
25	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.	9	50	VINYL ACETATE, STABILIZED	3

Source:

Association of American Railroads; Bureau of Explosives
Annual Report of Hazardous Materials Transported by Rail: 2012
Published August 2013; Report BOE 12-1-R

Code	Hazard Class
2.1	Flammable Gases
2.2	Non-Flammable Gases
2.3	Poison Gases
3	Flammable Liquids (CL) Combustible Liquids
4.1	Flammable Solids
5.1	Oxidizing Materials
6.1	Poisonous Materials
8	Corrosive Materials
9	Misc. Hazardous Materials

Appendix 2: Recognizing and Identifying Hazardous Material

Recognizing and Identifying Hazardous materials – Placards and Label Notes. Placards are diamond shaped – 10 ¾ inches square. The placard provides recognition information in a number of ways:

1. The colored background;
2. The symbol at the top;
3. The United Nation's hazard class number at the bottom; and
4. The hazard class wording or the identification number in the center.
 - a. Color:
 - i. Orange indicates explosive
 - ii. Red indicates flammable
 - iii. Green indicates nonflammable
 - iv. Yellow indicates oxidizing material
 - v. White indicates poisonous material
 - vi. White with vertical red stripes indicates flammable solid
 - vii. Yellow over white indicates radioactive material
 - viii. White over black indicates corrosive material

- b. Symbols:
 - i. The bursting ball symbol indicates explosive
 - ii. The flame symbol indicates flammable
 - iii. The slashed W indicates dangerous when wet
 - iv. The skull and crossbones indicates poisonous material
 - v. The circle with the flame indicates oxidizing material
 - vi. The cylinder indicates nonflammable gas
 - vii. The propeller indicates radioactive
 - viii. The test tube/hand/metal symbol indicates corrosive
 - ix. The word Empty indicates product has been removed, but a residue may remain

- c. United Nations Hazard Class Numbers:
 - i. Explosives
 - ii. Gases
 - iii. Flammable Liquids
 - iv. Flammable Solids
 - v. Oxidizing Substances
 - vi. Poisonous and Infectious Substances
 - vii. Radioactive Substances
 - viii. Corrosive Substances
 - ix. Miscellaneous Dangerous Substances

- d. Nine Classes of Hazardous Material – Identification Number: Examples below.

Nine Classes of Hazardous Materials

Class 1: Explosives

Divisions: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6



Class 6: Poison (Toxic) and Poison Inhalation Hazard

Class 2: Gases

Divisions: 2.1, 2.2, 2.3



Class 7: Radioactive

Class 3: Flammable Liquid and Combustible Liquid



Class 8: Corrosive

Class 4: Flammable Solid, Spontaneously Combustible, and Dangerous When Wet

Divisions 4.1, 4.2, 4.3



Class 9: Miscellaneous

Class 5: Oxidizer and Organic Peroxide

Divisions 5.1, 5.2



Dangerous

Revised 06/06

Federal Motor Carrier
Safety Administration


U.S. Department of Transportation
www.fmcsa.dot.gov

Class 1 - Explosives	
Division 1.1	Explosives which have a mass explosion hazard
Division 1.2	Explosives which have a projection hazard but not a mass explosion hazard
Division 1.3	Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
Division 1.4	Explosives which present no significant hazard
Division 1.5	Very insensitive explosives with a mass explosion hazard
Division 1.6	Extremely insensitive articles which do not have a mass explosion hazard
Class 2 - Gases	
Division 2.1	Flammable gases
Division 2.2	Non-flammable, non-toxic* gases
Division 2.3	Toxic* gases
Class 3 - Flammable liquids (and Combustible liquids [U.S.])	
Class 4 - Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water, emit flammable gases	
Division 4.1	Flammable solids, self-reactive substances and solid desensitized explosives
Division 4.2	Substances liable to spontaneous combustion
Division 4.3	Substances which in contact with water emit flammable gases
Class 5 - Oxidizing substances and Organic peroxides	
Division 5.1	Oxidizing substances
Division 5.2	Organic peroxides
Class 6 - Toxic* substances and Infectious substances	
Division 6.1	Toxic* substances
Division 6.2	Infectious substances
Class 7 - Radioactive materials	
Class 8 - Corrosive substances	
Class 9 - Miscellaneous hazardous materials/dangerous goods and articles	

