

Ethylene Dibromide (C₂H₄Br₂)
CAS 106-93-4; UN 1605

Synonyms include 1,2-dibromoethane, glycoldibromide, and bromofume.

- ▼ **Persons whose clothing or skin is contaminated with liquid ethylene dibromide (above 50 °F) can secondarily contaminate others by direct contact or through off-gassing vapor.**
- ▼ **A liquid at room temperature, ethylene dibromide readily penetrates skin, cloth, and other protective materials such as rubber and leather. It is nonflammable.**
- ▼ **Ethylene dibromide is a colorless, heavy liquid with a sweet chloroform-like odor. It's odor is not detectable at a low enough concentration to be considered a warning of excessive exposure.**
- ▼ **Absorption can occur by the inhalation, oral, and dermal routes. It is toxic by these three routes of exposure. Toxicity is thought to be due to metabolic products of ethylene dibromide.**

Description

Ethylene dibromide is a nonflammable colorless liquid with a sweet chloroform-like odor at room temperature above 50 °F (10 °C). It is slightly soluble in water and soluble in most organic solvents. It is heavier than water. When heated to decomposition, it may release gases and vapors such as hydrogen bromide, bromine, and carbon monoxide. Ethylene dibromide should be stored in a dry place at ambient temperature.

Routes of Exposure

Inhalation

Inhalation is an important route of exposure. Ethylene dibromide's odor is not detectable at a low enough concentration to be considered a good warning of excessive exposure. Ethylene dibromide vapors are heavier than air and can accumulate in poorly ventilated or low-lying areas.

Fatalities have occurred among workers cleaning a tank containing residues of ethylene dibromide. The dermal route also contributed to the exposure.

Children exposed to the same levels of ethylene dibromide as adults may receive larger doses because they have greater lung surface

area:body weight ratios and higher minute volume: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 ethylene dibromide vapors found nearer to the ground.

Skin/Eye Contact

Ethylene dibromide can penetrate ordinary rubber gloves and leather. Prolonged skin contact with the liquid may cause erythema, blistering, and skin ulcers. Skin absorption may contribute to systemic toxicity.

Because of their relatively larger surface area:weight ratio, children are more vulnerable to toxicants absorbed through the skin.

Ingestion

Acute toxic effects, including fatal systemic poisoning, can result from ingestion. Rapid effects following ingestion can include abdominal pain, diarrhea, nausea, vomiting, and drowsiness.

Sources/Uses

Ethylene dibromide is produced by liquid-phase bromination of ethylene at 35–85 °C. This is followed by neutralization to free acid and purification by distillation. Ethylene dibromide was used extensively as a scavenger for lead in gasoline and as a pesticide and an ingredient of soil, vegetable, fruit, and grain fumigant formulations. However, these uses have almost disappeared in the United States. It is used to some extent as a chemical intermediate, gauge fluid, and as a nonflammable solvent for resins, gums, and waxes.

Standards and Guidelines

OSHA 8-hour TWA = 20 ppm; acceptable ceiling concentration = 30 ppm

NIOSH REL-TWA = 0.045 ppm; 15-min ceiling limit = 0.13 ppm

NIOSH IDLH (immediately dangerous to life or health) = 100 ppm

Physical Properties

Description: Colorless; liquid at room temperature and solid below 50 °F (10 °C)

Warning properties: **Inadequate** for exposure to vapors

Molecular weight: 187.9 daltons

Boiling point (760 mm Hg): 268 °F (131 °C)

Freezing point: 50°F (10 °C)

Vapor pressure: 11 mm Hg at 77 °F (25 °C)

Liquid specific gravity: 2.172 at 77° F (25 °C)

Gas density: 6.48 (air = 1)

Water solubility: Water soluble (0.43% at 86 °F) (30 °C)

Flammability: Nonflammable

Incompatibilities

Incompatible with strong oxidizers, magnesium, alkali metals, and liquid ammonia.

Health Effects

- ▼ **Ethylene dibromide is a liquid at ambient temperatures that can cause skin, eye, mucous membrane, and respiratory tract irritation. It may also cause damage to the lungs, liver, and kidneys. These effects can result from all routes of exposure.**
- ▼ **The systemic effects of ethylene dibromide are in part due to metabolic conversion to the cell toxicant 2-bromoacetaldehyde.**
- ▼ **Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney, or respiratory tract function may be more susceptible to the effects of ethylene dibromide.**

Acute Exposure

Ethylene dibromide alkylates macromolecules causing cellular disruption and reduced glutathione levels. Cellular disruption in tissues and organs, such as liver and kidneys, results in progressive dysfunction. Manifestation of some of the effects of acute high exposure may be delayed a few days.

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

Respiratory

Early symptoms of acute exposure include irritation of the nose and throat. Exposures of moderate to severe intensity produce respiratory manifestations ranging from cough, chest pain, and dyspnea to bronchitis, pneumonitis, pulmonary edema, and hemorrhage. Pulmonary edema occurred 3 days after oral poisoning in one fatal human case.

