

30-MINUTE PLAN EMERGENCY CONTROL GUIDE

1. DISCOVERY - "LANCE"

Life Safety: Clear the Isolation Zone (NH₃ = 100 ft. to 1,000 ft.)

- Clear the Isolation Zone and escape laterally and upwind or SIP
- Set up for rapid entry rescue, decontamination, and medical care

Alert: Record Size-Up on Alert Form

- Who? (your name)
- What? (casualties, rescue, medical, fire, or chemical release)
- Where? (specific location)

Notification: Coordinate Checklist Notifications with IC

- 9-1-1; give response route and on-site meeting location
- LEPC: () SERC: ()
- NRC: (800) 424-8802 OSHA: ()
- Contractor: () CORP: ()

Command and Control

Action: Identify Hazard Zone, Level of Concern, size of Isolation Zone, and location of the Incident Command Post (ICP)

Plan: Engage the Command Team; Set the Life Safety Objective

Hazards (chemical/physical), **Risks** (life and environmental), **Threats** (fire, pressure, reactivity, slip/fall, structural integrity)

Level of Concern: 1 - Confined and Contained
2 - Contained and uncontrolled
3 - Uncontrolled and uncontained

Isolation and Protective Action Distance (PAD) for ammonia:

Small 100 ft. PAD: 550 ft. (day and night)
Large 500 ft. PAD: Day = .5 miles; Night = 1.3 miles
Catastrophic 1,000 ft. PAD: Track plume beyond 1.3 miles

Acute Exposure Guideline Levels (AEGL):

10 Minutes: AEGL 2 = 220 PPM AEGL 3 = 2,700 PPM
30 Minutes: AEGL 2 = 220 PPM AEGL 3 = 1,600 PPM

Flammability of confined NH₃ vapor with a 1,204°F ignition source:
Caution - 10,000 PPM, move-out - 15,000 PPM, high risk - 40,000 PPM

Evacuation to Safe Refuge or SIP

- Movement Plan—move laterally and upwind to Safe Rally Point
- Secure the safe assembly area locations
- Setup Access Controls to and from the plant
- Head count—check in/check out

2. INITIAL RESPONSE - "CAN use SIMPLE"

Size-up: CAN report Conditions-Actions-Needs

Conditions: Hazard Zone Location? Nature of emergency?
Level 1, 2, or 3? Size of Isolation Zone? Confined? Contained?
Controlled?

Actions: Incident Commander? Command post location?
Evacuation status? Rescue in progress? Life Safety in Isolation
Zone? Status of emergency shut-down?

Needs: Rescue? Medical? Decon? Shut-down? Ventilation
support? Downwind/downstream receptor management?

Sources of ignition and fire suppression controls

- Control utilities, ventilation, and sources of ignition
- Access to hydrants and FDCs for fire sprinkler system
- Firewall integrity, containment of fire, exposure protection

Isolate the source of the leak and pump down the liquid

- Identify upstream and downstream control points
- Avoid hydraulic shock - use situational awareness
- Avoid trapping liquid between valves with no relief valve
- Confine to hot zone, contain within system, and control leak source
- Confined and contain, e.g., close doors and/or tarp
- Control liquid upstream and/or downstream of leak

Manage energy flow to the high and low sides

- High side release - shutdown compressors and evaporators
- Low side release - use compressors and condensers to move liquid
- Reduce incoming heat - disable evaporators and defrost
- Use diffuser and/or pressure equalizer

Pressurized ventilation using system or portable fans

- Plan air flow - entry (upwind) and exhaust (downwind)
- Use fan to dilute or redirect vapor
- Engage portable fan to support rescue

Life Safety and Engage Incident Action Plan

- Assure life safety in Isolation Zone
- Public safety control of Protective Action Zone
- Eye-level wind movement: CAUTION for wind changes, eddies, backflow, and turbulence
- Engage site access control and air monitoring
- Assure containment of downstream environmental threat

3. SUSTAINED RESPONSE - "PLANS"

Integrate command with Facility Team - Senior Supervisor or Plant IC becomes Technical Support Liaison from the facility.

