

Methyl Bromide (CH₃Br) CAS 74-83-9; UN 1062

Synonyms include bromomethane, monobromomethane, isobrome, and methyl fume.

- **Persons exposed only to methyl bromide gas do not pose substantial risks of secondary contamination; however, some methyl bromide may permeate clothing. Persons whose clothing or skin is contaminated with liquid methyl bromide (temperatures less than 38.5 °F) can secondarily contaminate others by direct contact or through off-gassing vapor.**
- **A gas at room temperature, methyl bromide readily penetrates skin, cloth, and other protective materials such as rubber and leather. It is nonflammable and toxic at low concentrations.**
- **Methyl bromide is odorless and odor provides no warning of hazardous concentrations. However, because methyl bromide is odorless and nonirritating, a lacrimator (an agent that irritates the eyes and causes tearing), most commonly chloropicrin, is often added as a warning agent.**
- **Methyl bromide is absorbed well by the lungs and to some degree through intact skin. Oral exposure is rare because methyl bromide is a gas at room temperature, but it may be absorbed by the gastrointestinal tract. Exposure by any route can cause systemic effects.**

Description

Methyl bromide is a colorless gas at room temperature and a liquid below 38.5 °F (3.6 °C) or when compressed. It is usually shipped as a liquefied, compressed gas. It is odorless and nonirritating at low concentrations and has a musty or fruity odor at high concentrations (greater than 1,000 ppm). Because methyl bromide lacks adequate physiologic warning properties, up to 2% chloropicrin, a lacrimator, is often added to prevent significant exposure.

Routes of Exposure

Inhalation

Most exposures occur by inhalation and by absorption through the skin. **Odor is not an adequate indicator of the presence of pure methyl bromide and does not provide reliable warning of hazardous concentrations.** Because pure methyl bromide lacks adequate warning properties, significant exposure can occur before symptoms are evident.

Methyl bromide is 3 times heavier than air and can accumulate in poorly ventilated or low-lying areas. Under adverse conditions, it can remain in the air for days after application as

a fumigant. Fatalities have occurred among pesticide applicators and building occupants who were exposed during the application process or who prematurely reentered fumigated buildings.

Children exposed to the same levels of methyl bromide as adults may receive larger doses because they have greater lung surface area:body weight ratios and increased minute volumes:weight ratios. In addition, they may be exposed to higher levels than adults in the same location because of their short stature and the higher levels of methyl bromide found nearer to the ground.

Skin/Eye Contact

Methyl bromide gas easily penetrates most protective clothing (e.g., cloth, rubber, and leather) and skin. Prolonged retention in clothing and rubber boots may lead to chemical dermatitis and severe burns. Skin absorption may contribute to systemic toxicity

Children are more vulnerable to toxicants absorbed through the skin because of their relatively larger surface area:body weight ratio.

Ingestion

Ingestion of methyl bromide is unlikely because it is a gas at room temperature.

Sources/Uses

Methyl bromide is produced by adding sulfuric acid to a mixture of sodium bromide and methyl alcohol. Methyl bromide is used primarily as a pesticide to fumigate soil, spaces, structures, and commodities. It is also used as a methylating agent, low-boiling solvent, and oil extractant in chemical syntheses. Less toxic chemicals have replaced it as a refrigerant and fire-extinguisher constituent.

Standards and Guidelines

OSHA ceiling limit = 20 ppm (skin)

NIOSH IDLH (immediately dangerous to life or health) = 250 ppm

AIHA ERPG-2 (the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action) = 50 ppm

Physical Properties

Description: Colorless; gas at room temperature and liquid below 38.5 °F (3.6 °C)

Warning properties: **Inadequate**; musty or fruity odor at greater than 1,000 ppm; eye and throat irritation at greater than 500 ppm.

Molecular weight: 95.0 daltons

Boiling point (760 mm Hg): 38.5 °F (3.6 °C)

Freezing point: -137 °F (-94 °C)

Vapor pressure: 1420 mm Hg at 68 °F (20 °C)

Gas density: 3.4 (air = 1)

Water solubility: Water soluble (0.09% at 68 °F) (20 °C)

Flammability: Flammable, but only in the presence of a high-energy ignition source.

