Butyl, methyl and isopropyl alcohol

Definition of causal agent

The butyl, methyl and isopropyl alcohols are aliphatic hydrocarbons in which one hydrogen atom is replaced by a hydroxyl group.
Butyl alcohol (butanol) exists in four isomeric forms: 1-butanol, 2-butanol, isobutanol and tertiary butanol

Main occupational uses and sources of exposure:
The three alcohols are used as solvents and detergents in industry.
The uses of the isomers of butanol differ, as only 2-butanol may be used in perfumes and tertiary butanol as a hydrophilic agent. Methyl alcohol is widely used as a denaturing agent for ethanol, marketed for technical use. Isopropyl alcohol is used as a disinfectant

Toxic effects

1. Local effects

☐ Irritant effects:

These substances cause irritation to the skin, eyes and respiratory tract.

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

Allergic contact dermatitis:

Isopropyl alcohol is a sensitizer and may cause allergic contact dermatitis.

See section on ***Occupationally caused allergic contact dermatoses*** in Annex I entry nr. 202.

Exposure criteria

Minimum intensity of exposure: Occupational exposure confirmed if possible assessed by:

- History and study of exposure providing evidence of skin contact or inhalation

Minimum duration of exposure: Irritation skin and mucous membranes: A few minutes to a few hours depending on the intensity of the exposure

- Allergic skin reaction: Normally several instances of exposures are required. In a sensitized person one period may be enough to cause the skin lesions

Maximum latent period

- Irritation skin and mucous membranes: The symptoms must appear during exposure or within 48 hours at the latest
- Allergic reaction: A few days

☐ Systemic effects

- **Acute neurotoxic effects:** Acute neurotoxic effects like optic neuropathy and an exprapyramidal syndrome after methanol intoxication and acute encephalopathy after isopropylalcohol intoxication have only been described after ingestion. Under normal working conditions they are not expected to occur after inhalation.
- **Chronic toxic encephalopathy:** As a result of exposure to significant quantities over a long period chronic toxic encephalopathy may develop.

Exposure criteria:

Minimum intensity of exposure: Occupational exposure confirmed, if possible assessed by:

- History and analysis of the working conditions showing evidence of prolonged/repeated exposure to these substances taking into account the possibility of cutaneous absorption.
- And if available workplace air monitoring: guide values: methanol > 260 mg/m3 (SCOEL), butanol> 100 ppm (ACGIH), propanol > 200 ppm (ACGIH)

Minimum duration of exposure: 10 years, this could be less in case of exposure to particular high concentrations

Maximum latent period: Initial symptoms of mental impairment should be present within one year of cessation of exposure.

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