



U.S. Department of Transportation

Transportation Safety Institute  
(TSI)

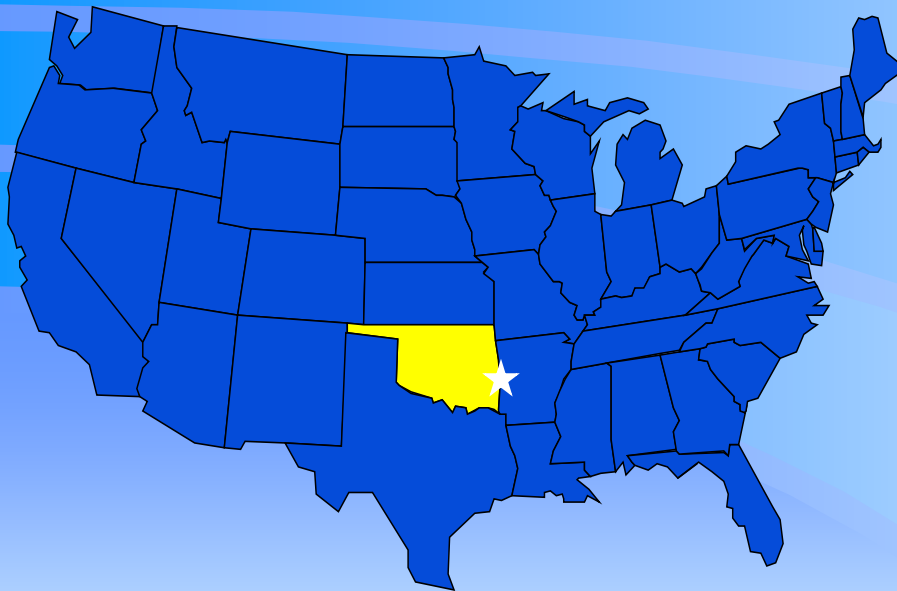
Multi-Modal Division  
Hazmat and Motor Carrier

# Sponsor

TSI is an element of the DOT  
OST-R, Office of the Secretary  
of Transportation, Research

# Location

The Transportation Safety Institute is located in Oklahoma City, OK, at the Mike Monroney Aeronautical Center next to Will Rogers World Airport.



# Types of Training

- More than 16 different courses on hazardous materials transportation and Motor Carrier
- All modes of transportation
- Both basic and specialized courses



# Core Courses

Basic “core” courses are offered several times each year:

- Transportation of Hazardous Materials  
(Basic and Recurrent)

Air Transportation of Hazardous Materials  
(ICAO/IATA)

- International Maritime Dangerous Goods Code  
(IMDG Code)

“Core” courses are conducted at TSI in OKC, OK but may be held at alternate location by request of client.

# Custom Training for Agencies

Besides specific subject matter, specialized training for specific audiences includes:



- FBI
- State Police and Highway Patrols
- State Inspectors
- DOD
- FAA / FMCSA / FRA / USCG
- TSA



# COMMON HAZMAT VIOLATIONS

## Training – 171.1 and 172.700

- Lack of training
- Improper training
- Failure to maintain training recurrency

U.S. Department of Transportation  
 Pipeline and Hazardous Materials Safety Administration  
 Office of Hazardous Material Safety  
 2016 FAA-AIR Hazmat Summary by Hazardous Materials Class