SUGGESTED OPERATIONS SHOULD ONLY BE PERFORMED BY ADEQUATELY TRAINED AND EQUIPPED PERSONNEL

3

PUBLIC SAFETY

- This section is divided into three subsections:
 - › **General Information:** describes initial precautionary measures to be taken by those first on the scene.
 - › **PROTECTIVE CLOTHING:** provides general guidance on personal protective equipment requirements including respiratory protection. The protective clothing information is general and correct selection is situation dependent, after considering the physical and chemical properties of the material, weather conditions, spill versus fire, topography, etc.
 - › **EVACUATION:** suggests protective distances for immediate precautionary measures defined for small and large spills, including suggested guidance for conditions where fire is present or likely (potential fragmentation hazard).
 - The term “isolate” indicates a zone of no entry that applies to the public and first responders who are not equipped, trained, and prepared to mitigate the incident.
 - The term “evacuate” indicates people should be removed from inside this zone, if it can be done safely. If removal is too risky, sheltering-in-place can also be considered in this zone. Evacuation aims to protect as many people as possible, and applies mainly to the public.
- Materials **highlighted in green** in the yellow-bordered and blue-bordered pages direct the reader to consult Table 1, detailing specific response distances for toxic inhalation hazard materials, water-reactive materials and chemical warfare agents (green-bordered pages).
 -  If a Canadian flag appears in this section, and the incident is located in Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product.

4

EMERGENCY RESPONSE

- This section is divided into three subsections:
 - › **FIRE:** provides extinguishing procedures for **Small Fire, Large Fire, and/or Fire Involving Tanks or Car/Trailer Loads**
 - › **SPILL OR LEAK:** includes general recommendations, and may describe the response procedure for **Small Spill and Large Spill**
 - › **FIRST AID:** provides general guidance prior to seeking expert medical care.

GUIDE EXPLOSIVES* - DIVISION 1.1, 1.2, 1.3 OR 1.5 112

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **MAY EXPLODE AND THROW FRAGMENTS 1600 METERS (1 MILE) OR MORE IF FIRE REACHES CARGO.**
- For information on "Compatibility Group" letters, refer to Glossary section.

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

- **CALL 911. Then call emergency response telephone number on shipping paper.** If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides thermal protection **but only limited chemical protection.**

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions.

Large Spill

- **Consider initial evacuation for 800 meters (1/2 mile) in all directions.**

Fire

- If rail car or trailer is involved in a fire, **ISOLATE** for 1600 meters (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 meters (1 mile) in all directions.



In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the ERAP Program Section (page 390).

*** FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS, REFER TO THE GLOSSARY SECTION.**

EMERGENCY RESPONSE

FIRE

CARGO Fire

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

TIRE or VEHICLE Fire

- **Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned master stream devices or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- **DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 METERS (330 FEET) OF ELECTRIC DETONATORS.**
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

* FOR INFORMATION ON "COMPATIBILITY GROUP" LETTERS,
REFER TO THE GLOSSARY SECTION.

Appendix 5: Sample Bill of Lading

Attachment 5
Page 1 of 2

***** STRAIGHT BILL OF LADING — SHORT FORM — Original — Not Negotiable
* * * * * (SAMPLE) Company

RECEIVED, subject to the stipulations, and to fully these terms in effect on the date of the receipt by the carrier of the property described in the Ship and Bill of Lading.

CUST. NUMBER 5	S.D. NUMBER 7	CAR OR TRAILER INITIAL AND NUMBER 15 RTMX 21065	DATE SHIPPED 8	T.C. DO NO. 22	ROUTE CODE 5	S-P. PLT. 1
NET WEIGHT 8	GROSS WEIGHT 8	NO. OF UNIT 4	UNIT CODE 3	PROD. CODE 3	PROD. FLT. 2	
CONSIGNEE John Doe, Inc.			DESTINATION Chicago, IL		STATE OF Cook	
FROM John Doe, Inc. Permanent Postoffice Address of Shipper St. Louis, MO			AT			
ROUTE ABC Railroad			DELIVERING CARRIER ABC	AGENT ABC PER		
NO. PKGS.	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS	WEIGHT (Sub. to Car.)	RATE			
1 T/C	Residue: Last Contained Acetone 3 UN 1090 II RQ (Acetone) EMERGENCY CONTACT 1-800-424-9300 HAZ MAT STCC = 4908105	Residue				
This shipment is correctly described: CORRECT WEIGHT IS _____ LBS. subject to verification by the Eastern, Southern or Western Weighing and Inspection Bureau, whichever applicable, 18943 John Doe, Inc. SHIPPER		THE TOTAL WEIGHT OF THE PALLETS USED ON THE SHIPMENT IS SHOWN ABOVE.				
PURCHASE ORDER NO.		SEAL NUMBERS	THIS CAR LEASED TO: John Doe, Inc.			
IF CHARGES ARE TO BE PREPAID, WRITE OR STAMP HERE "TO BE PREPAID" Prepaid		SHIPPER John Doe, Inc. PER				
SIGNATURE OF COMBINER						

