

PINCHE

**Policy Interpretation Network
for Children's Health and
Environment**



Initiated by INCHES



PINCHE Objectives

- **creation of a widely supported basis for public health policy-making**
- **analysis and interpretation of existing research**
- **draw policy recommendations**



PINCHE Network

- **Co-ordinators of EU funded projects**
- **Key investigators non-EU funded studies**
- **WHO and related bodies**
- **Policy makers and policy scientists**
- **Representatives of the chemical industry**
- **Representatives consumer organisations**
- **Representatives educational institutes**
- **Representatives NGO's**



PINCHE Themes

Air pollution (ambient & indoor)

Carcinogens

Noise

Neurotoxicants



Approach

Workpackages

- **Exposure Assessment**
- **Epidemiology**
- **Toxicology**
- **Risk and Health Assessment**
- **Socio-economic Impact**
- **Policy-Science Interface**

Scientific literature, reviews, reports as sources



Education, awareness raising

- **Broader knowledge utilisation**
- **Incorporate knowledge in schooling system**
- **Preconceptional counseling**



Capacity building

- **Increase capacity in multiple disciplines**
- **Increase environment and health marketing**
- **Support European wide training**



Multiple exposure

- **Performing multiple exposure studies**
- **Identification of child specific settings**



Regulation

- **Assessment of existing regulations**
- **New regulations supported by information on child specific hazards**



Research

- Hazard specific recommendations
- Exposure reduction models
- Cohort studies
- Research on latency periods



Health effects related recommendations

- Improve cancer registration
- Cohort studies
- Establish access to cancer data of small areas
- Exposure reduction



Environmental stressor	Children's susceptibility or intake	Children's exposure	Health risk at current exposure levels	Priority for action
Allergens	Early exposure might have some protective effects when the mother has developed protection herself, but this is under debate.	All children are exposed to allergens. Indoor allergen exposure can be high.	More children will develop allergic reactions when exposure increases. Air pollution exacerbates allergic symptoms.	High , because many children experience allergic symptoms. The societal impact is great.
Benzene	Children's intake is relatively higher. No specific susceptibility of children is suspected.	Children in urban areas are exposed to quite high levels.	Current exposure levels will cause a number of additional cases of cancer.	High , because many children are exposed to high levels and there is a strong causal relationship with cancer.
Brominated flame retardants	Children may be more susceptible; there is some evidence for developmental effects. Children may be exposed through breast-milk.	Children are exposed to low levels, but levels have increased rapidly in recent decades.	There is some evidence of adverse health effects, with suggestions of endocrine disruption similarly to that with PCBs and dioxins. However, data are lacking.	Medium : more research is needed. Based on the precautionary principle, the exposure should now be kept as low as possible. The potential impact could be large.
Cadmium	Children's intake is relatively higher. No specific susceptibility of children is suspected.	All children are exposed, mainly through the diet and through environmental tobacco smoke. A few percent have an intake exceeding the tolerable intake. Children living near copper smelters and in eastern Europe are exposed to higher levels.	At current exposure levels there is a risk for developing kidney disorders and a low cancer risk.	Medium , because some children are exposed to levels that may cause health effects.

Chlorinated by-products	Some data suggest that children are more susceptible.	Children are exposed in swimming pools and, in many countries, through chlorinated tap water.	The risk of an increase in asthma symptoms after swimming is low. On the other hand, disinfection of water is extremely important.	Low , because the health risks are not clear, and disinfection of water is necessary.
Chromium	There are no data on children's susceptibility.	Children are exposed to low background levels. Parents working in the chromium industry can inadvertently take chromium home.	The cancer risk is low.	Low , because children's exposure is low.
Cleaning products	Children's exposure may be higher. No specific susceptibility of children is suspected.	All children are exposed to some cleaning products. Most dangerous cleaning products are no longer used.	The exposure is not likely to cause great health effects. There may be an increased risk of asthma symptoms.	Low , because children's exposure is not suspected to lead to severe health effects.
Endotoxins	Early exposure might have some protective effects when the mother has developed protection herself, but this is under debate.	Indoor exposure varies enormously between houses. Houses with pets and homes of farmers have higher levels of endotoxins. In rural areas, exposure is higher.	Exposure may cause airway inflammation and exacerbate asthma. Positive effects on allergy development for exposure at a young age is under debate.	Low , because respiratory effects from exposure are not clear and early exposure may benefit health.

