The International Network for Acid Prevention (INAP) Progress Towards a Global Organization

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Abstract

Acid drainage (AD) is one of the most serious and potentially enduring environmental problems of the mining industry. Left unchecked, it can result in such extensive water quality impacts that it could well be this industry's most harmful legacy. No global estimation of the impact of acid drainage exists, however total liability costs for potentially acid generating wastes at mining sites in Australia, the USA, and Canada alone are estimated to be in the millions or even billions of dollars. Effectively dealing with acid drainage has been – and continues to be – a formidable challenge for which no global solutions currently exist.

Through continued effort, important advances have been made managing acid drainage by companies and research groups from around the world. In 1998, an industry based International Network for Acid Prevention (INAP) was created to facilitate the sharing of this knowledge. Through networking and coordinating information sharing on a global scale, INAP works to meet the challenge of dealing with acid drainage (AD) in a sustainable way and reducing its environmental liability.

The recent Mining, Minerals and Sustainable Development (MMSD) project, commissioned by the Global Mining Initiative (GMI), identified INAP as possessing the best known research initiatives aimed at preventing and controlling acid drainage. After 5 years of existence, INAP is renewing efforts to expand the global network and engage with AD groups on an international scale.

This paper provides more information on INAP, it's structure, activities, most recent research and events, and future plans.

Introduction - What is INAP?

Acid drainage (AD) is one of the most challenging environmental problems of the mining industry. It has the potential to have extensive and long-lasting water quality impacts. When considering how mining can contribute to an area's development in a sustainable way, AD is a primary concern for many operations. No global solutions exist to AD, and it continues to be a formidable challenge to the industry as a whole.

Much progress has been made dealing with AD by different groups around the world, such as the Mine Environment Neutral Drainage (MEND/NEDEM) in Canada. However, no international body existed to repeat MEND's success at a global level. At the International Conference on Acid Rock Drainage (ICARD) in Vancouver in 1997, informal meetings were held with industry, government, consulting, and university representatives to discuss ideas on an appropriate body to do this.

It was agreed that an industry group could develop a solid knowledge base covering collective experience. This would be invaluable in the dissemination of successful practices, the identification of knowledge gaps and the formation of effective research proposals. The sharing of information on past achievements and failures alone was viewed as sufficient justification for the formation of an AD group. Based on these discussions, in 1998 six mining companies officially founded the INAP network.

Since it's inception, INAP has successfully facilitated AD networking between companies. The recent Mining, Minerals and Sustainable Development (MMSD) project, commissioned by the Global Mining Initiative (GMI), identified INAP as possessing the best known

research initiatives aimed at preventing and controlling acid drainage. In recent times, the network has focussed efforts on engaging with important industry and non-industry AD groups that operate regionally around the world. INAP continues to facilitate information sharing and collaborative research on a global scale.

How is INAP Organized?

INAP members are mining companies who wish to work collaboratively to address acid drainage. INAP works via a Board made up of Senior Managers elected by the member companies. An Operating Committee (OpCom) made of Senior Technical Representatives from the member companies direct INAP's main activities. INAP activities are mostly carried out on a voluntary basis, only two positions are employed. A Technical Manager oversees the daily running of the network, and an Administrator supports the Board and Operating Committee.

INAP members currently include BHP Billiton, Rio Tinto, Noranda, Phelps Dodge, Barrick, INCO, Falconbridge, and Placer Dome.

Partner Regional Organisations

Many well-respected groups dealing with acid drainage exist in different countries around the world. The Australian Centre for Mining Environmental Research (ACMER) in Australia, the MEND/NEDEM Programme in Canada, and the Acid Drainage Technology Initiative (ADTI) in the U.S.A. have formed a partnership with INAP.

As an international organisation, INAP provides high-level support and the "global glue" that links regional activities, coordinates information flow, and identifies broad research needs. This brings additional resources to key regional initiatives and help minimise acid drainage research duplication. Regional organisations provide an important regional focus and a critical mass of activity in the countries in which they operate. They bring regional insight and help broaden the INAP network.

INAP and regional partners are also seeking potential partners in other regions where AD is an important issue such as Europe, South Africa, and South America. Potential partners need to have the ability to:

- Engage research providers, academics, and governments in their regions.
- