



In-Station Training

TM 26-36a Sulfuric Acid Spill



Author

Chief Ed Hartin

Purpose

After hydrocarbon products such as gasoline, diesel fuel, and propane, corrosives such as alkaline hydroxides (sodium hydroxide or potassium hydroxide) and acids such as sulfuric and hydrochloric acid are the most common materials released in transportation hazmat incidents (CDC, 2020).

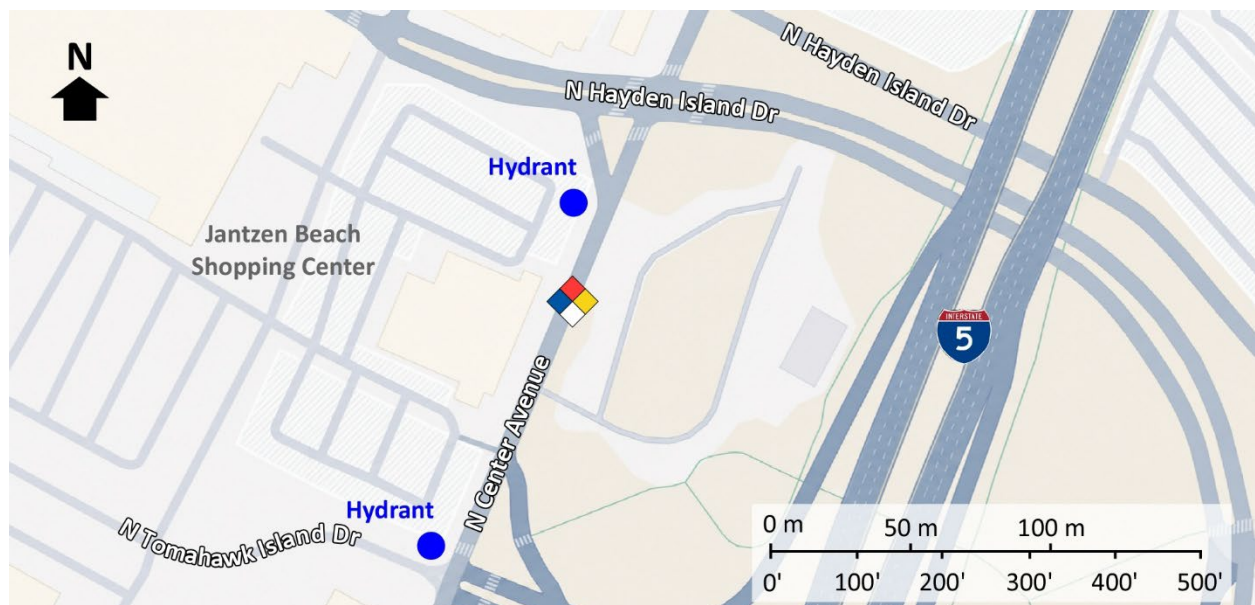
Learning Outcomes

Command officers perform effective ongoing size-up; select an appropriate strategy, and implement tactics based on the strategic decision-making model.

