

# International Association of Fire Fighters

## Mini-Drill #006

### Response to a Hazardous Materials Incident Structural Fire – Residential

Developed by

**Hazardous Materials/Weapons of Mass Destruction  
Training Department**



Harold A. Schaitberger  
General President

Thomas H. Miller  
General Secretary-Treasurer



© 2009 International Association of Fire Fighters  
1750 New York Avenue, NW  
Washington, DC 20006



## Disclaimer

Disclaimer and Notice of Copyright 2009

This program was developed by the International Association of Fire Fighters (IAFF) and is funded by the following federal agencies:

- Department of Energy (DOE)
- Department of Homeland Security (DHS)
- Department of Transportation (DOT)
- National Institute for Occupational Safety and Health (NIOSH)
- National Institute of Environmental Health Sciences (NIEHS)

Every effort has been made to ensure the information contained in these materials is accurate and reflects the latest scientific knowledge on its subject matter. However, proper training for, and understanding of, any emergency response situation is the responsibility of the responding agency or organization, and not of the IAFF. Furthermore, the IAFF and/or its agents cannot warranty the material presented in this program complies with requirements found in local policies or procedures.

These materials are copyrighted and may not be sold. Reproduction of these materials in the course of conducting any for-profit training program is prohibited. Exact and complete copies of the materials may be reproduced solely for the purpose of assisting departments in building a self-sufficient, non-profit training program. Permission to duplicate these materials for any purpose may be revoked by the IAFF at any time for failure to comply with these terms.

## Training Materials

Visit the IAFF Education and Training web site (<http://www.iaff.org>) for electronic copies of this and future Mini-Drills, as well as materials for crew-, station- and department-wide health and safety training.



## IAFF Mini-Drills

### Facilitator Instructions

#### PURPOSE

The purpose of the IAFF Mini-Drill is to provide emergency responders with an opportunity to use their local jurisdictions' standard operating procedures/guidelines (SOPs/SOGs) documents to address the issues present during an incident involving hazardous materials.

Each drill consists of:

- Facilitator Guide
- Photograph(s) or diagram(s) from an actual incident
- Incident information for each stage of the response process<sup>1</sup>
- Resource documents (e.g., Material Safety Data Sheets (MSDSs) for the materials involved in a product release)

The length of each drill will vary by the incident and student involvement, but is intended to last from 1½ to 2 hours.

#### PROCEDURE

The facilitator should:

1. Read through the Facilitator Guide prior to delivery with the students and note the points where the incident photograph, incident information and resource documents should be used. These areas are indicated by boxes and bold type.
2. Be familiar with local jurisdictional standard operating procedures/guidelines (SOPs/SOGs) that address the type of incident, and adapt them to the situation presented.
3. Have a working knowledge of the definitions presented in the chemical and physical properties of hazardous materials.
4. Guide the discussion and make sure it stays focused on the issues presented in the drill.

---

<sup>1</sup> The systematic response process Analyze, Plan, Implement and Evaluate (APIE) is a risk-based response process which correlates with the competencies outlined in NFPA® 472, Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents, 2008 Edition.



## Facilitator Guide

**Topic:** Response to a Hazardous Material Incident

**Time Required:** 1½ to 2 hours

**Materials:**

- Local jurisdiction's SOPs/SOGs
- Chalkboard, white board or large paper pad
- Chalk/markers
- References:
  - 2008 Emergency Response Guide (ERG)
  - NIOSH Pocket Guide to Chemical Hazards
  - MSDS for material(s) involved

Incident information handouts—Analyze, Plan, Implement and Evaluate with photographs of incident

**Motivation:** During an emergency, the decisions and actions of the initial responders are critical to the successful outcome of an incident. This includes the rapid assessment of the situation, identification of the materials involved and establishment of an Incident Action Plan (IAP). Personnel must be familiar with their jurisdiction's SOPs/SOGs and implement them effectively, based upon the situation present.

**Objective:** Given photographs of, and information about, an emergency incident, along with references, e.g., Emergency Response Guide (ERG), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide and Material Safety Data Sheet (MSDS), students demonstrate the necessary actions to identify the hazardous material(s) involved, conduct a hazard and risk analysis and identify the incident priorities. Students will use local jurisdictional SOPs/SOGs to establish an incident management system, based upon the National Incident Management System (NIMS) principles.



### Enabling Objectives:

1. Identify locations where hazardous materials may be present, and how the locations relate to the type and quantity of materials present.
  - Residential
  - Commercial fixed sites
  - Transportation routes
  - Non-structural/outside locations
  
2. Use the MSDS to identify the following chemical and physical properties, and how they relate to the release of a hazardous material.
  - Physical state
  - Vapor pressure
  - Boiling point
  - Vapor density
  - Specific gravity
  - Solubility
  - Flammability
    - Flash point
    - Ignition temperature
    - Flammable range
  - Toxicity
    - Routes of entry
    - Acute versus chronic effects
  - Incompatibilities
  
3. Identify clues for recognizing hazardous materials.
  - Dispatch information
  - Occupancy and location
  - Container shape and size
  - Placards, labels and markings
  - Shipping papers and facility documents



4. Identify considerations when developing an IAP for an emergency response.
  - Incident priorities
  - Personal Protective Equipment (PPE)
  - Resources available
    - Personnel
    - Equipment
    - References
  - Incident Command System (ICS)
    - Single command
    - Unified command
  - Accidental versus intentional
  
5. Identify the emergency response actions taken when implementing the plan.
  - Establish ICS, scene control and zones
  - Perform:
    - Rescue/recovery
    - Fire extinguishment
    - Decontamination
    - Vapor suppression
    - Defensive spill control
  
6. Identify benchmarks when evaluating effectiveness of emergency response actions.
  - Incident priorities
    - Successful completion
    - Deficiencies
  - Scene security
  - Termination activities

**Overview:**

- Locate and recognize hazardous materials.
- Determine chemical and physical properties.
- Develop and implement an IAP.
- Evaluate the effectiveness of emergency response actions.



## Introduction

Discuss the following rationale with students.

Emergency responders must be able to quickly respond to incidents, rapidly assess the conditions present, and determine the incident priorities. When hazardous materials are involved, they must be able to perform a hazard and risk analysis, and determine the appropriate strategy and tactics to produce a more favorable outcome.

### Notes Related to Handouts

Distribute and briefly introduce the APIE model (Handout #1).

