

Acrolein (C₃H₄O)
CAS 107-02-8; UN 1092

Synonyms include 2-propenal, 2-propen-1-one, prop-2-en-1-al, acraldehyde, acrylaldehyde, acrylic aldehyde, allyl aldehyde, ethylene aldehyde, aqualine.

- ▼ **Persons exposed only to acrolein vapor do not pose secondary contamination risks. Persons whose clothing or skin is contaminated with liquid acrolein can secondarily contaminate others by direct contact or off-gassing vapor.**
- ▼ **At room temperature, acrolein is a clear, colorless to straw-colored liquid with a pungent, suffocating odor. It is highly flammable and burns to produce toxic gases (peroxides and oxides of carbon). It is volatile, producing toxic concentrations at room temperature. Vapors may travel to a source of ignition and flash back. The odor of acrolein may not provide adequate warning of hazardous concentrations.**
- ▼ **Acrolein is toxic by all exposure routes. Exposure causes inflammation and irritation of the skin, respiratory tract, and mucous membranes. Delayed pulmonary edema may occur after inhalation. Systemic effects may occur after exposure by any route.**

Description

Acrolein is a clear, colorless, or yellow liquid with a pungent, suffocating odor. It is very flammable and may polymerize violently. Acrolein should be stored in a cool, dry, well-ventilated area in tightly sealed containers separated from alkaline materials such as caustics, ammonia, organic amines, or mineral acids, strong oxidizers, and oxygen. Acrolein is soluble in water, alcohol, ether, and acetone.

Routes of Exposure*Inhalation*

Inhaled acrolein is highly toxic. Acrolein is irritating to the upper respiratory tract even at low concentrations. Its odor threshold of 0.16 ppm is similar to the OSHA permissible exposure limit (0.1 ppm); thus odor may provide an adequate warning of potentially hazardous concentrations. Acrolein vapor is heavier than air, but asphyxiation in enclosed, poorly ventilated, or low-lying areas is unlikely due to its strong odor.

Children exposed to the same levels of acrolein vapor as adults may receive a larger dose because they have greater lung surface area:body weight ratios and higher 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 acrolein vapor found nearer to the ground.

Skin/Eye Contact

Direct contact with liquid acrolein causes rapid and severe eye and skin irritation or burns. Exposure to vapor produces inflammation of mucous membranes and it is a potent lacrimator.

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

Ingestion

Acrolein produces chemical burns of the lips, mouth, throat, esophagus, and stomach. Nausea, vomiting, and diarrhea also occur.

Sources/Uses

Acrolein is produced by oxidation of propylene.

Acrolein is principally used as a biocide to control plants, algae, molluscs, fungi, rodents, and microorganisms. Acrolein has also been used in the manufacture of other chemicals, as a warning agent in gases, as a test gas for gas masks, in military poison gases, in the manufacture of colloidal metals, in leather tanning, and as a fixative in histology.

Standards and Guidelines

OSHA PEL (permissible exposure limit) = 0.1 ppm as an 8-hr TWA concentration and 0.3 ppm as a 15-minute TWA short-term exposure limit (STEL).

NIOSH IDLH (immediately dangerous to life or health) = 2 ppm.

AIHA ERPG-2 (maximum airborne concentration below which it is believed that nearly all persons could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action) = 0.5 ppm.

Physical Properties

Description: Clear, colorless to yellow liquid.

Warning properties: Suffocating, pungent odor at 0.16 ppm.

Molecular weight: 56.06 daltons

Boiling point (760 mm Hg): 126.5 °F (52.5 °C)

Freezing point: -126 °F (-88.0 °C)

Vapor pressure: 210 mm Hg at 68 °F (20 °C)

Gas density: 1.94 (air = 1)

Specific gravity: 0.84 (water = 1)

Water solubility: 208 g/L at 20 °C

Flash point: -15 °F (-26.1 °C)

Flammable range: 2.8% to 31% (concentration in air)

Incompatibilities

Acrolein reacts with caustics, ammonia, organic amines, or mineral acids, strong oxidizers, and oxygen.

