

# Fire Engineering®

## DISPATCH AND INCIDENT INJECTS

Here is an example dispatch summary you can adjust and use in your training.

Call Source:	911
Incident Received:	16:33:26 PM
Incident Dispatched:	16:33:39 PM
First Unit on Scene:	xx:xx mins
Incident Type:	Vehicle Fire
Notes:	911 caller stating their vehicle is on fire, on the shoulder, I-476, MM130.6

UNITS DISPATCHED	POSSIBLE INJECTS
<b>Fire Department</b>	16:33 PM - ON THE SHOULDER
Engine 1	16:33 PM - CALLER TRANSFERRED
Engine 4	16:33 PM - STATING IT IS ON FIRE
Tender 5	16:33 PM - CALLER IS NOT INJURED
Squad 1	16:34 PM - STATED IT WAS RIGHT BEFORE EXIT 131
Battalion 1	16:37 PM - ANOTHER CALLER REPORTING VEH IS A FUEL TRUCK
HazMat Battalion	16:41 PM - Battalion 1 -- TRUCK WELL OFF IN THE TRAILER
Car 1	16:41 PM - Battalion 1 -- DISP ADDITIONAL Engine - MM130.6
<b>Emergency Medical Service</b>	
Medic 3	
Rehab 1	
QRS 3	
EMS Battalion	

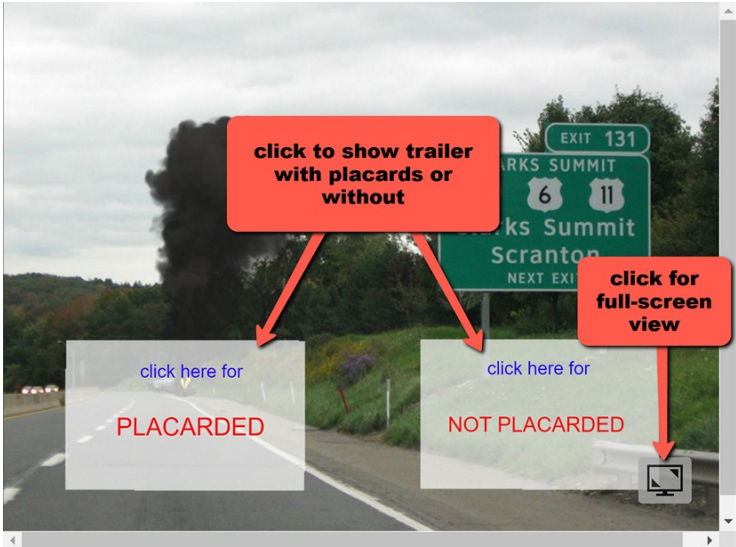
## SIMULATION A

This simulation reflects the actual incident described in this article. The substance is sodium hypochlorite. We have included a PDF of an example Bill of Lading and an SDS you can give your personnel if they request them. In the Simulation Credits section, we cite the URL from which we obtained the SDS.

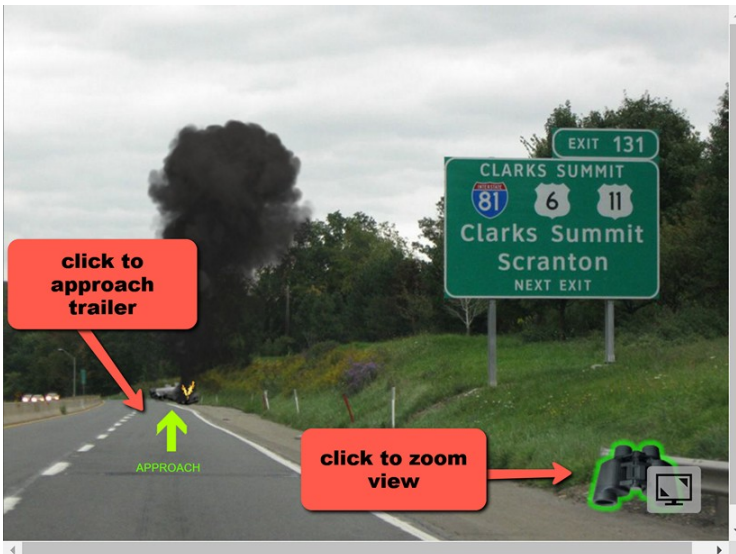
- Substance: Ammonium Hydroxide (concentration more than 50%): UN#3318
- Vapor Density: 0.59 (lighter than air, with leak out around the failure point and then rise)
- Specific Gravity: 0.6 (floats in water-temperature depending)
- Fire Suppression Hazard: Toxic vapors (may be fatal if inhaled), contact with gas and/or liquid will cause burns, severe injury, and frostbite. Turnout gear only offers limited chemical protection. The liquid is flammable and will increase toxic vapors.
- ERG (Orange Section): Page 125