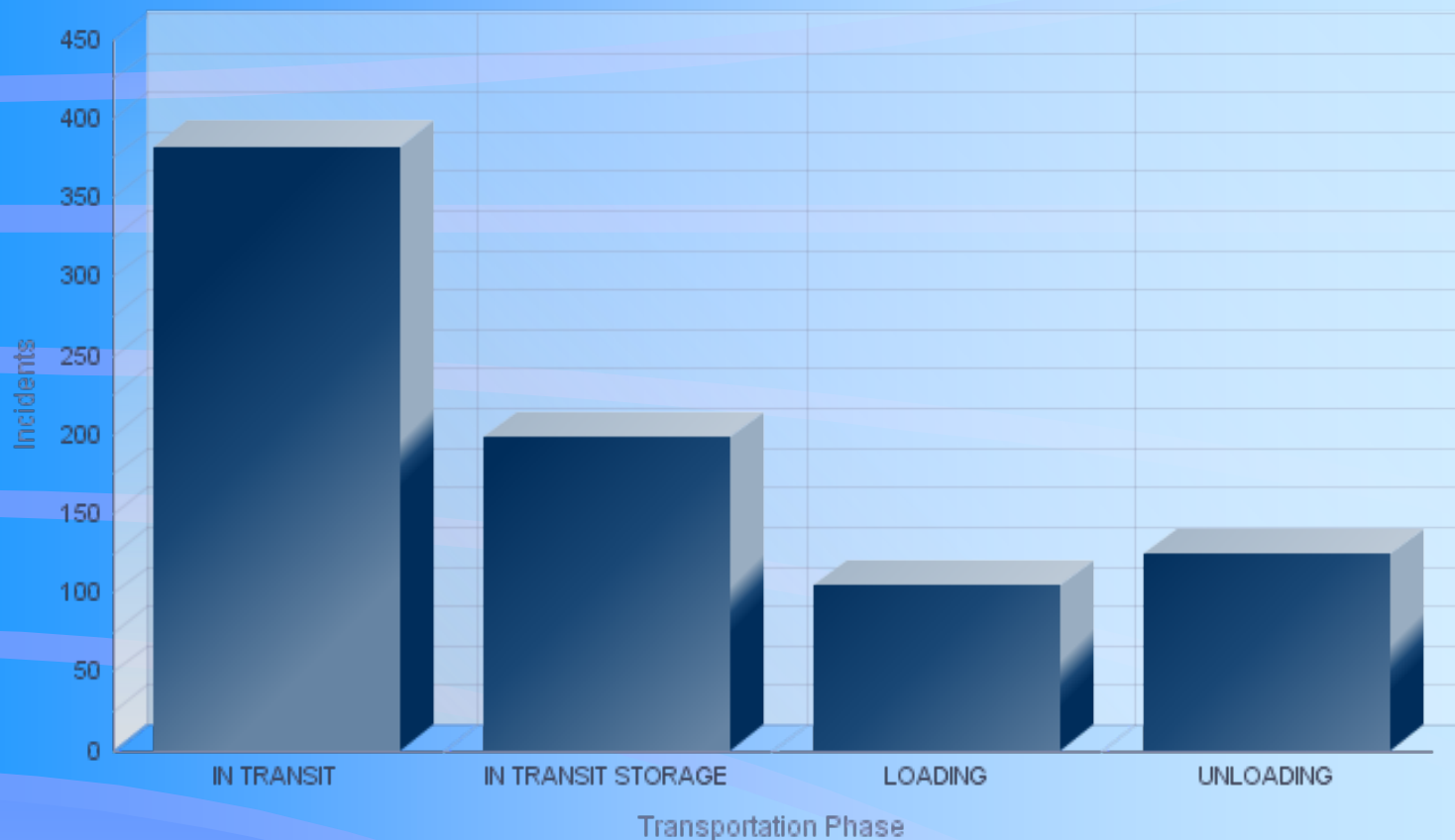
Hazard Division	Hazard Class	Incidents	Hospitalized	Non-Hospitalized	Fatalities	Damages
3	FLAMMABLE - COMBUSTIBLE LIQUID	295	0	1	0	\$16,600
9	MISCELLANEOUS HAZARDOUS MATERIAL	190	0	1	0	\$1,824,535
2.1	FLAMMABLE GAS	126	0	0	0	\$0
8	CORROSIVE MATERIAL	79	0	0	0	\$7,230
2.2	NONFLAMMABLE COMPRESSED GAS	33	0	0	0	\$15,000
OTHER REGULATED MATERIAL, CLASS	OTHER REGULATED MATERIAL, CLASS D	33	0	0	0	\$0
6.2	INFECTIOUS SUBSTANCE (ETIOLOGIC)	25	0	1	0	\$0
6.1	POISONOUS MATERIALS	18	0	0	0	\$0
1.4	EXPLOSIVE NO BLAST HAZARD	12	0	0	0	\$0
5.1	OXIDIZER	5	0	0	0	\$0
7	RADIOACTIVE MATERIAL	4	0	0	0	\$0
5.2	ORGANIC PEROXIDE	3	0	0	0	\$0
1.1	EXPLOSIVE MASS EXPLOSION HAZARD	1	0	0	0	\$0
4.2	SPONTANEOUS COMBUSTION	1	0	0	0	\$0
4.3	DANGEROUS WHEN WET	1	0	0	0	\$0



