

## Cyanides and compounds thereof

### Definition of causal agent

The common cyanides used in industry are alkaline cyanide salts of sodium, calcium (“black cyanide”) or potassium. They are white powders, flakes, or granules with a faint almond odour.

These cyanides release hydrogen cyanide (HCN) on exposure to acid. These simple salts of hydrocyanic acid have a toxicity similar to hydrocyanic acid, due to the release of cyanide ions. They act as chemical asphyxiants.

### *Main occupational uses and sources of exposure:*

Sodium and potassium cyanides are used in the extraction of gold and silver ores; electroplating; cleaning and heat treatment of metals; hardening of metals; as raw materials in the manufacture of dyes, pigments, nylon and chelating agents. Cyanides are extensively used as laboratory agents. They are also used as insecticides and fumigates; calcium cyanide is used mainly as a fumigant.

See Annex I entry nr. 104.01 on *Hydrocyanic acid*.

### Toxic effects

#### 2. Local effects

Cyanides are irritant to the skin, eyes, and respiratory tract.

They can cause epistaxis and ulceration of the nasal septum. Prolonged contact with aqueous cyanide solutions can cause caustic burns.

Chronic irritation of the skin is rare but may include itching, discolouration of the skin and ulceration.

See section on *Occupationally caused irritation of the skin and mucous membranes* in Annex I entry nr. 202.

#### 3. Acute systemic effects

Clinical picture is due to the affinity of the cyanide ions for cytochrome-oxidase, and the respiratory pigments such as haemoglobin:

- headache, dizziness, nausea, vomiting
- bitter almonds taste
- tachypnoea, dyspnoea
- angina pectoris
- anxiety, stupor, loss of consciousness
- tachycardia, metabolic acidosis, convulsions, coma, death.

---

***Exposure criteria:***

*Minimum intensity of exposure:* Occupational exposure confirmed by:

- history and analysis of the working conditions providing evidence of a significant exposure to this substances (notice should be taken of skin absorption),
- and, if available:
  - biological monitoring:
  - Urinary thiocyanates, blood cyanide

*Minimum duration of exposure:* A few minutes to a few hours depending on the intensity of exposure.

*Maximum latent period:* 24 hours.