## INSTRUCTIONS FOR OPERATING THE SIMULATION

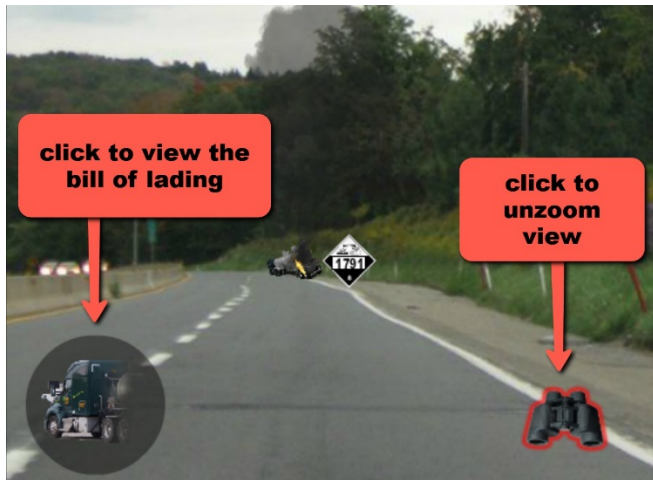
1. Open the link provided on any number of computers or devices you want to use for display.
2. Click on the START SIM button
3. Click on whether to show the trailer with placards or without



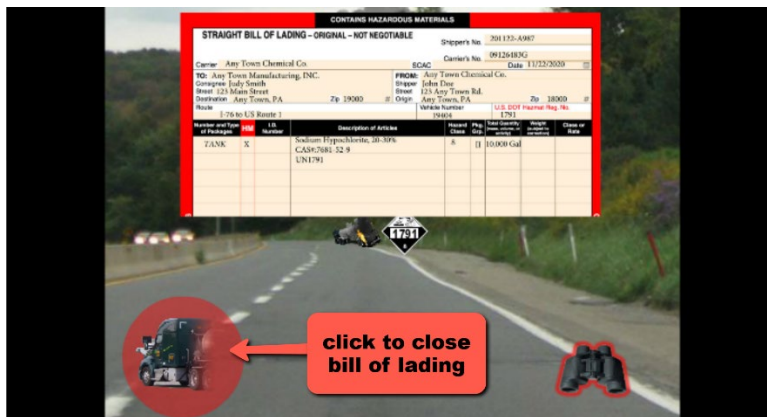
4. Click to use the binoculars or click on the arrow to approach the trailer. Use the included Bill of Lading and SDS (not in the simulation) if your responders request them.



5. If you clicked on the binoculars, you can see the zoomed-in view. You can click on the cab to show the bill of lading, or click the binoculars to stop the zooming.



6. If you clicked on the Bill of Lading, you can click again on the cab to close this view. If your responders also ask for the Safety Data Sheet (SDS), see the “Example Safety Data Sheets” section, below.



