Evaluating emission protocols for persistent organic pollutants

A recent study evaluating the effectiveness of regulations governing the release of persistent organic pollutants (POPs) shows dioxins and furans (PCDD/F) and hexachlorocyclohexane (HCH) decreased significantly between 1990 and 2000. Modelling future scenarios suggest further decreases in these and other POPs through 2020. POPs are toxic substances that resist breakdown when they are released into the environment. Pollutants that do not easily breakdown pose particular risks to human health, wildlife and the environment and policies are needed to control their emission.

The United Nations Economic Commission for Europe (UNECE) designs regulations to safeguard the environment and human health, whilst promoting sustainable development in its member states. The UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) was extended in 1998 by a specific protocol designed to reduce the emission of POPs. The protocol covers the pesticides, hexachlorocyclohexane (HCH) and hexachlorobenzene (HCB) and industrial chemicals such as polychlorinated biphenyls (PCB) amongst others. By-products of industrial processes, such as waste incineration and pesticide manufacture, including dioxins and furans and polycyclic aromatic hydrocarbons, are also covered by the protocol.

To evaluate whether this protocol is effectively reducing the release of POPs, researchers carried out a detailed survey of their sources and the amounts released in each of the countries in the UNECE group, excluding Canada and the USA. This revealed that dioxins, furans and HCH decreased significantly between the years 1990 and 2000. Using future activity scenarios developed under the Clean Air for Europe programme (EU CAFE) the study predicts that emissions of HCB, PCB, PCDD/F and PAH will be further reduced by 2020, if the POP protocol is fully implemented by all countries.

As well as posing a risk to health and the environment, POPs present additional concerns because they can be transported long distances, through air and water. Many of these molecules are known to accumulate in living organisms, presenting a great risk to humans and wildlife.

Other pollutants could be added to the POP protocol list in the future. This study includes a preliminary, baseline estimation for sources and emissions of 8 “candidate” POPs. The researchers believe that adding these molecules to the list would encourage the investigation required to fully understand how these molecules enter the environment. It would also stimulate the development of appropriate protocols for measuring their presence in the environment. Overall, the researchers recommend in-depth assessments for each of these candidate POPs, including patterns of use in each country and the measurement of other factors that affect their release and transport.

1. [www.unece.org/](http://www.unece.org/)
2. [Convention on Long-range transboundary air pollution, founded in 1979 (www.unece.org/env/lrtap/)](http://www.unece.org/env/lrtap/)
5. The 8 candidate POPs are: Hexachlorobutadiene (HBU); Pentabromodiphenyl ether (PBDE); Pentachlorobenzene (PCBe); Polychlorinated naftalenes (PCN); Pentachlorophenol (PCP); Endosulfan, Dicofol; Short chained chlororated paraffins (SCCPs)


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