

newsletter

Ecological damage risk capture and assessment

Adopted in the spring of 2004, the EU's Environmental Liability Directive introduced Europe-wide laws governing liability for ecological damage caused by commercial and industrial operations. Member states have until 30 April 2007 to implement the Directive in their national laws. The new categories of environmental damage will prove a challenge to underwriters when it comes to capturing and assessing risk.

Introduction

The new Directive came into power in April 2004 and establishes a basic framework for regulating liability for ecological damage. While focusing on prevention, it aims to ensure that the polluter implements and pays for adequate remediation measures if the worst comes to the worst.

The Directive covers environmental damage to waters, land, and biodiversity, ie species and natural habitats protected under the 1992 Habitats Directive and the 1979 Wild Birds Directive. The Habitats Directive currently lists around 800 species of flora and fauna, while the Wild Birds Directive provides protection to some 180 endangered species. The conservation areas established by the Habitats Directive currently include (as part of the Natura 2000 network) more than 15 500 individual areas, almost 15% of the entire territory of the EU. The EU is currently compiling a register of these areas that will include a quality code for each territory denoting the total number of protected species or the number of species subject to particular protection. It is important to note that many conservation areas are to be found alongside rivers. Unfortunately, this is also where many industrial facilities are situated – a fact that only goes to underline the significance of this field of underwriting.

Broadening the scope of risk assessment

As well as examining production facilities and existing or potential pollutants, an important parameter when assessing environmental liability risk has always been the location of an industrial site and its immediate environment. By extending liability to encompass ecological damage to natural habitats and protected species, the new EU Directive has raised the profile of locational risk considerably. Thus, in the future, all risk profiles must include an assessment of the surrounding ecological systems and capture data on eg distance to relevant conservation areas (fauna-flora habitats), and density and composition of water and wetlands. Against this backdrop, a geographical information system (GIS) can be a valuable instrument when assessing environmental risk.

When it comes to assessing the risk posed by hazardous substances, more emphasis should be placed on categories that represent a particular threat to the environment. In particular, substances which directly endanger flora and fauna, such as pesticides, should be examined in greater detail when profiling an industrial facility. Suitable assessment criteria would be parameters such as biodegradability or the potential for poisoning water-borne organisms.

Industrial accidents with ecological implications

As the following example shows, industrial operations can cause serious environmental damage:

In 1998, a dam retaining poisonous waste from a mine was breached, releasing large quantities of highly toxic mud into the surrounding area as far as the Doñana nature reserve. The soil, groundwater, plant and wildlife suffered considerable harm, and the clean-up operation cost the Spanish government more than EUR 240 million.

Other examples which highlight the considerable relevance to underwriting of such accidents were the Schweizerhalle and Baia Mare events in 1986 and 2000 respectively¹.

In accordance with EU legislation, member states are obliged to monitor potentially hazardous industrial activities (eg those where Seveso II facilities are involved) and report all serious incidents that occur within their sovereign territory to a central office of the EU Commission (Major Accident Hazards Bureau - MAHB), which then routes the information to the central MARS (Major Accident Reporting System) database.

Industrial sites that fall under the provisions of the EU's Seveso II Directive represent the main exposure in terms of ecological impairment. In Germany alone, around 1 600 industrial sites are subject to the extended notification obligations of the Seveso II Directive and, with that, represent a particular hazard to the public and the environment.

According to the reports in the aforementioned MARS database, 17% of accidents result in ecological damage stretching beyond the industrial site. In most cases, serious damage was done to ecological systems, eg fish dying or damage to vegetation. Since the start of the eighties, the MARS database has recorded 603 accidents, 100 of which resulted in ecological impairment.

Breakdown of accidents by branch of industry:

Chemicals	34
Oil and gas	16
Storage / transport	16
Food / agriculture	8
Others	7
Ceramics and metal processing	6
Paper-processing	5
Waste water / waste processing	6
Energy	2

Fig.: Ecological harm split by branch of industry (MARS database)

¹ Massive pollution of the River Rhine following a fire at a chemicals company in Basle (1986). Breaching of a dam at a Rumanian gold mine near to Baia Mare in 2000. Waste containing cyanide and heavy metals entered the rivers Somez, Theiss and Danube, destroying flora and fauna across a distance of more than 400 km.

Geographical information systems

Put simply, geographical information systems (GIS) are used to capture, analyse, manage and visualise spatial data. Such systems are also well-suited to the appraisal of environmental risks.

The environmental data obtained by the system can be mapped to models which show the geographical dissemination of air-, water- and soil-borne pollutants, thus simulating the potential ecological risk posed by a particular industrial site. The minimum data requirement are the coordinates of the site and the data records on the relevant conservation areas.

Information for the underwriter

Environmental impairment is a particularly complex problem because the implications of a loss event on ecological parameters such as biodiversity are difficult to quantify.

Virtually no loss experience exists for the new categories of damage for protected species and habitats defined in the EU Directive on Environmental Liability. And although estimating exposure is a key requirement when it comes to providing cover for a risk, it is a very difficult proposition in this case. Well-founded risk appraisal of major industrial facilities is a critical element in the underwriting process. Evaluating past accidents can serve as an initial approximation of exposure. Geographical information systems can make a valuable contribution to exposure rating and help standardise parameters in this field. When looking at the risk posed by high-exposure industrial facilities, therefore, an analysis of the site using GIS must be an integral part of the environmental risk analysis process.

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