Unify Command with agencies having jurisdictional authority to address emergency services within the Protective Action Area and establish the Incident Command Leader of the Unified Command.

Notify the community Emergency Services Director if the incident requires regional resources.

PRE ENTRY Hazard Zone readiness - ICS 215A

- Develop a Situation Status Report and a Hazard Assessment (ASTI All-Hazards Response Guidebook pgs. 2-4 and 36-42.)
- Recognize escalating factors, e.g., ammonia vapor >10,000 PPM ignition sources and overpressure (approaching cut-out and/or PRV settings).
- Avoid hydraulic shock (hot gas mixing with cold liquid within the system) and be aware of possible hydrostatic pressure (trapped liquid).
- Assure adequate entry/exit locations, communications, and buddy-system alert signals.
- Utilize Hazmat Competence (Haz-Comp) to judge the level of PPE and risk vs. benefit consideration before doing a high-risk rapid entry rescue.
- Order adequate resources - double the number that are engaged, or triple if high-life threat exists.

LIFE SAFETY and Logistics challenges

- Utilize chemical monitoring to identify life safety concerns within the Isolation Zone and Protective Action Area.
- Assure that adequate back-up for Entry Team with readiness for decon and rehab.
- Position ventilation fans and back-up hose lines for rapid decon and lifeline support.
- Evacuation staging areas to be monitored for potential chemical vapor and smoke exposure.
- Evacuees supported with adequate protection from weather and personal care concerns, e.g. hydration and bathroom facilities.
- Logistical needs for PPE, decon, medical treatment/transport, air supply support, communications, technical support for critical high-risk rescue and system control.

ACTION PLAN development using Hazmat Intelligence

- Review the ICS 201 form and the Organizational Chart (back of this plan).
- Consider a Science Officer and/or Plans Section Chief - Hazard Assessment and IAP Objectives.
- Quick-Guide Hazmat Intelligence - See ASTI All-Hazards Response Guidebook pgs. 2-4 and 36-42.

NO ENTRY until the following principles are addressed.


- Conduct and IAP Command Team briefing; review hand signals, alert tones, and safety concerns (see sample on the back).
- Never enter a danger area without "Command" approval; never change an IAP task without IC approval.
- PPE readiness to escape IDLH and to enter with SCBA and hazmat over suit that addresses the predicted and monitored level of exposure, e.g. Level B <5,000 ppm.
- PPE protection concerns for -30°F to -80°F exposure within an aerosol or dense gas cloud; for flash fire threat within a dense gas cloud (10% to 28% concentrations).
- Avoid using water on aerosol streams or dense gas clouds when the residual effects are high life hazard, longer downwind impacts, and/or high system pressure.
- If you "feel the tingle" of ammonia vapor, your vapor barrier is failing - escape immediately.
- Do not put water on a liquid pool of ammonia - tarp and cover and absorb or suction the liquid puddles into safe storage tanks.

SAFETY PLAN that is linked to the overall PLAN

- Develop ICS 208 Site Safety and Control plan and review All-Hazards Response Guidebook pgs. 36-38.
- Plan to perform hazard assessments and update the safety plan prior to engaging additional IAP's and/or at a minimum of every 30 minutes.

For more information about trainings and Safety Days
visit www.ammonia-safety.com or contact the main office at (831) 453-7102.