Children may be more vulnerable because of higher minute ventilation per kg and failure to evacuate an area promptly when exposed. Hydrocarbon pneumonitis may be a problem in children.

CNS

Ethylene dibromide is a mild central nervous system depressant. Drowsiness has been reported following ingestion and inhalation. Inhalation of vapors in a confined oxygen-deficient space has caused rapid loss of consciousness, coma, and death.

Dermal

Liquid ethylene dibromide is a skin irritant. Brief skin contact or contact with contaminated clothing causes erythema and discomfort. Splashing of the liquid on the skin causes a sensation of cooling

because the liquid evaporates quickly. Prolonged skin contact may cause blistering and skin ulcers (may be delayed 24–48 hours). Ethylene dibromide can be absorbed through the skin to produce systemic effects.

Exposure to certain chemicals can lead to Reactive Airway Dysfunction Syndrome (RADS), a chemically-or irritant-induced type of asthma.

Because of their larger relatively surface area:body weight ratio, children are more vulnerable to toxins absorbed through the skin.

Ocular/Ophthalmic Conjunctivitis has been reported after exposure to ethylene dibromide. Eye contact with the compound may cause temporary loss of vision because of destruction of tissues in the eye.

Hepatic Ethylene dibromide poisoning often affects the liver. Significant liver damage has resulted from inhalation and ingestion of ethylene dibromide. Necrosis of the liver was a chief finding in a fatal case of acute oral poisoning. In two fatal cases of inhalation/dermal exposure, serum aspartate aminotransferase and lactic dehydrogenase were elevated before death.

Renal The kidney is often affected in ethylene dibromide poisoning. Severe renal lesions were reported in fatal cases of acute oral poisoning and also inhalation poisoning. Lesions included necrosis of the tubular epithelium, cytoplasmic vacuolization of the proximal convoluted tubules, and tubular protein casts.

Gastrointestinal Abdominal pain, nausea, vomiting, and diarrhea have been reported after ethylene dibromide ingestion.

Hematological Coagulation has been reported after ingestion. Leukocytosis can occur within several days of exposure.

Metabolic Metabolic acidosis can occur after high exposure to ethylene dibromide.

Potential Sequelae Patients who develop severe acute neurologic injury but survive may have both central and peripheral neurologic effects that persist indefinitely.

Chronic Exposure No reliable reports exist of adverse health effects in humans exposed chronically to ethylene dibromide.

Chronic exposure may be more serious for children because of their potential for a longer latency period.

Carcinogenicity

The Department of Health and Human Services (DHHS) has determined that ethylene dibromide can reasonably be anticipated to be a human carcinogen, based on ethylene dibromide-induced tumors in multiple sites and by various routes of exposure in animals. Results from epidemiological studies have been inconclusive.

*Reproductive and
Developmental Effects*

There is inconclusive but suggestive evidence that ethylene dibromide may reduce fertility in men. Antispermatic effects have been demonstrated in various animal species. Ethylene dibromide is 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.

Special consideration regarding the exposure of pregnant women is warranted, since ethylene dibromide has been shown to be a genotoxin; thus, medical counseling is recommended for pregnant women.

Prehospital Management

- ▼ **Victims exposed only to ethylene dibromide gas do not pose substantial risks of secondary contamination to personnel outside the Hot Zone; however, some ethylene dibromide may permeate clothing. Victims whose clothing or skin is contaminated with liquid ethylene dibromide (i.e., ambient temperature higher than 50 °F) can secondarily contaminate response personnel by direct contact or through off-gassing vapor.**
- ▼ **Ethylene dibromide is a mucous membrane, skin, and eye irritant. It may also cause respiratory distress and pulmonary noncardiogenic pulmonary edema, liver and kidney toxicity, drowsiness, coma, and death. Dermal absorption may contribute to systemic toxicity.**
- ▼ **There is no antidote for ethylene dibromide. 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

Ethylene dibromide is a highly toxic systemic poison that is readily absorbed following inhalation and dermal exposure.

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 ethylene dibromide vapor or liquid can be absorbed through the skin and may contribute to systemic toxicity. Contact with liquid ethylene dibromide can cause skin irritation and blisters. Ethylene dibromide can penetrate ordinary rubber gloves and leather.

ABC Reminders

Quickly establish 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 anxiety in victims with chemically-induced acute disorders, especially children who may suffer separation anxiety if separated from a parent or other adult.

Decontamination Zone

Remove clothing, including footwear, from all victims because ethylene dibromide 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 as described 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 (described above).

ABC Reminders

Quickly establish 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. Ethylene dibromide 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 patients, particularly children or the elderly. Use blankets or warmers after decontamination as needed.

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.

