

EPA
REGION 9
(PACIFIC SOUTHWEST)



A Joint Training Tabletop Exercise Honolulu,
Hawaii Responders and U.S. EPA.

CHLORINE SIMULATION	
Location:	Honolulu TTX
Date:	June 15, 2022

EPA Region 9 Simulation

Region 9 EPA: Greg Bazley

Local Host: Liz Galvez

ASTI Lead Facilitator: Will Grass

ASTI Live Event Facilitator: Michael Chapman

ASTI Controller: Gary Smith

ASTI Technical Support: Manny Ehrlich and Bill Whealan

ASTI Evaluations and Documentation: Kayla Moore



REGION 9 (PACIFIC SOUTHWEST)

June 30, 2022

Chlorine Table-Top Exercise

The following TTX is fictitious event designed to help local, state, and federal responders to exercise their skills and abilities.

This simulation is designed to show how a routine event can quickly turn into a potential catastrophic event. The challenge is to see the escalating factors early by working safely with situational aware for risks and threats that may occur.



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June 30, 2022

EPA Region 9 Simulation

- **Goal:** Improve coordination, communication, and teamwork between local, state, and federal responders.
- **Purpose:** Improve Tripod connection between industry, government, and public safety.
- **Engage:** Emergency plans during the 4 stages of ONE Plan response.
- **Players:** Hawaii State, regional, and local health and public safety associations.
- **4 Hour Timeline:** Introduction, HRTs, 4 stages of response, debriefing.



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June 30, 2022

30-Min Plan

TTX Production

- **TTX Team:** Facilitators guide the TTX production & support learning.
- **Methods:** TTX inject, discussion, audience participation, & success
- **Preparation:** Pre-event readiness, 4 stages of response, & debriefing.
- **Training Method:** Realistic challenges supported by experienced facilitators who will give you questions that support YOUR success.
- **Documentation:** H-SEEP federal forms and format.



REGION 9 (PACIFIC SOUTHWEST)

June 30, 2022

30-Min Plan

Module 1: Hazards, Risks, and Threats

DEALING WITH KEY SAFETY REQUIREMENTS

- Common problems
- Risks
- Best practices
- ASTI Playbooks



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June 30, 2022

THE TRIPOD

INDUSTRY, GOVERNMENT, AND PUBLIC SAFETY

INDUSTRIAL COMMAND

Incident Commander
Lead Responder
Notification Leader
Evacuation Supervisor

RESPONSE TOOLS

CAN Report
30 – Minute Plan
Quick Guides
Playbooks & Master
Maps

INDUSTRY

Profit / Production
Risk Management
Process Safety

BOWTIE

- Prevent
- Protect
- Prepare

GOVERNMENT

Minimum Standards
Health Safety
Community Safety

ONE-PLAN RESPONSE

- D** Discovery-Escape Harm
And Engage Command
- I** Initial Response-Emergency
System Control
- S** Sustained Response-
Entry and Control Plan
- T** Termination-Recover
And Debrief

HAZARD

THREATS

RISKS

Handout Review

Tripod Workbook Handouts

- ALOHA and IMAAC Plumes
- DOT Isolation/Protective Action Zones
- Eye-level of wind indicators
- PPE and Decontamination
- Exposure – AEGL and STEL
- ASTI Forms for TTX

Master Maps and Plumes

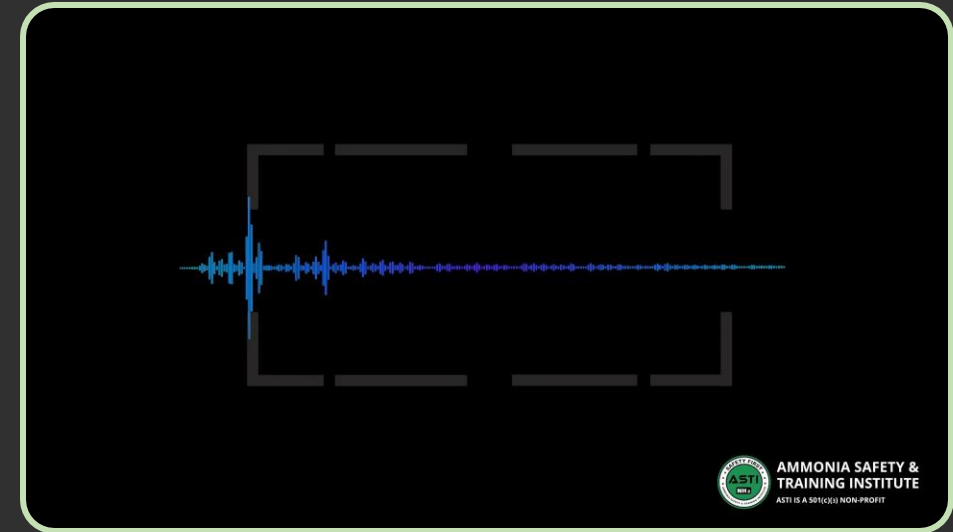
- Based upon One Plan Playbooks
- ChemResponder Platform
- BEI Emergency Plan