Flammable range: 13.5% to 14.5% (concentration in air)

Incompatibilities

Methyl bromide reacts with strong oxidizers, magnesium, aluminum, tin, zinc, and alloys. It attacks aluminum to form aluminum trimethyl, which is spontaneously flammable.

Health Effects

- **Methyl bromide is a neurotoxic gas that can cause convulsions, coma, and long-term neuromuscular and cognitive deficits.**
- **Exposure to high concentrations of pure methyl bromide may cause inflammation of the bronchi or lungs, an accumulation of fluid in the lung, and irritation of the eyes and nose. Tearing agents added to methyl bromide to provide warning of its presence can also cause these symptoms, even at very low concentrations.**
- **Skin contact with high vapor concentrations or with liquid methyl bromide can cause systemic toxicity and may cause stinging pain and blisters.**

Acute Exposure

Methyl bromide methylates the sulfhydryl groups of enzymes, causing cellular disruption and reduced glutathione levels. Cellular disruption, primarily in the CNS, results in progressive dysfunction. In sublethal poisoning, a latency period of 2 to 48 hours can occur between exposure and onset of symptoms. Methanol, a metabolite of methyl bromide, may also contribute to the neurologic and visual effects, but this is only likely to be significant at high levels of exposure.

Children do not always respond to chemicals in the same way that adults do. Different protocols for managing their care may be needed.

CNS

The most serious effects of acute inhalation exposure involve the CNS. Depending on the concentration and duration of exposure, initial neurologic effects may be delayed for 2 or more hours after exposure and may include headache, nausea, vomiting, dizziness, malaise, and visual disturbances. Examination may reveal involuntary movements of the eyes, dilated pupils, slurred speech, trembling of the extremities during movement, impaired gait, impaired sensation of touch, brain damage (i.e., cerebellar abnormalities), motor deficits, and decreased reflexes.

Neuropsychiatric abnormalities often occur after acute exposure, although onset may be delayed for days to weeks. In some cases, mental disturbances may predominate with only mild neurologic signs and no seizures; in others, severe and prolonged seizures may occur. Motor and cognitive deficits may persist indefinitely.

<i>Peripheral Neurologic</i>	Peripheral neuropathy may develop after acute exposure to methyl bromide and may persist indefinitely.
<i>Respiratory</i>	<p>Respiratory symptoms are the most likely nonneurologic effects of acute methyl bromide inhalation. Throat irritation, chest pain, and shortness of breath are common. Severe exposures may cause inflammation of the bronchi or lungs and an accumulation of fluid in the lungs, which may be delayed 24 hours or longer after exposure. Death may result from respiratory or cardiovascular failure.</p> <p>Exposure to certain chemicals can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically- or irritant-induced type of asthma.</p> <p>Children may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed.</p>
<i>Cardiovascular</i>	Acute inhalation of high concentrations can cause rapid, ineffective beating of the heart.
<i>Renal</i>	Protein and blood in the urine, scant urine production, absence of urine production, and accumulation of urea and other nitrogen wastes in the blood due to death of kidney cells have been described. Complete recovery is usual.
<i>Hepatic</i>	Elevated liver enzymes in serum and jaundice occur occasionally after acute exposure.
<i>Ocular</i>	Eye exposure to liquid methyl bromide or to high concentrations of vapor may cause corneal irritation and burns.
<i>Dermal</i>	<p>Contact with either liquid or high vapor concentrations can cause stinging pain, redness of the skin, and blisters characteristic of second-degree burns.</p> <p>Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants absorbed through the skin.</p>
<i>Potential Sequelae</i>	Peripheral nerve damage, speech difficulty, and neuropsychiatric sequelae such as impaired gait, involuntary movements of the eyes, tremors, involuntary muscle jerks, seizures, decline in mental abilities, and severe mental disorders (i.e., psychoses) may develop weeks after exposure.

Chronic Exposure

Repeated exposures have been associated with peripheral neuropathies, especially sensory neuropathy, impaired gait, behavioral changes, and mild liver and kidney dysfunction. Visual impairment secondary to atrophy of the optic nerve has been reported. Chronic exposure may be more serious for children because of their potential longer latency period.