**U.S. Department of Transportation**  
**Pipeline and Hazardous Materials Safety Administration**  
**Office of Hazardous Material Safety**  
 2016 Hazmat Summary by Results

<b>Result</b>	<b>Incidents</b>	<b>Hospitalized</b>	<b>Non-Hospitalized</b>	<b>Fatalities</b>	<b>Damages</b>
Environmental Damage	1	0	0	0	\$0
Explosion	2	0	0	0	\$0
Fire	26	0	1	0	\$112,650
None	334	0	0	0	\$1,708,020
Spillage	436	0	2	0	\$27,695
Vapor (Gas) Dispersion	13	0	0	0	\$15,000

## Incidents by Transportation Phase



Transportation Phase	Incidents	Hospitalized	Non-Hospitalized	Fatalities	Damages
IN TRANSIT	382	0	3	0	\$1,848,615
IN TRANSIT STORAGE	198	0	0	0	\$0
LOADING	104	0	0	0	\$0
UNLOADING	124	0	0	0	\$14,750

2016 FAA-AIR Commodity Summary by Incidents

Rank	Commodity Name	Hazard Class	Incidents	%
1	AEROSOLS, FLAMMABLE, (EACH NOT EXCEEDING 1 L CAPACITY)	FLAMMABLE GAS	115	14.08%
2	PAINT INCLUDING PAINT, LACQUER, ENAMEL, STAIN, SHELLAC SOLUTIONS, VARNISH, POLISH, LIQUID FILLER AND LIQUID LACQUER BASE	FLAMMABLE - COMBUSTIBLE LIQUID	89	10.89%
3	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.	MISCELLANEOUS HAZARDOUS MATERIAL	35	4.28%
3	LITHIUM ION BATTERIES PACKED WITH EQUIPMENT	MISCELLANEOUS HAZARDOUS MATERIAL	35	4.28%
3	PERFUMERY PRODUCTS WITH FLAMMABLE SOLVENTS	FLAMMABLE - COMBUSTIBLE LIQUID	35	4.28%
6	BIOLOGICAL SUBSTANCE, CATEGORY B	INFECTIOUS SUBSTANCE (ETIOLOGIC)	25	3.06%
6	FLAMMABLE LIQUIDS, N.O.S.	FLAMMABLE - COMBUSTIBLE LIQUID	25	3.06%
8	CARBON DIOXIDE, SOLID OR DRY ICE	MISCELLANEOUS HAZARDOUS MATERIAL	22	2.69%
9	CONSUMER COMMODITY	OTHER REGULATED MATERIAL, CLASS D	20	2.45%
10	RESIN SOLUTION, FLAMMABLE	FLAMMABLE - COMBUSTIBLE LIQUID	16	1.96%
11	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT INCLUDING LITHIUM ION POLYMER BATTERIES	MISCELLANEOUS HAZARDOUS MATERIAL	15	1.84%
11	LITHIUM ION BATTERIES INCLUDING LITHIUM ION POLYMER BATTERIES	MISCELLANEOUS HAZARDOUS MATERIAL	15	1.84%
13	DRY ICE	MISCELLANEOUS HAZARDOUS MATERIAL	13	1.59%
13	EXTRACTS, FLAVORING, LIQUID	FLAMMABLE - COMBUSTIBLE LIQUID	13	1.59%
13	PRINTING INK, FLAMMABLE OR PRINTING INK RELATED MATERIAL (INCLUDING PRINTING INK THINNING OR REDUCING COMPOUND), FLAMMABLE	FLAMMABLE - COMBUSTIBLE LIQUID	13	1.59%
16	DANGEROUS GOODS IN MACHINERY OR DANGEROUS GOODS IN APPARATUS	MISCELLANEOUS HAZARDOUS MATERIAL	11	1.35%
16	PAINT RELATED MATERIAL INCLUDING PAINT THINNING, DRYING, REMOVING, OR REDUCING COMPOUND	FLAMMABLE - COMBUSTIBLE LIQUID	11	1.35%
18	AEROSOLS, NON-FLAMMABLE, (EACH NOT EXCEEDING 1 L CAPACITY)	NONFLAMMABLE COMPRESSED GAS	10	1.22%