- APIE: A Risk-Based Response Process is a simple response tool which provides a set of actions to implement for all emergency response situations to reduce hazards/risk to:
  - Responders
  - The public
  - Property
  - The environment
- The APIE process includes the following **steps**:
  - Analyze the problem
  - Plan the response
  - Implement the plan
  - Evaluate the progress
- The steps are on-going and fluid.
- For each step, there are specific **risk-based response actions**.
- When working through each of the four steps in the APIE process, responders should **consider the facts, science and circumstances**.
- Steps should be repeated as needed.



## Analyze the Problem

Discuss the considerations for analyzing the problem.

- Start with knowledge of the area, pre-plans and previous experience
- Identify locations with hazardous materials
  - Residential
    - Normally do not have a large quantity
    - Small amounts of many substances
    - Materials involved in a fire produce hazardous gases
  - Commercial fixed sites
    - Manufacturing
      - Nature of site—chemical, industrial
      - Large quantity, small variety
    - Laboratory/research
      - Small quantity, large variety
      - Synergistic effect—what happens when mixed with other materials
      - Stability of materials, e.g., picric acid with presence of crystallization
  - Transportation routes
    - Highway—location, quantity
    - Rail—location, quantity
    - Air—location, quantity
  - Other non-structural/outside locations
  - Pipeline—location, quantity and type of material
  - Landfills

*Considerations continue on the next page.*



- Chemical and physical properties
  - Physical state—solid, liquid or gas
  - Vapor pressure
  - Boiling point
  - Vapor density
  - Specific gravity
  - Solubility
  - Flammability
    - Flash point
    - Ignition temperature
    - Flammable range
  - Toxicity
    - Routes of entry
      - Inhalation
      - Absorption
      - Ingestion
      - Injection
    - Acute versus chronic effects
  - Synergistic effects and incompatibilities

#### Notes Related to Handouts

Distribute and review the information and photograph on the handout entitled Analyze the Problem (Handout #2). Note the photograph shows a two-family dwelling with fire showing from Division 1, Side D of the structure.

Discuss the information from the initial dispatch and ask students to describe a normal response for this type of incident within your jurisdiction.

Discuss the following:

- What are the incident priorities?
- What initial actions should be taken?
- What additional resources may be needed to deal with the situation?



## **Plan the Response**

Discuss the considerations for planning the response.

- Dispatch information
  - Location
  - Name of product(s), if known
  - Leak or fire
  - Injuries, victims entrapped
  - Exposures
  - Actions being taken at scene
- Occupancy and location
  - Type of facility and chemicals involved
  - Pre-incident plans, if available
- Container shape and size
  - Transportation
  - Storage
- Placards, labels and markings
  - DOT placards and labels
  - NFPA 704 Marking System
  - Military Marking System
- Shipping papers and facility documents
  - Shipping papers
  - MSDSs



### Notes Related to Handouts

Distribute and review the information and the photographs on the handout entitled Plan the Response (Handout #3).

Discuss the key points related to the containers found in the kitchen and their impact on the incident.

- Appears to be an illicit drug lab
- Need for law enforcement and preservation of the evidence
- Contamination of personnel at scene and secondary contamination of health care providers

Ask students:

- After viewing the second photo, and given the additional information, what is the nature of this incident?
- What types of hazardous materials may be involved in this incident?
- What impact does this have on the priorities and actions for this incident?

Discuss incident priorities and the initial Incident Action Plan (IAP).

- Life safety
- Incident stabilization
- Property conservation

Discuss the types of monitoring equipment that will be needed.

- What are the potential ignition sources?

Discuss the PPE used.

- Is it appropriate for this incident?



## Implement the Plan

Discuss the considerations for implementing the plan.

- Establish:
  - Scene control—establish zones and control procedures
  - Incident Command System (ICS)
    - Incident Commander (IC) and command post identified
    - Single command versus unified command
- Perform:
  - Don/work in PPE
  - Rescue/recovery
  - Control actions:
    - Fire extinguishment
    - Vapor suppression
    - Defensive spill control
    - Vapor dispersion
    - Remote valve shut-off
  - Decontamination



### Notes Related to Handouts

Distribute and review the information on the handout entitled Implement the Plan (Handout #4). Discuss the photographs of the storage area and the covered smoke detector.

- Are there any indications that this incident is different from a typical residential structural fire?
  - Appears to be a possible illicit drug lab
  - Propane container with blue corrosion—possible contents might be ammonia
  - Corrosive liquid container in kitchen—methylamine
  - Many chemical containers and equipment in storage area
- What additional actions/precautions need to be taken?
  - Notify law enforcement to respond
  - Site security to protect evidence—potential crime scene
  - Advise EMS providers and receiving facility of possible patient contamination issues

Distribute and briefly review the MSDSs for some of the hazmats involved in this incident (Handout #5).

Have students draw the ICS for this incident on easel paper or white/chalkboard and discuss:

- Which branches will be necessary under Operations to manage this incident?
- What other agencies will need to be involved in this incident?
  - Will they just need to be notified of the incident?
  - Will they need to respond to the scene?



## **Evaluate the Progress**

Discuss the considerations for evaluating the progress.

Evaluate the status of the IAP

- Identify benchmarks to assist in identifying progress
- Review incident priorities
  - Life safety—rescue, treatment and transport of patients
  - Incident stabilization—scene stabilizing versus incident escalating
  - Property conservation—includes the environment
- Identify any deficiencies in the IAP and determine cause(s)
- Discuss termination activities
  - Debriefing
  - Post-incident analysis
  - Critique



Notes Related to Handouts

Distribute and review the information on the handout entitled Evaluate the Progress (Handout #6).

Ask students to discuss the following questions.

- Based on departmental standard operating procedures/guidelines, what is the role of fire suppression and hazardous materials personnel with this incident?
- What benchmarks should be established to evaluate the progress?
- If a fire fighter's structural gear has been exposed/contaminated, what actions should be taken?
- Who will be responsible for the disposal of the hazardous waste and assume the financial liability of the clean-up?



Page left blank intentionally. Use for notes.



