

### The "One Plan"



An Approach to All Hazards  
Emergency Response Planning

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### The Importance of Pre-Planning for Emergency Events

- [KS Evac Edited.wmv](#)

10/27/2010

AMMONIA SAFETY & TRAINING

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### Crises Management and The "One Plan"

- Accidental Releases Involving Ammonia
- The One Plan Ammonia Coalition (OPAC)
- OPAC Activities
- Background and Logic of The One Plan
- One Plan Structure and Operational Strategy
- Examples

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**2009 was a bad year!**

- 11-16-2009, CF Industries, Rosemont, MN (transportation) – 2 driver fatalities
- 7-15-2009, Tanner Industries, Swansea, SC (transportation) – 1 public fatality
- 6-20-2009, Mountaire Farms', Lumber Bridge, NC (ammonia refrigeration) – 1 worker fatality
- 5-13-2009, American Cold Storage, Louisville, KY (ammonia refrigeration) – 2 worker fatalities

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**BRIEF AMMONIA BACKGROUND**

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**Ammonia Use**

- 100 million metric tons of ammonia produced per year
- 16 million metric tons produced in U.S.

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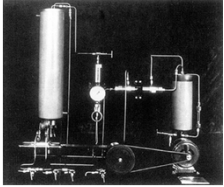
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Fritz Haber



Carl Bosch



high pressure

$$\text{N}_2 + \text{H}_2 \xrightarrow{\text{iron catalyst}} \text{NH}_3$$

iron catalyst

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### Ammonia Use (continued)

- 80 % Agricultural use
- 18 % in industrial processes
- <2 % as a refrigerant

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### Ammonia Uses

<ul style="list-style-type: none"><li>• Fertilizer</li><li>• Metal Heat Treating</li><li>• Water Treatment Plants</li><li>• Blue Print Shops</li><li>• Power Plants</li><li>• Meth Labs</li></ul>	<ul style="list-style-type: none"><li>• Refrigeration<ul style="list-style-type: none"><li>– Industrial Processes</li><li>– Cold Storage</li><li>– Ice Making</li><li>– Skating Rinks</li><li>– Bottling Plants</li><li>– Air Conditioning</li><li>– RV/Boat/Hotel Refrigerators</li></ul></li></ul>
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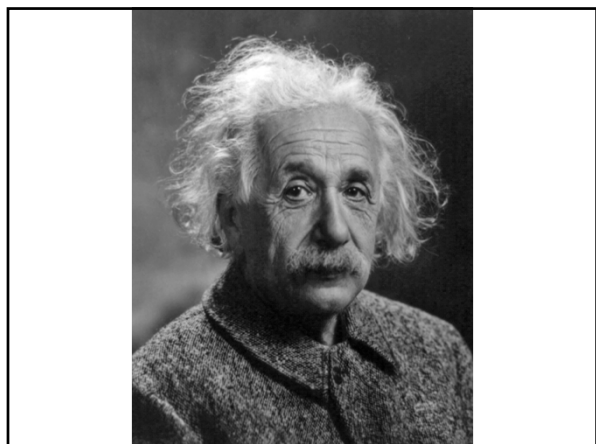
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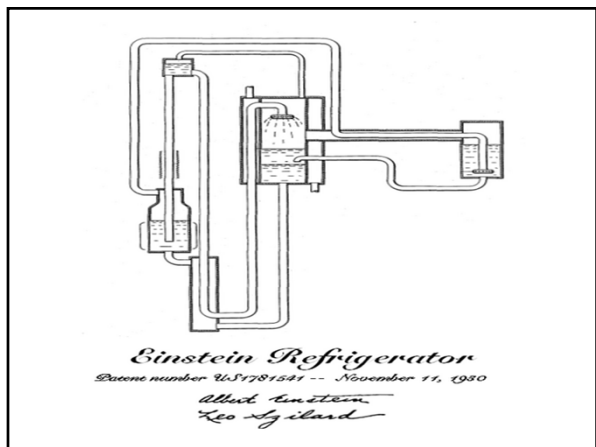
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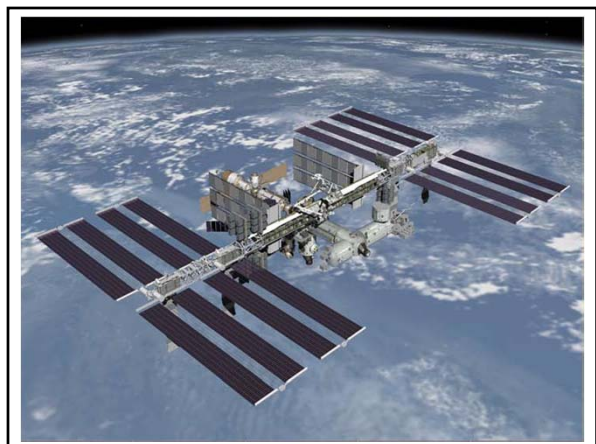
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### Ammonia Delivery Infrastructure