Conducting the Drill

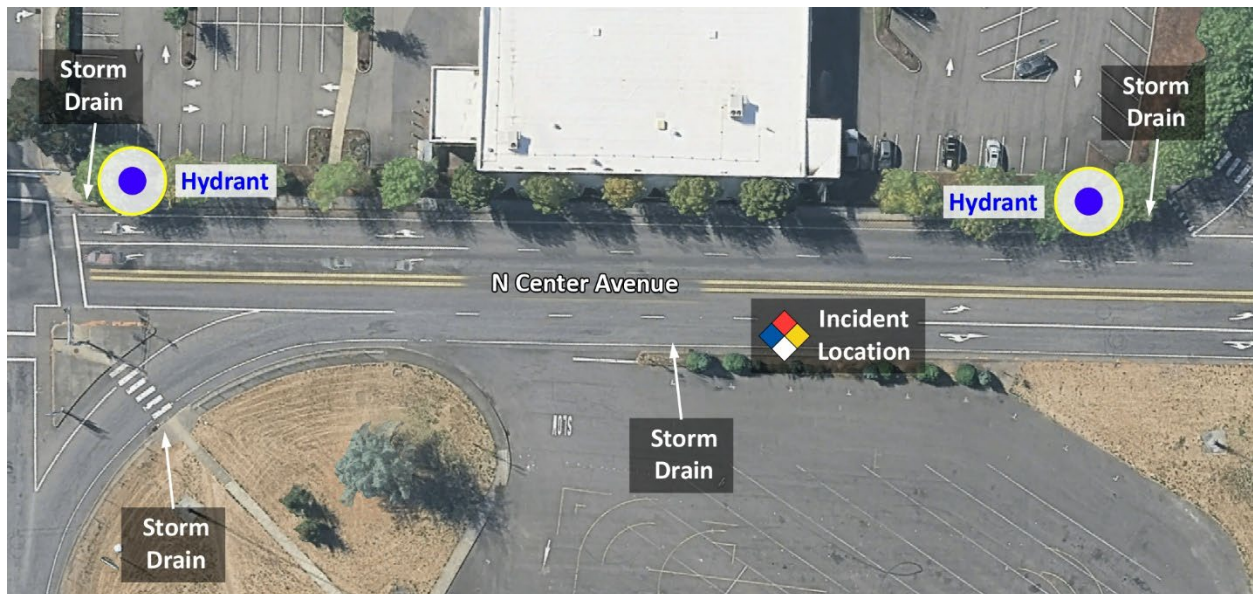
This incident involved a sulfuric acid leak on North Center Avenue near Hayden Island Drive in Portland, Oregon on Monday, August 10, 2026, at 05:30 (PF&R, 2026; KPTV Fox 12 Oregon, 2026; KGW8, 2026; Plante, 2026 & Broadcastify 2026a-i). Review the map and photos (Figures 1-5) to gain an understanding of the area involved.

Figure 1. Map of the Incident Area



Note: Adapted from Google. (2026a). [Map, North Center Avenue and North Hayden Island Drive, Portland, OR]. Map data ©2026 Google. <https://bit.ly/4ivLC1m>.

Figure 2. Aerial View



Note: Adapted from Google. (2026b). [aerial view North Center Avenue and North Hayden Island Drive, Portland, OR]. Imagery © Google, Imagery © Airbus Maxar Technologies, Map Data © 2026. <https://bit.ly/4iA2BQ2>.

The closest hydrants are at the intersections of North Tomahawk Island Drive and North Hayden Island Drive and North Center Drive as illustrated in Figures 1 and 2.

Figure 3. Northbound on North Center Avenue.



Note: Adapted from Google. (2025a). [Street view North Center Avenue and North Hayden Island Drive, Portland, OR]. <https://bit.ly/460ikR4>.

Figure 4. Northbound on North Center Avenue



Note: Adapted from Google. (2025b). [Street view North Center Avenue and North Hayden Island Drive, Portland, OR]. <https://bit.ly/4wPSOZD>.

Figure 5. 3D Aerial View from the Northeast



Note: Adapted from Google. (2026c). [3d aerial view North Center Avenue and North Hayden Island Drive, Portland, OR]. Imagery © Google, Imagery © Airbus Maxar Technologies, Map Data © 2026. <https://bit.ly/4y3et1w>.

The Jantzen Beach shopping center and access to Interstate 5, the only roadway connection to Hayden Island, are immediately adjacent to the incident location. The surrounding area is a mixed commercial and residential setting with large retail properties, parking areas, marinas, and residential development. Housing on Hayden Island includes manufactured-home communities, apartments or condominiums, floating homes, and other waterfront residences. Much of the area reflects later 20th-century and more recent planned development. English is the predominant language in the neighborhood, with relatively limited non-English language use.