Ammonia Safety and Training Institute



Take Command with the 30-Minute Plan

- ▶ Establish Hazard Zone ◀
- ▶ Set the Level of Concern ◀
- ▶ Secure the Isolation Zone ◀
- ▶ Set Life Safety Objective ◀
- ▶ Engage Emergency Shutdown Plan ◀

**Save yourself, engage the team, and help others.
Act decisively to stop problems when they are small.**

4. TERMINATE and "to RECOVER"

Note: This part of the 30-Minute Plan is available as a separate checklist with supporting Playbook information that engages the RECOVER acronym as follows:

- R**eview termination stipulations and regulatory orders
- E**valuate the situation status and develop a safety plan
- C**risis management team - Operations, Planning, Administrative (Legal, Finance, and Information Technology)
- O**verhaul, salvage, clean-up and restart plan
- V**erify status - customers, marketplace, investors, and stakeholders
- E**ducate the tripod; debrief, train, and improve
- R**eturn to business with celebrated success

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Visit www.ToucanEd.com/ASTI or call (888) 386-8226.

INCIDENT BRIEFING	1. Incident Name:	2. Date Prepared:	3. Time Prepared:
4. CAN Report and Sketch (Check Playbooks and Master Maps) C - Condition Report (Command, Zones, Situation Status) A - Actions Taken (LANCE CAN use SIMPLE PLANS) N - Needs (LANCE CAN do SIMPLE plan - go to #5 to set tasks) Sources of ignition Isolate the release Manage pressure Pressurized ventilation Life safety - rescue Emergency plan - go to #5 to set objectives/tasks		Status Reports <input type="checkbox"/> ICS 215A and/or ICS 208 <input type="checkbox"/> Situation Status Report <input type="checkbox"/> Detailed Hazard Analysis <input type="checkbox"/> Personnel Accountability Report <input type="checkbox"/> Status of System Control Mitigations <input type="checkbox"/> Downwind Receptor Status within the Protective Action Zone <input type="checkbox"/> Downstream – contain contaminated run-off <input type="checkbox"/> Other:	
5. General Control Objectives for the Incident: Overall Objective(s) - Life Safety Accountability/Zone Control Safety, Rapid-Entry Rescue, Emergency Shut-Down, Emergency Medical Support, Reconnaissance, Receptor Management, other: 3-Cs - Confine, Contain, Control 3-Ds - Diffuse, Disperse, Divert 3-Ps - Prevention, Protection, Preparedness 3-Rs - Recon, Redirect, Retreat Operational Tasks associated with the acronyms: LANCE CAN use SIMPLE PLANS to RECOVER			
6. Weather Forecast <input type="checkbox"/> National Weather Service current weather available on all ASTI Playbooks. <input type="checkbox"/> Roof-top windsock shows unobstructed upper atmosphere wind speed and direction. <input type="checkbox"/> Eye-level wind indicator shows ground level wind; place at all staging areas and near building exits.			
7. General Safety Message: initial isolation zone, protective action zone, NO Contact Lenses, proper PPE, entry team checklist, safety checklist, ICS 208, evacuation movement and personnel accountability <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Personal Protective Equipment <input type="checkbox"/> Air Monitoring Hazard Concentration <input type="checkbox"/> Emergency Evacuation/Hand Signal Alert <input type="checkbox"/> Set-up Decon, Rehab, and Medical <input type="checkbox"/> Entry Team On-air Monitoring <input type="checkbox"/> Safety Officer/Assistant Safety Officer <input type="checkbox"/> Eye-level and roof wind indicators <input type="checkbox"/> Control for the movement through the decon corridor <input type="checkbox"/> Position hose lines and ventilation fans <input type="checkbox"/> Back-up for/Rapid-Entry Rescue </div> <div style="width: 45%;"> Hand Signals: Hands gripping throat: Out of air/Breathing difficulty Grip partner's wrist: Leave area immediately Hands on waist: Leave area immediately Hands on top of head: Need assistance Thumbs up: I'm OK/I understand Thumbs down: I'm not OK </div> <div style="width: 45%;"> Tag Line Rope Signals: O – Okay: One tug—entrant is okay A – Advance: Two tugs—need rope T – Take up slack: Three tugs—entrant is retreating, take up slack H – Help: Four tugs—entrant needs help </div> <div style="width: 45%;"> Emergency Escape Signal: A repeated triple horn blast (10 second blasts) </div> </div>			
8. Attachments: <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> Organizational List - ICS 203 <input type="checkbox"/> Div. Assignment List - ICS 204 <input type="checkbox"/> Communications Plan - ICS 205 <input type="checkbox"/> Medical Plan - ICS 206 </div> <div style="width: 30%;"> <input type="checkbox"/> Site Safety and Control Plan - ICS 208 <input type="checkbox"/> General Message Form - ICS 213 <input type="checkbox"/> Unit Log - ICS 214 <input type="checkbox"/> Safety and Risk Analysis - ICS 215A </div> <div style="width: 30%;"> <input type="checkbox"/> Radio Requirement Worksheet ICS - 216 <input type="checkbox"/> Support Vehicle List - ICS 218 <input type="checkbox"/> Other: </div> </div>			
ICS 201 Page 1 of 2	9. Prepared by (name and position):		

