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MONITORING THE THREAT OF POLLUTION TO MARINE LIFE

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Centre for Environment
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Persistent organic pollutants (POPs) are slow to break down and persist in the environment long after release. They 'bioaccumulate' in food chains, posing a risk to marine life and, in the case of food species, human health. In 1999, Cefas published its first study on the presence of a particular class of these chemicals, the polybrominated diphenylethers (PBDEs, which are flame retardants), in UK biota and sediments. This study showed that emissions from manufacturing plants led to accumulation in the marine environment. This was one of the earliest studies showing the presence of PBDEs in the environment, and inspired more research that ultimately led to the restriction of the use of these chemicals in 2004. This example of 'method development followed by investigative survey' is one of many that Cefas has carried out over the last 20 years.

However, the story does not end at detection of impact; it is necessary to measure routinely the concentrations of potentially dangerous chemicals over many years to assess the effectiveness of regulatory legislation. PBDEs, and many other organic pollutants, are thus being continuously monitored by Cefas to assess their impact in marine mammals, fish and sediments.

An ongoing study using harbour porpoises provides an example of how long-term measurements can provide vital information about the population-level impact of POPs, and in particular polychlorinated biphenyls (PCBs). These chemicals were banned in the UK in 1981 and environmental levels fell in response. However, assessment of PCB contamination in harbour porpoises from 1975 to the present day showed that, although contamination levels fell after PCBs were banned, the levels stabilized in the late 1990s and have not fallen below the level likely to cause harm ever since.

An EU-wide survey of PCBs in other cetaceans such as killer whales and bottlenose dolphins has shown that, in those species, PCB burdens are above reproductive effects thresholds, and are likely to cause population declines and suppress population recovery. To achieve its role of monitoring the health of the marine environment, Cefas continues to improve existing methods, and to innovate in the search for emerging contaminants by developing new analytical methods and monitoring techniques, such as the use of passive water samplers for non-target screening.

For more information please visit:
<https://www.nature.com/articles/srep18573>



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