It is Monday, August 10th, The temperature is currently 59° F with wind from the north northwest at 7 mph, and there is no precipitation forecast (Weather Underground, 2026). You are monitoring the tapout talk group and hear Engine 1 and Ladder 1 dispatched on a Delta Level hazmat incident on North Center Avenue near the I-5 off ramp. Dispatch states that the call taker spoke to the truck driver and that he spilled some chemicals. Engine 1 and Ladder 1 go enroute and dispatch provides an update that the caller says he is carrying acid, less than five gallons have spilled so far, but it is a big tanker truck that holds 34 gallons, and it's spreading under the trailer through the dirt, on the road, and into a sewer drain. Several minutes later, Engine 1 provides the following initial radio report.

On scene of a leaking DOT 412 cargo tank just off the northbound lane of North Center Avenue, DOT placard 2796. Sulfuric acid is running into a storm drain. Isolating a 150' radius around the spill. Assign us a tactical talk group and dispatch Engine 3, Hazmat 3, and Battalion 1 to this incident and police for traffic control at North Hayden Island Drive, the I-5 Off Ramp, and access to the Jantzen Beach Shopping Center. Engine 1 is Center Command.

Dispatch assigns OPS 6 and taps out Engine 3, Hazmat 3, and Battalion 1. Center Command provides the following assignment to Ladder 1.

Ladder 1, block North Center Avenue at Hayden Island Drive.

You are Battalion 1 and are responding to this hazmat incident. The engines, ladder, and hazmat unit have four-person staffing¹ Hazmat 3 and Engine 3 respond together and are both staffed with hazmat technicians. You will arrive prior to Hazmat 3 and Engine 3.

Use the following reference resources as needed: [Emergency Response Guidebook](#) (US DOT, 2024), [Pocket Guide to Hazardous Chemical Hazards](#), and [CAMEO Chemicals](#) (NOAA, 2024) as needed to inform your decision making.

¹ If your first alarm deployment is different, use your own resource assignment and staffing with the first and second arriving resources typical for your agency (e.g., two engines vs. engine and ladder).



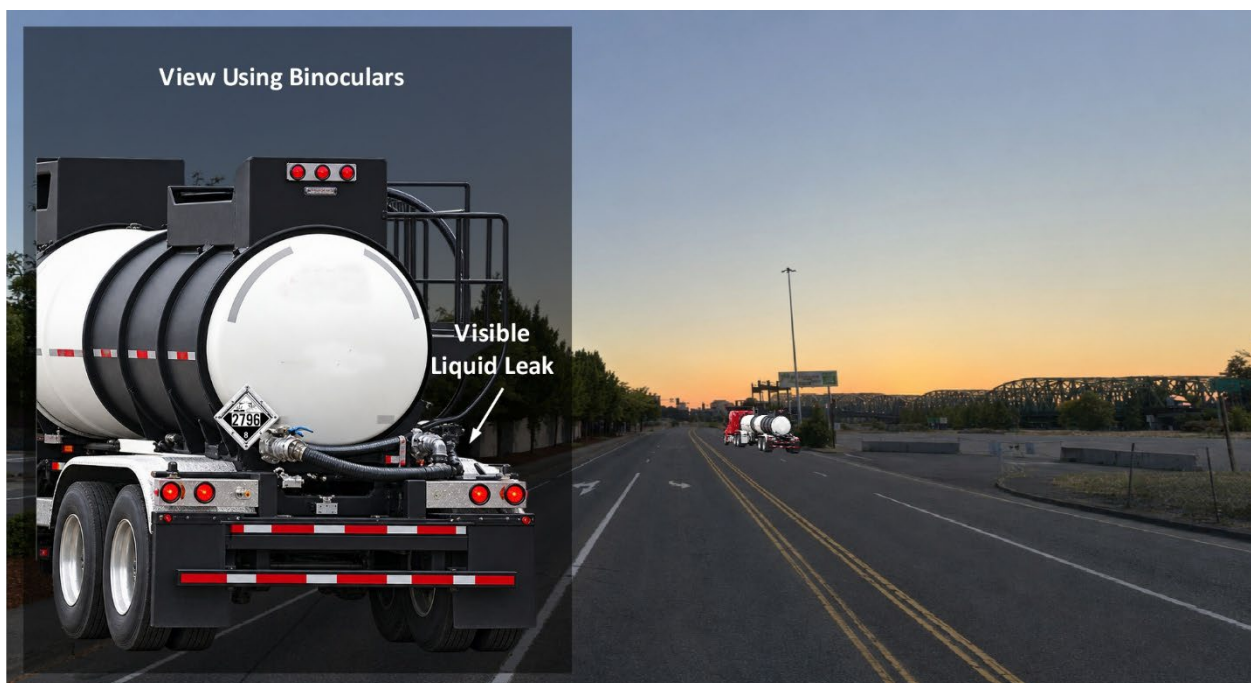
Time starts now! Answer the next seven questions within 10 minutes. After answering question one and two, decide and put your answers in the form of communication you would have with the companies assigned to this incident. Save discussion for after answering the first seven questions.