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### U.S. Ammonia Facilities

**68,000\*** facilities with ammonia inventory  
**16,000\*** facilities likely using ammonia in a refrigeration system

\* Rough approximation by CSB, using NRC and RMP data

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### Ammonia Properties

- PEL : 50 ppm
- IDLH : 300 ppm
- Odor threshold : 5 ppm to 50 ppm
- Above 100 ppm, uncomfortable
- Between 300 - 500 ppm, unbearable

**Fire and explosion hazard : concentrations of 16% to 25%+**  
– Mixtures of ammonia and oil may reduce lower limit to 8%

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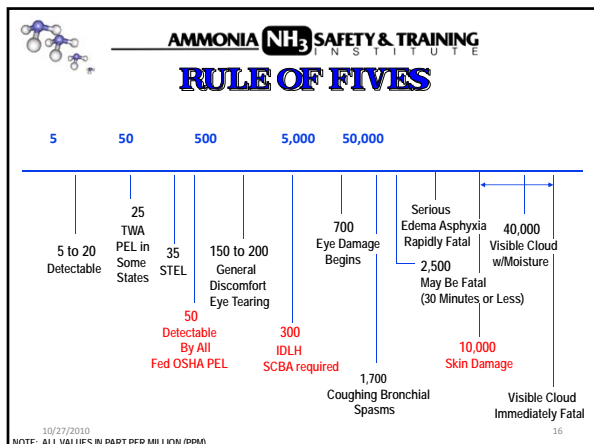
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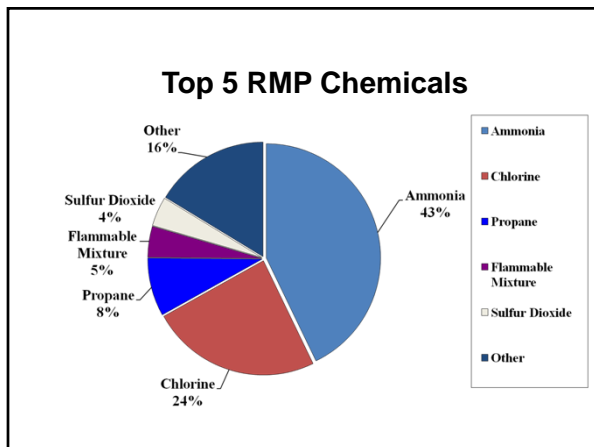
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**RMP Database 1994-2004**

- 9,400 RMP covered facilities with reportable ammonia inventory
- Over 1,200 incidents involving ammonia
  - Over 600 Ammonia refrigeration incidents