PLANT COPY

DUST. NUMBER	S.D. NUMBER	CAR OR TRAILER INITIAL AND NUMBER	DATE SHIPPED	MC DOCKET	ROUTE CODE	SHIP. P.L.	
		GAPX 6075					
NET WEIGHT		GROSS WEIGHT	NO. OF UNIT	UNIT CODE	PROD. CODE	PROD. P.L.	
CONSIGNEE John Doe, Inc.				DESTINATION Chicago, IL		STATE OF Cook	
FROM Permanent Postoffice Address of Shipper John Doe, Inc. St. Louis, MO				AJ			
ROUTE ABC Railroad				DELIVERING CARRIER ABC	AGENT ABC		
NO. PKGS.	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS					WEIGHT (Sub. to Cont.)	RATE
1 T/C	Phenol, Molten 6.1 UN 2312 II RQ (Phenol) EMERGENCY CONTACT 1-800-424-9300 HAZ MAT STCC = 4921220					20,000 Gals.	
This shipment is correctly described: CORRECT WEIGHT IS LBS. subject to verification by the Eastern, Southern or Western Weighing and Inspection Bureau, whichever applicable, 18543 John Doe, Inc. SHIPPER			THE TOTAL WEIGHT OF THE PALLETS USED ON THE SHIPMENT IS SHOWN ABOVE.		TRANSPORTATION FREE PER ABOVE		
PURCHASE ORDER NO.		SEAL NUMBERS		THIS CAR LEASED TO: John Doe, Inc.		LIGHT-TARE WEIGHT IS	
IF CHARGES ARE TO BE PREPAID, WRITE OR STAMP HERE "TO BE PREPAID" Prepaid			Subject to section 7 of conditions of a published bill of lading, if this shipment is to be delivered to the consignee without recourse to the shipper, the consignee shall sign the following statement. The carrier shall not make delivery of this shipment without payment of freight and of other lawful charges.		SHIPPER John Doe, Inc. PER		
SIGNATURE OF CONSIGNEE							

PLANT COPY

Appendix 6: Sample Train Consist

Train/Job	Conductor					
Name	Category – Secondary Manifest Type-Thru					
Engine – Ident	Horsepower	Length	Weight Status			
6142	3000	69	200E			
1001	3000	74	200E			
1005	3000	74	200E			
Total	9000 HP	217 Feet	600 Tons			
Train/Job	SEQ Equipment ID	KND	GWT	COMDTY	CITY/STATE	CONSIGNEE
BLOCK						
1	BJOX 278	LC4T	131	Corn	Memphis, TN	
2	BJOX 109	LC4T	131	Corn	Memphis, TN	
3	BJOX 110	LC4T	131	Corn	Memphis, TN	
4	CRDX 7227	LC4T	131	Corn	Memphis, TN	
5	RTMX 21065	ET29	35		Chicago, IL	
R50 SPEED RESTRICTED CAR						
*****				1/TC		
* Hazardous Materials *				Residue: Last Contained		
*****				UN 1090		
				Acetone		
				3//PG II		
				RQ (Acetone)		
				Emergency Contact: Chemtrec 1-800-424-9300		
				STCC 4908105		
6	GAPX 6075	LT19	38	POIS B	Chicago, IL.	
R50 SPEED RESTRICTED CAR						
*****				1/TC		
* Hazardous Materials *				UN 2312		
*****				Phenol, Molten		
				6.1//PG II		
				RQ (Phenol)		
				Emergency Contact: Chemtrec 1-800-424-9300		
				STCC 4921220		

Appendix 7: FRA and PHMSA Data Sources

Railroads must make an immediate telephonic report for certain incidents to the National Response Center ([NRC](#)), which is staffed 24/7 by the U.S. Coast Guard. The NRC notifies the Federal Railroad Administration (FRA), the Pipeline and Hazardous Materials Safety Administration (PHMSA), and the National Transportation Safety Board (NTSB), and other federal agencies (see regulation links below). By application, the NRC also provides “*real-time incident notifications for state agencies that have a regulatory/enforcement or response authority for environmental, railroad, or maritime security incidents*”. This includes IEMA and ICC.