## Mini-Drill #006

### Response to a Hazardous Materials Incident

### Structural Fire – Residential

### Handout #1



Copyright © International Association of Fire Fighters

### OBJECTIVE:

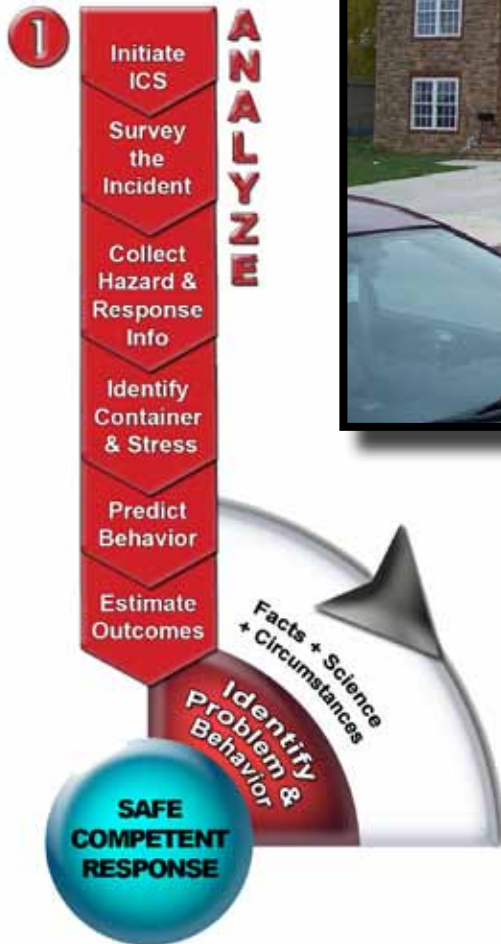
Given photographs of, and information about, an emergency incident along with references, e.g., Emergency Response Guide (ERG), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide and Material Safety Data Sheet (MSDS), demonstrate the necessary actions to identify the hazardous material(s) involved, conduct a hazard and risk analysis, and identify the incident priorities. Use local jurisdictional standard operating procedures/guidelines (SOPs/SOGs) to establish an incident management system, based upon the National Incident Management System (NIMS) principles.



## Handout #2

### ANALYZE THE PROBLEM

At approximately 0300 hours, an alarm is sounded for a structural fire in a residential area. The normal assignment for this type of incident is dispatched. The first unit to arrive on the scene reports a 2½-story double occupancy, of ordinary construction, with a heavy smoke condition and fire showing from Division 1, Side D.



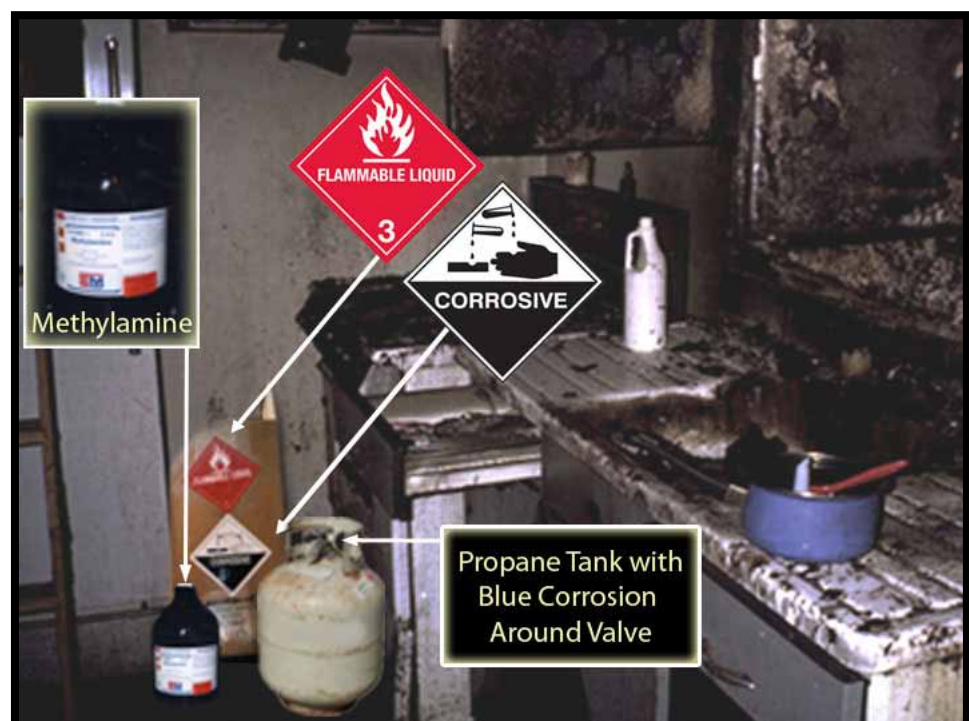
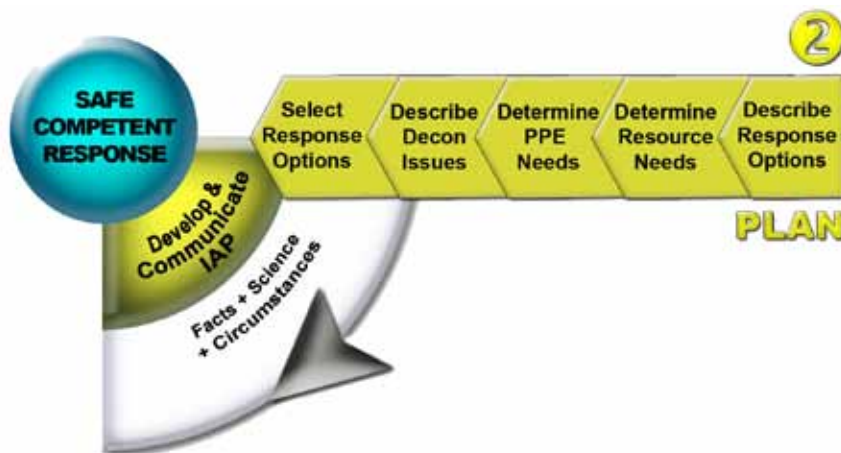


## Handout #3

### PLAN THE RESPONSE

During the primary search, an occupant is found and removed from Division 1 in a room adjacent to what appears to be a kitchen area. He has extensive burns and a compromised respiratory system. The fire is extinguished in several minutes, and there appears to be no extension.

The occupants of the side of the structure not involved in the fire self-evacuate prior to the arrival of the first unit. They are in their bedclothes and appear to be unharmed.





## Handout #4

### IMPLEMENT THE PLAN

During a secondary search, fire fighters do not find any additional occupants in the involved structure. However, upon entry into a room adjacent to the garage area, there is an assortment of materials that makes it difficult to search. Upon ventilating and lighting into the area, crews find an array of materials. They also search to determine if any smoke detectors were present, and why they did not activate.