Environmental stressor	Children's susceptibility or intake	Children's exposure	Health risk at current exposure levels	Priority for action
Environmental tobacco smoke	Children are more susceptible, and children are exposed to higher levels pre- and postnatally.	All children are exposed. About 40% of European children live in homes in which one or two parents smoke.	Postnatal exposure may lead to infections in the lower respiratory tract, chronic respiratory symptoms and asthma. Prenatal exposure leads to lower birth weight, sudden infant death syndrome and cognitive and respiratory effects.	High , because many children are exposed and many health effects are associated with exposure.
Formaldehyde	No specific susceptibility of children is suspected.	All children are exposed. Indoor exposure may be high.	Especially asthmatic children will develop respiratory symptoms. Carcinogenic effects are not likely at low levels.	Medium , because formaldehyde is ubiquitous because of its broad use. There are situations in which it leads to health effects.
Lead	Children are more susceptible. Young children's exposure is 2-3 times higher relative to body weight. In utero exposure occurs by mobilisation of lead from the mother's bones.	Children are exposed to lead via air, food, and sometimes water. Exposure is declining, but there are still sources of exposure, such as (old) lead paint, and lead is still used in petrol in some areas.	Current low exposure causes reduced birth weight, decreased IQ and decreased growth. The higher exposure that can occur at some hotspots can damage the brain and kidneys.	Medium , because most sources of lead exposure have been regulated, but lead is still a problem in some places and associated with severe health effects.
Mould	No specific susceptibility of children is suspected.	All children are exposed to mould indoors. Many households face problems with mould indoors.	Exposure leads to increased asthma symptoms. Mould growth could be a marker for other types of exposure.	Medium , because exposure to mould (or associated types of exposure) leads to respiratory problems.
Nickel	There are no data on children's susceptibility.	Children may be exposed to low background levels. Parents working in nickel industry may inadvertently take nickel home.	There is a low cancer risk. Nickel is an active sensitizer that affects about 10% of the population.	Low , because environmental exposure causes a very low cancer risk.
Nitrosamines (NDEA, NDMA)	No specific susceptibility of children is suspected.	All children are exposed to very low levels, mainly from environmental tobacco smoke and smoked or nitrite-cured meat.	Current exposure levels will give a very small cancer risk.	Low , because children's exposure is low.

Particulate matter	Children are more susceptible.	Exposure to particulate matter is high, especially in urban areas and areas with high density of road traffic.	Exposure leads to respiratory effects and neonatal mortality. Increased school absenteeism is an important indirect effect.	High , because exposure leads to respiratory effects in many children.
Polycyclic aromatic hydrocarbons	The foetus may be more susceptible: prenatal effects are associated with lower birth weight and intrauterine growth retardation.	Children are mainly exposed to polycyclic aromatic hydrocarbons through tobacco smoke and smoke from fuel combustion. Background concentrations are higher in urban and traffic dense areas.	Exposure to polycyclic aromatic hydrocarbons may lead to lower birth weight and intrauterine growth retardation. The exposure levels give a small cancer risk.	Medium , because current exposure leads to some health effects.
Tetrachloroethylene	No specific susceptibility of children is suspected.	Background exposure is very low but can be quite high near dry-cleaning plants.	There is no health risk at normal exposure. Exposure near dry-cleaning plants may lead to health effects. The cancer risk is very low.	Low , because children's exposure is low. There are some local hotspots.
Trichloroethylene	No specific susceptibility of children is suspected.	Background exposure is very low but can be higher near industry or near waste sites.	Near industry or waste sites the cancer risk is very low.	Low , because children's exposure is low. There are some local hotspots.

<p>Volatile organic compounds</p>	<p>The foetus is more susceptible; young children may be more susceptible.</p>	<p>Children are exposed indoors and outdoors. Indoor concentrations can reach high levels.</p>	<p>Exposure increases the prevalence of asthma symptoms in children. Prenatal exposure may lead to nervous system effects.</p>	<p>Medium, because exposure occurs in different settings, and this can lead to some irritation and nervous system effects.</p>
<p>Noise in general</p>	<p>Children are more susceptible in acquiring noise-induced hearing impairment. Children may be less susceptible to developing stress symptoms.</p>	<p>Children are exposed indoors (noise from audio and video equipment, and transport noise) and out-doors (transport, industrial and building noise and noise at shopping malls).</p>	<p>Exposure leads to health effects in certain settings and with certain types of behaviour.</p>	<p>Medium, because many children are exposed to noise levels that cause health effects.</p>

