First WHO Global Conference on Air Pollution and Health - Geneva, 30 October

Overview of Anses activities on indoor air pollution

Focus on french indoor air quality guidelines (IAQGs) and labelling of building materials

Emmanuelle Durand
ANSES - France
ANSES contributes to ensuring:
- **human health and safety** in the fields of environment, work and food as well as
- **protecting animal health and welfare**
- **protecting plant health**

**Conduct surveillance, monitoring, alert and vigilance missions**
**Conduct risk assessment in its fields of competence**
**Recommend public health measures**
**Conduct laboratory reference missions**
**Conduct, coordinate and initiate research projects**

**Provide training and information and contribute to public debate**
- Issues marketing authorisations of veterinary medicinal products
- Issues marketing authorisations of plant protection products, fertilisers, growing media, and adjuvants
- Issues marketing authorisations of biocides

Collaborate with European and international agencies (EFSA, ECHA, EMA, EEA, EU-OSHA, and ECDC)

WHO 2018 - Geneva
Scientific support related to public health (risk assessment, surveillance, advice)

French governance of air pollution

Regulation

Ministries
Define regulations

Central-level services

Review

Implementation

Local-level services

Control and inspections

Research

WHO 2018 - Geneva
Overview of Anses activities on indoor air pollution

Risk Assessment related to air environments (outdoor air and indoor air)

- A dedicated team (11 persons)
- A specific Experts Committee (CES) to conduct collective expert appraisals for health risk assessments related to air environments
- Working groups for specific assessments
- Risk assessments for general population and workers
- Implication in aggregated risk assessments for different substances
- Numerous subjects of expertise (focus on indoor air pollution):
  - Indoor air quality guidelines (IAQGs)
  - Support for the labelling of building and furniture products
  - Indoor car parks
  - Risks for workers in underground railway transportation areas
  - Mould exposure in buildings
  - Evaluation of the socio-economic cost of indoor air pollution
  - Indoor air purifiers
  - Ongoing: Characterization of outdoor air pollution transfers to inside buildings, exposure via settled dusts, IAQs
Context of Anses’s IAQGs

Indoor air quality guidelines (IAQG) : safe levels below which adverse health effects are not expected to occur in the general population, including sensitive groups.

- French environmental health action plan (NEHAP) – 2004
  - Monitoring indoor air quality in public buildings
  - National indoor air campaigns
  - Regulatory framework since 2011

ANSES proposes IAQGs based exclusively on health criteria

The High Council for Public Health (HCSP) proposes management support benchmark values for air in confined spaces based on ANSES’s work and other technical, sociological and economic factors

Official regulatory IAQGs, based on the HCSP’s work, are published by decree by the Ministry of Ecology
Methods of Anses’s IAQGs

Selection of IAQGs based on existing guideline or reference values:
US EPA, ATSDR, OEHHA, RIVM, Index project

Establishment of IAQGs based on several steps

WHO indoor air quality guideline:
Critical analysis

Review of hazard characterisation:
Adverse health effects:
toxicokinetics, toxicodynamics, mode of action, dose-response relationship, health effects, sensitive populations etc.
Existing guideline or reference values:
US EPA, ATSDR, OEHHA, RIVM, Index

Setting of IAQG values
Choice of one or more critical effects, modes of action and relevant exposure times
Proposal of IAQG values according to ANSES’s method

Support of IAQGs
Evaluation of measurement methods
Health impact assessment
# Recommended IAQG values (13 pollutants)

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Critical Effects</th>
<th>IAQG VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS: 50-00-0)</td>
<td>Irritant effects at the contact site (eyes and upper respiratory tract)</td>
<td>100 µg.m(^{-3}) for acute exposure (to respect during the day)</td>
</tr>
<tr>
<td>Acetaldehyde (CAS: 75-07-0)</td>
<td></td>
<td>160 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Acrolein (CAS: 107-02-8)</td>
<td></td>
<td>0.8 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Benzene (CAS: 71-43-2)</td>
<td>Non-carcinogenic and carcinogenic haematological effects</td>
<td>0.2 and 2 µg.m(^{-3}) for long-term exposure (excess lifetime risk 10(^{-6}) and 10(^{-5}))</td>
</tr>
<tr>
<td>Naphtalene (CAS: 91-20-3)</td>
<td>Respiratory tract lesions (inflammation)</td>
<td>10 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Ethylbenzene (CAS: 71-43-2)</td>
<td>Ototoxic effects</td>
<td>1500 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Toluene (CAS: 71-43-2)</td>
<td>Neurological effects</td>
<td>20 000 µg.m(^{-3}) for acute or long-term exposure</td>
</tr>
<tr>
<td>Trichloroethylene (CAS: 79-01-6)</td>
<td>Neurological effects (narcotic symptoms) and carcinogenic effects</td>
<td>2 and 20 µg.m(^{-3}) for long-term exposure (excess lifetime risk 10(^{-6}) and 10(^{-5}))</td>
</tr>
<tr>
<td>Perchloroethylene (CAS: 127-18-4)</td>
<td>Neurological, renal and hepatic effects</td>
<td>250 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Carbon monoxide (CAS: 630-08-0)</td>
<td>CO haemoglobin level used as a biomarker of CO effect and exposure in order to protect to neurological and cardiovascular effects</td>
<td>10 000 µg.m(^{-3}) for 8h exposure</td>
</tr>
<tr>
<td>Nitrogen dioxide (CAS: 10102-44-0)</td>
<td>Respiratory effects (bronchitis, bronchial obstructions, persistent cough, wheezing, shortness of breath)</td>
<td>20 µg.m(^{-3}) for long-term exposure</td>
</tr>
<tr>
<td>Hydrogen cyanide (CAS: 74-90-8)</td>
<td></td>
<td>No guideline value</td>
</tr>
<tr>
<td>Particulate matter (PM)</td>
<td></td>
<td>No guideline value, but recommendation of WHO guidelines for ambient air quality</td>
</tr>
</tbody>
</table>

Ongoing: mixture of aldehydes and other pollutants co-occurrent in indoor air
Support for the labelling of building and furniture products

2004-2009

• First French National Environment and Health Action (NEHAP)
• 2009 Publication of 2nd NEHAP and “Grenelle environment” law
• Reduction of emissions of pollutants at their source
• Introduction of labelling for materials that can emit pollutants into indoor air

Ansés (2006) and (2009)

• Proposition of qualification procedure for solid building materials based on their VOC emissions and health criteria (2006), updated and extended to liquid building materials and decoration products in 2009
• List of 165 VOCs that can be emitted by these products along with lower concentration of interest (LCIs) to be complied with

1st September 2013

• Mandatory labelling of building and decoration products sold in France
• Emission level indicated by a ranking from A+ (best class) to C, based on 11 parameters of evaluated emissions: 10 individual VOCs and Total VOCs

2015-2019

• 3rd NEHAP: extension of this measure to furnishing products

Ansés (2015)

• ANSES published the list of 31 substances it considers as having first priority based on their health effects, in order to support the public authorities in the future implementation of furnishing product labelling with regard to volatile pollutants.
Thank you for your attention

For more information

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