Carcinogenicity

The International Agency for Research on Cancer has determined that methyl bromide is not classifiable as to its carcinogenicity to humans.

*Reproductive and
Developmental Effects*

Methyl bromide is not considered a reproductive or developmental toxicant. No human data are available; one study of experimental animals (rats and rabbits) did not find teratogenic effects at levels below those causing maternal death. Methyl bromide is not included in *Reproductive and Developmental Toxicants*, a 1991 report published by the U.S. General Accounting Office (GAO) that lists 30 chemicals of concern because of widely acknowledged reproductive and developmental consequences.

Prehospital Management

- Victims exposed only to methyl bromide gas do not pose substantial risks of secondary contamination to personnel outside the Hot Zone; however, some methyl bromide may permeate clothing. Victims whose clothing or skin is contaminated with liquid methyl bromide (i.e., ambient temperature less than 38.5 °F) can secondarily contaminate response personnel by direct contact or through off-gassing vapor.
- Methyl bromide is a neurotoxic gas that may cause headaches, dizziness, visual disturbances, ventricular fibrillation, pulmonary edema, ataxia, convulsions, coma, and death.
- Exposures to high concentrations of methyl bromide can cause eye, skin, and respiratory tract irritation, as well as chemical pneumonitis. Dermal absorption may contribute to systemic toxicity.
- There is no antidote for methyl bromide. Treatment consists of support of respiratory and cardiovascular functions.

Hot Zone

Rescuers should be trained and appropriately attired before entering the Hot Zone. If the proper equipment is not available, or if rescuers have not been trained in its use, assistance should be obtained from a local or regional HAZMAT team or other properly equipped response organization.

Rescuer Protection

Methyl bromide is a highly toxic systemic poison that is absorbed well by inhalation and through the skin.

Respiratory Protection: Positive-pressure, self-contained breathing apparatus (SCBA) with a full facepiece is recommended in response situations that involve exposure to potentially unsafe levels of methyl bromide vapor.

Skin Protection: Chemical-protective clothing (including boots and gloves) is recommended because methyl bromide vapor or liquid can be absorbed through the skin and may contribute to systemic toxicity. Contact with liquid methyl bromide can cause skin irritation and burns.

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible.

Victim Removal

If victims can walk, lead them out of the Hot Zone to the Decontamination Zone. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available, carefully carry or drag victims to safety.

Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety if a child is separated from a parent or other adult.

Decontamination Zone

Remove clothing, including footwear, from all victims because methyl bromide gas persists in cloth, leather, and rubber. After clothing has been removed, patients exposed only to the gas who have no skin or eye irritation may be transferred immediately to the Support Zone. All others require decontamination (see *Basic Decontamination* below).

Rescuer Protection

If exposure levels are determined to be safe, decontamination may be conducted by personnel wearing a lower level of protection than that worn in the Hot Zone (see *Rescuer Protection*, above).

ABC Reminders

Quickly access for a patent airway, ensure adequate respiration and pulse. Stabilize the cervical spine with a collar and a backboard if trauma is suspected. Administer supplemental oxygen as required. Assist ventilation with a bag-valve-mask device if necessary.

Basic Decontamination

Victims who are able may assist with their own decontamination. Remove all contaminated clothing including footwear. Methyl bromide can persist in cloth, leather, and rubber, and these materials may contribute to severe chemical burns after prolonged skin contact. Double-bag contaminated clothing and personal belongings. **Leave these items in the Hot Zone.**

Flush exposed skin and hair with water for at least 15 minutes, then wash twice with mild soap. Rinse thoroughly with water. Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Irrigate exposed or irritated eyes with plain water or saline for 15 to 20 minutes. Remove contact lenses if easily removable without additional trauma to the eye. If pain or injury is evident, continue irrigation while transferring the victim to the Support Zone.

Oral exposure to methyl bromide is rare (it is a gas at temperatures above 38.5 °F); however, if ingestion occurs, **do not induce emesis**. If the victim is alert and able to swallow, administer a slurry of activated charcoal at 1 gm/kg (usual adult dose 60–90 g, child dose 25–50 g). A soda can and straw may be of assistance when offering charcoal to a child.