## Handout #5

### Material Safety Data Sheet

Methylamine, 40 wt. % solution in water

ACC# 00983

#### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Methylamine, 40 wt. % solution in water

**Catalog Numbers:** AC126230000, AC126230010, AC126230025, AC126235000

**Synonyms:** Aminomethane; Methanamine; Monomethylamine.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

#### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
74-89-5	Methylamine	40	200-820-0
7732-18-5	Water	60	231-791-2

**Hazard Symbols:** F C

**Risk Phrases:** 11 20/22 34

#### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless. Flash Point: -18 deg C. **Danger!** May cause liver damage. May cause lung damage. Corrosive. Causes eye and skin burns. May cause respiratory and digestive tract burns. Harmful if inhaled or swallowed. Extremely flammable liquid and vapor. Vapor may cause flash fire. May be harmful if absorbed through the skin.

**Target Organs:** Liver, respiratory system, eyes, skin.

**Potential Health Effects**

**Eye:** Causes eye burns. May result in corneal injury. May cause chemical conjunctivitis and corneal damage. May cause tearing, conjunctivitis and corneal edema when vapor is absorbed into the tissue of the eye.

**Skin:** Causes skin burns. May be absorbed through the skin. May cause dermatitis. Methylamine is readily absorbed through the skin and may cause malaise ,



**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Avoid runoff into storm sewers and ditches which lead to waterways. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as saw dust. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Approach spill from upwind. Use only non-sparking tools and equipment. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. 5% sulfuric acid may be used to neutralize diluted pools.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Do not breathe vapor. Use only with adequate ventilation. Keep away from heat, sparks and flame. Pipes, fittings, pumps, gauges, and other equipment should be made of steel or other material not subject to corrosion by methylamine. Methylamine may attack aluminum, copper, tin, zinc, lead and their alloys as well as rubber and some plastics.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep container closed when not in use. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Keep away from acids.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Methylamine	5 ppm TWA; 15 ppm STEL	10 ppm TWA; 12 mg/m <sup>3</sup> TWA 100 ppm	10 ppm TWA; 12 mg/m <sup>3</sup> TWA



**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Avoid runoff into storm sewers and ditches which lead to waterways. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as saw dust. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Approach spill from upwind. Use only non-sparking tools and equipment. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. 5% sulfuric acid may be used to neutralize diluted pools.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Do not breathe vapor. Use only with adequate ventilation. Keep away from heat, sparks and flame. Pipes, fittings, pumps, gauges, and other equipment should be made of steel or other material not subject to corrosion by methylamine. Methylamine may attack aluminum, copper, tin, zinc, lead and their alloys as well as rubber and some plastics.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep container closed when not in use. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Keep away from acids.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Methylamine	5 ppm TWA; 15 ppm STEL	10 ppm TWA; 12 mg/m <sup>3</sup> TWA 100 ppm	10 ppm TWA; 12 mg/m <sup>3</sup> TWA



		IDLH	
Water	none listed	none listed	none listed

**OSHA Vacated PELs:** Methylamine: 10 ppm TWA; 12 mg/m<sup>3</sup> TWA Water: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** Wear chemical goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR §1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** fishy ammoniacal

**pH:** >base than ammonia

**Vapor Pressure:** 485 mm Hg @20 deg C

**Vapor Density:** 1.07 (air=1)

**Evaporation Rate:**Not available.

**Viscosity:** Not available.

**Boiling Point:** 48 deg C @ 760 mm Hg

**Freezing/Melting Point:**-38 deg C

**Autoignition Temperature:** 430 deg C ( 806.00 deg F)

**Flash Point:** -18 deg C ( -0.40 deg F)

**Decomposition Temperature:**Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 3; Reactivity: 0

**Explosion Limits, Lower:**4.90 vol %

**Upper:** 20.70 vol %

**Solubility:** Soluble.

**Specific Gravity/Density:**.9000g/cm<sup>3</sup>

**Molecular Formula:**CH<sub>5</sub>N

**Molecular Weight:**31.06

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid:** Ignition sources, excess heat, attacks aluminum, copper, lead, tin, zinc and alloys.

**Incompatibilities with Other Materials:** Nitromethane, acids, oxidizing agents,



chlorine, hypochlorite, halogenated agents, mercury, copper, copper alloys, zinc, zinc alloys, aluminum, perchlorates.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon dioxide, ammonia and/or derivatives, amines.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 74-89-5:** PF6300000

**CAS# 7732-18-5:** ZC0110000

**LD50/LC50:**

**CAS# 74-89-5:**

Inhalation, mouse: LC50 = 2400 mg/m<sup>3</sup>/2H;

Inhalation, rat: LC50 = 448 ppm/2.5H;

Oral, rat: LD50 = 100 mg/kg;<BR.

**CAS# 7732-18-5:**

Oral, rat: LD50 = >90 mL/kg;<BR.

**Carcinogenicity:**

**CAS# 74-89-5:** Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. **CAS# 7732-18-5:**

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information found.

**Teratogenicity:** No information found.

**Reproductive Effects:** No information found.

**Neurotoxicity:** No information found.

**Mutagenicity:** Mutagenic effects have occurred in experimental animals.

**Other Studies:** See actual entry in RTECS for complete information.

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** Exists in soil and water mainly in the protonated form. Expected to adsorb to clay and organic carbons in soil and suspended solids and sediment in water. Will biodegrade and not expected to bioconcentrate. Will exist solely in the gas phase in the atmosphere, and will be degraded by photochemically produced hydroxyl radicals (half-life = 18h).

**Physical:** No information available.

**Other:** No information available.

## Section 13 - Disposal Considerations



Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
<b>Shipping Name:</b>	METHYLAMINE, AQUEOUS SOLUTION				METHYLAMINE, AQUEOUS SOLUTION
<b>Hazard Class:</b>	3				3(9.2)
<b>UN Number:</b>	UN1235				UN1235
<b>Packing Group:</b>	II				II
<b>Additional Info:</b>					FLASHPOINT - 18 C

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 74-89-5 is listed on the TSCA inventory.

CAS# 7732-18-5 is listed on the TSCA inventory.

##### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

##### Section 12b

None of the chemicals are listed under TSCA Section 12b.

##### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

##### SARA

##### Section 302 (RQ)

CAS# 74-89-5: final RQ = 100 pounds (45.4 kg)

##### Section 302 (TPQ)

None of the chemicals in this product have a TPQ.



**SARA Codes**

CAS # 74-89-5: acute, flammable.

**Section 313**

No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**

CAS# 74-89-5 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

CAS# 74-89-5 is considered highly hazardous by OSHA.

