

Unidentified Chemical

All attempts should be made to determine the identity of the hazardous material before the *Unidentified Chemical* guideline is used. Responders should obtain assistance in identifying the chemical(s) from container shapes, placards, labels, shipping papers, and analytical tests. General information on these identification techniques is located in *Managing Hazardous Materials Incidents Volumes I and II*. The Unidentified Chemical protocol provides basic victim management recommendations but the techniques for a specific chemical could provide information which would allow more effective patient treatment.

Unidentified Chemical Prehospital Management

Potential for Secondary Contamination. The route and extent of exposure are important in determining the potential for secondary contamination. Victims who were exposed only to gas or vapor and have no gross deposition of the material on their clothing or skin are not likely to carry significant amounts of chemical beyond the Hot Zone and are not likely to pose risks of secondary contamination to response personnel. However, victims whose skin or clothing is soaked with liquid chemical or victims who have condensation of chemical vapor on their clothes or skin may contaminate others by direct contact or by off-gassing vapor. If the victim has ingested a chemical, toxic vomitus may also pose a danger to others through direct contact or off-gassing vapor.

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, call for assistance from a local or regional HAZMAT team or other properly equipped response organization.

Rescuer Protection When a chemical is unidentified, worst-case possibilities concerning toxicity must be assumed. The potential for severe local effects (e.g., irritation and burning) and severe systemic effects (e.g., organ damage) should be assumed when specific rescuer-protection equipment is selected.

Respiratory Protection: Pressure-demand, self-contained breathing apparatus (SCBA) should be used in all response situations.

Skin Protection: Chemical-protective clothing should be worn when local and systemic effects are unknown.

ABC Reminders Quickly ensure a patent airway. 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.

Decontamination Zone Victims exposed only to gas or vapors 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 the chemical or concentration is unidentified, personnel in the Decontamination Zone should wear the same protective equipment used in the Hot Zone (see Rescuer Protection, above).

ABC Reminders

Quickly ensure a patent airway. 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 and cooperative may assist with their own decontamination. Remove and double-bag contaminated clothing and personal belongings.

Flush exposed or irritated skin and hair with plain water for 3 to 5 minutes. For oily or otherwise adherent chemicals, use mild soap on the skin and hair.

Flush exposed or irritated eyes with plain water or saline for at least 5 minutes. Remove contact lenses if present and easily removable without additional trauma to the eye. If a corrosive material is suspected or if pain or injury is evident, continue irrigation while transferring the victim to the Support Zone.

In cases of ingestion, do not induce emesis. Victims who are conscious and able to swallow should be given 4 to 8 ounces of water. Obtain medical care immediately.

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 who have been exposed only to gas or vapor and who have no evidence of skin or eye irritation generally pose no serious risks of secondary contamination. In such cases, Support Zone personnel require no specialized protective gear.

ABC Reminders

Quickly ensure a patent airway. If trauma is suspected, maintain cervical immobilization manually and apply a cervical collar and a backboard when feasible. Ensure adequate respiration; administer supplemental oxygen as required. Ensure a palpable pulse. Establish intravenous access if necessary. Attach a cardiac monitor.

Additional Decontamination

Continue irrigating exposed skin and eyes, as appropriate.

In cases of ingestion, do not induce emesis. If the patient is conscious and able to swallow, administer 4 to 8 ounces of water if it has not been given previously. Obtain medical care immediately.

Advanced Treatment

Intubate the trachea in cases of respiratory compromise. When the patient's condition precludes endotracheal intubation, perform cricothyroidotomy if equipped and trained to do so.

Treat patients who have bronchospasm with aerosolized bronchodilators. Use these and all catecholamines with caution because of the enhanced risk of cardiac dysrhythmias after exposure to certain chemicals.

Patients who are comatose, hypotensive, or have seizures or cardiac dysrhythmias should be treated according to ALS protocols.

Transport to Medical Facility

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 a chemical 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 Wagon

All exposed patients should be transported to a medical facility for evaluation.

Asymptomatic patients who have not had direct chemical exposure can be discharged from the scene after their names, addresses, and telephone numbers are recorded. Those discharged should be advised to seek medical care promptly if symptoms develop.