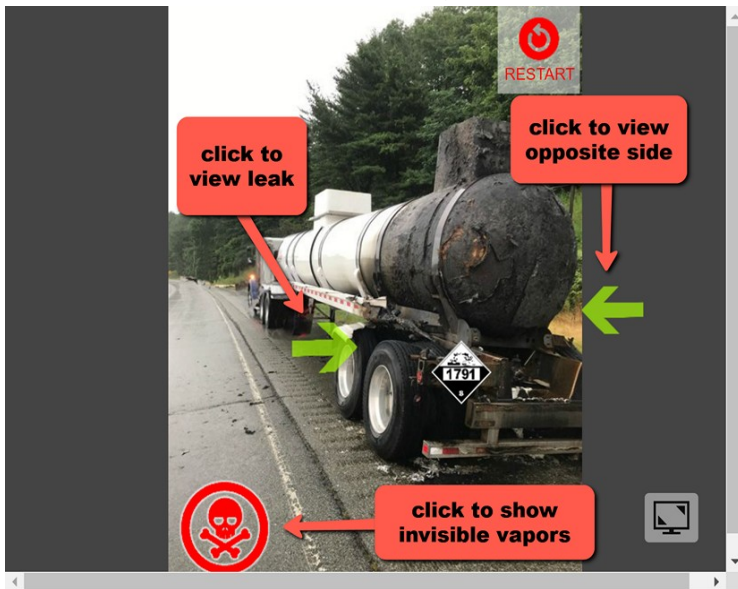
7. If you had clicked on the Approach arrow, you will arrive at the trailer just behind it on the driver's side



8. Click on the Hidden Dangers symbol (skull and crossbones) to see the invisible vapor and button for extinguishing the fire



9. Click the firefighter to extinguish the fire, or Hidden Danger symbol to hide the invisible vapor. Once the fire is extinguished, you can move closer to the trailer to examine the leak or the runoff on the opposite side of the vehicle, as well as invisible vapors.



## SIMULATIONS B-E

This simulation has four (4) different scenarios you can use for enhancing your HazMat Awareness and Operations training. Each scenario has the option to show the trailer with placards or without them. These scenarios include the ability for the viewer to see a portion of the Bill of Lading. We have included SDS's you can provide your personnel. In the Simulation Credits section, we cite the URL from which we obtained the SDS.

**Note:** The simulations give you the option to see a zoomed-in (binoculars) view. We have intentionally thinned the smoke conditions to help your personnel use the trailer shape to help identify substances when placards are not present or the trailer has not been properly labelled.

The scenarios were chosen to give a distribution of substances with various vapor densities and specific gravities. The scenarios are as follows:

- Scenario B: Ammonium Hydroxide
  - Vapor Density: 0.59 (lighter than air, with leak out around the failure point and then rise)
  - Specific Gravity: 0.6 (floats in water-temperature depending)
  - Fire Suppression Hazard: Toxic vapors (may be fatal if inhaled), contact with gas and/or liquid will cause burns, severe injury, and frostbite. Turnout gear only offers limited chemical protection. The liquid is flammable and will increase toxic vapors.
  - ERG (Orange Section): Page 125
- Scenario C: Milk
  - UN# NONE unplacarded (none hazard)
  - Vapor Density: N/A
  - Specific Gravity: Milk Fats = 0.93 milk & Nonfats = 1.6
  - Fire Suppression Hazard: Miscible, copious amounts of water to dilute
  - ERG (Orange Section): Page 131
- Scenario D: Gasoline
  - UN#1203
  - Vapor Density: 3.9 (much heavier than air, large low lying pools of flammable vapors)
  - Specific Gravity: 0.7 (floats in water, leaving a rainbow sheen)
  - Fire Suppression Hazard: Flammable liquid, water will cool the tank, but because gasoline is immiscible so straight stream water application can spread the fire. Foam will be needed. Hydraulic ventilation to disperse low lying vapors.
  - ERG (Orange Section): Page 128
- Scenario E: Chlorodimethylsilane
  - UN#2988
  - Vapor Density: 3.7 (extremely low lying)
  - Specific Gravity: N/A
  - Fire Suppression Hazard: Produces flammable and highly toxic gases on contact with water; may be fatal. May ignite on contact with air and water. May produce corrosive solutions on contact with water. Inhalation or contact with vapors may cause severe injury or death. DO NOT USE WATER OR FOAM. ONLY AFFF expansion foam. Turnout gear provides little to no chemical protection?
  - ERG (Orange Section): Page 139