**STATE**

CAS# 74-89-5 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

F C

**Risk Phrases:**

R 11 Highly flammable.

R 20/22 Harmful by inhalation and if swallowed.

R 34 Causes burns.

**Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 29 Do not empty into drains.

S 3 Keep in a cool place.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 74-89-5: 2

CAS# 7732-18-5: No information available.

**Canada**

CAS# 74-89-5 is listed on Canada's DSL List. CAS# 74-89-5 is listed on Canada's DSL List. CAS# 7732-18-5 is listed on Canada's DSL List. CAS# 7732-18-5 is listed on Canada's DSL List.

This product has a WHMIS classification of B2, D1B, E.

CAS# 74-89-5 is listed on Canada's Ingredient Disclosure List.

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

**Exposure Limits**



CAS# 74-89-5: OEL-AUSTRALIA:TWA 10 ppm (12 mg/m<sup>3</sup>) OEL-BELGIUM:TWA 10 ppm (13 mg/m<sup>3</sup>) OEL-DENMARK:TWA 10 ppm (12 mg/m<sup>3</sup>) OEL-FINLAND:STEL 10 ppm (12 mg/m<sup>3</sup>);Skin OEL-FRANCE:STEL 10 ppm (12 mg/m<sup>3</sup>) OEL-GERMANY :TWA 10 ppm (12 mg/m<sup>3</sup>) OEL-JAPAN:TWA 10 ppm (13 mg/m<sup>3</sup>) OEL-THE NETHERLANDS:TWA 10 ppm (12 mg/m<sup>3</sup>) OEL-THE PHILIPPINES:TWA 10 ppm (12 mg/m<sup>3</sup>) OEL-POLAND:TWA 5 mg/m<sup>3</sup> OEL-RUSSIA:TWA 10 ppm;STEL 1 mg/m<sup>3</sup>;Skin OEL-SWEDEN:TWA 10 ppm (13 mg/m<sup>3</sup>);STEL 20 ppm (25 mg/m<sup>3</sup>);Skin OEL-SWITZERLAND:TWA 10 ppm (12 mg/m<sup>3</sup>);STEL 20 ppm (24 mg/m<sup>3</sup>) OEL-UNITED KINGDOM :TWA 10 ppm (12 mg/m<sup>3</sup>) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

### Section 16 - Additional Information

**MSDS Creation Date:** 9/02/1997

**Revision #7 Date:** 7/16/2001

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages*

[http://avogadro.chem.iastate.edu/MSDS/methylamine\\_40pct.htm](http://avogadro.chem.iastate.edu/MSDS/methylamine_40pct.htm)



# Airgas

Material Safety Data Sheet # 4001

Last Revision 05/20/09

Page 1 of 2

## SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

**CHEMICAL NAME:** Anhydrous Ammonia

**TRADE NAMES / SYNONYMS:** Ammonia

**DISTRIBUTOR:**

**EMERGENCY TELEPHONE NUMBERS:**

Airgas Specialty Products  
2530 Sever Road, 300  
Lawrenceville, GA 30043 USA

Transportation (CHEMTREC): 1-800-424-9300  
Transportation, Canada (CANUTEC): 1-613-996-6666  
Environmental/Health/Safety (24-hr): 1-800-528-4963  
Customer Service (Toll Free): 1-800-295-2225

## SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL	FORMULA	% BY WEIGHT		CAS	OSHA PEL	NIOSH REL / ACGIH TLV		IDLH
		C-grade	P-grade					
Ammonia	NH <sub>3</sub>	99.5	99.995	7664-41-7	25 ppm (California only) 50 ppm (TWA)	25 ppm (TWA)	35 ppm (STEL)	300ppm
Water	H <sub>2</sub> O	0.4	33 ppm	7732-18-5	None	None	None	
Oil	----	0.1	2 ppm	-----	None	None	None	

## SECTION 3: HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** 1. Colorless gas or compressed liquid with a pungent, suffocating odor. 2. Liquid ammonia reacts violently with water. Vapor cloud is produced. 3. Avoid contact with liquid and vapor. 4. Stay upwind and use water spray to absorb vapor. 5. Not flammable under conditions likely to be encountered outdoors. 6. Stop discharge if possible.

### POTENTIAL HEALTH EFFECT

**ROUTES OF ENTRY:** Inhalation, Skin Contact, Eye Contact, Ingestion. **TARGET ORGANS:** Eyes, skin and respiratory system. **EYE CONTACT:** Exposure to liquid or high concentrations of vapor can cause painful, instant and possibly irreversible damage to tissue such as conjunctiva, cornea and lens. **SKIN CONTACT:** Prolonged contact with high concentrations can cause painful tissue damage, frostbite and serious chemical burns. **INHALATION:** Depending on exposure concentration and duration, effects can vary from none or only mild irritation, to obstruction of breathing from laryngeal and bronchial spasm, to edema and severe damage to mucous membranes of the respiratory tract with possible fatal results. Latent edema and residual reduction in pulmonary function may occur. **INGESTION:** Tissue damage, chemical burns, nausea and vomiting can occur. Ammonia is a gas under normal atmospheric conditions and ingestion is unlikely. **CARCINOGENICITY:** NTP? No IARC? No OSHA? No

## SECTION 4: FIRST AID MEASURES

**EYE CONTACT:** Flush with large amounts of water for at least 15 minutes then immediately seek medical aid.

**SKIN CONTACT:** Immediately flush with large quantities of water for at least 15 minutes while removing clothing. If clothing has frozen to skin, thaw with water before removal. Seek immediate medical aid.

**INHALATION:** Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as needed. Seek immediate medical aid.

**INGESTION:** Do not induce vomiting. Have victim drink large quantities of water if conscious. Immediately seek medical aid. Never give anything by mouth to an unconscious person.

## SECTION 5: FIRE FIGHTING MEASURES

**FLASH POINT(method used):** Not Applicable **FLAMMABLE LIMITS:** 16-25% in air (for labeling purposes, not DOT flammable gas). **EXTINGUISHING MEDIA:** Stop flow of gas or liquid. Ammonia will burn in the range of 16-25% in air with a constant source of ignition. **SPECIAL FIRE FIGHTING PROCEDURES:** Move containers from fire zone if possible; if not, use water to cool fire-exposed containers. Use water spray to control vapors. Do not put water directly on liquid ammonia. Personnel must be equipped with appropriate protective clothing and respiratory protection.

