

CYANIDE POISONING

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27



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PowerPoint

Cyanide



PROPERTIES:-

Gas / liquid/solid

Gas- hydrogen cyanide (HCN)

Liquid – prussic acid

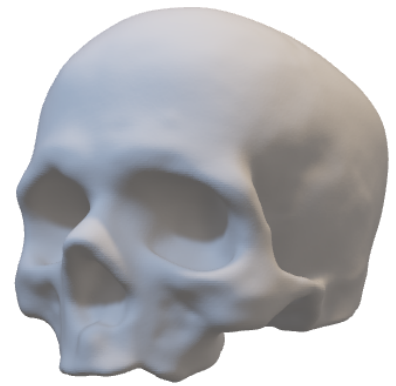
Appearance – white, crystalline powder

Odour- bitter almond smell

Taste – bitter, burning

TOXIC EFFECT:

Histotoxic anoxia by inhibiting cytochrome oxidase.
Consequent reduced ATP production.



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Clinical features

- **Acute poisoning**
 - a) **CNS:** headache, anxiety, agitation, confusion, convulsion, coma. Pupils dilated and sluggish.
 - b) **CVS:** initial tachycardia and hypertension, later bradycardia and hypotension
 - c) **RS:** tachypnoea followed by bradypnoea
 - d) **GIT:** nausea, vomiting, abdominal pain
 - e) **SKIN:** brick red colour , cold, clammy, cyanosis is a late feature
 - f) **ACID-BASE:** Metabolic and lactic acidosis



Cyanide poisoning—brick red color of blood

Clinical features

- **Chronic poisoning**
 - a) Survivors of acute poisoning – parkinsonian symptoms, basal ganglia damage
 - b) Chronic exposure – headache, vertigo, dizziness, tremor, mental impairment
 - c) Tobacco amblyopia- progressive visual loss in heavy smokers
 - d) Cyanide rash – workers; electroplaters, picklers
 - e) Enlarged thyroid gland
 - f) Tropical ataxic neuropathy- tapioca in large quantities (cyanogen)



Autopsy features

External

- a. Odour of bitter almonds
- b. **Brick red** color of skin and mucus membranes
- c. **Cyanosis** at extremities
- d. **Froth** at mouth, nostrils (maybe blood stained)



Internal

- a. Hemorrhagic gastritis
- b. Pulmonary and cerebral oedema
- c. Disseminated petechiae in brain, meninges, pleura, lungs, pericardium



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Diagnosis

1. Characteristic **odour** in the vicinity of the patient.
2. **Lee-Jones** test: Add a few crystals of ferrous sulfate to 5 ml of gastric aspirate. Add 5 drops of 2% sodium hydroxide. Boil and cool. Add 10 drops of 10% HCl
Greenish-blue colour indicates cyanide
3. Serum cyanide level
4. Laboratory findings: Laboratory tests should include CBC, arterial and venous blood gases, serum electrolytes and lactate, assessment of renal function, chest X-ray
 1. a. Serum lactate level more than 10 mmol/L.
 2. b. Elevated serum anion gap.
 3. Arterial blood gas analysis.
 4. Elevated venous oxygen saturation.
5. Cyanide and thiocyanate levels can also be measured in timed urine collections which may yield useful information on cyanide clearance.
6. ECG: Erratic atrial and ventricular cardiac rhythms with varying degrees of atrioventricular block, followed by asystole may be seen in severe cyanide poisoning. ST-T segment elevation or depression may occur.

Treatment

1. **Stabilisation:** Assisted ventilation, 100% oxygen, cardiac monitoring, IV access, treatment of metabolic acidosis, vasopressors for hypotension.

2. **Decontamination:**

- a. Cutaneous exposure—remove clothing and wash skin with soap and water.
- b. Ingestion—stomach wash (with 5% sodium thiosulfate solution), activated charcoal. Emesis is not recommended due to rapid progression and potential for early development of seizures, coma, or apnoea. Absorption of cyanide is rapid and charcoal may only be beneficial if administered immediately after ingestion.

ANTIDOTES:

Nitrites induce methaemoglobinaemia which causes the detachment of cyanide from the haeme group of cytochrome oxidase.

sodium thiosulfate: It enables the enzyme rhodanese to catabolise cyanide to non-toxic thiocyanate which is excreted in the urine.



A Life

Most SHOCKING Crimes

Jolly Joseph Case Of Cyanide Killings That Shook Kerala

CRIME SCENE

CRIME SCENE

CRIME



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Wednesday Morning, December 5, 1984

25 cents

BROWARD METRO FINAL

India gas death toll hits 1,000

Worried residents keep eye on plant

Associated Press
INSTITUTE, W.Va. — Until this week, few residents of this town had ever heard of methyl isocyanate, but on Tuesday — after a leak of the chemical was blamed for 1,000 deaths in India —



200,000 affected by leak

By Jonathan Brader

Chicago Tribune

BHOPAL, India — A day after the devastating Union Carbide gas leak in this central Indian city, the bodies of hundreds more victims accumulated at the hospital morgue as doctors struggled desperately to save thousands of people critically injured in the world's worst gas poisoning.

Hospital officials here, placing the death toll so far at more than 1,000, said they expect it to climb even higher. United News of India said its reporters counted 1,350 dead.

Doctors said as many as 200,000 people were affected by the gas, and added 20,000 may suffer serious after-effects. He said some may lose their eyesight, and some women may not be able to bear children.

The cloud of deadly methyl isocyanate gas leaked from Union Carbide Corp.'s pesticide plant early Monday, poisoning in varying degrees some 200,000 people over 25 square miles.

Even in India, where natural calamities such as floods leave thousands

addled together in Bhopal exhibit various stages of sickness from poisonous gas which leaked from pesticide plant.

He said the chemical is stored in a tank with a double containment system. The one of the tanks is the largest in the world. The plant employs 1,400 people. "We've been making it for 17 years and it's safe yet," Henderson said.

Bhopal Gas Tragedy



KERALA'S CYANIDE MURDERS ONE KILLER, 6 MURDER, 14 YEARS

STARTED WITH BABIES'

Jones Ordered Cultists to Drink Cyanide Potion

Gunmen Prevented Escapes

BY CHARLES A. KRAVITZ

CLIENTELE
U.S. Air Force
Blue Chip
Furrier Fleet

The background of the slide features a silhouette of a mountain range against a sky with a warm, orange-to-yellow gradient, suggesting a sunset or sunrise.

THANK YOU



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