



Situation Manual/Participant Handout

Introduction: This tabletop exercise (TTX) involves a release of hydrochloric acid from a vehicle accident at facility that stores and transports extremely hazardous substances (EHS facility). Alliance Solutions Group, Inc (ASG) designed this exercise to generate discussion about your organization's procedures, processes, and considerations during a hazardous materials release. This example TTX will increase the audience's understanding of the usefulness and value for conducting a similar exercise within your LEPC's jurisdiction. ASG will facilitate this discussion-based exercise; this is not a pass/fail test.

- **Sponsor:** The Oregon State Fire Marshall (OSFM) sponsored this exercise under the Hazardous Materials Emergency Preparedness grant.
- **Exercise Date:** 22 May 2025
- **Schedule of Events:** This exercise is scheduled to last approximately four hours. The facilitator will grant participants short breaks at various points throughout the TTX. The schedule is provided in the table below.

Exercise Schedule

Time	Topics
08:00 am – 08:05 am	Introduction and administrative notes
8:05 a.m. – 8:45 a.m.	Initial notification and response actions
8:45 a.m. – 9:15 a.m.	Identification and communication with at-risk populations
9:15 a.m. – 9:30 a.m.	Break
9:30 a.m. – 10:00 a.m.	Public protective action decision-making (PPAs)
10:00 a.m. – 10:25 a.m.	Public alert and warning process
10:25 a.m. – 10:45 a.m.	Public Water System Notification
10:45 a.m. – 11:00 a.m.	Break
11:00 a.m. – 11:25 a.m.	Unified Command
11:25 a.m. – 11:45 a.m.	Recovery Outcomes and Operationalizing Resilience
11:45 a.m. – 12:15 p.m.	TTX Hotwash and Feedback Session

- **Exercise Scenario Background:** The incident for this exercise occurs at an EHS facility located in an industrialized area of a city. Winds are blowing from 315 degrees (from NW blowing towards SE) at 7 miles per hour. Skies are partly cloudy, temperature is 71 degrees and humidity is 59%.
- **Incident Summary:** The 9-1-1 dispatch center receives a call from an employee at the EHS facility who reports a two-vehicle accident involving a semi-truck transporting hydrochloric acid totes on a flat-bed trailer resulting in a possible large release of the chemical near the entrance to the EHS facility.
- **Mission Areas:** Mitigation, Response, and Recovery



Situation Manual/Participant Guide



- **Exercise Purpose and Scope:** OSFM contracted ASG to develop a TTX to highlight the effectiveness and value of conducting a TTX and demonstrate a method for TTX delivery and execution.
- **Core Capabilities:** This TTX will address the following core capabilities: Environmental Response/Health and Safety, Planning, Situational Assessment, and Operational Coordination.
- **Objectives:** The primary objectives for this TTX include the following:
 - Understand the usefulness for conducting a discussion-based exercise based on a presented scenario
 - Discuss procedures/processes within your organization for the following elements:
 - Initial incident notification processes
 - Facility/transportation response actions
 - Identification and communication with the at-risk populations
 - Public protective action decision-making
 - Public alert and warning process
 - Public water system notification
 - Approach to establishing a Unified Command
 - Recovery outcomes and operationalizing resilience
- **Hazard:** The primary hazard of concern is hydrochloric acid released from damaged totes caused by a semi-truck collision at the EHS facility entrance. Hydrochloric acid routes of exposure include skin or eye contact and inhalation. This EHS facility stores many other onsite hazards to include ammonium hydroxide, acetic acid, isopropanol, nitric acid, sulfuric acid, and hydrofluoric acid (list not all inclusive). A hydrochloric acid safety data sheet (SDS) is provided at each table for reference.
- **Exercise Structure:** The ASG facilitator will begin by presenting the scenario. Following the scenario introduction, the facilitator will present slides associated with the eight topics listed above to include questions related to each of these elements. Small groups of participants will discuss each question with the expectation of identifying some of the challenges and best practices that may be in place in your jurisdiction.
- **Facilitator Instructions:** The facilitator presents the participants with issues, results, focuses group discussion, and records the discussion and action(s). The facilitator has the right to table any issues for later discussion to keep the exercise on schedule.
- **Participant Instructions:** Participants should engage in discussion and crosstalk to enhance this exercise and identify potential shortfalls. This TTX is not a pass/fail test.



Small group breakout session # 1 – Initial incident notification processes

- What are the expected initial notification responsibilities and processes for the following organizations?
 - 1) EHS facility employees.
 - 2) Transportation carrier (for this scenario, the trucking company).
 - 3) Public Service Answering Point (i.e., 9-1-1 dispatch).
 - 4) Any other key stakeholders.

Small group breakout session # 2 – Facility/transportation company response

- What are the expected initial response actions of the following?
 - 1) EHS facility employees.
 - 2) Transportation company.
 - 3) Fire department (initial response force).
 - 4) Law enforcement.
 - 5) Emergency Medical Services (EMS).