**NFPA HAZARD CLASSIFICATION:** Health: 3 Flammability: 1 Reactivity: 0 (least-0 — 4-highest)

## SECTION 6: ACCIDENTAL RELEASE MEASURES

In US, federal regulations require that a release of 100 lb. or more of ammonia must be reported immediately to the National Response Center at (800) 424-8802, the SERC and the LEPC. In California, ALL releases must be reported to CUPA, state and local agencies. Additional state and local regulations may apply. **SUGGESTED LOCAL ACTION:** Stop leak if feasible. Avoid breathing ammonia. Evacuate personnel not equipped with protective clothing and equipment. Use copious amounts of water spray or fog to absorb ammonia vapor. DO NOT put water on liquid ammonia. Contain run-off to prevent ammonia from entering a stream, lake, sewer, or ditch. Any release of this material, during the course of loading, transporting, unloading or temporary storage, must be reported to U.S. DOT as required by 49 CFR 171.15 and 171.16.

## SECTION 7: HANDLING AND STORAGE

Refer to the ANSI K61.1 standard for storage and handling information. Protect containers from physical damage and temperatures exceeding 120°F. Use only approved storage systems. Zinc, copper, silver, cadmium, and their alloys must not be used in ammonia systems since they can be rapidly corroded by it. Avoid hydrostatic pressure, which can cause equipment rupture, by adhering to proper filling procedures and the use of hydrostatic pressure relief valves where appropriate.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**RESPIRATORY PROTECTION:** Respiratory protection approved by NIOSH / MSHA for ammonia must be used when exposure limits are exceeded. Whether chemical canister respirator or self-contained breathing apparatus is sufficient for effective respiratory protection depends on the type and magnitude of exposure.



MSDS 4001 Revision 05/20/09

Page 2 of 2

**SKIN PROTECTION:** Rubber gloves and rubber or other types of approved protective clothing should be used to prevent skin contact. A face shield should be used for increased protection from contact with liquid or vapor.

**EYE PROTECTION:** Chemical splash goggles, approved for use with ammonia, must be worn to prevent eye contact with liquid or vapor. A face shield should be used for increased protection from contact with liquid.

**VENTILATION:** Local positive pressure and/or exhaust ventilation should be used to reduce vapor concentrations in confined spaces. Ammonia vapor, being lighter than air, can be expected to dissipate to the upper atmosphere. Ammonia concentrations may also be reduced by the use of an appropriate absorbent or reactant material.

#### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**BOILING POINT:** -28.1°F

**SPECIFIC GRAVITY:** 0.62 @ 60°F (water=1)

**SOLUBILITY IN WATER:** High

**VAPOR DENSITY:** 0.60 @ 32°F (Air=1)

**MELTING POINT:** -107.9°F

**pH:** Approx. 11.6 for 1 N Sol'n. in water

**PERCENT VOLATILE BY VOLUME:** 100%

**APPEARANCE:** Colorless, pungent gas

**VAPOR PRESSURE:** 4802.9 mm Hg @ 60°F or 107.6 psia.

#### SECTION 10: STABILITY AND REACTIVITY

**STABILITY:** Material generally considered stable. Heating above ambient temperature causes rapid increase of vapor pressure.

**INCOMPATIBILITY (materials to avoid):** Ammonia can react violently with strong acids. Under certain conditions, ammonia reacts with bromine, chlorine, fluorine or iodine to form compounds, which explode spontaneously. Reactions of ammonia with gold, silver or mercury to form explosive fulminate-like compounds has been reported.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen on heating to over 850°F. The decomposition temperature may be lowered to 575°F by contact with certain metals such as iron or nickel.

**HAZARDOUS POLYMERIZATION:** Will not occur

**CONDITIONS TO AVOID:** Not applicable

#### SECTION 11: TOXICOLOGICAL INFORMATION

Ammonia is a strong alkali and readily damages all body tissues. Ammonia is not a cumulative metabolic poison.

**Carcinogenicity, Reproductive, Mutagenicity, Teratogenicity Effects:** No information is available and no adverse effects are anticipated. **Synergistic Materials:** None known.

#### SECTION 12: ECOLOGICAL INFORMATION

**AQUATIC TOXICITY:** 2.0-2.5 ppm/1-4 days/ goldfish and yellow perch/LC;

**WATERFOWL TOXICITY:** 120 ppm

60-80 ppm/3 days/crayfish/LC<sub>100</sub>;

**BIOCHEMICAL OXYGEN DEMAND:** Not pertinent

8.2ppm/96hr/fathead minnow/TLm

**FOOD CHAIN CONCENTRATION POTENTIAL:** None

#### SECTION 13: DISPOSAL CONSIDERATIONS

Recover ammonia if feasible. Otherwise, let ammonia evaporate if appropriate. Only personnel experienced in ammonia spills should add water to liquid ammonia. Dispose of diluted ammonia as a fertilizer or in an industrial process. For Hazardous Waste Regulations call (800) 424-9346, the RCRA Hotline.

#### SECTION 14: TRANSPORT INFORMATION

	DOMESTIC SHIPMENTS	INTERNATIONAL SHIPMENTS	CANADIAN TDG ACT
Proper shipping name:	Ammonia, Anhydrous	Ammonia, Anhydrous	Ammonia, Anhydrous
Shipping Class:	DOT 2.2 (nonflammable gas)	2.3 (poison gas)	2.4 (9.2)
Identification Number:	UN1005	UN1005	UN1005
Packing Group:	None	None	None

#### SECTION 15: REGULATORY INFORMATION

**NOTICE:** This product is subject to the reporting requirements of SARA (1986, Section 313 of Title III) and 40 CFR Part 370. Be sure to verify and comply with state and local regulations.

**CERCLA/SUPERFUND, 40 CFR 117.302:** Unpermitted releases of 100 lb. or more of ammonia in any 24-hour period must be reported immediately to the NRC at 1-800-424-8802, the SERC, and the LEPC. Written follow-up is required to SERC & LEPC.

**OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:** Ammonia is considered a hazardous chemical.

**TOXIC SUBSTANCE CONTROL ACT:** This material is listed in the TSCA Inventory.

**EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (SARA, TITLE III):** Section 302 Extremely Hazardous Substance: Yes; Section 311/312 Hazardous Categories: Immediate (Acute) Health Hazards; Section 313 Toxic Chemical: Yes.

**WHMIS:** One percent (1%) **CALIFORNIA PROPOSITION 65:** Reproductive: No Carcinogen: No

**OSHA PROCESS SAFETY MANAGEMENT, 29 CFR 1910.119:** This product is subject to the Process Safety Management requirements of 29 CFR 1910.119 if maintained on-site in quantities of 10,000 lb. or greater.

