

Pesticides and biocides

Pesticides and biocides are used on plants to repel, kill or control pests, or otherwise in medicine, agriculture, forestry or other applications to kill, and protect against, for example germs, bacteria, viruses, parasites, fungi *etc.* For purposes of EU legislation, the distinction between pesticides and biocides may be described in general terms as agricultural uses (pesticides) and non-agricultural uses (biocides). OSPAR has prioritised six pesticidal and biocidal substances for priority action: dicofol, endosulfan, hexachlorocyclohexane (namely lindane), methoxychlor, pentachlorophenol (PCP) and trifluralin.

What is the problem?

Except trifluralin, a dinitroaniline herbicide, the priority pesticides/biocides are chlorinated organic pollutants. They have distinct chemical properties but all are toxic to aquatic organisms, highly bioaccumulative and very persistent. Dicofol, endosulfan and methoxychlor are suspected endocrine disruptors. Some of the substances can travel with air over long distances; in contrast, trifluralin used in agriculture is not expected to reach the marine environment due to its properties. None of the chemicals are any longer produced in Europe except for the formulation of trifluralin in France and Spain. The main concern are the uses of the pesticides/biocides outside Europe and their introduction via imported products and atmospheric deposition to the Convention area. Main sources are releases from reservoirs in sediment, soil and sludge as legacy of past uses, landfills with disposed products treated with those substances, and imported goods e.g. textiles and wood treated with PCP and lindane.

What has been done?

Almost all uses of the pesticides substances have been phase out under the EU Pesticides Directive (91/414/EEC) and Biocides Directive (98/8/EC) by 2009. A period of grace for dicofol expires in 2010. Lindane has recently been included for elimination under the UNEP Stockholm POP Convention, endosulfan is still under review for inclusion.

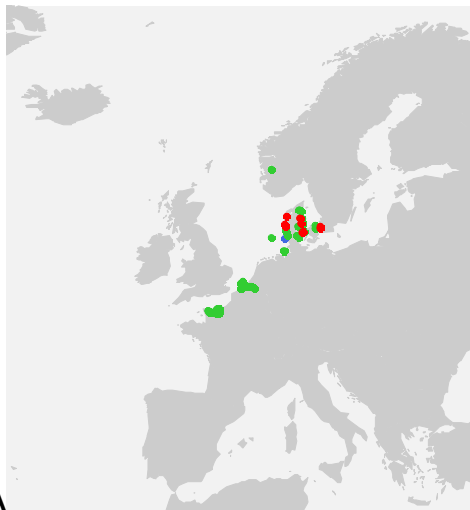
Did it work?

Source related data are scarce for the OSPAR priority pesticides and biocides. There is some evidence that releases are falling. For lindane consistent data collected under the OSPAR Comprehensive Atmospheric Monitoring Programme suggest that while emissions continue, atmospheric deposition has dropped by more than one third across OSPAR in the period 2004 – 2007. The downward trend is confirmed by model calculations indicating a reduction between 70 and 80% since 1998 in all OSPAR Regions. There is evidence that lindane is still released to water partly from historic uses, partly from the organic chemical industry (20 kg reported for 2004 to the European Pollution Register). Measurements for estimating riverine inputs of lindane are patchy and often below detection limit.

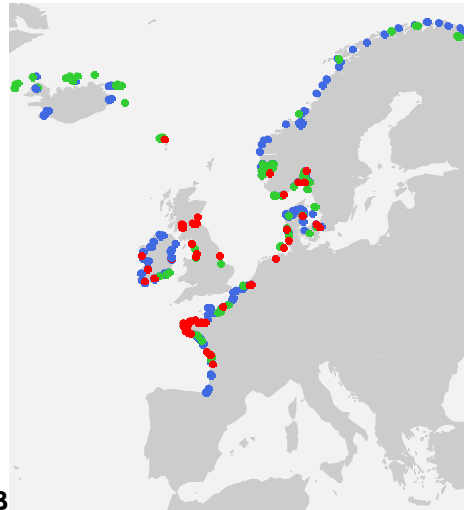
How does this affect the quality status?

Marine monitoring data is scarce for most pesticides and biocides. The best coverage is for lindane although these data are relatively sparse compared to the data for metals, PCBs, or PAHs. Where data exist, concentrations in sediments are generally not close to zero. Some concentrations around Denmark are at levels which pose a risk of pollution effects. Concentrations measured in northern France and the Netherlands pose no risk. There are insufficient time series of data to make any statements on temporal trends on lindane in sediments in the OSPAR area.

Monitoring data for lindane in biota show a wide range of concentrations. In some areas, for example western and northern Norway, parts of Ireland, France and Iceland, concentrations are close to zero. However, concentrations remain at levels where there is a risk of pollution effects in a number of other areas in particular the coast of Brittany, the German Bight, and certain northern UK estuaries (Humber, Clyde, Forth, Tay). The localised nature of these hotspots, which may persist for years to come, may reflect historical use in adjacent areas.

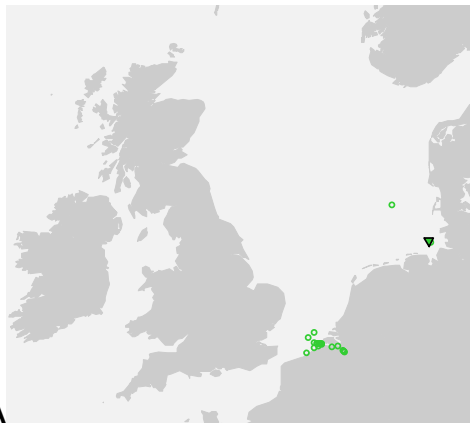


A

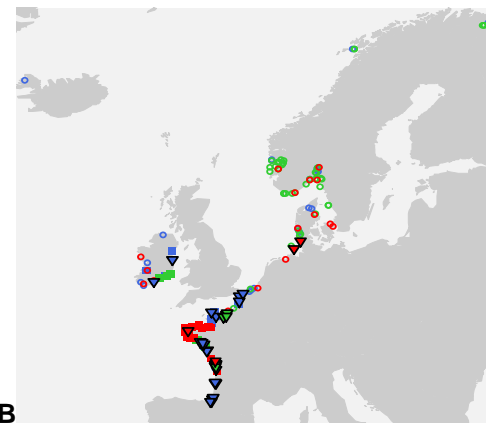


B

Status of lindane concentrations in (A) sediments and (B) biota: close to zero (blue), acceptable (green), and unacceptable (red)



A



B

Temporal trends of lindane concentrations in (A) sediment and (B) biota: downward ∇ , upward Δ , insufficient data for trend assessment \circ

Electronic navigator to OSPAR publication sources (publication number):

- Status and trend of marine chemical pollution (395/2009) – Annex 2 for monitoring data
- Towards the cessation target (354/2008)
- Trends and concentrations in marine sediments and biota (390/2009)
- Trends in atmospheric concentrations and deposition (447/2009)
- Background Documents (as updated) for
 - endosulfan (149/2002)
 - lindane (153/2002)
 - dicofol (150/2002)
 - methoxychlor (147/2002)
 - pentachlorophenol (138/2001)
 - trifluralin (203/2005)