Consider appropriate management of chemically contaminated children at the exposure site. Also, provide reassurance to the child during decontamination, especially if separation from a parent occurs. If possible, seek assistance from a child separation expert.

Transfer to Support Zone

As soon as basic decontamination is complete, move the victim to the Support Zone.

Support Zone

Be certain that victims have been decontaminated properly (see *Decontamination Zone* above). Persons who have undergone decontamination pose no serious risks of secondary contamination. Support Zone personnel require no specialized protective gear in such cases.

ABC Reminders

Quickly access for a patent airway. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible. Ensure adequate respiration and pulse. Administer supplemental oxygen as required and establish intravenous access if necessary. Place on a cardiac monitor.

Additional Decontamination

Continue irrigating exposed skin and eyes, as appropriate.

Advanced Treatment

In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, perform cricothyroidotomy if equipped and trained to do so.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine

solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or are having seizures or cardiac arrhythmias should be treated according to advanced life support (ALS) protocols.

If evidence of shock or hypotension is observed begin fluid administration. For adults, bolus 1,000 mL/hour intravenous saline or lactated Ringer's solution if blood pressure is under 80 mm Hg; if systolic pressure is over 90 mm Hg, an infusion rate of 150 to 200 mL/hour is sufficient. For children with compromised perfusion administer a 20 mL/kg bolus of normal saline over 10 to 20 minutes, then infuse at 2 to 3 mL/kg/hour.

Transport to Medical Facility

Only decontaminated patients or patients not requiring decontamination should be transported to a medical facility. "Body bags" are not recommended.

Report to the base station and the receiving medical facility the condition of the patient, treatment given, and estimated time of arrival at the medical facility.

If the patient has ingested methyl bromide, prepare the ambulance in case the patient vomits toxic material or has diarrhea. Have ready several towels and open plastic bags to quickly clean up and isolate vomitus.

Multi-Casualty Triage

Consult with the base station physician or the regional poison control center for advice regarding triage of multiple victims. Because systemic symptoms may be delayed for several hours after exposure, all exposed patients should be transported to a medical facility for evaluation. Symptomatic patients should receive priority in transport.

Emergency Department Management

- Hospital personnel away from the scene are not at significant risk of secondary contamination from patients exposed to methyl bromide gas or to liquid methyl bromide at ambient temperatures greater than 38.5 °F; however, some methyl bromide may have permeated clothing.
- Methyl bromide is a neurotoxic gas that may cause headaches, dizziness, visual disturbances, ventricular fibrillation, pulmonary edema, ataxia, convulsions, coma, and death.
- Exposures to high concentrations of methyl bromide can cause eye, skin, and respiratory tract irritation, as well as chemical pneumonitis. Dermal absorption can contribute to systemic toxicity.
- There is no antidote for methyl bromide. Treatment consists of support of respiratory and cardiovascular functions.

Decontamination Area

Patients who have been decontaminated previously may be transferred immediately to the Critical Care Area. Other patients require decontamination as described below.

Be aware that use of protective equipment by the provider may cause fear in children, resulting in decreased compliance with further management efforts.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants absorbed through the skin. Also, emergency room personnel should examine children's mouths because of the frequency of hand-to-mouth activity among children.

ABC Reminders

Evaluate and support airway, breathing, and circulation. Intubate the trachea in cases of respiratory compromise. In cases of respiratory compromise secure airway and respiration via endotracheal intubation. If not possible, surgically create an airway.

Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of

cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Patients who are comatose, hypotensive, or have seizures or ventricular arrhythmias should be treated in the conventional manner.

Basic Decontamination

Patients who are able may assist with their own decontamination. Remove and double-bag all clothing, including footwear, because methyl bromide penetrates many materials and can remain trapped in them. If clothing is to be reused, it must undergo thorough decontamination. Some contaminated clothing may not be safe for reuse (e.g., leather articles).

Flush exposed skin and hair with water for at least 15 minutes, then wash **twice** with mild soap. Rinse thoroughly with water. Use caution to avoid hypothermia when decontaminating children or the elderly. Use blankets or warmers when appropriate.