ICS ORGANIZATIONAL CHART

Command
 Assignments:
 Incident Commander:
 Unified Command Team:
 Plant Liaison:

Incident Assignments:
 COMMAND STAFF
 Incident Safety Officer
 Liaison Officer/Agency Rep.
 Public Information Officer
 Legal Officer

Plant Response Team
 Assignments:
 Plant IC
 Lead Responder
 Notification Unit Leader
 Evacuation Group Supervisor
 Safety Officer
 Plans Section Chief
 Documentation (Scribe)
 Production Control Specialist
 Access Control Officer
 Air Monitoring Team Leader
 Media Representative
 Logistics Officer

Operations Section Chief
 Assignment:
 Branch Director Title: Assignment:
 Branch Director Title: Assignment:
 Branch Director Title: Assignment:
 Hazmat Division and/or Group Supervisor

Plans Section Chief
 Assignment:
 Notification Unit Leader
 Documentation Unit Leader
 Situation Unit Leader
 Environmental Unit Leader
 Sampling and Monitoring Coordinator
 Modeling Analysis Coordinator
 Science Officer/Technical Specialist

Logistics Section Chief
 Assignment:
 Medical Unit Leader
 Supply Unit Leader
 Communications Unit Leader
 Food and Facilities Unit Leaders
 Breathing Air Support
 Logistics Set-up

Finance Section Chief
 Assignment:
 Procurement Unit Leader
 Cost Unit Leader
 Time Unit Leader
 Contractor Compliance Unit Leader

CONTROL ZONE LAYOUT—AMMONIA RELEASE

Cold Zone - Command and Operations Zones

Wind Monitor the windsock and eye-level wind indicators
Weather data: www.weather.gov

Exclusion-Red Hot Zone
 • AEGL 2 = 220 PPM
 • 30 minutes exposure

Protective Action Distance
 Day Time: 550 ft. to .5 Miles
 Night Time: up to 1.3 Miles

Initial Isolation Zone
 • 100' small leak < 100'/s
 • 500' large leak (aerosol cloud)
 • Use buddy system
 • Support with a fan and hose line

Contamination Reduction - Yellow Zone
 • Minimum of 100 ft. to 150 ft. between Red and Green Zones
 • Drop equipment at the entry
 • Decon with water for gross contamination (liquid)
 • Decon with a fan for vapor exposure

Command Team
 • Establish personnel accountability
 • Pre-entry hazard assessment (ICS 215a)
 • Secure a site safety and control plan (ICS 208)
 • Situation status and pre-entry hazard analysis (ICS 201)
 • Written Incident Action Plan

INITIAL RESPONSE ASSIGNMENT OPTIONS

Hazmat Group Supervisor:

- Assistant Safety Officer
- Entry Team Leader
- Decon Officer
- Rehab Officer

Optional Positions:

- Site Access and Control Officer
- Safe Refuge Officer
- Staging Officer
- Rescue Team Leader
- Ventilation Group Supervisor
- Air Monitoring Group Supervisor

ACTUAL ASSIGNMENTS: