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WG 5 Air Quality and Health

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Health effects are an important driver of air pollution policy. However, current standards in the EU or US do not meet WHO air quality guidelines for protection of human health. Furthermore, these standards are violated in several areas. The purpose of the Working Group discussions was to arrive at policy relevant conclusions for health protection related to air pollution. In addition, cobenefits of measures in relation to climate were considered. The discussion centered around five questions which constituted the basis for conclusions and policy recommendations.

What new evidence of importance for the risk assessment has emerged on health effects regarding specific air pollution components?

- Evidence for health effects from $PM_{2.5}$ has strengthened.
- Evidence for health effects from $PM_{2.5-10}$ is emerging.
- Health effects related to proximity to roads are not explained only by PM mass (e.g. $PM_{2.5}$ or PM_{10}).
- Evidence has accumulated that primary emissions from combustion (e.g. from road traffic and wood burning) are related to adverse health effects.
- More quantitative estimates are needed of long-term health effects of primary emissions indicators (e.g. BC, ultrafines). EC and national funding agencies should prioritize such research.

- There is new evidence that NO_2 is associated with short-term health effects, even below current EU standards, and at least in part attributed to NO_2 per se.
- For ozone there is new evidence for long-term health effects, in addition to effects of short-term exposure.

Are certain groups of the population particularly vulnerable to the adverse effects of air pollution?

- Evidence is accumulating that early exposure to air pollution (prenatally or early in life) is associated with impaired lung function development and other health effects which may also be of importance later in life.
- There is new evidence that air pollution is associated with adverse birth outcomes and pregnancy complications.
- There is emerging evidence that adults with common chronic diseases are particularly vulnerable.
- Special precautions should be taken by the appropriate authorities in order protect children and other vulnerable groups.

Which measures should be prioritized for human health protection in relation to air pollution?

- Reducing the effects of long-term (months to years) population exposure should be the primary goal.
- Short-term monitoring and standards are needed to timely assess the effectiveness of air quality management, and to adequately inform the public.
- Concrete measures like low-emission zones or improved local combustion appliances should consider both long-term and short-term exposure.
- Measures in response to high levels of particles should focus on reducing primary emissions from combustion sources.
- Vulnerable groups need to be considered.

What is the role of local, regional and long-range transported emissions of air pollutants for adverse health effects?

- Evidence is clear that all these source levels are important for adverse health effects.
- Concerted international action is crucial for reduction of population exposure to long-range air pollution such as ozone and accumulation mode particles.

Which preventive measures have the highest priority considering health risks related to both air pollution and climate change?

- Low-emission transport and energy systems and technologies should be promoted.
- Reducing BC emissions (e.g. from diesel, coal and wood combustion) is beneficial for population health and mitigating short-term climate forcing.
- Reduction of combustion emissions of NO_X, CO and methane (e.g. from diesel and wood combustion) is also of importance for mitigation of short-term climate forcing as well as of health and environmental effects by decreasing ozone formation.

- Development and implementation should be speeded up of strict standards for emissions from new and existing small-scale solid fuel combustion, non-road mobile machinery and shipping.