Irrigate exposed or irritated eyes with plain water or saline for 15 to 20 minutes. Remove contact lenses if easily removable without additional trauma to the eye. If pain or injury is evident, continue irrigation while transferring the victim to the Critical Care Area. An ophthalmic anesthetic, such as 0.5% tetracaine, may be necessary to alleviate blepharospasm, and lid retractors may be required to allow adequate irrigation under the eyelids.

Oral exposure to methyl bromide is rare (it is a gas at temperatures above 38.5 °F); however, if ingestion occurs, **do not induce emesis**. If the victim is alert and able to swallow, and if not already done, administer a slurry of activated charcoal (at 1 gm/kg, usual adult dose 60–90 g, child dose 25–50 g). A soda can and straw may be of assistance when offering charcoal to a child.

Critical Care Area

Be certain that appropriate decontamination has been carried out (see *Decontamination Area*, above).

ABC Reminders

Evaluate and support airway, breathing, and circulation as in *ABC Reminders* above. Establish intravenous access in seriously ill patients. Continuously monitor cardiac rhythm.

Patients who are comatose, hypotensive, or have seizures or cardiac arrhythmias should be treated in the conventional manner.

Inhalation Exposure

Administer supplemental oxygen by mask to patients who have respiratory complaints. Treat patients who have bronchospasm with aerosolized bronchodilators. The use of bronchial sensitizing agents in situations of multiple chemical exposures may pose additional risks. Consider the health of the myocardium before choosing which type of bronchodilator should be administered. Cardiac sensitizing agents may be appropriate; however, the use of cardiac sensitizing agents after exposure to certain chemicals may pose enhanced risk of cardiac arrhythmias (especially in the elderly).

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution in 2.5 cc water, repeat every 20 minutes as needed, cautioning for myocardial variability.

Observe these patients for 24 hours using repeated chest examinations and other appropriate tests. Follow-up as clinically indicated.

Skin Exposure

If the skin was in contact with concentrated methyl bromide vapor or liquid, chemical burns may result; treat as thermal burns. Burns may be delayed in onset.

Eye Exposure

Continue irrigation for at least 15 minutes. Test visual acuity. Examine the eyes for corneal damage and treat appropriately. Immediately consult an ophthalmologist for patients who have corneal injuries.

Ingestion

Oral exposure to methyl bromide is rare (it is a gas at temperatures above 38.5 °F); however, if ingestion occurs, **do not induce emesis**. If the victim is alert and able to swallow, and if not already done, administer a slurry of activated charcoal (at 1 gm/kg, usual adult dose 60–90 g, child dose 25–50 g). A soda can and straw may be of assistance when offering charcoal to a child.

*Antidotes and
Other Treatments*

There is no proven antidote for methyl bromide poisoning. Dimercaprol (BAL) or acetylcysteine (Mucomyst) have been

suggested as antidotes based on the postulated mechanism of methyl bromide's toxicity. However, no adequate studies have tested the efficacy of these therapies, and they are not recommended for routine use.

Laboratory Tests

Serum bromide levels can be used to document that exposure did occur. However, bromide levels do not accurately predict the clinical course. Routine laboratory studies include CBC, glucose, and electrolyte determinations. Additional studies for patients exposed to methyl bromide include liver-function tests and renal-function tests. In cases of inhalation exposure, chest radiography and pulse oximetry (or ABG measurements) may be helpful.

**Disposition and
Follow-up**

Decisions to admit or discharge a patient should be based on exposure history, physical examination, and test results. The probable delay in onset of serious effects from methyl bromide exposure should be considered.

Delayed Effects

Because the onset of pulmonary edema may be delayed for up to several days, patients who have severe exposure should be monitored with serial examinations before absence of toxic effects can be assured. If pulmonary edema is suspected, admit patients to an intensive care unit. Neurological symptoms also may not develop for several days or weeks.

Patient Release

Patients who have no evidence of neuropsychiatric or pulmonary effects 24 hours after exposure may be discharged with instructions to return to the ED if symptoms develop or recur (see the *Methyl Bromide—Patient Information Sheet*).

Follow-up

Obtain the name of the patient's primary care physician so that the hospital can send a copy of the ED visit to the patient's doctor.

Patients exposed to methyl bromide should be monitored for late neuropsychiatric sequelae.