Small group breakout session # 3 – Identification and communication with the at-risk populations (10 minutes)

- 1) How do you identify at-risk populations around the EHS facilities?
- 2) How does your LEPC engage with these populations?
- 3) Are there any unengaged vulnerable populations around your EHS facility?
- 4) Describe the vulnerable populations in your community.
- 5) What method(s) are used to notify vulnerable populations?
- 6) How have facilities planned to promptly notify other facilities immediately downwind?

Small group breakout session # 4 –Public protective action decision-making

- 1) How are public protective actions (PPAs) determined for facility employees?
- 2) What is the process for determining PPAs for downwind populations?
- 3) Who has the authority to implement PPAs?
- 4) Who assists vulnerable populations with PPAs if needed?



Small group breakout session # 5 –Public alert and warning process

- 1) How are emergency messages drafted and approved for release to the public?
- 2) What method(s) is used to communicate PPAs to the public in your community?
- 3) What do you include in your messaging to ensure it is easy to understand and implement?
- 4) How do you disseminate information to vulnerable populations (e.g., homeless, households without a smartphone, etc.)?
- 5) Choose a method/media and draft a message for your selected PPA.

Small group breakout session # 6 – Public water system notification

- 1) Who makes the decision to notify a drinking water purveyor of a HAZMAT release? Describe this process and all those involved.
- 2) What is the criteria used to make notification decisions?
- 3) How are drinking water purveyors notified of a HAZMAT release that could adversely impact the drinking water?
- 4) Should the water purveyor be notified based on this TTX scenario?



Small group breakout session # 7 – Approach to establishing a Unified Command

- 1) Would the establishment of a Unified Command be beneficial in this scenario?
- 2) What organizations would support the Unified Command for this scenario?
- 3) Do EHS facility plans include procedures for establishing a Unified Command?
- 4) Have you conducted exercises to validate the procedures?

Small group breakout session # 8 – Recovery outcomes and operationalizing resilience

- 1) What is the process for transitioning from response to recovery?
- 2) Who is involved in recovery and what is each organization's role?
- 3) Who coordinates and oversees cleanup operations to ensure adequacy?
- 4) What are the procedures for terminating an incident?
- 5) What are some resilience measures your organization or community can implement to reduce HAZMAT incident impacts?

GUIDE 157 SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE/WATER-SENSITIVE)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- UN1796, UN1802, UN1826, UN2032, UN3084, UN3085, and, at concentrations above 65%, UN2031 may act as oxidizers. Also consult GUIDE 140.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

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.
- 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).
- Wear chemical protective clothing that is specifically recommended by the manufacturer **when there is NO RISK OF FIRE**.
- Structural firefighters' protective clothing provides thermal protection **but only limited chemical protection**.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

Spill

- For **highlighted materials**: see Table 1 - Initial Isolation and Protective Action Distances.
- For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

(NON-COMBUSTIBLE/WATER-SENSITIVE)

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EMERGENCY RESPONSE

FIRE

- Note: Some foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO₂ (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Avoid aiming straight or solid streams directly onto the product.
- Dike runoff from fire control for later disposal.

Fire Involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

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 damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor-suppressing foam may be used to reduce vapors.
- **DO NOT GET WATER INSIDE CONTAINERS.**
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

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.
- **Do not perform mouth-to-mouth resuscitation if victim ingested or inhaled the substance; wash face and mouth before giving artificial respiration. Use a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- 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.
- **In case of skin contact with Hydrofluoric acid (UN1790)**, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.



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Hydrochloric Acid Safety Data Sheet (SDS)

Hydrochloric Acid 37%

SECTION 1: Identification

GHS Product identifier

Product name Hydrochloric Acid 37%

1.1 Other means of identification

Muriatic acid; hydrogen chloride, aqueous

1.2 Recommended use of the chemical and restrictions on use

For laboratory and manufacturing use only.

1.3 Supplier's details

Name High Purity Products
Address 14546 N. Lombard Street
Portland OR 97203
United States of
America

Telephone 503-227-1616

email help.desk@highpp.com

1.4 Emergency phone number

CHEMTREC: 1-800-424-9300

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200)

- Corrosive to metals, Cat. 1
- Respiratory tract irritation, Cat. 3
- Skin corrosion/irritation, Cat. 1B
- Eye damage/irritation, Cat. 1

2.2 GHS label elements, including precautionary statements

Pictogram



Safety Data Sheet
Hydrochloric Acid 37%

Signal word

Danger

Hazard statement(s)

H290
H314
H318
H335

May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage
May cause respiratory irritation

Precautionary statement(s)

P234
P260
P264
P271
P280

Keep only in original container.
Do not breathe gas/mist/vapors/spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

P301+P330+P331
vomiting.
P303+P361+P353
contaminated clothing. Rinse skin

IF SWALLOWED: Rinse mouth. Do NOT induce

P304+P340
comfortable for breathing.
P305+P351+P338

IF ON SKIN (or hair): Take off immediately all
with water/shower.

P310
unwell.
P390

IF INHALED: Remove person to fresh air and keep

P403+P233
closed.
P405

IF IN EYES: Rinse cautiously with water for
several minutes. Remove contact lenses if present
and easy to do. Continue rinsing.
Immediately call a POISON CENTER if you feel

Absorb spillage to prevent material-damage.
Store in a well-ventilated place. Keep container tightly

Store locked up.

SECTION 3: Composition/information on ingredients

3.1 Mixture

Components	CAS #	Percent (weight)
Hydrochloric Acid	7647-01-0	36-38%
Water	7732-18-5	62-64%

SECTION 4: First-aid measures

Description of necessary first-aid measures

If inhaled
oxygen. Do not use

Remove to fresh air. If breathing is difficult, give

Safety Data Sheet
Hydrochloric Acid 37%

mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

In case of skin contact
15 minutes.

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

In case of eye contact
eyelids, for at least 15 minutes.

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

If swallowed

Do NOT induce vomiting. Call a physician or poison control center immediately.

4.1 Most important symptoms/effects, acute and delayed

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

5.2 Specific hazards arising from the chemical

Hydrogen chloride.

5.3 Special protective actions for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from upwind of spill/leak. Do not get in eyes, on skin, or on clothing.

6.2 Environmental Precautions

Do not let enter drain.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Hydrochloric acid (CAS: 7647-01-0):

NIOSH REL: C 5 ppm (7 mg/m³)

8.2 Appropriate engineering controls

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

8.3 Individual protection measures, such as personal protective equipment (PPE) Pictograms



Eye/face protection

Face shield or goggles.

Skin protection

Corrosion-proof clothing

Respiratory protection

Use a respirator if a fume hood is not available.

SECTION 9: Physical and chemical properties and safety characteristics

Physical state

Liquid

Appearance

Colorless Liquid

Color

Colorless

Odor

Pungent odor

Odor threshold

No data available.

pH

<1

Safety Data Sheet

Hydrochloric Acid 37%

Melting point/freezing point	-35 °C / -31 °F	Boiling point or	57 °C / 135 °F	Flash point	Not
initial boiling point and boiling range					
combustible					
Evaporation rate	No data available.				
Flammability	Not combustible				
Vapor pressure	17.2 kPa				
Relative vapor density	1.27				
Density and/or relative density	1.18				
Solubility	Completely soluble in water.				
Auto-ignition temperature	No data available.				
Decomposition temperature	No data available.				
Kinematic viscosity	1.933 mm ² /s				

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on exposure to temperature rise: release of (highly) toxic gases/vapors (chlorine). On exposure to air: release of corrosive mist. Reacts violently with (some) bases. Reacts exothermically with many compounds. Reacts with (strong) oxidizers: release of (highly) toxic gases/vapors (chlorine). Reacts with (some) metals: release of highly flammable gases/vapors (hydrogen).

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.

10.4 Conditions to avoid

Incompatible products. Excess heat.

10.5 Incompatible materials

Hydrochloric acid: Bases, Amines, Alkali metals, Metals, permanganates, for example potassium permanganate, Fluorine, metal acetylides, hexalithium disilicide.

10.6 Hazardous decomposition products

Hydrogen chloride gas

SECTION 11: Toxicological information

Information on toxicological effects Acute toxicity

Hydrochloric Acid:

LC50 Rat inhalation

3124 ppm/1 hr

LD50 Rabbit oral

900 mg/kg

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Hydrochloric Acid 37%

LD50 Rabbit dermal >5010 mg/kg

Skin corrosion/irritation

Causes burns by all exposure routes

Serious eye damage/irritation

Causes serious eye damage.

Respiratory or skin sensitization

Causes burns

Germ cell mutagenicity

No data available.

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Reproductive toxicity

No data available.

STOT-single exposure

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT-repeated exposure

No data available.

Aspiration hazard

No data available.

SECTION 12: Ecological information

Toxicity

LC50 fishes 1 282 mg/l (96 h; Gambusia affinis; PURE SUBSTANCE) EC50 Daphnia 1 < 56 mg/l (72 h; Daphnia magna; PURE SUBSTANCE) LC50 fish 2 862 mg/l (Leuciscus idus; PURE SUBSTANCE)

TLM fish 1 282 ppm (96 h; Gambusia affinis; PURE SUBSTANCE)

Persistence and degradability

Persistence is unlikely based on information available.

Bioaccumulative potential

No data available.

Mobility in soil

Will likely be mobile in the environment due to its water solubility.

Safety Data Sheet
Hydrochloric Acid 37%

SECTION 13: Disposal considerations

Disposal methods

Waste material must be disposed of in accordance with the national and local regulations.

Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. EPA Waste Code: **D002**

SECTION 14: Transport information

DOT (US)

UN

Number:

UN1789

Class: 8

Packing Group: II

Proper Shipping Name:

Hydrochloric acid Reportable
quantity (RQ): 13,500 lbs

SECTION 15: Regulatory information

CERCLA RQ Hazardous Substances

Hydrochloric Acid : 5,000 lbs

CAA 112(r) TQ Regulated Chemicals for Accidental Release Prevention

Hydrochloric Acid : 15,000 lbs

EPCRA Section 313 Toxic chemicals

Hydrochloric acid (aerosol forms only)

HMIS Rating

Hydrochloric Acid 37%	
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	1
PERSONAL PROTECTION	

NFPA Rating