**EPA CHEMICAL ACCIDENTAL RELEASE PREVENTION, 40 CFR PART 68:** This product is subject to the Risk Management Plan requirements of 40 CFR Part 68 if maintained on-site in quantities of 10,000 lb. or greater.

**DRINKING WATER:** Maximum use dosage in potable water is 5mg/l.


#### SECTION 16: OTHER INFORMATION

**REASON FOR REVISION:** 1. Addition of new Toll Free Customer Service Number in Section 1. 2. Revised LEL and UEL from 16-25% to 15-28%. 3. Company name change from LaRoche Industries to Airgas Specialty Products. 4. Canadian transportation emergency information added. 5. California PEL limits added. 6. LEL and UEL Revised: 16-25%. 7. Company address changed.

**MSDS PREPARED BY:** Airgas Specialty Products

This information is taken from sources or based upon data believed to be reliable, however, Airgas Specialty Products makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.





Home usepropane.com Consumer Information PropanePAC

Home > Safety/Training Programs > Safety Alerts and News

## Anhydrous ammonia and propane cylinders

### **SAFETY ALERT**


**INTRODUCTION:** Readers of this bulletin should consult the law of their individual jurisdictions for codes, standards and legal requirements applicable to them. This bulletin merely suggests methods which the reader may find useful in implementing applicable codes, standards and legal requirements. This material is not intended nor should it be construed (1) to set forth procedures which are the general custom or practice in the propane industry; (2) to establish the legal standards of care owed by propane distributors to their customers; or (3) to prevent the reader from using different methods to implement applicable codes, standards or legal requirements. The National Propane Gas Association assumes no liability for reliance on the contents of this bulletin. It is offered as a guide only to assist expert and experienced trainers in training in service personnel in their organizations.

### **Caution!**

The brass valve in a propane cylinder will be damaged if it comes in contact with ammonia. This deterioration will lead to cracking of the valve body or its components ultimately result in a violent, unexpected expulsion of the valve from the cylinder injury or death.

### Background and Recommended Action

It has come to the attention of the National Propane Gas Association that propane cylinders in the manufacturing of **Methamphetamines**. This drug is commonly referred to as 'crack' and this illegal substance are using propane cylinders for the storage and the use of anhydrous ammonia cylinders have been found in many states at cylinder exchange and refilling locations, rooms and mobile laboratories, where the manufacturing of this illegal substance takes place.



As observed in the illustrations, a blue-green stain on any brass valve is evidence that it may have been in contact with anhydrous ammonia on or near the cylinder. This is also an indication that a propane cylinder contains or has contained anhydrous ammonia. Exercise extreme caution and restrict access to the area.

It can be dangerous to move the cylinder due to the unknown condition of the cylinder's service valve. If you determine that it must be moved, hazards due to valve expulsion can be reduced by pointing the cylinder in the direction in which the valve is placed away from yourself and others and in a safe direction.

Immediately contact your Fire Department, Hazardous Materials Emergency Response Unit or the nearest office of the United States Department of Justice's Drug Enforcement Administration (DEA) for information on properly disposing of the cylinder.



cylinder. If these respondents are not sure what to do, for assistance call 1-800-728-2482, which is the contact number for [PERS](#), an independent hazardous materials info

\*Note: Sherwood valves contain a green coated valve stem. Additionally, a green threa is used on some valves. These valves should not be confused with those that have been anhydrous ammonia.



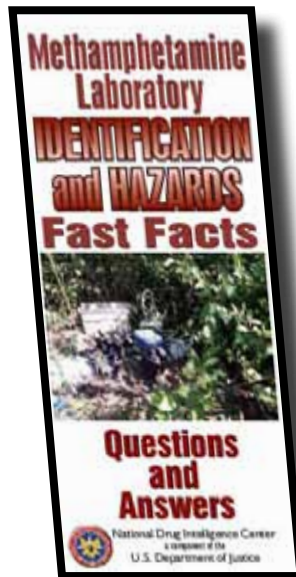
## Handout #6

### EVALUATE THE PROGRESS

With the circumstances and evidence present at the scene, the site is secured by fire service personnel to protect the evidence. Law enforcement is notified and their criminal investigation unit responds to the scene. The EMS providers treating the patient were notified of the circumstances and appropriate protective actions are taken to decontaminate the transport unit, equipment and personnel. The health care facility is notified and the patient is isolated in the decontamination room until necessary precautions are taken to protect the treatment area.

The patient is later transferred to a specialized care facility for burn injuries.

Information on drug labs <http://www.justice.gov/ndic/pubs7/7341/7341p.pdf>





# Methamphetamine Laboratory IDENTIFICATION and HAZARDS Fast Facts



## Questions and Answers

National Drug Intelligence Center  
a component of  
U.S. Department of Justice



### Other products of interest:

- Methamphetamine Fast Facts
- Crystal Methamphetamine Fast Facts

For more information on illicit drugs check out our web site at:

[www.usdoj.gov/ndic](http://www.usdoj.gov/ndic)

National Drug Intelligence Center  
319 Washington Street, 5th Floor  
Jenkintown, PA 19001-1022  
Telephone: 814-532-4601

FAX: 814-532-4699  
NDIC Washington Liaison Office  
8201 Greenbore Drive, Suite 1001  
McLean, VA 22102-3140  
Telephone: 703-556-8970  
FAX: 703-556-7807

NDIC publications are available on the following web sites:

- ADNET <http://ndic.usa>
- LEO [www.lead.gov/lead/ndic](http://www.lead.gov/lead/ndic)
- RISS [ndic.riss.net](http://ndic.riss.net)
- INTERNET [www.usdoj.gov/ndic](http://www.usdoj.gov/ndic)

Call 811-532-4341  
to request NDIC products

NDIC Product No. 2004-L0559-001  
Cover photo: Southwest Regional Drug Task Force (SRDTF)

### Products Used in Methamphetamine Production

- Acetone
- Alcohol (isopropyl or rubbing)
- Anhydrous ammonia (fertilizer)
- Ephedrine (cold medications)
- Ether (engine starter)
- Hydrochloric acid (pool supply)
- Iodine (flakes or crystals)
- Katy Bar
- Lithium (lithium)
- Methanol (gasoline additive)
- MBM (nutritional supplement)
- Pseudoephedrine (cold medications)
- Red phosphorus (matches or road flares)
- Salt (table or rock)
- Sodium hydroxide (lye)
- Sodium metal
- Sulfuric acid (drain cleaner)
- Toluene (laundry cleaner)
- Tetrahydrofuran (gas cleaner)