1. What critical factors would you consider when dispatched and during response?

While you are responding, Center Command requests that dispatch contact both state and local public works for dump trucks with sand to dike the spill. Dispatch advises that response time for both will be 20 minutes.

Examine 6 illustrating conditions on your arrival. There is no incident or simulation video for this 10-Minute Training.

Figure 6. Conditions on Arrival from the South



Note: Adapted from Google. (2025a). [Street view North Center Avenue and North Hayden Island Drive, Portland, OR]. <https://bit.ly/460ikR4>. [Street view image edited for lighting and DOT 412 cargo tank image created with [Image edited with ChatGPT Images 2.5] Open Ai, (2025). Subsequent images were manually edited.

2. What actions will you take prior to contacting IC #1 (Engine 1) to begin command transfer?

3. State your command transfer communication after IC #1 acknowledges your radio contact (exactly as you would transmit it).

Following your confirmation of the location and assignment of Engine 1 and Ladder 1 and request for a CAN (conditions, actions, and needs) report, IC #1 advises:

Capacity of the truck is 5,000 gallons, currently loaded with 3,400 gallons of 51% or less sulfuric acid. We are working off ERG guide page 157, 150' initial isolation, and starting to dike the spill with dirt upstream from the storm drain. The driver has contacted his company for spill response. Need dump trucks with sand to create a larger diked area.

4. State the communication you would have with IC #1 and dispatch to complete the command transfer exactly as you would transmit it.
5. What action would you take based on the CAN from Engine 1 (IC #1)? State the communications you would have with the operating companies exactly as you would transmit them.
6. Engine 3 and Hazmat 3 tell you that they are Level 1 at the northbound offramp from I-5 (allowing access to North Center Avenue from either the north or the south). State the tactical assignment you would give them exactly as you would transmit it.
7. How would you work with the company officer of Hazmat 3 to develop the ongoing incident action plan?



Reflect on your strategic decision-making and responses to questions one through seven before answering the next eight questions. Think about what cues, patterns, or anomalies (differences from conditions that you would anticipate) informed your answers.

8. What information most influenced your expectations?
9. Did anything in the incident post-arrival challenge your initial expectations?
10. What was the actual problem once you arrived?
11. What hazmat information resources did you use? What information was most important to your decision making?
12. What were your tactical priorities and what was getting in the way of achieving them?
13. During initial operations, was there an immediate threat of serious injury or death to the companies operating at this incident?
14. Was there a civilian life hazard (either in the immediate area or the adjacent commercial occupancies)?
15. What actions could you take to minimize the risk to the companies operating at this incident and any potential civilians in the area

Listen to the [incident audio](#) (Hartin, 2026a) and think about how this incident developed, relevant cues, and critical factors. The incident audio has been edited to remove dead airtime between communications and the audio feed included multiple talk groups (resulting in some incident radio communication being walked on and not included). There was also communication via cell phone between Engine 17 and Hazmat 7 and face-to-face communication between resources on scene. Click the link above or scan the QR code to access the incident simulation video.



