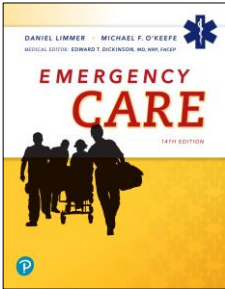



Emergency Care

Fourteenth Edition




Chapter 25
Poisoning and Overdose Emergencies

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Topics

- [Poisoning](#)
- [Alcohol and Substance Abuse](#)

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Poisoning

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Poisoning (1 of 4)

- A poison is any substance that can harm the body.
- The harm it can cause can result in a medical emergency.

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Poisoning (2 of 4)

- Common poisonings
 - Medications
 - Petroleum products
 - Cosmetics
 - Pesticides
 - Plants
 - Food

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Poisoning (3 of 4)

- Effects of a poison
 - Harm to body based on nature of poison, its concentration, route of entry, patient's age, weight, and health
 - Damage to skin and tissues from contact
 - Suffocation
 - Localized or systemic damage to body systems

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Poisoning (4 of 4)

- Classified by route
 - Ingested (swallowed)
 - Inhaled (breathed in)
 - Absorbed (through unbroken skin)
 - Injected (inserted through skin)



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Pediatric Note

- EMT's own home and squad building should be "childproofed" against poisoning.
- Share poisoning-prevention information with members of the public during school visits and community outreach programs.



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Classification of Poisons (By Routes of Entry)



[For long description, see slide 84: Appendix 1](#)

Poisons enter the body by way of ingestion, inhalation, absorption, and injection.



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Ingested Poisons (1 of 5)

- Child
 - May accidentally eat or drink a toxic substance
- Adult
 - Often an accidental or deliberate medication overdose



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Patient Assessment (1 of 13)

- What substance was involved?
 - Get the exact spelling.
 - Transport with patient to hospital.
- When did exposure occur?
 - Quick-acting poison requires faster treatment.
 - ED personnel need to know for appropriate testing and treatment.



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Patient Assessment (2 of 13)

- How much was ingested?
 - Estimate missing pills by looking at prescription label.
- Over how long a period did the ingestion occur?
 - Treatments may vary.
 - Was medication taken for very first time?
 - Was medication being taken chronically?



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Patient Assessment (3 of 13)

- What interventions have been taken?
 - Home remedies
 - Treatments indicated on label
- What is patient's estimated weight?
 - Treatment is related to weight.
 - Children experience greater effects because of smaller size.



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Patient Assessment (4 of 13)

- What effects has patient experienced?
 - Nausea, vomiting, altered mental status, abdominal pain, diarrhea, chemical burns around mouth, and unusual breath odors



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Food Poisoning

- Can be caused by improperly handled or prepared food
- Symptoms
 - Nausea, vomiting, abdominal cramps, diarrhea, and fever
- Prevent by washing hands and surfaces that touch raw meat



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Activated Charcoal (1 of 4)

- Works through adsorption, allowing substances to attach to its surface
- Not an antidote
 - Prevents or reduces amount of poison absorbed by body



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Activated Charcoal (2 of 4)

- Many poisons but not all are adsorbed by activated charcoal.
- Medical direction will determine whether the use of this substance is appropriate.



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Activated Charcoal (3 of 4)

- Contraindications of activated charcoal
 - Patient cannot swallow
 - Patient has altered mental status
 - Patient ingested acids or alkalis
 - Patient swallowed gasoline



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Activated Charcoal (4 of 4)

- Activated charcoal versus syrup of ipecac
 - Traditionally syrup of ipecac was preferred treatment for poisoning.
 - Induces vomiting in most people with one dose
 - However, has potential to make patient aspirate and only removes less than one-third of stomach contents



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Dilution

- Adult patient should drink one to two glasses of water or milk.
- Children should drink one-half to one full glass of water or milk.
- Water may slow absorption, but milk may soothe stomach upset.
- Frequently advised for patients who, as determined by medical direction, do not need transport



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Patient Care (1 of 6)

- Detect and treat life-threatening problems
- Perform a secondary assessment
- Assess baseline vital signs
- Consult medical direction or poison control
- Transport with substance information
- Perform reassessment en route



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Antidotes

- Thought of as substance that will neutralize the poison or its effects
 - Very few genuine antidotes exist.
- Naloxone directly reverses narcotics' depressant effects on level of consciousness and respiratory drive.