Per [92 IL Adm Code 1515.10\(c\)](#), “*telephonic reports submitted to the FRA shall also be submitted to Illinois Emergency Management Agency (IEMA) by calling (217) 782-7860 day or night.*” IEMA in turn contacts the ICC Rail Safety Section via email, or phone outside of business hours, dependent upon the incident.

FRA

[49 CFR 225.9 Telephonic reports of certain accidents/incidents and other events.](#)

[49 CFR 225.11 Reporting of accidents/incidents.](#)

[Rail Equipment Accident/Incident Data \(Form 54\) | Department of Transportation - Data Portal](#)

PHMSA

[49 CFR 171.15 Immediate notice of certain hazardous materials incidents.](#)

[49 CFR 171.16 Detailed hazardous materials incident reports.](#)

[Incident Statistics | PHMSA \(dot.gov\)](#)

Railroads are required to submit detailed written reports (generally within 30 to 60 days) for the incidents requiring immediate calls to NRC, as well as incidents meeting other regulatory thresholds. The reporting requirements for each agency, and the publicly available databases vary. Incidents can result in a range of releases from a gallon of diesel fuel up to an entire tank car. The PHMSA reported incidents are included within Tables A and C of this report. The FRA table below identifies where incidents included damage to hazmat cars may not have been reported to the NRC or IEMA. Overall, there are typically more reports submitted to IEMA - most involving diesel fuel and locomotives.

IEMA Dispatch	(217) 782-7860
NRC Hotline	(800) 424-8802 or (800) 424-0201

Through one of the same telephone numbers (800-424-0201), the National Response Center (NRC) also receives notifications of rail accidents for the National Transportation Safety Board ([49 CFR part 840](#)) and the Research and Special Programs Administration of the U.S. Department of Transportation (Hazardous Materials Regulations, [49 CFR 171.15](#)). FRA Locomotive Safety Standards require certain locomotive accidents to be reported by telephone to the NRC at the same toll-free number (800-424-0201). [49 CFR 229.17](#).

FRA TABLE: 2023 Rail Incidents Involving Hazardous Materials – Hazmat Cars Damaged

Reporting Railroad Code	Accident Number	PDF Link	County Name	Accident Type	Hazmat Cars	Hazmat Cars Released	Persons Evacuated	Total Damage Cost	Primary Accident Cause	Date
NS	152099	https://safety	MACON	Derailment	14	4	0	\$22,808	Wide gage (due to defective or missing crossties)	1/26/2023
CSX	209969	https://safety	COOK	Derailment	17	3	0	\$259,696	Switch damaged or out of adjustment	2/21/2023
BRC	14609	https://safety	COOK	Other impacts	60	4	1	\$458,807	Throttle (power), too rapid adjustment (H015)	2/24/2023
BRC	14631	https://safety	COOK	Side collision	5	1	0	\$53,012	Retarder worn, broken, or malfunctioning	4/1/2023
BNSF	CH0523111	https://safety	WILL	Other	1	1	0	\$22,934	Kicking or dropping cars, inadequate precautions	5/15/2023
NS	153181	https://safety	COOK	Side collision	1	1	0	\$14,300	Switch improperly lined	5/26/2023
IC	1133876	https://safety	CHAMPAIGN	Side collision	2	2	0	\$15,000	Switch improperly lined	6/7/2023
TRRA	23037	https://safety	MADISON	Derailment	1	1	0	\$54,458	Joint bar broken (compromise)	7/21/2023
IHB	20232855	https://safety	COOK	Derailment	26	1	0	\$98,956	Failure to apply sufficient number of hand brakes on car(s) (railroad employee)	7/28/2023
IHB	20232865	https://safety	COOK	Derailment	1	1	0	\$34,500	Switch improperly lined	9/25/2023
UP	1023MA016	https://safety	ST CLAIR	Derailment	43	1	0	\$12,421	Track alignment irregular (other than buckled/sunkink)	10/9/2023
IAIS	202359	https://safety	COOK	Derailment	96	5	0	\$417,817	Broken Rail - Head and web separation (outside joint bar limits) [Desc.Changed-Refer to Current/Pre	10/15/2023
BNSF	CH1023110	https://safety	KNOX	Derailment	1	1	0	\$99,975	Cause under active investigation by reporting railroad (Amended report will be forwarded when repor	10/23/2023

Source – FRA Data: [Rail Equipment Accident/Incident Data \(Form 54\) | Department of Transportation - Data Portal & https://data.transportation.gov/browse?category=Railroads](https://data.transportation.gov/browse?category=Railroads)