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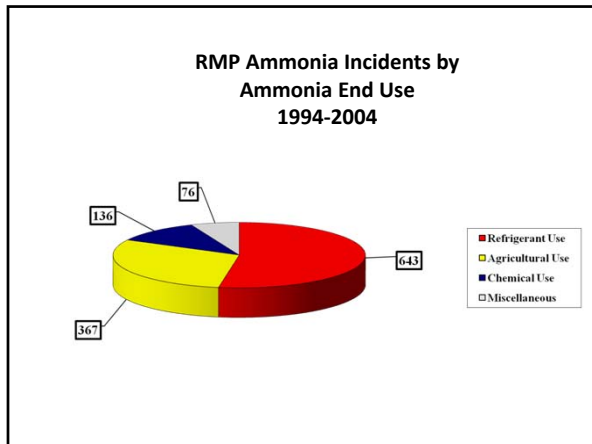
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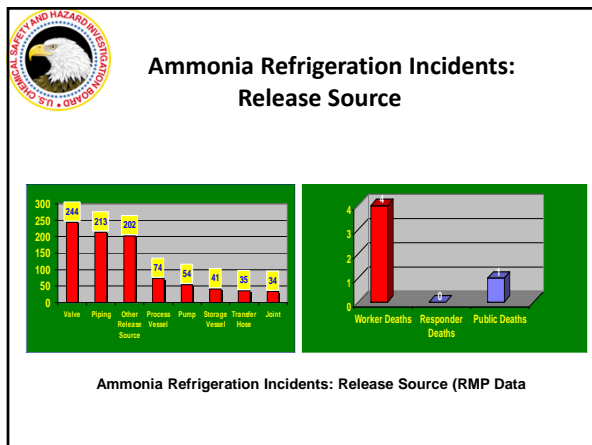
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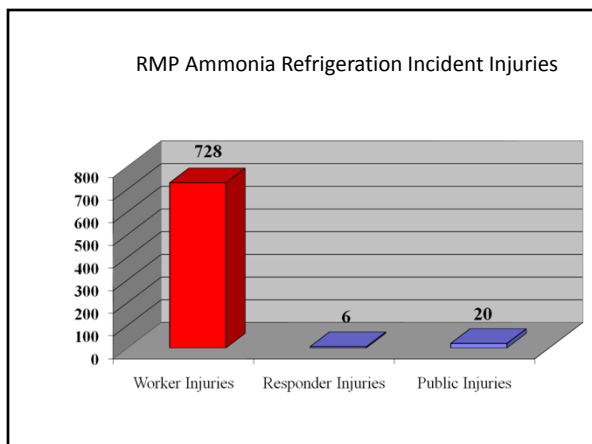
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**AMMONIA RELEASE DATA  
TOP 10 LIST**

Quantity	NAICS	Release Date
109,040	31152	Mar-27-1999
75,000	311611	Jan-21-1997
40,000	48422	Apr-18-2003
33,000	311612	Nov-17-2003
30,000	31161	Jan-30-1995
27,677	31193	Apr-11-2003
27,000	311615	Dec-19-1995
24,000	311813	Jul-30-1996
20,080	311615	Nov-03-1997
20,000	311612	Jul-26-1998

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**AMMONIA RELEASE DATA  
TOP 10 LIST**

NAICS Code	NAICS Description	# Releases	%
311615	Poultry Processing	124	16.1%
49312	Refrigerated Warehousing and Storage	90	11.7%
311612	Meat Processed from Carcasses	66	8.5%
311411	Frozen Fruit, Juice, and Vegetable Manufacturing	53	6.9%
311611	Animal (except Poultry) Slaughtering	46	6.0%
31152	Ice Cream and Frozen Dessert Manufacturing	33	4.3%
311511	Fluid Milk Manufacturing	31	4.0%
31141	Frozen Food Manufacturing	24	3.1%
311225	Fats and Oils Refining and Blending	19	2.5%
31151	Dairy Product (except Frozen) Manufacturing	19	2.5%

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## One Plan Ammonia Coalition (OPAC)

- Initial Meeting: December 2007, WDC
  - ASTI                      – RETA
  - IARW/WFLO            – IAFC
  - IIAR
- Agreement to cooperate on improving the safe use of ammonia
- Development of a “One Plan” for ammonia emergency response
- Ammonia Safety Days

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## OPAC Activities

- Continue Development of a “One Plan” for Ammonia Incidents and Other Emergency Events
- Ammonia Safety Days
  - 2008 OSHA Susan G. Harwood Training Grant
  - 2009/2010 Industry Supported Safety Days
- Complete “One Plan” Template

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## Golden Rules of Response Readiness “The 10 Safety Commandments”

<ol style="list-style-type: none"> <li>1. If you don't know, don't go!</li> <li>2. Prevent them all or stop them small.</li> <li>3. Place high value on Pre-Emergency readiness.</li> <li>4. Don't be the "village idiot."</li> <li>5. Consider <u>all</u> pipelines to be pressurized and dangerous.</li> </ol>	<ol style="list-style-type: none"> <li>6. Check downstream &amp; upstream pipeline/valve conditions.</li> <li>7. Wearing PPE is like insurance</li> <li>8. Understand the hazards, risks, and threats.</li> <li>9. Put high value on engaging in the first 5 MINUTES.</li> <li>10. Incident Commanders are organized and act methodically.</li> </ol>
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## Why Have an Emergency Management Plan?

