



Centre for
Ecology & Hydrology

NATURAL ENVIRONMENT RESEARCH COUNCIL

Pathogens in the Environment & Human Health



Johne's disease is caused by a bacterium that affects the small intestine mainly of ruminants (cattle, sheep) but also of primates. (Photograph - Shutterstock)

Background

Recent outbreaks of Avian Flu and Swine Flu have raised public awareness of the ability of pathogens to cross from the environment to humans. Avian Flu and Swine Flu are viruses but many other pathogens (including microbes and fungi) also have an environmental source. The pathogens do not necessarily need to be new in order to cross over; there may be existing diseases for which the connection between animal and human health has yet to be recognised. In order to help develop effective treatments and preventative strategies in humans, it is useful to study the source and routes of transmission of these pathogens from the environment to man.

Research and Monitoring by CEH

Researchers at CEH are investigating the links between birds and the pathogens that they carry. Recent work has identified a fungus associated with seabirds that can cause fatal systemic disease in humans with compromised immune systems. Other research by CEH is looking at a possible connection between Johne's disease in animals and Crohn's disease in humans. Johne's disease is caused by a bacterium that affects the small intestine mainly of ruminants (cattle, sheep) but also of primates. Crohn's disease also occurs in the gastrointestinal tract, has similarities to Johne's disease and is now significantly associated with the Johne's disease pathogen. Recent evidence across the world suggests that there is a five-fold increase per decade in the incidence of Crohn's disease particularly in children. CEH is carrying out environmental studies on the sources of the bacterium and investigating the possible exposure routes to humans, through air, rain runoff into rivers, and milk. It is intended that the results of this research and the evidence obtained will help policy-makers determine the action needed to reduce environmental exposure routes and ultimately lower instances of Crohn's disease in humans.

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