30-MINUTE PLAN EMERGENCY CONTROL GUIDE

1. DISCOVERY - “LANCE”

Life Safety: Clear the Isolation Zone (NH = 100 ft. to 1,000 ft.)
☐ Clear the Isolation Zone and escape lattely and upward or SIF
☐ 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)

Information/Coordination/Checklist/Notifications with IC
☐ 8-9-1, give response route and old meeting location
☐ LEPC: (____) SERC: (____)
☐ NRC: (800) 424-8802 OSHA: (____)
☐ Contractor: (____) COR: (____)

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, malleability, spill, airborne, structural)
Level of Concern: 1 - Confined and Contained
2 - Confined and uncontrolled
3 - Unconfined and uncontrolled

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 out beyond 1.3 miles

Acute Exposure Guideline Levels (AEGLs):
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 SIF:
☐ Movement Plan—move laterally and upward 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?
Adesign Incident Commander? Command post location?
Evacuation status? Rescue in progress? Life Safety in isolation Zone?
Status of emergency shutdown?

SOURCES OF IGNITION AND FIRE SUPPRESSION ENHANCEMENTS
☐ Control utilities, ventilation, and sources of ignition
☐ Access to hydrants and FDF to 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 fluid 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

Presurized ventilation using system or portable fans
☐ Plan air flow - entry (upwind) and exhaust (downwind)
☐ Use fan to dilute or redirect vapor
☐ Engage portable fans 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.
Unity 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 2-4 and 36-42.)
☐ Recognize escalating factors, e.g., ammonia vapor >10,000 PPM ignition sources and overpressure (approaching cut-out and/or PVR settings).
☐ Avoid hydraulic shock (hot gas mixing with cold liquid within the system) and be aware of possible hydrostatic pressure (trapped liquid).
☐ Assess air direction (entry/exit) locations, communications, and buddy-system alert signals.
☐ Utilize Hazmat Competence (Haz-Corp) 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 triage 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.
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☐ 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” to “80” exposure within an aerosol or dense gas cloud; for flash fire threat within a dense gas cloud (10% in 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 suck 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 on trainings and Safety Days visit www.ammonia-safety.com or contact the main office at (303) 453-7102.

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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:
☐ Review termination stipulations and regulatory orders
☐ Evaluate the situation status and develop a safety plan
☐ Crisis management team - Operations, Planning, Administrative (Legal, Finance, and Information Technology)
☐ Overhaul, salvage, clean-up and restant plan
☐ Verify status - customers, marketplace, investors, and stakeholders
☐ Educate the tripod; debrief, train, and improve
☐ Return to business with celebrated success

SAVE YOURSELF, ENGAGE THE TEAM, AND HELP OTHERS. ACT DECISIVELY TO STOP PROBLEMS WHEN THEY ARE SMALL.