- [Hudson River Plane Landing Animation with Audio.wmv](#)

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## Background and Logic of The One Plan

Federal Register / Vol. 61, No. 109 /Wednesday, June 5, 1996

**The National Response Team's  
Integrated Contingency Plan Guidance**  
**AGENCY:** Environmental Protection Agency (EPA),  
 U.S. Coast Guard (USCG),  
 Minerals Management Service (MMS),  
 Research and Special Programs Administration (RSPA),  
 Occupational Safety and Health Administration (OSHA).

*The policies set out in this notice are intended solely as guidance.*

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## Background and Logic of The One Plan

**Presidential Review Findings**

- Section 112(r)(10) of the Clean Air Act required the President to conduct a review of federal release prevention, mitigation, and response authorities.
- The Presidential Review was delegated to EPA, in coordination with agencies and departments that are members of the National Response Team (NRT).
- The Presidential Review concluded that, while achieving its statutory goals to protect public safety and the environment, the current system is complex, confusing, and costly.
- It identified several key problem areas and recommended a second phase to address these issues. One of the issues identified is the multiple and overlapping federal requirements for facility emergency response plans.

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## Background and Logic of The One Plan

**SUMMARY:** The U.S. Environmental Protection Agency, as the chair of the National Response Team (NRT), is announcing the availability of the NRT's **Integrated Contingency Plan Guidance ("one plan")**. This guidance is intended to be used by facilities to prepare emergency response plans.

**The intent of the NRT is to provide a mechanism for consolidating multiple plans that facilities may have prepared to comply with various regulations into one functional emergency response plan or integrated contingency plan (ICP).**

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## Background and Logic of The One Plan

NRT is to provide a mechanism for consolidating multiple plans that facilities may have prepared to comply with various regulations into one functional emergency response plan or integrated contingency plan (ICP).

- EPA's Risk Management Programs Regulation—40 CFR part 68;
- OSHA's Emergency Action Plan Regulation—29 CFR 1910.38(a);
- OSHA's Process Safety Standard—29 CFR 1910.119;
- OSHA's HAZWOPER Regulation—29 CFR 1910.120; and
- EPA's Resource Conservation and Recovery Act Contingency Planning Requirements—40 CFR part 264/265/279.52.

In addition, facilities may also be subject to state emergency response planning requirements that this guidance does not specifically address. Facilities are encouraged to coordinate development of their ICP with relevant state and local agencies to ensure compliance with any additional regulatory requirements.

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## Background and Logic of The One Plan

This one-plan guidance was developed through a cooperative effort among numerous NRT agencies, state and local officials, and industry and community representatives. The NRT and the agencies responsible for reviewing and approving federal response plans to which the ICP option applies agree that **integrated response plans prepared in the format provided in this guidance will be acceptable and be the federally preferred method of response planning.**

The NRT anticipates that future development of all federal regulations addressing emergency response planning will incorporate use of the ICP guidance. Also, developers of state and local requirements will be encouraged to be consistent with this document.

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## Background and Logic of The One Plan

**Integrated Contingency Plan (ICP) Philosophy:**

- minimize duplication in the preparation and use of emergency response plans at the same facility
- improve economic efficiency for both the regulated and regulating communities.
- eliminate confusion for facility first responders
- yield a highly functional document for use in varied emergency situations
- providing a mechanism for complying with multiple agency requirements.
- improve coordination between facility response personnel and local, state, and federal emergency response personnel.

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## Background and Logic of The One Plan

- The ICP concept should also allow coordination of facility plans with plans that are maintained by: local emergency planning committees (LEPCs), Area Committees, cooperatives, and mutual aid organizations. In some cases, there are specific regulatory requirements to ensure that facility plans are consistent with external planning efforts. Industry use of this guidance along with active participation on local and Area Committees will improve the level of emergency preparedness and is therefore highly encouraged.
- The projected results described above will ultimately serve the mutual goal of the response community to more efficiently and effectively protect public health, worker safety, the environment, and property.