If ingestion of liquid ethylene dibromide occurs, **do not induce emesis**. If the victim is alert and able to swallow, administer a slurry of activated charcoal at a dose of 1 g/kg (infant, child, and adult dose). 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.

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). Victims 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 establish 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. 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.

In cases of ingestion of liquid ethylene dibromide, **do not induce emesis**. If the victim is alert and able to swallow, administer a slurry of activated charcoal at a dose of 1 g/kg (infant, child, and adult dose). A soda can and straw may be of assistance when offering charcoal to a child.

Advanced Treatment

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

Treat patients who have bronchospasm with an aerosolized bronchodilator such as albuterol.

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

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 with systolic pressure less than 80 mmHg, bolus perfusion of 1,000 mL/hour intravenous saline or lactated Ringer's solution may be appropriate. Higher adult systolic pressures may necessitate lower perfusion rates. 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 ethylene dibromide, 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 vapors of ethylene dibromide or to liquid ethylene dibromide (ambient temperatures greater than 50 °F); however, some ethylene dibromide may have permeated clothing.**
- ▼ **Ethylene dibromide is a mucous membrane irritant and exposures to high concentrations can cause eye, skin, and respiratory tract irritation, as well as pulmonary edema. Dermal absorption can contribute to systemic toxicity.**
- ▼ **High concentrations can also cause drowsiness, coma, and death.**
- ▼ **There is no antidote for ethylene dibromide. Treatment consists of support of respiratory and cardiovascular functions.**

Decontamination Area

Unless previously decontaminated, all patients suspected of contact with liquid ethylene dibromide and all victims with skin or eye irritation require decontamination as described below. Because ethylene dibromide is absorbed through the skin, don butyl rubber gloves and apron before treating patients. Ethylene dibromide readily penetrates most rubbers and barrier fabrics or creams, but butyl rubber provides good skin protection. All other patients may be transferred immediately to the Critical Care Area.

Be aware that use of protective equipment by the provider may cause anxiety, particularly 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 department 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. 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 an aerosolized bronchodilator such as albuterol.

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

Patients who are comatose, hypotensive, or have seizures or cardiac 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 ethylene dibromide penetrates many materials and can remain trapped in them. Leather absorbs ethylene dibromide; items such as leather shoes, gloves, and belts may require disposal by incineration.

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 patients, particularly children or the elderly. Use blankets or warmers after decontamination as needed.

Irrigate exposed or irritated eyes with tap 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.

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 a dose of 1 g/kg (infant, child, and adult dose). 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 an aerosolized bronchodilator such as albuterol.

Consider racemic epinephrine aerosol for children who develop stridor. Dose 0.25–0.75 mL of 2.25% racemic epinephrine solution, 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 ethylene dibromide vapor or liquid, chemical burns may result; treat as thermal burns. Burns may be delayed in onset.

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

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

If ingestion of liquid ethylene dibromide 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 a dose of 1 g/kg (infant, child, and adult dose). 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 ethylene dibromide poisoning. Dimercaprol (BAL) or acetylcysteine (Mucomyst) have been suggested as antidotes based on the postulated mechanism of ethylene dibromide'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 ethylene dibromide include liver-function tests and renal-

**Disposition and
Follow-up**

function tests. In cases of inhalation exposure, chest radiography and arterial blood gas measurements may be helpful.

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 ethylene dibromide 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 emergency department (ED) if symptoms develop or recur (see the *Ethylene Dibromide—Patient Information Sheet* below).

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 ethylene dibromide should be monitored for late neuropsychiatric sequelae.

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

Reporting

Ethylene dibromide 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 Appendix III for a list of agencies that may be of assistance.

Ethylene Dibromide Patient Information Sheet

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

What is ethylene dibromide?

Ethylene dibromide is a colorless liquid at ambient temperature, with a sweetish odor. Ethylene dibromide has been used as a scavenger for lead in gasoline and as a pesticide and an ingredient of soil and grain fumigant formulations. These uses have virtually disappeared in the United States. Minor uses include use as a chemical intermediate and as a nonflammable solvent for resins, gums, and waxes.

What immediate health effects can be caused by exposure to ethylene dibromide?

Ingestion of the ethylene dibromide or inhalation of vapors can cause injury to the brain, lungs, and throat. High doses can also injure the kidneys and liver. Contact with the skin and eyes can lead to irritation and burns and can also contribute to systemic toxicity. Ethylene dibromide may cause cardiac arrhythmias and sensitization. Generally, the more serious the exposure, the more severe the symptoms.

Can ethylene dibromide poisoning be treated?

There is no antidote for ethylene dibromide 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 lung damage can result. The Department of Health and Human Services has determined that ethylene dibromide can reasonably be anticipated to be a carcinogen.

What tests can be done if a person has been exposed to ethylene dibromide?

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, liver, or kidneys have been damaged. Testing is not needed in every case.

Where can more information about ethylene dibromide be found?

More information about ethylene dibromide 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
 - ▼ 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 _____