

Fact sheet, 15 December 2010

**New guidelines for selected indoor chemicals establish targets
at which health risks are significantly reduced**

Benzene – Indoor air is a significant source of benzene and inhalation is the main pathway of human exposure. Benzene is a genotoxic carcinogen in humans and no safe level of exposure can be recommended. Life-long exposure to benzene at concentrations commonly observed in houses in European cities is associated with up to 10 excess cases of leukaemia per 100 000 people.

Carbon monoxide – Exposure to high levels of carbon monoxide is a frequent cause of fatal accidents. At lower levels, exposure leads to reduced exercise ability and increased risk of ischaemic heart disease. A series of guidelines is recommended to prevent the effects of short peaks of exposure. A new guideline value of 7 mg/m³ is defined for a 24-hour mean carbon monoxide concentration to prevent the effects of chronic exposure.

Formaldehyde – Indoor sources are the dominant contributor of exposure to formaldehyde. A 30-minute guideline of 0.1 mg/m³ is recommended to prevent sensory irritation in the general population. This guideline, valid for any 30-minute period, also prevents the effects of long-term exposures on lung function or on the risk of nasopharyngeal cancer and myeloid leukaemia.

Naphthalene – The main health concerns of exposure to naphthalene are respiratory tract lesions, including tumours in the upper respiratory tract. A guideline value of 0.01 mg/m³ is established as an annual average to prevent these risks.

Nitrogen dioxide – An annual average indoor nitrogen dioxide guideline of 40 µg/m³ is recommended. This guideline intends to reduce the risk of a broad range of respiratory symptoms associated with the exposure.

Polycyclic aromatic hydrocarbons (PAHs) – Lung cancer is the most serious health risk from exposure to PAHs in indoor air. Benzo[*a*]pyrene is one of the most potent carcinogens among the known PAHs. No safe level of exposure can be recommended. Life-long exposure to PAHs at concentrations commonly observed in European or North American cities is associated with up to 50 excess cases of lung cancer per 1 000 000 people. Markedly higher risks have been estimated for houses with smokers or poorly ventilated indoor combustion sources.

Radon – Residential epidemiological studies show evidence of the lung cancer risk from radon, with no safe exposure level. Continuing smokers have a 20–25 times higher risk of lung cancer than nonsmokers at mean concentrations of radon commonly observed in houses in various regions of the world.

Trichloroethylene – The plausibility of a human cancer risk (including liver, kidney and testicular cancer as well as non-Hodgkin’s lymphoma) leads to the recommendation of a non-threshold approach.

Tetrachloroethylene – The recommended guideline for year-long exposure is 0.25 mg/m³. At higher exposures, effects can appear in the kidney indicative of early renal disease and impaired neurobehavioural performance.

For questions about the data contained in the guidelines, please contact:

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