The resource determination in this incident was different than in this 10-Minute Training. A single engine was dispatched to investigate and did a phone consult with the hazmat team before upgrading the resource determination to include the hazmat team and a chief officer. Hazmat 7 is cross staffed with Engine 7 and Truck 7. Hazmat 133, the department's hazmat coordinator added himself to the incident and responded along with Hazmat 7.

16. What information in this initial segment of radio communications triggered questions or concerns in your mind? What questions or concerns would you have as the response chief and how would you address them?

17. What hazmat resources does your agency have and what are your expectations of the initial incident commander when responding to a hazardous materials incident? What criteria differentiates the need for a hazmat consult (phone call with the hazmat team company officer) and a hazmat team response?

Additional Learning

Reference materials are critical to effective decision making in hazardous materials incidents.

Review Your References

Take the opportunity to review the hazardous material references available on your apparatus and how they can inform your decision making during the initial stages of a hazmat incident.

The additional learning in [10-Minute Training 26-27 Nitric Acid Release](#) (Hartin, 2026b) reviewed use of the Emergency Response Guidebook (ERG) (US DOT, 2024) and the importance of critical thinking when using information provided on the ERG guide pages.

Critical Thinking and Attention to Detail

Sulfuric acid presents an interesting example of why critical thinking is important in using hazmat reference resources. The leaking cargo tank carries a corrosive placard with UN IF 2796 for sulfuric acid with not more than 51% acid for this UN ID the ERG references Guide Page 157 Substances – Toxic and/or Corrosive (Non-Combustible/Water Sensitive). On the other hand, sulfuric acid (UN ID 1830) and spent sulfuric acid (UN ID 1832) reference Guide Page 137 Substances – Water Reactive – Corrosive.

Fuming Sulfuric Acid (UN ID 1831) also references Guide Page 137, but this entry is highlighted, indicating that this chemical is a toxic inhalation hazard and is listed in the Table of Isolation and Protective Action Distances (which are generally larger than the initial isolation distance listed on the Guide Pages).

A search of the NIOSH Pocket Guide to Chemical Hazards on sulfuric acid returns results referencing UN ID 1830, 1831, and 1832 and their related guide page, but does not reference UN ID 2796.

A similar result is obtained when searching in CAMEO Chemicals using the name sulfuric acid. However, searching on UN ID 2796 returns data for sulfuric acid with not more than 51% acid that was extracted from the ERG, but no specific physical and chemical properties.

Depending on the response time of the hazardous materials team the incident commander (either the company officer serving in the role of IC #1 or the chief in the role of IC #2) is dependent on their proficiency in use of the available hazmat resources and consultation with the hazmat team via cell phone or radio.

Resources and Relationships

Reach out to the hazardous materials team that you would work with on an incident and have a conversation about resource capability, consultation (what information do they need and what information they can provide), and application of incident organization for hazmat incidents. The best time to have this conversation and build a good working relationship is before the incident!

References

Broadcastify. (2026a). Portland Area Fire and Rescue — 08/10/2026 05:13 AM - 05:43 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/4ckcHAO>.

Broadcastify. (2026b). Portland Area Fire and Rescue — 08/10/2026 05:42 AM - 06:12 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/4glUyOw>.

Broadcastify. (2026c). Portland Area Fire and Rescue — 08/10/2026 06:12 AM - 06:42 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/4gpMenT>.

Broadcastify. (2026d). Portland Area Fire and Rescue — 08/10/2026 06:42 AM - 07:12 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/3UsciGn>.

Broadcastify. (2026e). Portland Area Fire and Rescue — 08/10/2026 07:12 AM - 07:42 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/4ceHVt5>.

Broadcastify. (2026f). Portland Area Fire and Rescue — 08/10/2026 07:42 AM - 08:12 AM PDT. Retrieved August 29, 2026, from <https://bit.ly/4grOLOs>.

Broadcastify. (2026g). Portland Area Fire and Rescue — 08/10/2026 08:12 AM - 08:42 AM PDT.
Retrieved August 29, 2026, from <https://bit.ly/4gYZcci>.