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## Background and Logic of The One Plan

**Organizational Concepts**

- The ICP format provided in this one plan guidance is organized into three main sections:
  - an introductory section,
  - a core plan, and
  - supporting annexes.
- It is important to note that the elements contained in these sections are not new concepts, but accepted emergency response activities that are currently addressed in various forms in existing contingency planning regulations.
- The goal of the NRT is not to create new planning requirements, but to provide a mechanism to consolidate existing concepts into a single functional plan structure.

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## Background and Logic of The One Plan

**introduction section**

- designed to provide facility response personnel, outside responders, and regulatory officials with basic information about the plan and the entity it covers. It calls for a statement of purpose and scope, a table of contents, information on the current revision date of the plan, general facility information, and the key contact(s) for plan development and maintenance.
- This section should present the information in a brief factual manner.

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## Background and Logic of The One Plan

**core plan and annexes**

- based on the structure of the National Interagency Incident Management System (NIIMS) Incident Command System (ICS). NIIMS ICS is a nationally recognized system currently in use by numerous federal, state, and local organizations (e.g., some Area Committees under OPA). NIIMS ICS is a type of response management system that has been used successfully in a variety of emergency situations, including releases of oil or hazardous substances. NIIMS ICS provides a commonly understood framework that allows for effective interaction among response personnel.
- Organizing the ICP along the lines of the NIIMS ICS will allow the plan to dovetail with established response management practices, thus facilitating its ease of use during an emergency.

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## Background and Logic of The One Plan

**Facility owners and operators should determine appropriate response levels based on:**

- 1) the need to initiate time urgent response actions to minimize or prevent unacceptable consequences to the health and safety of workers, the public, or the environment; and
- 2) the need to communicate critical information concerning the emergency to offsite authorities.

The consideration and development of response levels should, to the extent practicable, be consistent with similar efforts that may have been taken by the LEPC, local Area Committee, or mutual aid organization. Response levels, which are used in communications with offsite authorities, should be fully coordinated and use consistent terminology.

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## Background and Logic of The One Plan

**The Core Plan should:**

- reflect the essential steps necessary to initiate, conduct, and terminate an emergency response action: recognition, notification, and initial response, including assessment, mobilization, and implementation.
- be concise and easy to follow. A rule of thumb is that the core plan should fit in the glovebox of a response vehicle. The core plan need not detail all procedures necessary under these phases of a response.
- provide information that is time critical in the earliest stages of a response and a framework to guide responders through key steps necessary to mount an effective response.
- be convenient to use and understandable at the appropriate skill level.

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## Background and Logic of The One Plan

Facility planners need to find the right balance between the amount of information contained in the core plan versus the response critical annexes

The NRT recommends the use of checklists or flowcharts wherever possible to capture these steps in a concise easy-to-understand manner. The core plan should be constructed to contain references to appropriate sections of the supporting annexes for more detailed guidance on specific procedures. The NRT anticipates that for a large, complex facility with multiple hazards the annexes will contain a significant amount of information on specific procedures to follow. For a small facility with a limited number of hazard scenarios, the core plan may contain most if not all of the information necessary to carry out the response thus obviating the need for more detailed annexes. The checklists, depending on their size and complexity, can be in either the core or the support section.

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## Background and Logic of The One Plan

Regardless of the response management system used, the plan should include an organization chart, specific job descriptions, a description of information flow ensuring liaison with the on-scene coordinator (OSC), and a description of how the selected response management system integrates with a Unified Command.

To accomplish this, the annexes should contain sections on facility information, notification, and a detailed description of response procedures under the response management system (i.e., command, operations, planning, logistics, and finance). The annexes should also address issues related to post accident investigation, incident history, written follow-up reports, training and exercises, plan critique and modification process, prevention, and regulatory compliance, as appropriate.

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## Background and Logic of The One Plan

- The NRT anticipates that the use of linkages (i.e., references to other plans) when developing annexes will serve several purposes. Linkages will facilitate integration with other emergency plans within a facility (until such plans can be fully incorporated into the ICP) and with external plans, such as LEPC plans and Area Contingency Plans (ACPs). Linkages will also help ensure that the annexes do not become too cumbersome. The use of references to information contained in external plans does not relieve facilities from
- regulatory requirements to address certain elements in a facility-specific manner and to have information readily accessible to responders. When determining what information may be linked by reference and what needs to be contained in the ICP, response planners should carefully consider the time critical nature of the information.

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## Background and Logic of The One Plan

- Discretion should be used when submitting documents containing proprietary data.
- It is, however, necessary to identify in the ICP the specific section of the document being incorporated by, where the document is kept, and how it will be accessed if needed by the facility or requested by the reviewing agency.
- In addition, facility owners or operators are reminded to take note of submission requirements of specific regulations when determining what materials to provide an agency for review as it may not be necessary to submit all parts of an ICP to a particular agency.

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## Why a Good Emergency Response Plan is Important

- [Louie Wrong Way.wmv](#)

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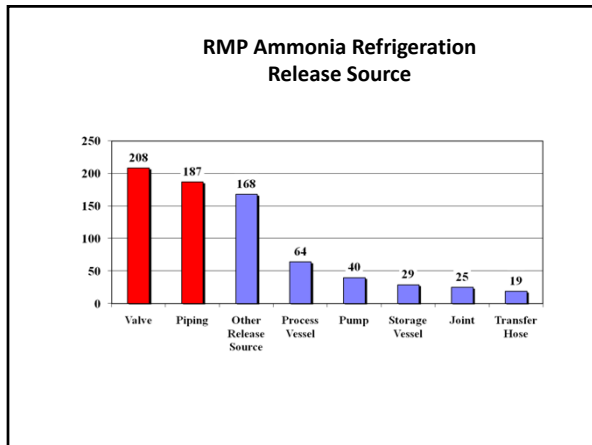
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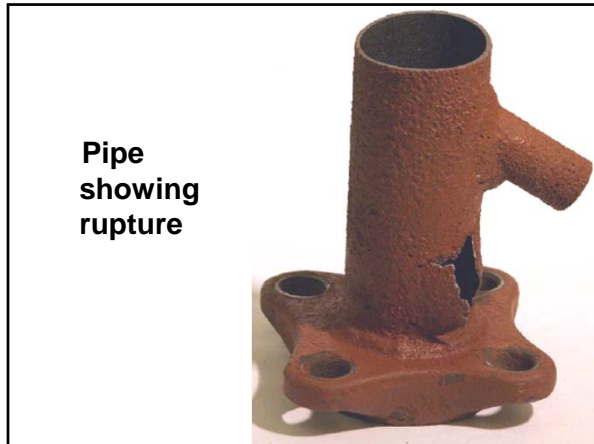
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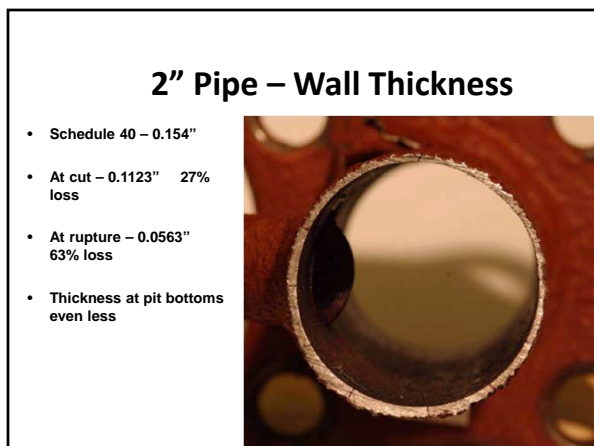
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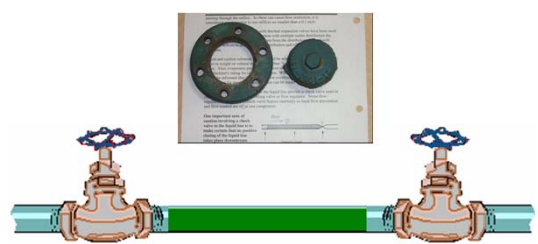
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 **Hydrostatic Pressure**



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 **Hydraulic Shock**



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 **Hydraulic Shock**



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 **What Does a REALLY Bad Ammonia Release Look Like?**

- [CompositeAmmonia.wmv](#)

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## One Plan Operational Strategy

**Pre-Emergency Readiness:** High risk service/maintenance, odor investigation, incidental readiness

- Clipboard and SOP readiness
- Clear objective, back up support, and PPE
- Pre-Alert and incidental response

