



Pragmatic tool arrives

A new software package has been developed by the Australian Nuclear Science and Technology Organisation (ANSTO) to help tackle acid rock drainage and the release of metals into the environment.

AQUARISK — launched in early November by ANSTO and Hearne Scientific Software — involves a tiered assessment approach to predict pollutant releases while linking environmental engineering with ecological goals.

Potential users of the new product include mine managers, minerals industry consultants, researchers and downstream processors.

ANSTO environmental researcher Jim Twining said the software was developed from the need to estimate the ecological costs of economic and industrial development.

“Until now there hasn’t been a straightforward way to adequately assess the long-term ecosystem impact of environmental protection strategies industry puts in place,

making this software the first of its kind,” he explained.

“AQUARISK is in line with Australian water quality guidelines and provides a pragmatic and convenient means to perform site-specific ecological risk assessments to measure industrial discharges into water in a methodical and structured way.

“The software directly links on-site environmental engineering options with off-site ecological goals.”

Examples of AQUARISK’s predictions of ecological detriment were shown at sites affected by acid drainage in the Northern Territory and South Australia.

In both cases, Twining said, the software results clearly aligned with, but slightly over-estimated, the measured degree of ecological detriment.

“This proves AQUARISK was sufficiently accurate, whilst also being precautionary as there were limitations in available data, which is important to ensure the protection of biodiversity,” he explained.

“In addition, AQUARISK was used in a cost-benefit analysis of various remedial water quality options for the abandoned Rum Jungle uranium-copper mine.

“Here the cost of applying a range of water treatment options was compared against a scale, reflecting the predicated degree of biodiversity in the Finnis River.

“This gave stake holders an easier task in deciding the level of treatment needed for the required degree of ecological recovery.”

In addition, Twining said, AQUARISK could be used to save money, his comment coming after a variety of engineering options for water quality management (before any expenditure was incurred) were compared.

“The results showed that whilst cheap options were individually unable to achieve the required goals, they could be sufficient if applied simultaneously,” he explained.

“Also, the less expensive of the more complex solutions was shown to be adequate for the site, saving costs going for the more expensive option.”