### Equipment Used in Methamphetamine Production

- Aluminum foil
- Bleach
- Chems cloths
- Clamps
- Coffee filters
- Funnels
- Gas cans
- Ice chests
- Jugs and bottles
- Laboratory beakers and glassware
- Measuring cups
- Pails and buckets
- Paper towels
- Plastic storage containers
- Propane cylinders
- Rubber gloves
- Rubber tubing
- Stirrers
- Tape
- Tempered glassware
- Thermometer
- Towels and bed sheets

**Ingestion.** Toxic chemicals can be ingested either by consuming contaminated food or beverages or by inadvertently consuming the chemicals directly. (Young children present at laboratory sites are at particular risk of ingesting chemicals.) Ingesting toxic chemicals—or methamphetamine itself—may result in potentially fatal poisoning, internal chemical burns, damage to organ function, and harm to neurological and immunologic functioning.

In addition, methamphetamine production threatens the environment. The average methamphetamine laboratory produces 5 to 7 pounds of toxic waste for every pound of methamphetamine produced. Operators often dispose of this waste improperly, simply by dumping it near the laboratory. This can cause contamination of the soil and nearby water supplies.

### What can I do?

If you suspect that someone in your neighborhood is operating a methamphetamine laboratory, report your concerns to the local police department or sheriff's office immediately. For your own safety, do not investigate the suspected laboratory or confront the occupants. In addition to the hazards discussed above, many laboratories are equipped with security devices or booby traps that could cause serious injuries or death.



seized laboratories at private residences, commercial properties, hotels and motels, and outdoor locations. Mobile laboratories have been discovered in automobiles, boats, and luggage.

**What are the signs that a methamphetamine laboratory may be present?**

The following, often in combination, may indicate the presence of a methamphetamine laboratory:

- Unusual odors (ether, ammonia, acetone, or other chemicals)
- Excessive amounts of trash, particularly chemical containers (see list of products and equipment), coffee filters or pieces of cloth that are stained red, and duct tape rolls
- Curtains always drawn or windows covered with aluminum foil or blackened on residences, garages, sheds, or other structures
- Evidence of chemical waste or dumping
- Frequent visitors, particularly at unusual times
- Extensive security measures or attempts to ensure privacy (no trespassing or beware of dog signs, fences, large trees or shrubs)
- Secretive or unfriendly occupants

**What hazards are associated with them?**

The chemicals used to produce methamphetamine are extremely hazardous. Some are highly volatile and may ignite or explode if mixed or stored improperly. Fire and explosion

**What is a methamphetamine laboratory?**

A methamphetamine laboratory is an illicit operation that has the apparatus and chemicals needed to produce the powerful stimulant methamphetamine. (See list of products and equipment.) These laboratories vary drastically in size and output. Large laboratories, known as super labs, produce 10 pounds or more of the drug per production cycle. Much smaller laboratories—sometimes called box labs—produce as little as an ounce or less of the drug and are small enough to fit in a box or backpack.

**How common are they?**

Methamphetamine laboratories are increasingly prevalent throughout the United States. In 2002 more than 7,500 laboratories were seized in 44 states, according to the Drug Enforcement Administration (DEA) El Paso Intelligence Center National Crackdown Laboratory Seizure System. While methamphetamine production remains most common in the western portion of the United States—particularly California—seizures of methamphetamine laboratories in the west-central part of the country have become more commonplace.

**Where are methamphetamine laboratories found?**

Methamphetamine laboratories may be located virtually anywhere. Laboratories have been found in secluded rural areas as well as in residential, commercial, and industrial districts. Law enforcement officers have

pose risks not only to the individuals producing the drug but also to anyone in the surrounding area, including children, neighbors, and passersby.

Even when fire or explosion does not occur, methamphetamine production is dangerous. Simply being exposed to the toxic chemicals used to produce the drug poses a variety of health risks, including intoxication, dizziness, nausea, disorientation, lack of coordination, pulmonary edema, serious respiratory problems, severe chemical burns, and damage to internal organs.

**Inhalation.** Inhaling chemical vapors and gases resulting from methamphetamine production causes shortness of breath, cough, and chest pain. Exposure to these vapors and gases may also cause intoxication, dizziness, nausea, disorientation, lack of coordination, pulmonary edema, chemical pneumonitis, and other serious respiratory problems when absorbed into the body through the lungs.

**Skin Contact.** The chemicals used to produce methamphetamine may cause serious burns if they come into contact with the skin.

Chemical	Hazards
Pseudoephedrine	Ingestion of doses greater than 240 mg causes hypertension, arrhythmia, anxiety, dizziness, and vomiting. Ingestion of doses greater than 600 mg can lead to renal failure and seizures.
Acetone/ethyl alcohol	Extremely flammable, posing a fire risk in and around the laboratory. Inhalation or ingestion of these solvents causes severe gastric irritation, nausea, or coma.
Ferrocen	Inhalation can cause sudden cardiac arrest or severe lung damage. It is corrosive if ingested.
Anhydrous ammonia	A colorless gas with a pungent, suffocating odor. Inhalation causes edema of the respiratory tract and asphyxia. Contact with vapors damages eyes and mucous membranes.
Red phosphorus	May explode as a result of contact or friction. Ignites if heated above 260°C. Vapor from ignited phosphorus severely irritates the nose, throat, lungs, and eyes.
Hypophosphorous acid	Extremely dangerous substance for red phosphorus. If overheated, deadly phosphine gas is released. Poses a serious fire and explosion hazard.
Lithium metal	Extremely caustic to all body tissues. Reacts violently with water and poses a fire or explosion hazard.
Hydrochloric acid	A corrosive acid with vapors that are irritating to the respiratory system, eyes, and skin. If ingested, causes severe internal irritation and damage that may cause death.
Sulfuric acid	Clear off-white liquid that is irritating to respiratory system and eyes. Solid form irritates the eyes and may burn skin. If ingested, causes severe internal damage.
Phenylephedrine	Ingestion of doses greater than 75 mg causes hypertension, arrhythmia, anxiety, and dizziness. Quantities greater than 300 mg can lead to renal failure, seizures, shock, and death.

Source: DEA Office of Diversion Control



Page left blank intentionally. Use for notes.