



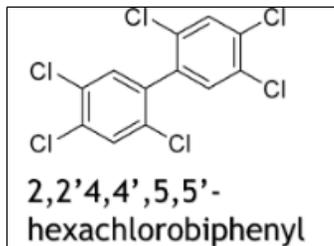
Wildlife Disease & Contaminant Monitoring & Surveillance Network

NEWLETTER: Number 1

Winter SPOTLIGHT 2011

Polychlorinated biphenyls (PCBs)

PCBs, widely used by industry and in commercial products, have escaped from open sources and damaged/degraded closed sources to cause global contamination of food chains. PCBs are toxic, persistent, bioconcentrate in top predators and have been associated with adverse effects, particularly on reproduction. PCB production was banned in the US and some European countries in the 1970s and the EU Council Directive 96/59/EC set a 2010 deadline for complete disposal or decontamination of equipment containing PCBs. Wildlife have been monitored to see how effective the ban has been in removing PCBs from the environment. We summarise information from multiple WILDCOMS partners to provide a holistic UK synthesis of how environmental contamination by PCBs has changed.



Freshwater habitats: Nine PCB congeners (105, 118, 128, 138, 153, 156, 170, 180 and 187) have been detected frequently in Eurasian otters (*Lutra lutra*) from England and Wales. All, except congeners 128 and 170 have shown clear progressive declines between 1992 (start of monitoring) and 2009. PCBs 128 and 170 also declined in concentration up until 2005 but then increased; the cause of this is unclear. Data from the Cardiff University Otter Project (CUOP).

Marine habitats: The summed concentration of a standard suite of 25 PCB congeners in UK-stranded marine mammals (mainly harbour porpoises, *Phocoena phocoena*) declined in the early 1990s but has remained constant since 1997. This contrasts sharply with organochlorine pesticides (DDTs, dieldrin, etc.) that have declined steeply in a range of marine species including harbour porpoises. Increased susceptibility to infectious disease and mortality is strongly associated with the most highly contaminated porpoises. Even higher PCB levels are found in UK-stranded bottlenose dolphins (*Tursiops truncatus*) and killer whales (*Orcinus orca*) and are potential drivers of population declines in these species. Data from the UK Cetacean Strandings Investigation Programme (CSIP) in collaboration with CEFAS.



Gannet (*Morus bassanus*) eggs from Bass Rock (North Sea) and Ailsa Craig (eastern Atlantic) have been monitored for 36 PCB congeners since 1990. PCBs 153, 138, 180, 118 and 170 predominate. Concentrations of all these congeners declined over time in eggs from Ailsa Craig, whereas some congeners (PCB 153,180) remained stable over time or increased slightly (PCB 170) in eggs from Bass Rock. Data from the Predatory Bird Monitoring Scheme (PBMS).

Terrestrial habitats: PCBs have been monitored in three avian top predators, the sparrowhawk (*Accipiter nisus*) from lowland and upland habitats, and the merlin (*Falco columbarius*) and golden eagle (*Aquila chrysaetos*) from the rural uplands. Analysis of 36 PCB congeners in sparrowhawk livers has been carried out since 1990 and the predominant congeners are PCBs 153, 180, 187 and 138. There has been no significant change since 1990 in the summed congener concentration. In contrast, summed PCB congener concentrations have declined over time in merlin eggs and in the eggs of inland-nesting golden eagles. Egg PCB concentrations for coastal nesting golden eagles have not declined over time and are higher than those of birds that nest inland. Data from the PBMS.



Summary of patterns over time

PCBs 153, 138, 180, 118 and 170 are the dominant congeners in vertebrates across different UK habitats. Declines have been observed in most but not all congeners in vertebrate sentinels for marine and freshwater systems. The picture is more mixed for the terrestrial environment. Summed PCB congener concentrations have declined in species from upland, remote areas (perhaps reflecting decreased long range transport and deposition) but not in sparrowhawks that are from rural and more urbanised areas (which may also have localised inputs). Overall, current PCB levels in biota may represent those maintained by current diffuse inputs and historic contamination and future declines may only be slow.

Scheme News

Predatory Bird Monitoring Scheme (PBMS). The Royal Society for the Protection of Birds (RSPB) has recently become one of the funding stakeholders of the PBMS (<http://pbms.ceh.ac.uk/news.asp>).

Wildlife Incident Investigation Scheme. Following an investigation by WIIS in England a pest control company was fined a total of £3,350 for not taking all reasonable precautions during a rodent control treatment. <http://www.pesticides.gov.uk/approvals.asp?id=3064>

Scottish Wildlife Incident Investigation Scheme. SASA has contributed to the book "*Carbofuran and Wildlife Poisoning: Global Perspectives and Forensic Approaches*" published in November 2011 ISBN: 978-0-470-74523-6 (<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470745231.html>)

Cardiff University Otter Monitoring Project. DNA sequencing has confirmed the presence of *Pseudamphistomum truncatum* in the aquatic snail *Radix balthica*, a previously unreported intermediate host for this parasite.

WILDCOMS events

The WILDCOMS website <http://www.wildcoms.org.uk/> is currently under construction and some pages have yet to be populated. All future outputs from WILDCOMS will be published on the website.

Prof Richard Shore (CEH), the principle Investigator for the PBMS, was an invited speaker at the 4th SETAC Europe Special Science Symposium in Brussels (25th-26th October 2011) on *The Environmental Risk Assessment of Biocides: Regulatory Challenges and Scientific Solutions*. Richard gave a presentation on "Anticoagulant rodenticides, relating field measurements to protection goals" and highlighted the role of WILDCOMS in integrating the information gained from different surveillance and monitoring schemes. The presentation can be downloaded at http://sesss04.setac.eu/embed/sesss04/Shore_Richard.pdf

Dr Thomas Maes (CEFAS), the representative for the Clean Seas Environment Monitoring Programme in the WILDCOMS network, will present a poster outlining the aims and activities of WILDCOMS at the Society of Environmental Toxicology and Chemistry's 6th World Congress in Berlin (20-24 May 2012).

CONTACT US:

If you would like to see a particular topic in the "spotlight" section of the WILDCOMS quarterly bulletin, or would like to contact us about other WILDCOMS related matters, please e-mail the WILDCOMS coordinator, Dr Gloria Pereira (mdgds@ceh.ac.uk)