POP emission inventories on different scales and their future trends

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Persistent organic pollutants (POPs) are defined as organic substances that

- possess toxic characteristics;

- are persistent;

- bioaccumulate;

- are prone to long-range transboundary atmospheric transport and deposition; and

- are likely to cause significant adverse human health or environmental effects near to and distant from their sources.

To reduce these adverse effects and for monitoring the effectiveness of existing international agreements, esp. UNECE-POP and UNEP protocols, concerning POPs the compilation of emission inventories is required. This presentation addresses emission inventories for POPs which are covered by existing protocols as well as candidate substances which are in focus for the revision of the international protocols. The following substances will be taken into account in this presentation: Dioxins and Furans (PCDD/F), PAHs, PCBs, Hexachlorbenzene (HCB), Pesticides (e.g. HCH, Dicofol and Endosulfan), Perfluoroctansulfonate (PFOS) and Polybrominated Diphenylethers (PBDEs), Hexachlorobutadiene (HCBD), Pentachlorobenzene (PeCB), Polychlorinated Naphthalenes (PCN), and Pentachlorophenols (PCPs).

For all considered substances emission inventories exist with different qualities, from preliminary estimates to more complete inventories. These inventories are based on different methodologies (measurements, modelling, mass balance approaches, etc.), cover different regions (Europe, North America, Asia, China) and different spatial scales (regional, global) with different spatial resolutions. An overview will be given of the current state of the knowledge through a description of the main sources for the specific pollutants, the recent emission levels, a description of historical emission (incl. time series) and gridded data bases, if available. Furthermore, recommendations to improve POP emission inventories as well as major obstacles to achieve these improvements will be given.

A further focus of this presentation will be an overview of future trends of specific POPs, e. g. PCB and PCDD/F until 2050, with special emphasis on the different approaches for compilation of future scenarios for specific substances. The following key questions concerning compilation of projections will be considered here:

- Do we have sufficient data on emissions and the trends in driving forces needed for making reasonable future projections?

- How might emission quantities and spatial distributions change over the next 20 to 50 years?

- How will different source categories change?