Health Effects

- ▼ **Acrolein is severely irritating to skin, eyes, and mucous membranes. Inhalation of acrolein may result in respiratory distress and delayed pulmonary edema. Contact with the skin or eyes produces irritation and lacrimation, and can result in chemical burns.**
- ▼ **The mechanism by which acrolein produces toxic symptoms is not known, but the compound is highly reactive. No information was found as to whether the health effects of acrolein in children are different than in adults. Exposure to acrolein produces severe respiratory problems and individuals with pre-existing breathing difficulties or skin disease may be more susceptible to its effects.**

Acute Exposure

The mechanism by which acrolein produces toxic symptoms is not known, but the compound is highly reactive, cross-links DNA, and inhibits the activities of some enzymes (including cytochrome P450 and glutathione-S-transferase) *in vitro* by reacting with sulfhydryl groups at the active sites. It has also been shown to suppress pulmonary antibacterial defenses, to release oxygen radicals, and to react with proteins. Onset of irritation is immediate, but pulmonary edema may be delayed and respiratory insufficiency may persist for up to 18 months after exposure.

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

Respiratory

Acrolein produces irritation of the respiratory tract, increases airway resistance and tidal volume, and decreases respiratory frequency. It is also ciliastatic. Exposure to acrolein vapor concentrations as low as 10 ppm can lead to pulmonary edema and death. Inhalation may also cause an asthmatic reaction in sensitized individuals.

Acrolein is a weak sensitizer.

Children may be more vulnerable because of higher minute ventilation per kg and failure to evacuate an area promptly when exposed.

Dermal

Acrolein is a skin irritant. Contact with the liquid may cause skin burns, erythema, and edema.

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

Ocular/Ophthalmic

Acrolein liquid or vapor can cause eye irritation and damage to the cornea.

Gastrointestinal

Acrolein causes burns of the lips, mouth, throat, esophagus, and stomach. Nausea, vomiting, and diarrhea have been reported. No data were located as to whether ingestion leads to systemic toxicity in humans.

Cardiovascular

Acrolein inhalation may cause hypertension and tachycardia.

CNS

Serious poisoning may cause CNS depression.

Immunologic

Acrolein may have the potential to be immunotoxic.

The immune system in children continues to develop after birth, and thus children may be more susceptible to certain chemicals.

Potential Sequelae

Respiratory insufficiency may persist for up to 18 months after exposure.

Chronic Exposure

Apart from rare cases of sensitization, no adverse effects in humans chronically exposed to low concentrations of acrolein have been reported.

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 has determined that acrolein may possibly be a human carcinogen. The International Agency for Research on Cancer has determined that acrolein is not classifiable as to its carcinogenicity to humans.

Reproductive and Developmental Effects

No studies were located that address reproductive or developmental effects of acrolein in humans. Acrolein caused developmental effects when injected into rats, but did not cause developmental effects when ingested by rabbits. No information was found as to whether acrolein crosses the placenta, but it has been measured in breast milk.

Acrolein 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 acrolein vapor do not pose contamination risks to rescuers. Victims whose clothing or skin is contaminated with liquid acrolein can secondarily contaminate response personnel by direct contact or by off-gassing vapor.**
- ▼ **Acrolein is a direct irritant to mucous membranes, skin, eyes, and the respiratory system. Acute inhalation exposure may lead to respiratory distress and noncardiogenic pulmonary edema.**
- ▼ **There is no antidote for acrolein. Treatment consists of respiratory and cardiovascular support.**

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

Acrolein is highly toxic via all routes and is severely irritating to the eyes, mucous membranes, respiratory tract, and skin. Acrolein is highly flammable, can form explosive mixtures with air, and burns to produce irritating, corrosive and/or toxic gases. Acrolein vapor may travel to a source of ignition and flash back.

Respiratory Protection: Positive-pressure, self-contained breathing apparatus (SCBA) is recommended in response situations that involve exposure to potentially unsafe levels of acrolein.

Skin Protection: Chemical-protective clothing is recommended because acrolein can cause skin irritation, burns, and sensitization. Fully encapsulating, vapor protective clothing should be worn to deal with spills or leaks with no fire.

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

Patients exposed only to acrolein vapor who have no skin or eye irritation may be transferred immediately to the Support Zone. Other patients will 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. Quickly remove and double-bag contaminated clothing and personal belongings.

Flush exposed skin and hair with copious amounts of water. Wash with soap and rinse thoroughly with water. Use caution to avoid hypothermia when decontaminating victims, particularly children or the elderly. Use blankets or warmers after decontamination as needed.

Flush exposed or irritated eyes with tepid water for 15 minutes. Remove contact lenses if easily removable without additional trauma to the eye. Continue eye irrigation during other basic care and transport. If pain or injury is evident, continue irrigation while transferring the victim to the Support Zone.