- Broadcastify. (2026h). Portland Area Fire and Rescue — 08/10/2026 08:41 AM - 09:11 AM PDT. Retrieved August 29, 2026, from <https://bit.ly/4gYZsrM>.
- Broadcastify. (2026i). Portland Area Fire and Rescue — 08/10/2026 09:11 AM - 09:41 AM PDT. Retrieved August 29, 2026, from <https://bit.ly/4y75yw1>.
- Centers for Disease Control and Prevention (CDC). (2020) National toxic substances incidents program — nine states, 2010-2014, *Morbidity and Mortality Weekly Report* 62(2). Retrieved August 29, 2026 from <https://bit.ly/4A2tIPJ>.
- Google. (2025a). [Street view North Center Avenue and North Hayden Island Drive, Portland, OR]. Retrieved August 29, 2026, from <https://bit.ly/460ikR4>.
- Google. (2025b). [Street view North Center Avenue and North Hayden Island Drive, Portland, OR]. Retrieved August 29, 2026, from <https://bit.ly/4wPSOZD>.
- Google. (2026a). [Map, North Center Avenue and North Hayden Island Drive, Portland, OR]. Map data ©2026 Google. Retrieved August 29, 2026, from <https://bit.ly/4ivLC1m>.
- Google. (2026b). [aerial view North Center Avenue and North Hayden Island Drive, Portland, OR]. Imagery © Google, Imagery © Airbus Maxar Technologies, Map Data © 2026. Retrieved August 29, 2026, from <https://bit.ly/4iA2BQ2>.
- Google. (2026c). [3d aerial view North Center Avenue and North Hayden Island Drive, Portland, OR]. Imagery © Google, Imagery © Airbus Maxar Technologies, Map Data © 2026. <https://bit.ly/4y3et1w>.
- Hartin, E. (2026). *Sulfuric acid spill incident audio* North Center Avenue, Portland, OR August 10, 2026. Retrieved August 29, 2026, from <https://bit.ly/3Ug4ifD>.
- Hartin, E. (2026a) *10-minute training 26-27 nitric acid release*. Retrieved August 29, 2026, from <https://bit.ly/4y9rC9I>.
- KGW8. (2026). Hazmat crews respond to sulfuric acid spill on Hayden Island. Retrieved August 29, 2026, from <https://bit.ly/4wVpD7s>.
- KPTV Fox 12 Oregon. (2026). *PF&R: 5,000-gallon tank leaking sulfuric acid on Hayden Island near I-5* [news video]. Retrieved August 29, 2026, from <https://bit.ly/4cC8hpd>.
- National Institute for Occupational Safety and Health (NIOSH). (2020). *Pocket guide to chemical hazards*. Retrieved August 29, 2026, from <https://bit.ly/4xxfP4W>.
- National Oceanic and Atmospheric Administration (NOAA). Computer Aided Management of Emergency Operations (CAMEO) Chemicals. Retrieved August 29, 2026, from <https://bit.ly/3Xm9byB>.
- OpenAI. (2026a). *ChatGPT 5.2* [Large language model]. August 29, 2026, from <https://chat.openai.com/chat>.

- OpenAI. (2026). ChatGPT Images 2.5 [Large language model]. Retrieved August 29, 2026, from <https://chat.openai.com/chat>.
- Plante, A. (2026). (2026). 5K gallon tank spills acid onto I-5 near Hayden Island. Retrieved August 29, 2026, from <https://bit.ly/4qHQRNH>.
- Portland Fire and Rescue (PF&R). (2026) [Spill of sulfuric acid on Hayden Island, Facebook post]. Retrieved August 29, 2026, from <https://bit.ly/4cl8ywp>.
- US Department of Transportation (US DOT). (2024). *Emergency response guidebook*. Retrieved August 29, 2026, from <https://bit.ly/4dlCnLo>.
- Weather Underground (2025). *Portland, OR weather history* [historical weather August 10, 2026]. Retrieved August 29, 2025, from <https://bit.ly/4xyW50S>.