

## Aliphatic nitrated derivatives

### Definition of causal agent

The most important nitroalkanes ( $C_nH_{2n+1}NO_2$ ) are nitromethane (nitrocarbonyl), nitroethane and 1-nitropropane/2-nitropropane. The boiling points are 101.2 °C /112-116 °C/132 °C/119-122 °C. These substances are colourless, oily liquids with a fruity odour (nitroethane). Vapour/air mixtures can be explosive.

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

Nitromethane is used as a solvent and as an intermediate in organic synthesis. It is used in the manufacture of pharmaceuticals, pesticides, explosives, fibres and coatings; It is a component of some fuels, too. Nitromethane is added in small amounts to many halogenated solvents and aerosol propellants as a stabilizer. Nitroethane is used as a solvent, as fuel additive and in the organic synthesis. Occupational exposure to 2-nitropropane occurs primarily in its production and use as a solvent in inks, adhesives, paints and coatings. The exposure route is by inhalation and by skin (nitromethane, 2-nitropropane especially).

### Toxic effects

#### 1. Local effects

##### ☐ Irritant effects

These substances are dermal irritants; they irritate the eyes and the respiratory tract. See section on *Occupationally caused irritation of the skin and mucous membranes* in Annex I entry nr. 202.

#### 2. Systemic effects

##### *Acute*

Drowsiness, headache, nausea, unconsciousness, cough and vomiting are described after inhalation. Nitroethane shows effects on the blood with formation of methaemoglobin resulting in cyanosis. Effects may be delayed.

##### *Exposure criteria:*

*Minimum intensity of exposure:* occupational exposure confirmed, if possible assessed, by:

Anamnesis and study of working conditions providing evidence of particularly intense exposure to these substances, especially by skin contact.

*Minimum duration of exposure:* Brief.

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*Maximum latent period:* 24 hours

***Chronic***

See Annex I entry nr. 135 on ***Encephalopathies due to organic solvents which do not come under other headings.***

Chronic exposure may lead to liver injury. There is inadequate evidence in humans for the carcinogenicity of 2-nitropropane.

***Exposure criteria:***

Occupational exposure confirmed, if possible assessed, by:

History and study of working conditions providing evidence of particularly intense exposure to these substances, especially prolonged or repeated skin contact.

*Minimum duration of exposure:* unknown

*Maximum latent period:* unknown