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**PRE EMERGENCY AND FIRST FIVE MINUTES FOR ALL INCIDENTS**

Pre-Emergency Readiness: *Odor Investigation, Line Break, and High Risk Maintenance/Service*  
 Blue Print indicates "must do - fill in the blank" items

**Project Readiness** Review each box with project team      Date: \_\_\_\_\_ Time: \_\_\_\_\_

Project Lead/Supervisor: \_\_\_\_\_ Facility IC: \_\_\_\_\_

Production Control Supervisor: \_\_\_\_\_ Notification: \_\_\_\_\_

**Personal Protective Equipment** Check the appropriate PPE for the job performed

Respiratory:  APR  SCBA  Radio frequency check  Hard hat  Hearing protection  Gloves

Cotton or fire-resistant overalls  Boots  NH<sub>3</sub> monitor  Nomex hood  Chemical suit  Fan

Identify most appropriate shower/eye wash: \_\_\_\_\_

**Repair Readiness** Review each box with the project team

Project objective  Digital pictures  Verify contractor readiness  Lock out tag out  Hot works permit  Confined space permit  Review P&ID and SOP's  Define and mark restricted area outside, above, below hot zone  Exits posted with repair order  Determine use of "buddy system"

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## Pre-Emergency Readiness Using the One Plan

- [Pre Emergency Readiness.wmv](#)

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## One Plan Operational Strategy

**Phase I: First Five Minutes / Discovery:**

- First person to discover initiates LANCE:
  - o Life Safety in the hot zone
  - o Alert the facility lead
- Facility lead completes LANCE and may assign Notification/Documentations role
  - o Notify 9-1-1, facility I.C., and agencies (LEPC, SERC, and NRC)
- Facility I.C. establishes command and may assign Safety, Operations, and Evacuation Director roles
  - o Control, contain with defensive SIMPLE
  - o Escape, evacuate or SIP Secure perimeter/establish entry control

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**Discovery and Initial Response: The First Five Minutes - Engage LANCE**

**Life Safety:** Call out and move out of the Hot Zone and set the boundary! Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Alert and Alarm:** What is the problem? \_\_\_\_\_ (Review the boxes below)

Fire    Release (liquid, vapor, dense gas, aerosol)    Overpressure (PSI gauge)    Rescue

Injury - fall, chemical exposure, burns, cardiac, heat stress, other: \_\_\_\_\_

**Where is the problem?** \_\_\_\_\_ (building location/component)

**Type of Release:** Check the box below      **Level of Concern:** Check the box below

**Notify:** Supervisor/IC will call or delegate notification for dispatch of 9-1-1 and agency regulators

LEPC \_\_\_\_\_ (see epa.gov)      SERC \_\_\_\_\_ (see epa.gov)      NRC 800-424-8802

**Command/Control/Contain:** Facility IC establishes command and assigns Defensive SIMPLE

" \_\_\_\_\_ (Your Title/Name) \_\_\_\_\_ establishing command for a \_\_\_\_\_ (Level 1, 2, 3) \_\_\_\_\_ (Type of Release/Fire/Rescue/Medical) \_\_\_\_\_ located at \_\_\_\_\_ (Hot Zone location) \_\_\_\_\_; the Command Post will be located at \_\_\_\_\_ (Location) \_\_\_\_\_."

**Escape, Evacuate or Shelter-In-Place (SIP):** Escape laterally and upwind and SIP appropriately

**Evacuation Routes and SIP Location:** \_\_\_\_\_

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**SIMPLE - Use the 30-Minute Plan, Emergency Response Cards, and Your One Plan**

**Command/Control/Contain:** Facility IC establishes command and engages "Defensive SIMPLE" with priority for controlling fire and explosion threat, keeping people out of the Protective Action Zone and reducing environmental damage by controlling contaminated runoff.