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

Victims who are conscious and able to swallow should be given 4 to 8 ounces of milk or water (not to exceed 15 mL/kg in a child). If the victim is symptomatic, delay decontamination until other emergency measures have been instituted.

Consider appropriate management of chemically contaminated children at the exposure site. 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 or have been exposed only to vapor pose no serious risks of secondary contamination to rescuers. In such cases, Support Zone personnel require no specialized protective gear.

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, **do not induce emesis**. If the victim is alert, asymptomatic, and has a gag reflex, administer a slurry of activated charcoal at a dose of 1 g/kg (infant, child, and adult dose) if it has not already been administered. A soda can and a straw may be of assistance when offering charcoal to a child.

Victims who are conscious and able to swallow should be given 4 to 8 ounces of milk or water (not to exceed 15 mL/kg in a child) if it has not been given previously. If the victim is symptomatic, delay decontamination until other emergency measures have been instituted.

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 that acrolein inhalation may cause hypertension and tachycardia, in which case the use of bronchodilators that are known cardiac sensitizing agents may pose enhanced risk. Administer corticosteroids as indicated to patients who have persistent wheezing or hypersensitivity pneumonitis.

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 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 acrolein has been ingested, prepare the ambulance in case the victim vomits toxic material. 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.

Patients who are seriously symptomatic (as in cases of chest tightness or wheezing), patients who have histories or evidence of significant exposure, and all patients who have ingested acrolein should be transported to a medical facility for evaluation. Others may be discharged at the scene after their names, addresses, and telephone numbers are recorded. Those discharged should be advised to seek medical care promptly if symptoms develop (see *Patient Information Sheet* below).

Emergency Department Management

- ▼ **Hospital personnel in an enclosed area can be secondarily contaminated by direct contact or by off-gassing vapor from soaked skin or clothing. Patients do not pose contamination risks after contaminated clothing is removed and the skin is washed.**
- ▼ **Acrolein is irritating to mucous membranes, skin, eyes, and the respiratory tract. Acute inhalation exposure may lead to respiratory distress and noncardiogenic pulmonary edema.**
- ▼ **There is no antidote for acrolein. Treatment consists of respiratory and cardiovascular support.**

Decontamination Area

Unless previously decontaminated, all patients suspected of contact with acrolein liquid and all victims with skin or eye irritation require decontamination as described below. Because acrolein reacts with the skin, don butyl rubber gloves and an apron before treating patients. Acrolein 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 that react with 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. 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 that acrolein inhalation may cause hypertension and tachycardia, in which case the use of bronchodilators that are known cardiac sensitizing agents may pose enhanced risk. Administer corticosteroids as indicated to patients who have persistent wheezing or hypersensitivity pneumonitis.

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 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 contaminated clothing and all personal belongings.

Flush exposed skin and hair with water for 2 to 3 minutes (preferably under a shower), then wash thoroughly with mild soap. Rinse thoroughly with water. Use caution to avoid hypothermia when decontaminating victims, particularly children or the elderly. Use blankets or warmers after decontamination as needed.

Flush exposed eyes with plain tepid water for at least 15 minutes. Remove contact lenses if easily removable without additional trauma to the eye. If pain or injury is evident, continue irrigation while transporting the patient to the Critical Care Area.

In cases of ingestion, **do not induce emesis**. If the victim is alert, asymptomatic, and has a gag reflex, administer a slurry of activated charcoal at a dose of 1 g/kg (infant, child, and adult dose) if it has not already been administered. A soda can and a straw may be of assistance when offering charcoal to a child.

Victims who are conscious and able to swallow should be given 4 to 8 ounces of milk or water (not to exceed 15 mL/kg in a child) if it has not been given previously (see *Critical Care Area* below for more information on ingestion exposure).

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 under *Decontamination Zone*. Establish intravenous access in seriously ill patients if this has not been done previously. 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 symptoms. Treat patients who have bronchospasm with an aerosolized bronchodilator such as albuterol. Consider that acrolein inhalation may cause hypertension and tachycardia, in which case the use of bronchodilators that are known cardiac sensitizing agents may pose enhanced risk. Administer corticosteroids as indicated to patients who have persistent wheezing or hypersensitivity pneumonitis.

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.

Skin Exposure

If the skin was in contact with liquid acrolein, chemical burns may occur; treat as thermal burns.

