
Poisons

A *poison* is any substance or matter (solid, liquid, or gaseous) which when applied to the body outwardly, or in any way introduced into it, can destroy life by its own inherent qualities, without acting mechanically, and irrespective of temperature.

[Guy]

The effects of poisoning on a casualty will depend on the amount poison absorbed. Note that in small, controlled doses, some normally poisonous substances have potentially beneficial effects. eg. Atropine. Likewise, many substances which are classed as harmless or beneficial in normal use may have poisonous effects if taken in abnormally high quantities. eg. Aspirin.

The action of many poisons on the body is complex, and may have consequences beyond the initial reactions. eg. damage to organs such as the liver or kidneys by the toxic chemical action of the poison.

Absorption of poisons

Poisons enter the body by four main routes:

- by being swallowed.
- by being inhaled.
- by being absorbed through the skin.
- by being injected.

General treatment for poisoning

Take precautions to avoid contamination from the poison.

Summon medical assistance, or transport the casualty to a hospital.

Keep the casualty calm and prevent all unnecessary movement.

Do not give the casualty anything to eat or drink. Do not attempt to induce vomiting.

Wash away any poison on the surface of the skin, and clean any sites of injection, using clean water.

Monitor the casualty's condition continuously, and be prepared to utilise CPR.

Inform the medical services of the nature or identity of the poison - if known. Pass them a sample of the poison, or any container, if possible.

If the casualty vomits, pass a sample to the medical services.

Classifications of poisons

Poisons may be classified into four main groups: corrosives, irritants, narcotics, and narcotico - irritants. Food poisoning, and animal bites and stings are considered as special cases.

Corrosives

Corrosive poisons react in a chemical manner with body tissue, such that they burn and destroy the parts with which they come into contact.

Examples

Strong acids	Hydrochloric acid, Sulphuric acid, Nitric acid
Strong alkalis	Sodium hydroxide, Potassium hydroxide
Salts	Mercuric chloride

Signs & symptoms of corrosive poisoning

Immediate pain and swelling at the points of contact, maybe accompanied by discoloration. Eventual unconsciousness and death (depending on dose). If swelling occurs within the airway this may also cause asphyxia.

Irritants

Irritant poisons aggravate the digestive system, particularly the stomach and bowels.

Examples

Vegetable acids and salts (eg. Tartaric acid), Arsenic, Lead, Antimony, Copper sulphate, Zinc Chloride, Silver Nitrate, Potassium Bichromate, Iron Sulphate, leaves, roots, berries, resins of many plants (in larger doses).

Signs & symptoms of irritant poisoning

Vomiting, diarrhoea, abdominal discomfort or pain, features of shock through loss of fluid. Eventual unconsciousness and death (depending on dose).

The onset of signs and symptoms may be deferred for a few hours after ingesting the poison.

Narcotics

Narcotic poisons affect the brain and/or nervous system, causing a reduction in co-ordination and the level of consciousness.

Examples

Opium and derivatives, Potassium Cyanide, Hydrocyanic acid (very fast acting, paralysing poison), alcohol, ether, Chloral Hydrate, chloroform, Carbon Monoxide (also affects the ability of red blood cells to carry oxygen), Hydrogen Sulphide, Ammonium Sulphide.

Signs & symptoms of narcotic poisoning

Dizziness, loss of co-ordination, interference with vision. Eventual unconsciousness (sometimes preceded by convulsions) and death (depending on dose).

Narcotic poisons do not generally produce pain.

Narcotico - irritants

Narcotico - irritant poisons initially have an irritant action upon the digestive system, and then act as narcotics.

Examples

Phenol (carbolic acid), Oxalic acid, Strychnine, atropine, tobacco, hemlock, yew leaves / berries, laburnum pods, digitalis, various fungi.

Signs & symptoms of narcotico - irritant poisoning

Initially, vomiting, diarrhoea, abdominal pain. Then delirium and/or convulsions. Eventual unconsciousness and death (depending on dose).

Food poisoning

Food poisoning is a term usually given to poisoning caused by eating food contaminated with:

- Metallic or chemical poisons.
- Bacteria, toxins of bacteria.
- or eating inherently poisonous food.

Signs and symptoms are generally as for irritant poisons, usually appearing within 12 hours of eating the poisonous food.

Animal bites and stings

A bite or sting involves one or more puncture wounds, or lacerated wounds, contaminated with saliva, bacteria, and/or poisonous venom.

Stings may cause anaphylactic shock in those susceptible.

Stings in the mouth or airway may lead to breathing problems as tissue swells. Sucking ice or sipping cold water may ease stings to the mouth.

In all cases, attempt to identify the animal concerned or to log details of its appearance.

Notes on specific animals

Insects

Stings or bites from many insects can cause great irritation and pain.

If the stings remains in the skin, scrape it away using a fingernail or the blunt edge of a knife.

Apply ice or a cold compress, and elevate the site of the sting (if possible).

Advise the casualty to seek medical treatment if pain and swelling persist or worsen.

