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The road from Seveso to today - from dioxins to POPs

33rd anniversary of Seveso chemicals disaster: International chemicals management making progress

An accident at the ICMESA chemicals plant near the town of Seveso on 10 July 1976 released a toxic cloud consisting mainly of dioxins and poisoning a densely populated area of six square kilometres. This environmental catastrophe finally triggered serious efforts to make the production and application of chemicals safe. The highly toxic 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8 TCDD) released at the time became known around the world as "Seveso poison". Dioxins are formed as the by-products of certain chemical reactions and are the most potent man-made environmental toxins ever produced despite the fact that their production was never intentional. Thermic processes typical in the metals industry or various combustion processes account for their origin. Dioxins can escape to the environment along with waste gases and production residuum.

The international community has reacted to this problem. In 1980, Germany's Major Accidents Ordinance made industrial installations safer, followed by the so-called Seveso Directive of 1982 (Council Directive 82/501/EEC on the major-accident hazards of certain industrial activities) in Europe. Since then industrial installations that either handle or at which hazardous substances might be produced in chemical reactions (as was the case at ICMESA), have been obligated to carry out safety inspections and set up emergency plans. The Seveso Directive and the Major Accidents Ordinance were amended in 1996 and 2000, respectively, and now require that industrial installations have a safety management system in place. Responsibility in handling hazardous substances at relevant installations became necessary due to the great risks posed by dioxins, as even the smallest amounts can do long-term damage to human health. Due to the toxicity, persistence, and tendency of dioxins to bioaccumulate, as well as the fact they are transported across great distances around the globe, they have been classified as highly toxic persistent organic pollutants (POPs). The production and applications of POPs were banned worldwide when the Stockholm Convention entered into force in 2004. The Convention also covers dioxins, whose use must be reduced to lowest level technically possible. There are many other POPs besides dioxins. In early May 2009, the 4th Conference of the Parties to the Stockholm Convention added nine to

the existing list of twelve POP substances covered by the Convention. They include brominated flame retardants and perfluorooctanesulfonic acid (PFOS) which were, and in part still are, in use in industrialised countries. The Stockholm Convention provides for action plans to promote the discontinuation of use of certain substances in applications that are as yet either absolutely essential or for which there is no substitute.

The latest proof that there is need for further action were the recent traces of dioxins and PCB in a contaminated sheep's liver—an indication of the persistence of POPs in the environment. More data on environmental pollution is key to identifying further sources of dioxin production and to efforts to reduce their spread in the environment, particularly in the food chain.

Responsible handling of chemicals has now become more than a mere cost factor; instead it has proven to be a recipe for economic innovativeness and operational safety. Dr. Thomas Holzmann, Vice President of the Federal Environment Agency, comments: "Rigorous standards and limit values have helped German businesses to develop innovative technologies which the environment has benefited from and which are competitive on the global market. The Federal Environment Agency has guided this development by providing evaluation of chemicals and technologies for the sake of safety in production and application."

Information from the Federal Environment Agency about international chemicals management is available here: <http://www.umweltbundesamt.de/chemikalien/pops.htm>.
<http://www.umweltbundesamt.de/technik-verfahren-sicherheit/index.htm>

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