Because of their relatively larger surface area:body weight ratio, children are more vulnerable to toxicants affecting 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 Exposure

Do not induce emesis. If the victim is alert, asymptomatic, and has a gag reflex, administer a slurry of activated charcoal at a dose of 1 g/kg (infant, child, and adult dose) if it has not already been administered. A soda can and a straw may be of assistance when offering charcoal to a child.

Victims who are conscious and able to swallow should be given 4 to 8 ounces of milk or water (not to exceed 15 mL/kg in a child) if it has not been given previously.

Consider endoscopy to evaluate the extent of gastrointestinal-tract injury. Extreme throat swelling may require endotracheal intubation or cricothyrotomy. Gastric lavage is useful in certain circumstances to remove caustic material and prepare for endoscopic examination. Consider gastric lavage with a small nasogastric (NG) tube if: (1) a large dose has been ingested; (2) the patient's condition is evaluated

within 30 minutes; (3) the patient has oral lesions or persistent esophageal discomfort; and (4) the lavage can be administered within one hour of ingestion. Care must be taken when placing the gastric tube because blind gastric-tube placement may further injure the chemically damaged esophagus or stomach.

Because children do not ingest large amounts of corrosive materials, and because of the risk of perforation from NG intubation, lavage is discouraged in children unless performed under endoscopic guidance.

Toxic vomitus or gastric washings should be isolated, e.g., by attaching the lavage tube to isolated wall suction or another closed container.

*Antidotes and
Other Treatments*

There is no antidote for acrolein. Treatment is supportive of respiratory and cardiovascular functions.

Laboratory Tests

Routine laboratory studies for all exposed patients include CBC, glucose, and electrolyte determinations. Patients who have respiratory complaints may require pulse oximetry (or ABG measurements), chest radiography, and peak-flow spirometry.

**Disposition and
Follow-up**

Consider hospitalizing patients who have histories of significant inhalation exposure and are symptomatic (e.g., chest tightness or wheezing) or who have ingested acrolein.

Delayed Effects

Pulmonary edema may be delayed for 24 hours after inhalation exposure and respiratory dysfunction may remain for as long as 18 months after exposure.

Patient Release

Patients who remain asymptomatic for 24 hours after exposure may be discharged with instructions to seek medical care promptly if symptoms develop (see the *Acrolein—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 emergency department (ED) visit to the patient's doctor.

If significant inhalation or skin contact has occurred, monitor pulmonary function. In rare cases individuals may be permanently sensitized and may need to be removed from future work with acrolein; patients should consult an occupational medicine or

pulmonary specialist before returning to work that entails exposure to acrolein.

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

Reporting

If a 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.

Acrolein

Patient Information Sheet

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

What is acrolein?

Acrolein is a colorless to pale-yellow liquid with a strong, pungent odor. Acrolein is principally used as a biocide to control plants, algae, molluscs, fungi, rodents, and microorganisms. Acrolein has also been used in the manufacture of other chemicals, as a warning agent in gases, as a test gas for gas masks, in military poison gases, in the manufacture of colloidal metals, in leather tanning, and as a fixative in histology.

What immediate health effects can be caused by exposure to acrolein?

Low levels of acrolein in the air can irritate the eyes, nose, throat, and lungs and cause cough, chest tightness, and shortness of breath. Higher levels can cause a build-up of fluid in the lungs, which may cause death. If liquid acrolein comes in contact with the skin or eyes, it can cause severe burns. Generally, the more serious the exposure, the more severe the symptoms.

Can acrolein poisoning be treated?

There is no antidote for acrolein, but its effects can be treated and most exposed persons get well. Seriously exposed persons may need to be hospitalized.

Are any future health effects likely to occur?

Respiratory dysfunction may persist for over a year. In rare cases, after exposure to acrolein, certain persons can be sensitized so that even small exposures to acrolein or other irritants can trigger allergic reaction. Therefore, it is important to tell your doctor that you have been exposed to acrolein. The Department of Health and Human Services has determined that acrolein may possibly be a human carcinogen, based in part on limited evidence of cancer in rats that were exposed to acrolein in the drinking water for a lifetime.

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

Specific tests for the presence of acrolein in blood are not available. If a severe exposure has occurred, respiratory function tests and a chest x-ray may show whether lung damage has occurred. In some cases, lung damage may not be noticed immediately following exposure. Specialized tests exist for reacted hemoglobin in blood and for modified DNA in white blood cells.

Where can more information about acrolein be found?

More information about acrolein 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, wheezing, difficulty breathing, shortness of breath, or chest pain
- increased pain or a discharge from your 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 _____