1. **Sources of Ignition:** controlled and ventilation engaged to mitigate vapor deflagration; nearest fire extinguisher available and ready for control of incipient fires; fire walk and fire protection systems ready for fire control service
2. **Inhibition:** to manage liquid flow; evaluate upstream and downstream valves (avoid trapping liquid); close the doors and contain the release
3. **Management of Pressure:** manage energy input that raises pressure on high and low sides; control compressor(s), condenser(s), liquid pump(s) and evaporator(s); use diffuser or pressure equalizer
4. **Pressurized Ventilation:** operation of fixed and mobile fans with a plan for downwind safety and downstream environmental protection; use fans to support escape, evacuation, and rescue
5. **LANCE Again:** recheck hot zone safety, notifications, escape routes, evacuation, and/or SIP; set the Protective Action Zone downwind from the Hot Zone (flanks and cross wind at 25 to 50 PPM - first check 100' to 500'); monitor wind changes; give a status update to the IC
6. **Emergency Response Plan:** establish command and engage a written IAP and safety plan; manage downwind/downstream threats and use P&ID/digital pictures and facility plans to define the problem and overall objective and tasks for the IAP and Safety Plan

**Sustained Response:** IC will assign command team roles/functions and develop/implement the IAP and Safety Plan based upon the facility Emergency Action Plan or Response Plan strategy, PPE readiness, and safe entry team protocols (2 in 2 out, zones and controls, decon, rehab, medical, etc.)

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
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## The First Five Minutes Using the One Plan

- [First Five Minutes.wmv](#)

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## One Plan Operational Strategy

**Phase II: 30 Minute Plan / Initial Response:**

- Assure employee and visitor accountability
- Establish the protective action zone
- Confirm that defensive SIMPLE is completed
- Meet and size up with public safety I.C.
- Transition or unify command with Public Safety
- Assess downwind/downstream conditions
- Establish control zones
- Write an Incident Action Plan (IAP)/Safety Plan

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**FIRST 30 MINUTE PLAN - PHASING INTO SUSTAINED RESPONSE**

Initial Response - First 30 Minutes - Public Safety Responders Arrive On-Scene

Size Up: What's happening now? Date: \_\_\_\_\_ Time: \_\_\_\_\_

Employees and visitor accountability head count: \_\_\_\_\_

Downwind/downstream life and environmental receptors: \_\_\_\_\_

Emergency Responder route and check-in location: \_\_\_\_\_

Fire flame/smoke or chemical release area involved: \_\_\_\_\_

Size of release - lbs, gallons, size of dense gas cloud: \_\_\_\_\_

Number of injuries: \_\_\_\_\_ Need for rescue: \_\_\_\_\_

What do we do next?

Engage LANCE; secure hot zone and protective action zone; coordinate rescue and emergency medical needs; coordinate production control; assure personnel accountability and PPE safety; engage Defensive SIMPLE; unify command with public safety; IC to consider the assignment of the following command team members:

Evacuation  
 Notification  
 Production Control  
 Hot Zone and Scene Safety  
 Site Security  
 NH3 Control Team Leader  
 Documentation/Scribe - Optional:  Communications  
 Deputy IC

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**One Plan Operational Strategy**

**Phase IV: Recovery and Improve Incident Termination:**

- Assess and secure the damage area
- Develop and implement business continuation plan
- Communicate incident termination to command team members and off site shelter in place locations
- Develop restart and recovery plan
- Maintain safety and PPE
- Debrief and develop a prioritized list of PMP improvements
- Establish regulatory compliance team
- Develop and implement a public relations plan

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**The Advantage of a Good Emergency Response Plan**

- [Cranston One Plan.wmv](#)

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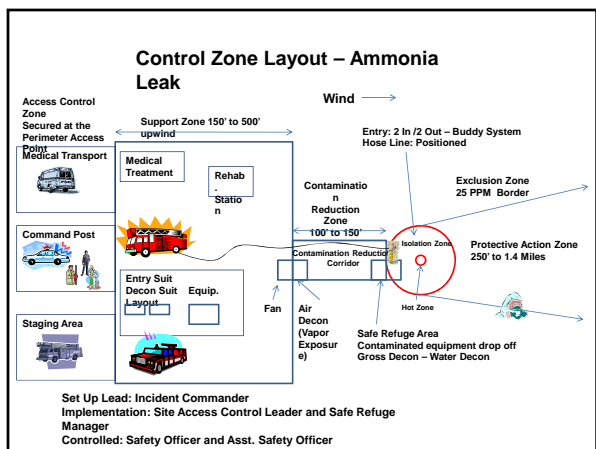
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## The Future of the One Plan

- [One Plan.wmv](#)

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## More Information

<http://www.ammonia-safety.com/oneplan.html>

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## Questions?

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