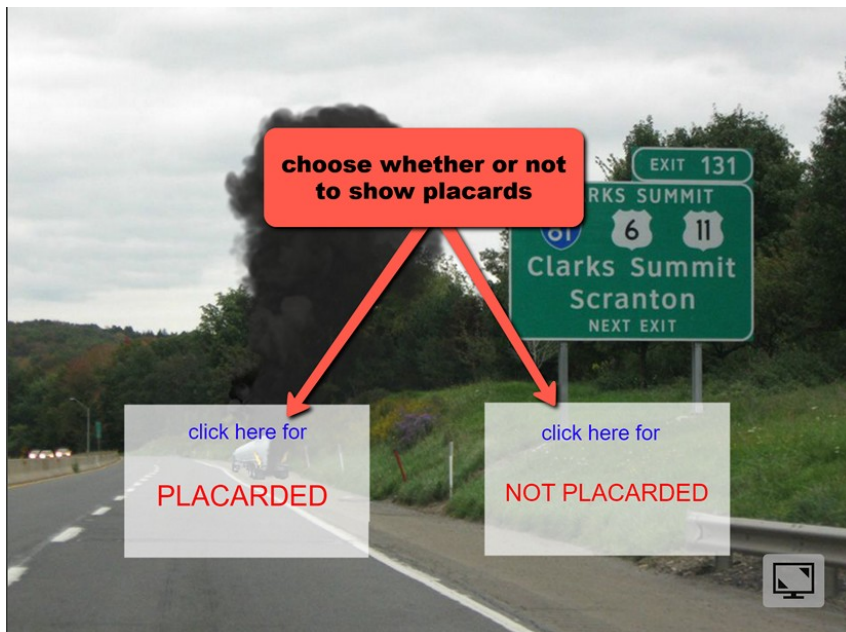
For each scenario, we have included a PDF of an example Bill of Lading and an SDS you can give your personnel if they request them. Scenarios B-E also include a portion of the Bill of Lading in the simulation itself.

#### INSTRUCTIONS FOR OPERATING THE SIMULATION

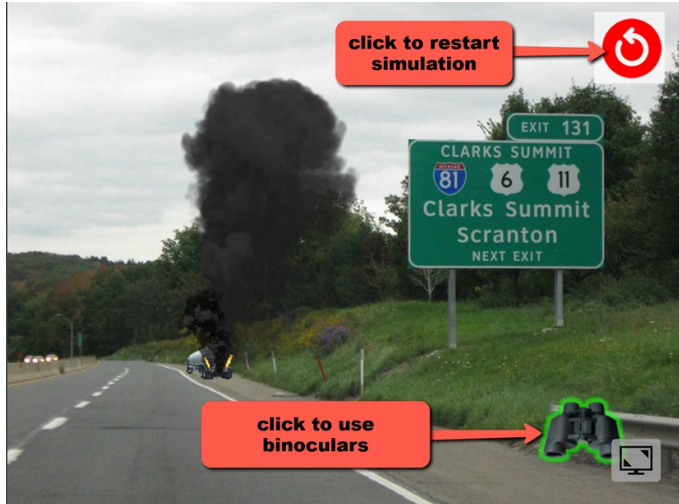
1. Open the link provided on any number of computers or devices you want to use for display.
2. Click on the Start Sim button to begin the simulation
3. Click on which scenario (B, C, D, or E) you wish to use