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Acetaminophen Poisoning (1 of 2)

- Common cause of overdose
- Toxic effects do not appear right away
 - 4-12 hours: loss of appetite, nausea, vomiting
 - 1-2 days: right upper quadrant pain and jaundice
- Antidote should be given within the first 12 hours



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Acetaminophen Poisoning (2 of 2)

- Prehospital assessment and management
 - Suspect acetaminophen poisoning with any overdose
 - Search medicine cabinets and garbage cans for empty pill bottles
 - Deal with apparent threats to life first
 - Treatment can be instituted at the hospital



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Ingested Poisons (2 of 5)



First Take Standard Precautions. 1. Quickly gather information.



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Ingested Poisons (3 of 5)



2. Call medical direction on the scene or en route to the hospital.



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Ingested Poisons (4 of 5)

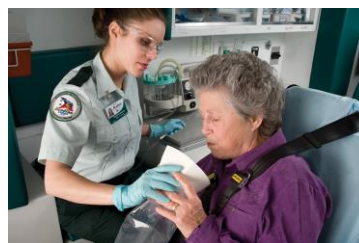


3. If directed, administer activated charcoal. You may wish to administer the medication in an opaque cup that has a lid with a hole for a straw.



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Ingested Poisons (5 of 5)



4. Position the patient for vomiting and save all vomitus. Have suction equipment ready.



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Think About It

- Think about your own home. Is it safe for a small child?
- Are there potential poisons within three feet of the floor, or behind unlocked doors?
- Are there household cleaners that look like juices and drinks familiar to children?
- Can flavored children's medications be mistaken for candy?
- What sense does a small child typically use to identify things?



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Inhaled Poisons (1 of 2)

- Common types
 - Carbon monoxide
 - Chlorine gas
 - Ammonia
 - Agricultural chemicals and pesticides
 - Carbon dioxide



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Inhaled Poisons (2 of 2)

- Scene safety
 - Approach scene with caution.
 - Protective clothing and self-contained breathing apparatus may be required.
 - If not trained or equipped, call for additional resources.



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Patient Assessment (5 of 13)

- What substance was involved (exact name)?
- When did exposure occur?
- Over how long did exposure occur?
- What interventions has anyone taken?
 - Did someone remove patient?
 - Did someone ventilate the area?
- What effects is patient experiencing?



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Carbon Monoxide (1 of 3)

- Colorless, odorless, tasteless gas
- Can be caused by improper venting of wood-burning stoves, furnaces, generators
- Common cause of death during natural disasters and power outages



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Carbon Monoxide (2 of 3)

- Signs and symptoms of poisoning
 - Headache, especially “a band around head”
 - Dizziness
 - Breathing difficulty
 - Nausea
 - Cyanosis
 - Altered mental status
 - In severe cases, unconsciousness



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CO Monitor



Special monitors are needed to detect the presence of carbon monoxide in the environment.



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Carbon Monoxide (3 of 3)

- Treatment
 - Patient may begin to feel better shortly after being removed from dangerous environment.
 - Administer 100 percent oxygen.
 - Transport to hospital.
 - Takes time to “wash out” CO from bloodstream



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Patient Care (2 of 6)

- Move patient from unsafe environment using trained and equipped personnel.
- Detect and treat immediately life-threatening problems in primary assessment.
- Perform secondary assessment, obtain vital signs.
- Administer high-concentration oxygen
- Transport with all containers, bottles, and labels
- Perform reassessment en route



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Smoke Inhalation (1 of 3)

- Smoke inhalation is associated with thermal burns as well as effects of irritants and chemical poisons within the smoke.
- Substances can burn the skin, irritate the eyes, injure the airway, and progress to respiratory or cardiac arrest.



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Smoke Inhalation (2 of 3)

- Signs and symptoms
 - Difficulty breathing
 - Coughing
 - “Smoky” or chemical smell on breath
 - Black (carbon) residue in mouth, nose, or sputum
 - Singed nasal hair



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Smoke Inhalation (3 of 3)

- Treatment
 - Move patient to safe area.
 - Assess patient.
 - Maintain airway.
 - Provide high-concentration oxygen.
 - Transport.



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“Detergent Suicides” (1 of 2)

- Method of suicide started in Japan and is becoming more common in the United States.
- Mix of two easily obtained chemicals to release toxic hydrogen sulfide gas
- Commonly released inside enclosed space such as a car



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“Detergent Suicides” (2 of 2)

- Scene safety
 - Exposure to fumes may injure EMS personnel.
 - Warning note may be left on vehicle, but this is not assured.
 - May need to treat first as a HAZMAT scene



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Absorbed Poisons

- Can be absorbed through skin
- May or may not cause damage to skin
- Patient may require decontamination prior to treatment



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Patient Assessment (6 of 13)

- Detect and treat immediate life-threatening problems in primary assessment.
- Perform secondary assessment, obtain vital signs.
- Remove powder by:
 - Brushing off powder
 - Irrigating with clean water for at least 20 minutes and during transport
- Transport with all containers, bottles, SDSs, and labels from substance.
- Perform reassessment en route.