Escaping an Ammonia Aerosol

Case name: Pedro's Accident

Country: Colombia

Other:



Glasses Saved the Day



Ammonia Injuries



Unprotected Areas



DHS Jack Rabbit II Releases of ammonia and chlorine



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June 30, 2022

Ammonia and Chlorine Mix

Situation – 01/06/2005



- Nine persons dead
 - Including Engineer of train (non-traumatic)
 - Including Truck Driver from Quebec
- Approximately 240 admitted to Hospitals
- 5,400 Evacuated
- Continuing leak from DOT105 Cl₂ Railcar



Graniteville Video

Mainline
Train

North

Switch

Mainline

From the Augusta Chronicle



Fictitious Chemical Emergency Plan



30-Min Plan

ERP



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June 30, 2022

Module 2: Discovery

ENGAGING LANCE

- Situational awareness.
- Life safety
- Alert the command team
- Notification – 911 and responders
- Command and Control
- Evacuation.



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June 30, 2022

Pre-Event Inject 1 – August 26, 2021

Island Equipment Company sells industrial and medical gases, welding supplies, dry Ice, chlorine, O₂ refilling, fire extinguisher hydrotesting, and safety equipment.

A new Client, Apaca Point Water Treatment Company makes an appointment to pick up five 150-pound cylinders and two one-ton cylinders of Chlorine.



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June 30, 2022

Players:

Industrial plant staff for normal operations – Operations manager and floor supervisor

Pre-Event Action Plan Thoughts

SOP and signage to enter the facility

- Set up an account
- Pre-Arrival appointment and information
- Special Security Check-in Procedures
- Rules associated with receiving the delivery
- Supervised loading/unloading of chemicals



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June 30, 2022

Situation Status at 15:45 hours

Thursday, September 2, 2021, Island Equipment, Guam

Weather 83°F with 12 mph wind from the east.

Forecast: Clear – Humidity 91%.

Island Equipment Company - CM8J+589, Santa Rita, Guam



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June 30, 2022

Module 3: The Event

ENGAGING LANCE CAN DO SIMPLE

- Weather and wind
- Mixed load of chemicals
- Picking up ammonia and chlorine
- Customer shows lack of accountability



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June 30, 2022

Discovery Inject 2 – 15:45 hours

A van-enclosed truck from Apaca Point Water Treatment Company arrives LATE to Island Equipment Company (IEC) to pick up a five 150-pound ammonia cylinders and two one-ton cylinders of Chlorine cylinders. The driver doesn't stop for check-in.



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June 30, 2022

Players:

Industrial plant staff for normal operations – Operations manager and floor supervisor

Chlorine delivery starts at 16:00 hours

The Driver arrives late and is anxious because he must get back to his facility to setting up supplies for a big job sanitizing at a food processing facility tonight.

At 16:25 The truck is loaded with five 150# cylinders and one 1-toner, They are waiting for the last 1-ton cylinder to arrive.

The driver and new employee detect an odor of chlorine.



Chlorine Table Top



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Module 3: Discovery

ENGAGING LANCE CAN DO SIMPLE

- Life Safety
- Alert
- Notification
- Command and Control
- Evacuate



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June 30, 2022

Inject 3 - Engage LANCE – 16:10 Hours

Dispatcher (forklift operator) escapes

Alerts the Operations Manager Jun Panintuan with a CAN report

Jun takes charge and engages the emergency plan



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June 30, 2022

[Workbook Handouts](#)

[CAN Report](#)

Inject 4 - 911 call 16:12 hours

IEC Caller: “My name is _____ and I’m the _____ of the Island Equipment Company located at CM8J+589, Santa Rita.

We just experience a chlorine release from a 150-pound cylinder that fell off the back of a delivery truck...there are at least three injured victims and a forklift carrying a one-ton cylinder crashed into the delivery truck as the driver was escaping the on-coming chlorine cloud.



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June 30, 2022

Bill Whealan will handle the Dispatch the 911 dispatcher and the Facility emergency coordinator (Phil or Dave) decision.

[CAN Report](#)

Inject 5 - 911 Dispatch – 16:15 Hrs.

The Dispatcher performs the initial dispatch and makes mandatory notifications.

Responding units report in.

Dispatcher describes the notifications that would be performed.



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June 30, 2022

[CAN Report](#)

Audience Discussion Situation Status

The Discovery stage of the emergency is completed.

Are adequate resources dispatched?

Is the response route appropriate and safe?

Your thoughts about hazards, risks, and threats?



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June 30, 2022

[BEI Emergency Action Plan](#)

Inject 6 – IEC Command Team 16:28 hours

Responding public safety responders receive a Dispatcher update.

IEC reports that the fire has spread to the engine compartment of the delivery truck.

A fusible soft plug from the vapor side has ruptured.

The fire is beginning to grow more aggressively.



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June 30, 2022

[CAN Report](#)

Module 3: Initial Response

ENGAGING LANCE CAN DO SIMPLE

- Sources of Ignition
- Isolate the release
- Manage pressure
- Pressurized ventilation
- Life Safety – on and off-site
- Emergency Plan – 3 C's & 3 D's



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June 30, 2022

Inject 7 - First engine arrives at 16:31 hours

Gate access person is standing by.