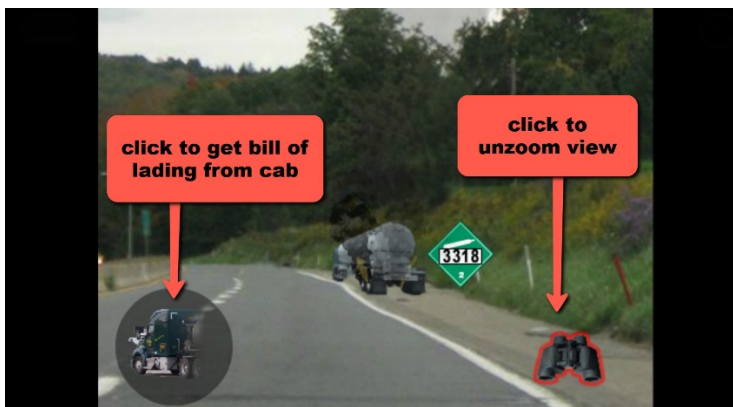
4. Click on the button to show the trailer with or without placards.



5. Click on the binoculars icon to zoom the view and evaluate the trailer



- You may click on the truck cab icon in the bottom left corner to show the Bill of Lading for this substance. Responders may also want to get information from the Safety Data Sheet (SDS) we have provided as PDF's for this substance—please see the “Example Safety Data Sheets” section, below.



- Click again on the cab to close the Bill of Lading view.

CONTAINS HAZARDOUS MATERIALS						
STRAIGHT BILL OF LADING - ORIGINAL - NOT NEGOTIABLE				Shipper's No. 286122-AH81		
Carrier Amy Towns Chemical Co.		SHIPAC		Carrier's No. 85126483G		Date 11/22/2020
TO: Amy Towns Manufacturing, INC. Conover, South Carolina 123 Main Street Conover, Amy Towns, P.A. Zip 19008		FROM: Amy Towns Chemical Co. Driver: John Doe 123 Amy Towns Rd. Amy Towns, P.A. Zip 19008		U.S. DOT Hazardous Mat. No. 3118		
Number and Type of Packages	U.S. Hazard	Description of Article	Quantity	Net Weight (kg)	Net Volume (L)	Class or Div.
TANK X	0980	AMMONIUM HYDROXIDE, 28% REAGENT UN# 1595 ENVIRONMENTALLY HAZARDOUS	2	30.000 Gal		



## EXAMPLE SAFETY DATA SHEETS (SDS)

To enhance your exercises, you may want to print out or distribute the following Safety Data Sheets (SDS's), which the authors downloaded from the following sites in November, 2020:

- A. Sodium Hypochlorite: [https://olinchloralkali.com/wp-content/uploads/2016/11/Olin\\_NaClO\\_20\\_MSDS\\_Canada\\_English.pdf](https://olinchloralkali.com/wp-content/uploads/2016/11/Olin_NaClO_20_MSDS_Canada_English.pdf)
- B. Milk: <https://shop.perfumersapprentice.com/msds/345497.pdf>
- C. Ammonium Hydroxide: <https://www.emsdiasum.com/microscopy/technical/msds/10600.pdf>
- D. Gasoline: <http://quileutenation-wa.safeschoolssds.com/document/view/90471034-f4e6-4008-a842-2de033b43ec2/6a697493-f8b5-4f69-8b23-c7e6f51d278d/Unleaded%20Gasoline%20-%20Valero>
- E. Chlorodimethylsilane:  
<https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=144207&brand=ALDRICH&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Faldrich%2F144207%3Flang%3Den>

## SIMULATION CREDITS

- The simulation was built by Jonathan Kaye, using the SimsUshare All-Hazards simulation engine (<https://simsushare.com>). The simulations use the following materials licensed under the Creative Commons Agreement:
  - Danger symbol, by B Farias, the Noun Project, <https://thenounproject.com/search/?q=danger&i=958844>

## AUTHORS

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Arman J. Force is a career firefighter with the Merion Fire Company of Ardmore and holds the rank of Lieutenant with the Union Fire Association of Lower Merion. The Lower Merion (PA) Fire Department is an urban combination department servicing approximately 60,000 residents and 24 square miles.