Patients who have corneal injuries should be reexamined within 24 hours.

Reporting

Methyl bromide is a pesticide. If a pesticide or work-related incident has occurred, you may be legally required to file a report; contact your state or local health department.

Other persons may still be at risk in the setting where this incident occurred. If the incident occurred in the workplace, discussing it with company personnel may prevent future

incidents. If a public health risk exists, notify your state or local health department or other responsible public agency. When appropriate, inform patients that they may request an evaluation of their workplace from OSHA or NIOSH. See Appendices III and IV for a list of agencies that may be of assistance.

Methyl Bromide Patient Information Sheet

This handout provides information and follow-up instructions for persons who have been exposed to methyl bromide.

What is methyl bromide?

Methyl bromide is a colorless gas or liquid that is odorless at low concentrations. At very high concentrations, it has a sweet, fruity odor. Tear gas is often mixed with it so that a person exposed to methyl bromide will be warned of its presence. Methyl bromide is used to kill insects in the soil and to rid soils and buildings of termites. Typically, the field or home is covered (“tented”) by a large tarp and the methyl bromide is pumped in. Methyl bromide is also used in industry to make other chemicals.

What immediate health effects can be caused by exposure to methyl bromide?

Breathing methyl bromide can cause injury to the brain, nerves, lungs, and throat. High doses can also injure the kidneys and liver. Contact with the skin and eyes can lead to irritation and burns. Generally, the more serious the exposure, the more severe the symptoms.

Can methyl bromide poisoning be treated?

There is no antidote for methyl bromide poisoning, but its effects can be treated and most persons recover. Persons who have experienced serious symptoms may need to be hospitalized and may need follow-up examinations or treatment later on.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly is not likely to cause delayed or long-term effects. After a serious exposure that causes lung or nervous system-related problems, permanent brain or nerve damage can result.

What tests can be done if a person has been exposed to methyl bromide?

Specific tests for the presence of bromide in blood may provide some useful information to the doctor. If a severe exposure has occurred, blood and urine analyses and other tests may show whether the lungs, brain, nerves, liver, or kidneys have been damaged. Testing is not needed in every case.

Where can more information about methyl bromide be found?

More information about methyl bromide can be obtained from your regional poison control center; your state, county, or local health department; the Agency for Toxic Substances and Disease Registry (ATSDR); your doctor; or a clinic in your area that specializes in occupational and environmental health. If the exposure happened at work, you may wish to discuss it with your employer, the Occupational Safety and Health Administration (OSHA), or the National Institute for Occupational Safety and Health (NIOSH). Ask the person who gave you this form for help in locating these telephone numbers.

Follow-up Instructions

Keep this page and take it with you to your next appointment. Follow *only* the instructions checked below.

- ☐ Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:
- coughing or wheezing
 - difficulty in breathing, shortness of breath, or chest pain
 - difficulty in walking
 - numbness of hands or feet
 - confusion, dizziness, or fainting
 - increased pain or a discharge from exposed eyes
 - increased redness or pain or a pus-like discharge in the area of a skin burn
- ☐ No follow-up appointment is necessary unless you develop any of the symptoms listed above.
- ☐ Call for an appointment with Dr. _____ in the practice of _____.
When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by _____ and were advised to be seen again in _____ days.
- ☐ Return to the Emergency Department/ _____ Clinic on (date) _____ at _____ AM/PM for a follow-up examination.
- ☐ Do not perform vigorous physical activities for 1 to 2 days.
- ☐ You may resume everyday activities including driving and operating machinery.
- ☐ Do not return to work for _____ days.
- ☐ You may return to work on a limited basis. See instructions below.
- ☐ Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.
- ☐ Avoid drinking alcoholic beverages for at least 24 hours; alcohol may worsen injury to your stomach or have other effects.
- ☐ Avoid taking the following medications: _____
- ☐ You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

- ☐ Other instructions: _____

- Provide the Emergency Department with the name and the number of your primary care physician so that the ED can send him or her a record of your emergency department visit.
 - You or your physician can get more information on the chemical by contacting: _____
_____ or _____, or by checking out the following Internet Web sites: _____; _____.

Signature of patient _____ Date _____

Signature of physician _____ Date _____