19	BATTERY-POWERED VEHICLE OR BATTERY-POWERED EQUIPMENT	MISCELLANEOUS HAZARDOUS MATERIAL	9	1.10%
19	FIRE EXTINGUISHERS CONTAINING COMPRESSED OR LIQUEFIED GAS	NONFLAMMABLE COMPRESSED GAS	9	1.10%
21	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	CORROSIVE MATERIAL	8	0.98%
21	CORROSIVE LIQUIDS, N.O.S.	CORROSIVE MATERIAL	8	0.98%
23	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.	MISCELLANEOUS HAZARDOUS MATERIAL	7	0.86%
24	ACETONE	FLAMMABLE - COMBUSTIBLE LIQUID	6	0.73%
24	CARTRIDGES FOR WEAPONS, INERT PROJECTILE OR CARTRIDGES, SMALL ARMS	EXPLOSIVE NO BLAST HAZARD	6	0.73%
24	EXTRACTS, AROMATIC, LIQUID	FLAMMABLE - COMBUSTIBLE LIQUID	6	0.73%
24	PETROLEUM CRUDE OIL	FLAMMABLE - COMBUSTIBLE LIQUID	6	0.73%
24	PETROLEUM DISTILLATES, N.O.S. OR PETROLEUM PRODUCTS, N.O.S.	FLAMMABLE - COMBUSTIBLE LIQUID	6	0.73%
29	ADHESIVES, CONTAINING A FLAMMABLE LIQUID	FLAMMABLE - COMBUSTIBLE LIQUID	5	0.61%
29	BATTERIES, WET, FILLED WITH ACID, ELECTRIC STORAGE	CORROSIVE MATERIAL	5	0.61%
29	BATTERIES, WET, NON-SPILLABLE, ELECTRIC STORAGE	CORROSIVE MATERIAL	5	0.61%
29	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	CORROSIVE MATERIAL	5	0.61%
29	ENGINES INTERNAL COMBUSTION, OR ENGINES, FUEL CELL, FLAMMABLE LIQUID POWERED	MISCELLANEOUS HAZARDOUS MATERIAL	5	0.61%
29	FLAMMABLE LIQUIDS, CORROSIVE, N.O.S.	FLAMMABLE - COMBUSTIBLE LIQUID	5	0.61%
29	GASOLINE INCLUDES GASOLINE MIXED WITH ETHYL ALCOHOL, WITH NOT MORE THAN 10% ALCOHOL	FLAMMABLE - COMBUSTIBLE LIQUID	5	0.61%
29	LITHIUM BATTERIES PACKED WITH EQUIPMENT	MISCELLANEOUS HAZARDOUS MATERIAL	5	0.61%
29	LITHIUM BATTERY	MISCELLANEOUS HAZARDOUS MATERIAL	5	0.61%
29	SODIUM HYDROXIDE, SOLUTION	CORROSIVE MATERIAL	5	0.61%
39	AEROSOLS, FLAMMABLE, N.O.S. (ENGINE STARTING FLUID) (EACH NOT EXCEEDING 1 L CAPACITY)	FLAMMABLE GAS	4	0.49%
39	ALCOHOLS, N.O.S.	FLAMMABLE - COMBUSTIBLE LIQUID	4	0.49%
39	AMINES, LIQUID, CORROSIVE, N.O.S. OR POLYAMINES, LIQUID, CORROSIVE, N.O.S.	CORROSIVE MATERIAL	4	0.49%
39	CARBON DIOXIDE	NONFLAMMABLE COMPRESSED GAS	4	0.49%
39	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	CORROSIVE MATERIAL	4	0.49%
39	FUEL, AVIATION, TURBINE ENGINE	FLAMMABLE - COMBUSTIBLE LIQUID	4	0.49%
39	HYPOCHLORITE SOLUTIONS	CORROSIVE MATERIAL	4	0.49%
39	METHANOL	FLAMMABLE - COMBUSTIBLE LIQUID	4	0.49%