Initial size-up – smoke from engine compartment of the truck, and forklift with one ton cylinder lodged into the side of the delivery truck.

Receive the CAN report

Integrate Command and develop a plan of action



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June 30, 2022

[CAN Report](#)

Action Plan Review

Situation Status Report

What are the current escalating factors?

Downwind and downstream status?

EOC opened – Fire, Law, Medical, Environmental Plans Section Chief – Updates on the Plume model ordered?



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June 30, 2022

[CAN Report](#)

Audience Review

Initial Response Command Team

- CAN report size-up from Facility to fire and law ICs
- Command team formed - Unified Command (UC)/Liaison
- Hazmat Tech Team status
- Downwind plume movement and need for a traffic plan?
- Community, high risk receptors, and safety for incoming responders?

Module 4: Sustained Response

ENGAGE CAN DO LANCE AND SIMPLE PLANS

- Community Plan – ESF 10 & EOC Medical, Evac/SIP, Traffic Plume model
- Facility Plan – EAP & Control plans
- First Responders – law, fire, medical
- Hazmat Team – Tech responders
- SERC and EPA support



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June 30, 2022

Inject 8 – Unified Command IAP – 16:55

Command team initiates a 2nd Alarm hazmat dispatch request

EOC opened – Fire, Law, Medical, Environmental Plans Section Chief
– Updates on the Plume model ordered.

Emergency Manager has the EOC opened

- Resources in place now?
- Special needs?



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June 30, 2022

[Maps and Plumes](#)

Action Plan Thoughts

Unified Command – Fire, Law, Hazmat, Medical

Command Functions – advanced planning – plume models

Joint Operational Goals & Assignments – on-site and off-site

Resources needed – support available

Communications and situational status updates

Link from field command to EOC and EPA



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June 30, 2022

[Maps and Plumes](#)

Facilitator On Site Action Plan for the UC

Safety Officer: Set a safe ICP and Operations staging areas

Rescue, decon, and medical treatment/transport

Hazard assessment – cause, anticipated risks and threats.

Containment and Control Plan – Meet with Facility SME's

- Review the C&C plan – System control options (**SOP <IDLH**)
- Review safety orders for entry



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June 30, 2022

[Maps and Plumes](#)

Facilitator Off-Site Action Plan for the UC

Plans Section Chief: Advanced plume model information.

- ChemResponder support
- Attain downwind flank readings – **(PBS/JIC)**
- IMAAC/DTRA advanced plume model arrives.

Status of a protection-in-place order for the downwind and traffic plan?

Show video

Community Issues that occurred

Community Challenges

- Dispatch Center overwhelmed with questions.
- People worried about status of their family and pets.
- Residents reporting a strong odor of ammonia.
- County Hospital - high volume of walk-in patients.
- Triage and decon being setup at the hospital.
- Cardiac emergency reported in the downwind plume.



Module 5: Termination and Recover

DEALING WITH KEY SAFETY REQUIREMENTS

- Hazard Assessment
- Demob. Unified Command
- Liaison EOC operations
- Assess Protective Action Zone
- Termination Order with Facility



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June 30, 2022

Action Plan Thoughts 21:05 hours

Termination Order

All-hazards assessment

Recovery safety plan

Overhaul and cleanup plan of action



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June 30, 2022

Action Plan Thoughts 21:25 hours

UC receives an updated **plume model**

UC Command team addresses the downwind action plan

Public Information – PBS announcements

Coordinate demobilization and site security.

Update responders and coordinate reports.

Facilitator: Review



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June 30, 2022

Audience Reflection

- Does the emergency response system meet the challenge?
- Situation status – escalating safety factors or sudden expansion of the risks and threats anticipated and controlled?
- Importance of site and system details.
- Coordinated support from response agencies involved?
- Anticipated Community threats?



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June 30, 2022

Lorraine

Community Issues that occurred

Community Challenges

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June 30, 2022

Lorraine

Module 6: Hot Wash Debriefing

DEALING WITH KEY SAFETY REQUIREMENTS

- Crisis Management
- After-Action Reports
- AAR – Improvement Plan
- Possible escalating factors
- Future TTX

Lorraine



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June 30, 2022

Final Situation Status

2 Hour and 45 minutes into call – Situation Status

- Termination proclamation includes safety requirements:
- Restart and recovery plan signed of by a licensed engineer or licensed refrigeration service specialist.
- Command transition - Sr. Environmental Health Officer.
- Set up debriefing for emergency responders.
- Termination Proclamation signed by Plant IC.



Action Plan Thoughts

Demobilization and Hazard assessment.

- PPE and back-up to investigate cause and origin.
- Risk management plan for remaining threats.
- Safety Plan for transition to Termination of emergency.
- Community message regarding status of emergency.
- Evaluate need for new Isolation Zone restrictions.



One Plan Playbooks

- Master Maps and hazard zones
- Blue – Discovery
- Green – Initial Response
- Red – Sustained Response
- Orange – Termination and Recovery



REGION 9 (PACIFIC SOUTHWEST)

June 30, 2022