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Injected Poisons

- Most common are:
 - Illicit drugs injected with a needle
 - Venom of snakes and insects



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Poison Control Centers

- Excellent resource
- Information on poisons, signs and symptoms, and treatments
- Follow local protocol for contact procedures.



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Alcohol and Substance Abuse

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Alcohol and Substance Abuse

- Many patients have conditions that are caused either directly or indirectly by alcohol or substance abuse
- Abuse of alcohol and other drugs crosses all geographic and economic boundaries.



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Alcohol Abuse (1 of 2)

- Potent drug affects central nervous system.
- Emergencies may result from recent consumption or years of abuse.
- Treat patients with same respect and dignity as any others.
- Abuse can lead to or worsen other medical conditions.



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Alcohol Abuse (2 of 2)

- Alcohol often consumed with other drugs, which can result in a serious medical emergency.
- Impaired patients can be irrational or aggressive.
- Contact law enforcement if safety concern.



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Patient Assessment (7 of 13)

- Many medical conditions mimic alcohol intoxication.
- Intoxicated patients may also have medical problems.
- All patients receive full assessment regardless of suspicion of intoxication.



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Patient Assessment (8 of 13)

- Signs and symptoms of alcohol abuse:
 - Alcohol odor on breath or clothing
 - Swaying or unsteady on feet
 - Slurred, rambling speech
 - Flushed, complaining of being warm
 - Nausea/vomiting
 - Poor coordination
 - Slowed reaction time



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Patient Assessment (9 of 13)

- Blurred vision
- Confusion
- Hallucinations, visual or auditory
- Lack of memory (blackout)
- Altered mental status



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Patient Assessment (10 of 13)

- Alcohol withdrawal
 - Abrupt cessation of drinking may cause some alcoholics to suffer from delirium tremens (DTs).
 - Can be serious, resulting in tremors, hallucinations, and seizures



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Patient Assessment (11 of 13)

- Signs and symptoms of alcohol withdrawal:
 - Confusion and restlessness
 - Unusual behavior
 - Hallucinations
 - Gross tremor of hands
 - Profuse sweating
 - Seizures
 - Hypertension
 - Tachycardia



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Patient Care (3 of 6)

- Vomiting common
 - Standard precautions are essential.
- Stay alert for airway and respiratory problems.
- Assess for trauma.
- Be alert for changes in mental status.



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Patient Care (4 of 6)

- Monitor vital signs.
- Treat for shock.
- Protect the patient from self-injury.
- Stay alert for seizures.
- Transport the patient to a medical facility.



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Substance Abuse (1 of 8)

- Any chemical substance taken for other-than-therapeutic (medical) reasons
- Includes opioids, uppers, downers, hallucinogens, and volatile chemicals



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Substance Abuse (2 of 8)

- Opioids
 - Used to relieve pain or cause a state of relaxation
- Opiates
 - Codeine, oxycontin, Percocet
- Heroin



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Substance Abuse (3 of 8)

- Signs and symptoms of opioids
 - Reduced rate of pulse and rate and depth of breathing
 - Lowered skin temperature
 - Pinpoint pupils
 - Relaxed muscles
 - Profuse sweating
 - Sleepy
 - Coma



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Substance Abuse (4 of 8)

- Uppers
 - Stimulants that affect the nervous system
 - Cocaine
 - Methamphetamine
 - May be snorted, smoked, or injected



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Substance Abuse (5 of 8)

- Signs and symptoms of uppers
 - Excitement, restlessness
 - Increased pulse and breathing rates
 - Rapid speech
 - Dry mouth
 - Dilated pupils
 - Sweating
 - No sleep for a long time, possibly days



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Substance Abuse (6 of 8)

- Downers
 - Central nervous system depressants
 - Benzodiazepines
 - Rohypnol (roofies)
 - GHB (gamma hydroxybutyrate)
 - Signs and symptoms
 - Sluggishness, poor coordination
 - Decreased pulse and respirations



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Substance Abuse (7 of 8)

- Hallucinogens
 - Create intense state of excitement and distorted perception
 - LSD, PCP, XTC
 - Signs and symptoms
 - Rapid pulse
 - Dilated pupils
 - Flushed face
 - Seeing or hearing things