# Common Violations

- Training – Segregation & Separation of HAZMAT
- Training - Blocking & Bracing
- Training – Shipping Paper

# Common Violations

- Training –
- Who is responsible?
- Shipper / offeror
- Transporter

# Common Violations

- Training – Segregation, Blocking & Bracing
- HM packages must:
  - Compatible or segregated (175.78)
  - Properly blocked and braced (173.30 & Parts 175.75)





# Common Violations

- Training – Paper work
- Shipping Papers – 172.200 &  
172.600

# SHIPPING PAPERS

No format or form style specified by the HMR.

Any document will do...with the required info.

Required for all modes: Air, Ground, Rail,  
Water

Ex. Bill of Lading (BOL) –

# SHIPPING PAPERS

Required information

Specific sequence for basic HM description

I = Identification Number (UN1263)

S = Proper Shipping Name (Paint)

H = Hazard Class or Division number (3 or 8)

P = Packing Group (I, II or III)

# SHIPPING PAPERS

## Required information

How many? - number of packages (1 box, tank or drum)

How much? - total quantity of HAZMAT  
(Can be both net and gross mass – 5L, 5kg or 3000lbs) Modes may require more detail.

What type? – drum, cargo tank, cylinder

# SHIPPING PAPERS

Required information

Number of pages

Signature

Date of acceptance

Emergency phone number

Shipper's certification statement

# SHIPPING PAPER

JKH Extracts  
P.O. 0000  
Spills, TX 77332

Num & Type	HM	Shipping Description PSN, Class, ID, PG EXTRA info	Net Wgt./Qty.	Gross Wgt.
1 Drum	X	UN1238, Methyl Chloroformate, 6.1 (3,8), PG I,	15 liters	60 lbs/ 30 kg
20 Box		Food stuffs		100 lbs
2 Boxes	X	UN1263, Paint, 3, PG II	5 liters	18 lbs/ 9 kg
		Page 1 of 1	Date of Acceptance October 20, 2016	Aircraft type: Cargo Aircraft Only

**Emergency Contact**  
**1-800-555-1212**

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/ placarded, and are in all respects in proper condition for transport according to international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.

Judy K. Halloran

# Air Specific Requirements

## Part 175

- Compliance with 14 CFR Part 135 HM Training
- Inspecting shipments
- Crew Notification
- Loading & Unloading
- Stowage and compatibility of HM cargo

Questions?  
How to correct?  
Who?  
What?  
When?  
Why?  
Where?





# How to Contact Us

## Transportation Safety Institute

### Hazardous Materials Division

Brad Hallmark – [brad.hallmark@dot.gov](mailto:brad.hallmark@dot.gov)

Telephone: 405-954-4554

*Internet:*                      [www.tsi.dot.gov/hazmat](http://www.tsi.dot.gov/hazmat)