



# CASE STUDY

## CUSTOMER

International organisations,  
governments and industry

## DELIVERABLE

Knowledge exchange, support  
networks and novel research

## OUTCOMES

International handbooks and  
improved models

More than 200 professionals trained  
in environmental assessment

Improved knowledge of the  
environmental effects of nuclear  
accidents

## Radiation in the environment – leading research and knowledge exchange

Developing original research, knowledge transfer systems  
and training courses to secure and progress the UK's  
radioecological expertise

### The challenge

Radiation has always been naturally present in the environment. However, there are authorised discharges of radioactivity from many facilities such as hospitals and nuclear power plants, and accidents such as those at Chernobyl (Ukraine) and Fukushima Daiichi (Japan) have released large quantities of radioactivity into the environment.

We need to understand the environmental behaviour of radioactive substances to ensure that there is no detrimental health impact to either human beings or the environment, and allow for the safe use of radioactivity in such areas as medicine and power generation. As many of the experts who investigated the 1986 accident at Chernobyl begin to retire, we also need to safeguard against knowledge fragmentation and loss of expertise.

### The research

The Centre for Ecology & Hydrology (CEH) has over 35 years of experience in the highly specialised field of radioecology. Our research outputs and models play an important role in radiation protection worldwide, and we work across many countries to develop research support and knowledge transfer networks.

We co-developed, and now co-maintain, the freely available ERICA Tool, a software system that assesses the radiological risk to wildlife. It is now used worldwide by regulators, industry and consultants to conduct environmental risk assessments. Our training course on radiological environmental protection focuses on the application of the ERICA Tool.



*...[we are] certain that STAR\* has increased interest and awareness about radioecological issues in the European Community and beyond, strengthening future scientific excellence and societal relevance on this important topic ..."*

**External Advisory Board**

\*Strategy for Allied Radioecology (STAR) Performance Report: final report, 2015



*...an excellent and enjoyable [course] delivered by obvious experts in the field..."*

**Course participant**

Radiological protection of the environment, Centre for Ecology & Hydrology training course, 20-22 July 2015



ERICA training course, South Africa



Wildlife trap camera image  
TREE project, Chernobyl

*The CEH projects described here have multiple partners across the UK, Europe and worldwide that are too numerous to mention individually. Please visit our website for partner details.*

CEH is also a leading organisation in the development of databases and associated handbooks of radionuclide transfer to wildlife and the human food chain. These handbooks help operators and regulators to meet safety standards while realising the economic and social benefits of using radioactivity.

After the nuclear accidents at Chernobyl in 1986 and Fukushima Daiichi in 2011, we initiated sampling analysis programmes across Great Britain, using, in part, the geographical network of CEH's four sites. The data were supplied to government agencies.

We currently coordinate the TREE project, which conducts studies in the Chernobyl Exclusion Zone and elsewhere to investigate new ways of assessing the transfer and effect of radionuclides on the food chain and wildlife. The project is part of the UK-funded RATE programme that supports both research and capacity-building.

To help ensure the preservation and continuation of radioecological knowledge, we have created the Radioecology Exchange website through recent European-funded projects. With our collaborators we continue to develop this site and also provide training in environmental assessment methodologies.

**The outcomes**

CEH makes a significant input into international developments in radiological risk assessments, helping to safeguard both human beings and the environment and enabling the safe use of radioactivity:

- The ERICA Tool is the most commonly used environmental assessment model worldwide, used, for instance, in safety cases for site authorisations in the UK and Europe. We have trained about 200 regulators, industry and SME (small or medium enterprise) representatives, and researchers from over 20 countries in the tool's use and the concepts of environmental radiation protection.
- By drawing on the wider expertise of our scientists, CEH has been able to begin to investigate the combined effects of chemical and radiation pollution.
- We contributed to the Food Standards Agency's lifting of the post-Chernobyl restrictions on upland sheep farms (which cost the FSA over £600k per year).
- Our investigations on the impacts of Chernobyl are beginning to help in answering key questions about the impact of radiation in the environment.

With our collaborators, we are helping to ensure the preservation and continuation of radioecological knowledge. Our commitment to independent research secures our place at the forefront of the radioecological community.