Ticks

Ticks often carry disease which they spread when biting into the skin to take blood.

Remove the tick by grasping it as close to its head as possible with fine-pointed tweezers, and using a rocking motion to ease it from the skin.

Dress the wound.

Advise the casualty to seek medical attention - taking the tick for possible analysis.

Dog

Wash wounds with soap and water, and apply dressings.

Refer the casualty to medical treatment for antibiotics, anti-tetanus, anti-rabies treatment.

Snake

Venom may cause swelling and paralysis of the bitten part, leading to general depression, abnormal heartbeat, difficulty in breathing, and then to unconsciousness, increasing paralysis, convulsions, and death. The timescale varies according to the snake, and the amount of venom injected.

Immobilise the bitten part, wash wounds with water and wash away any poison on the skin.

Apply light compression to the limb above the bite site using a roller bandage.

Some species of centipedes, scorpions, and spiders

Bites or stings from some of these animals may have effects similar to those of snake-bite.

Apply ice or a cold compress, and elevate the site of the bite or sting (if possible).

Transport to hospital unless there is knowledge that the injury is benign.

Tropical jellyfish

Stinging tentacles may become attached to the casualty. It may be possible to use wet sand as a barrier when removing attached tentacles.

Use sea water or vinegar to reduce the effectiveness of the stinging cells.

Apply light compression to the limb above the sting sites using a roller bandage.

Immobilise the limb.

Marine puncture wounds

Stinging spines on some sea creatures may cause painful puncture wounds, and may break off and become embedded in the skin.

Immersion in hot - but not scalding - water (for up to 30 minutes) may reduce the effects of any poison.

Embedded spines must only be removed by medical staff (in hospital).

Signs & symptoms caused by some specific poisons

Adder venom

Early stages: Pain, swelling, and enlargement of lymph nodes around the bite, fainting, abdominal pain, vomiting, diarrhoea.

Later stages: abnormal heartbeat, spontaneous bleeding, difficulty in breathing, acute kidney failure (characterised by a much reduced urine output, cloudy urine, persistent nausea and vomiting, diarrhoea, dry skin, convulsions, lethargy, drowsiness, halitosis).

Alcohol

Early stages: Flushed moist face, full bounding pulse, deep noisy breathing, unconsciousness.

Later stages: Dry bloated face, unreactive dilated pupils, weak rapid pulse, shallow breathing, unconsciousness.

Aspirin

Upper abdominal pain, nausea, vomiting (maybe bloodstained), sweating, tinnitus, hyperventilation, confusion, delirium.

Atropine (deadly nightshade)

Hot dry skin, dry mouth, dilated pupils, excitable behaviour, noisy breathing.

Severe cases may lead on to: Vomiting, weakness, delirium, unconsciousness.

Carbon Dioxide

Headache, dizziness, breathlessness, rapid unconsciousness.

Carbon Monoxide

Long term exposure: Headache, nausea, vomiting, confusion, aggression, incontinence.

Acute poisoning: Rapid distressed breathing, cyanosis, rapid unconsciousness.

Depressant drugs

Lethargy, drowsiness, weak irregular pulse, shallow breathing, falling consciousness.

Hydrogen Sulphide

Headache, spasm of the eyelids, pain and redness of the eyes, blurred vision with 'haloes' around lights.

In severe cases: Confusion, convulsions, pulmonary oedema (characterised by extreme breathlessness, gasping and wheezing, coughing - maybe with bloodstained sputum, sweating, pale skin with cyanosis).

Narcotic drugs

Dizziness, confusion, lethargy, constricted pupils, slow shallow breathing, falling consciousness.

Organo-Phosphorus insecticides (eg. Parathion, Malathion)

Anxiety, restlessness, dizziness, constricted pupils, hypersalivation, nausea, vomiting, diarrhoea, abdominal pain, developing muscular weakness.

Severe cases may lead on to: Convulsions, pulmonary oedema with excessive secretions, unconsciousness.

Paracetamol

Initial stages: Nausea, vomiting.

After 2 to 3 days: Features of liver failure - upper abdominal pain, tenderness, nausea, vomiting.

Note: Liver damage will usually be irreversible unless an antidote is given within 12 hours of ingestion.

Paraquat

Inhaled spray: Bleeding from the nose, sore throat. (Spray inhalation is rarely serious).

Ingestion: Nausea, vomiting, diarrhoea.

After approximately 48 hours: Painful ulcers on lips, inside mouth, kidney failure.

After a few days: Difficulty in breathing caused by proliferating inflammation of the lung tissues.

Note: Oxygen must not be given to casualties who have been poisoned by Paraquat.

Solvents

Headache, nausea, vomiting, hallucinations, maybe unconsciousness.

Stimulant drugs

Excitable hyper-active wild frenzied behaviour, hallucinations, sweating, tremors.

Sulphur Dioxide, Chlorine, Ammonia

Coughing, choking, maybe leading on to acute pulmonary oedema up to 36 hours after inhalation.