Consult with the base station physician or regional poison control center for advice regarding triage of multiple victims.

Unidentified Chemical Emergency Department Management

Potential for Secondary Contamination. Victims who were exposed only to gas or vapor and have no gross deposition of the material on their clothing or skin are not likely to carry significant amounts of chemical beyond the Hot Zone and are not likely to pose risks of secondary contamination to hospital personnel. However, victims whose skin or clothing are covered with liquid or solid chemical or victims who have condensation of chemical vapor on their clothes or skin may contaminate hospital personnel and the ED by direct contact or by off-gassing vapor. If the victim has ingested a chemical, toxic vomitus may also pose a danger through direct contact or off-gassing vapor.

Decontamination Area

Previously decontaminated patients and patients exposed only to gas or vapor who have no evidence of skin or eye irritation may be transferred immediately to the Critical Care Area. Other victims will require decontamination as described below.

ABC Reminders

Evaluate and support airway, breathing, and circulation. Intubate the trachea in cases of respiratory compromise. If the patient's condition precludes intubation, surgically create an airway.

Treat patients who have bronchospasm with aerosolized bronchodilators; use these and all catecholamines with caution because of the possible enhanced risk of cardiac dysrhythmias.

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

Basic Decontamination

Patients who are able and cooperative may assist with their own decontamination. Remove and double-bag contaminated clothing and personal belongings.

Flush exposed or irritated skin and hair with plain water for 3 to 5 minutes. For oily or otherwise adherent chemicals, use mild soap on the skin and hair. Rinse thoroughly with water.

Flush exposed or irritated eyes with plain water or saline for at least 5 minutes. Remove contact lenses if present and easily removable without additional trauma to the eye. If a corrosive material is suspected or if pain or injury is evident, continue irrigation while transferring the patient to the Critical Care Area.

In cases of ingestion, do not induce emesis. Administer 4 to 8 ounces of water to dilute stomach contents if the patient is

conscious and able to swallow. Immediately transfer the patient to the Critical Care Area.

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, page 7. Establish intravenous access in seriously ill patients. Continuously monitor cardiac rhythm.

Patients who are comatose, hypotensive, or have seizures or ventricular dysrhythmias 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; use these and all catecholamines with caution because of the potential or possible enhanced risk of cardiac dysrhythmias.

Skin Exposure

If chemical burns are present, treat as thermal burns.

Eye Exposure

Ensure that adequate eye irrigation has been completed. Test visual acuity. Examine the eyes for corneal damage using a magnifying device or a slit lamp and fluorescein stain. For small corneal defects, use ophthalmic ointment or drops, analgesic medication, and an eye patch. Immediately consult an ophthalmologist for patients who have severe corneal injuries.

Ingestion Exposure

Do not induce emesis. If the patient is alert and charcoal has not been given previously, administer a slurry of activated charcoal. If a corrosive material is suspected, administer 4 to 8 ounces of water do not give a slurry of activated charcoal. Consider endoscopy to evaluate the extent of gastrointestinal-tract injury. If a large dose has been ingested and the patient's condition is evaluated within 30 minutes after ingestion, consider gastric lavage.

Antidotes and Other Treatments

Treatment consists of supportive measures.

Laboratory Tests

Routine laboratory studies for all exposed patients include CBC, glucose, and electrolyte determinations. Additional studies for patients exposed to an unidentified chemical include ECG monitoring, renal-function tests, and liver-function tests. Chest radiography and pulse oximetry (or

ABG measurements) are recommended for severe inhalation exposure.

Disposition and Followup

Consider hospitalizing patients who have suspected serious exposures and persistent or progressive symptoms.

Delayed Effects

When the chemical has not been identified, the patient should be observed for an extended period or admitted to the hospital.

Patient Release

Asymptomatic patients who have minimal exposure, normal initial examinations, and no signs of toxicity after 6 to 8 hours of observation may be discharged with instructions to seek medical care promptly if symptoms develop.

Followup

Provide the patient with follow-up instructions to return to the emergency department or a private physician to reevaluate initial findings. 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 Appendices III and IV for a list of agencies that may be of assistance.

