

Recommendations and management options for priority indoor air pollutants

Dimitris Kotzias

European Commission, Joint Research Centre
Institute for Health and Consumer Protection
21020 Ispra (VA), Italy
e-mail: dimitrios.kotzias@jrc.it



The INDEX project

-Critical appraisal of the setting and implementation of indoor exposure limits in the EU-

Group 1 (high priority): benzene, formaldehyde, carbon monoxide, nitrogen dioxide, and naphthalene

Group 2 (low priority): m&p-xylenes, o-xylene, acetaldehyde, styrene, toluene

Group 3 (chemicals requiring further research with regard to human exposure and dose/response): NH₃, d-limonene, α-pinene.

- **Restrict tobacco smoking in all indoor spaces.**
- **Restrict the construction of attached garages, or isolate them from living and working spaces.**
- **Ensure that ventilation dilutes predictable indoor emissions below the guideline levels.**
- **Raise public awareness about indoor air risks.**

Formaldehyde: The non-carcinogenic no-effect level is $30 \mu\text{g}/\text{m}^3$. Pending on IARC revision of formaldehyde carcinogenicity, a guideline should be as low as reasonably achievable. Management options are to restrict and avoid the use of formaldehyde containing materials and products in buildings.

Nitrogen Dioxide: Proposed guideline values are $40 \mu\text{g}/\text{m}^3$ (1-week) and $200 \mu\text{g}/\text{m}^3$ (1-hour). Management options are to connect each indoor combustion device/appliance to chimney or vented hood, and to ensure sufficient local extract ventilation in kitchens with gas stove.

Carbon Monoxide: Proposed guideline values are 10 mg/m³ (8-hour) and 30 mg/m³ (1-hour). Management options are to connect each combustion equipment/appliance to chimney or vented hood, to ensure sufficient local extract ventilation in kitchens with gas stove, mandatory inspection and maintenance of indoor combustion devices, and CO alarms.

Benzene: Benzene is a carcinogen, its indoor air concentration should be kept as low as reasonably achievable, and not exceed outdoor concentrations. Management options are to ban benzene sources indoors, and lower the permissible benzene content in any building material and consumer product.

Naphthalene: Proposed long term guideline value is 10 µg/m³. Management option is to restrict the use of naphthalene containing household products.

The next steps

Implementation of the actions according to E&H Action Plan

Opinion of the COM scientific committees on the INDEX project (Green Paper?)

Continuation of the mapping of indoor air quality at European level (including source apportionment)

Harmonization of the labeling schemes for consumer products (building/construction materials)