Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environmental Pollutants & Human Health

The Predatory Bird Monitoring Scheme monitors birds of prey for pollutants in order to determine a UK fingerprint of exposure. *(Photograph - Shutterstock)*

Background

Every year, tonnes of man-made substances are released into the environment. Some are deliberate: for example, 80-90% of UK farms use poison to keep down rat populations, vermin that would otherwise eat our cereal grains or defecate on them. Predators, such as birds of prey, eat the rats (and other non-target animals) and are gradually poisoned themselves. Other substance releases are inadvertent: many modern sunscreens contain titanium dioxide, a nanoparticle. When sunscreen is washed off in the shower, the nanoparticles go down the drain. Currently it is not clear what effect they may have in the environment. In order to mitigate the risk to human health for all types of releases, it is necessary to understand and monitor these substances in the environment.

Research and Monitoring by CEH

CEH carries out a broad range of environmental monitoring. For the examples mentioned here it has specific projects.

Operating for over 40 years, the Predatory Bird Monitoring Scheme monitors birds of prey for pollutants in order to determine a UK fingerprint of exposure. Many are exposed - 70% of red kites have detectable levels of rat poison. This sort of evidence is used to help determine policies, such as the banning of the pesticide DDT. Other substances currently under examination include flame-retardants.

CEH scientists are also researching the fate and effects of nanoparticles in the environment, a question of key concern to governments and health authorities. Research by CEH has shown that most titanium dioxide is taken out in sewage-treatment plants as sludge and then enters the environment via soil. Tests have also shown that earthworms are not harmed, a finding which could be used as a sentinel for humans. Current research by CEH is looking at nanoparticle fuel additives and the silver nanoparticles released through their use as antibacterial treatments (e.g. deodorants, anti-odour socks and coated washing machines).

Much of CEH's research is carried out in partnership with, or funded in conjunction with, other organisations.