Member States

<i>Topic</i>	<i>Recommendation</i>	<i>Level of action</i>
Measures on outdoor air pollutants and noise	Support non-technical measures: improving road traffic flow, improving spatial planning, improving public transport, implementing road pricing and reducing and enforcing speed limits.	National, local
Moulds, formaldehyde	Educate people how to control ventilation, temperature and humidity, in order to lower concentrations of moulds and formaldehyde indoors.	National
Environmental tobacco smoke	Educate caregivers, health care providers, school personnel, parents and other adults on effective ways to prevent or reduce children's exposure.	Local
Regulate smoking	Prohibit smoking in public places and similar places where children and other people can be exposed.	National
Reduction of mercury emission	Reduce the level of mercury in the environment by means of action on production, use, trade and waste treatment in accordance with the Community strategy on mercury.	National, EU
Radon	Monitoring of radon in schools and child-care centres.	National
Action on classroom noise	Implement adequate acoustic treatment of classrooms and child-care centres in European countries based on EU-wide regulations.	EU, national

Regional, local authorities

<i>Topic</i>	<i>Recommendation</i>	<i>Level of action</i>
Measures in and near schools on air pollutants and noise	Do not build new schools in hotspots of air pollution or noise. Make environmental impact assessment in combination with health impact assessment compulsory for new schools and/or for new roads with a special focus on schools etc. nearby.	Local, national
Remediation of lead	Reduce the number of households connected to the leaded drinking-water pipe system. A 1% reduction will reduce mean lead dietary intake by 0.09 micrograms/day for children 1-6 years olds.	Local
Cancer	Monitor and study cancer clusters.	Local

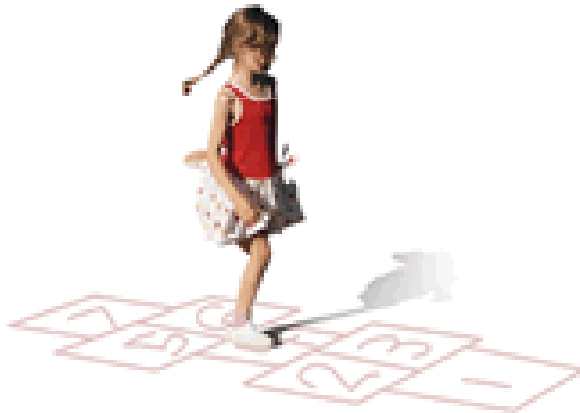
Air pollutants

<i>Topic</i>	<i>Recommendation</i>
1. Regulation of outdoor air pollutants and allergens	Harmonise and enforce existing ambient air quality regulations because air pollution is known to exacerbate and increase susceptibility to allergen-induced respiratory diseases.
2. Legislation on indoor air	Develop European guidelines for healthy indoor air in dwellings, schools, child-care facilities, recreational buildings, public buildings and workplaces. This will affect building standards, construction products, possible legislative action and educational and awareness activities.
3. Emission standards for particulate matter	Adopt new vehicle emission standards. Although gaseous pollutants must not be neglected (see NO ₂ , benzene and ethylene oxide), the key problem is fine and ultrafine particles. Impose strict limit values not only for particle size but also for the concentration of particles.
4. Emission standards for particulate matter	Ensure that off-road vehicles and machinery used in confined spaces (machinery in tunnels and mining but also in construction work near schools, kindergartens and playgrounds) comply with strict emission standards. Introduce retrofitting with diesel particulate filters.
5. Education on environmental tobacco smoke	All health care practitioners, relevant governing bodies and public and private health care providers should give parents and other adults information on the health effects of environmental tobacco smoke on children and fetuses.
6. Legislation on environmental tobacco smoke	Prohibit smoking in workplaces and places open to the public.

EU level

<i>Topic</i>	<i>Recommendation</i>	<i>DG responsible</i>
Legislation on indoor air	Develop European guidelines for healthy indoor air in dwellings, schools, child-care facilities, recreational buildings, public buildings and workplaces. This will affect building standards, construction products, possible legislative action and educational and awareness activities.	Various DGs and Member States
Monitoring of benzene	Monitor children living on streets with heavy road traffic and children living near petrol stations for benzene or its metabolites to obtain information on when and how children can adequately be protected.	DG Environment
Legislation on personal audio equipment	Implement directives that set a maximum level of output noise on personal audio equipment and that require that the noise levels of products be labelled.	Various DGs and Member States

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