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Substance Abuse (8 of 8)

- Volatile chemicals
 - Produce vapors that are inhaled
 - Initial “rush” then acts as central nervous system depressant.
 - Signs and symptoms
 - Dazed/loss of contact with reality
 - May develop a coma
 - Swollen membranes in nose or mouth
 - “Funny numb feeling” or “tingling” inside head
 - Changes in heart rhythm



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Volatile Chemicals



Volatile chemicals produce vapors that can be inhaled. Methods of inhaling substances include “huffing” (breathing fumes directly or from a substance-impregnated fabric) and “bagging” (breathing fumes from a substance sprayed into a bag).



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Patient Assessment (12 of 13)

- May be difficult
 - Signs and symptoms vary from patient to patient.
 - Patient may have taken more than one type of drug.
 - Signs and symptoms are similar to other medical emergencies.
- Begin by asking if the patient has taken any medications, then ask about drugs.



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Patient Assessment (13 of 13)

- Signs and symptoms of drug withdrawal:
 - Shaking
 - Anxiety
 - Nausea
 - Confusion and irritability
 - Hallucinations, visual or auditory
 - Profuse sweating
 - Increased pulse and breathing rates



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Patient Care (5 of 6)

- Perform a primary assessment.
- Be alert for airway problems and respiratory distress.
- Provide oxygen and assist ventilations as needed.
- Administer naloxone intranasally.
- Treat for shock.
- Talk to patient to keep them calm and cooperative.
- Perform physical exam.



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Patient Care (6 of 6)

- Look for evidence of injection sites (“track marks”).
- Protect the patient from self-injury.
- Transport as soon as possible.
- Consult medical direction according to local protocols.
- Perform reassessment with monitoring vital signs.
- Continue to reassure patient throughout all phases of care.



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Treatment: Substance Abuse



Needle tracks on a patient's arm indicate a history of injected drug use.
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Chapter Review



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Chapter Review (1 of 4)

- In a poisoned patient, perform a primary assessment and immediately treat life-threatening problems. Ensure an open airway. Administer high-concentration oxygen if the poison was inhaled or injected.



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Chapter Review (2 of 4)

- Next perform a secondary assessment, including baseline vital signs. Find out if the poison was ingested, inhaled, absorbed, or injected; what substance was involved; how much poison was taken in; when and over how long a period exposure took place; what interventions others have already done; and what effects the patient experienced.



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Chapter Review (3 of 4)

- Consult medical direction. As directed, administer activated charcoal or water or milk for ingested poisons.
- Remove the patient who has inhaled a poison from the environment and administer high-concentration oxygen. Remove poisons from the skin by brushing them off or diluting them.



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Chapter Review (4 of 4)

- Transport the patient with all containers, bottles, and labels from the substance.
- Reassess patient en route.
- Carefully document all information about poisoning, interventions, and patient's responses.



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Remember (1 of 3)

- Safety is always the first concern when dealing with a poisoning or substance-abuse patient.
- Poisonings are generally classified by route of exposure. Effects vary greatly, depending upon type of poison and method of entrance into body.



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Remember (2 of 3)

- EMTs must use thorough assessment, including scene clues, to help identify the nature and severity of poisoning.
- Poison control centers offer a wealth of resources to assist in assessment and treatment of poisoning patients.



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Remember (3 of 3)

- Alcohol is a common underlying issue with patients. In some patients, it may be the most significant problem.
- The effects of substance abuse can vary greatly, based on the type of substance. Determining the type of drug ingested can shed light on effects to come.



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Questions to Consider

- What are potential risks to the responder on a poisoning or overdose call?
- What are the routes of entry into the body?
- What are some things EMS can do to prevent poisonings, especially in children?



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Critical Thinking (1 of 2)

- A farmer calls 911 because one of his farm hands has tried to clean up spilled pesticide powder with his hands. On arrival, you find that the patient insists he has brushed all the powder off, feels fine, and doesn't need to go to the hospital.



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Critical Thinking (2 of 2)

- As he talks, he continues to make brushing motions at his jeans on which you can see the marks of a powdery residue. How do you manage the situation?



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Appendix 1

Under the word inhalation is a labeled image of a spray can and a labeled image of cans of cleaning fluid. Under the word, injection is a labeled image of a hypodermic needle. Under the word ingestion is a labeled image of rat poison, a labeled image of lye, and a labeled image of drain cleaners. Under the word absorption is a labeled image of household cleaners and a labeled image of insecticides.

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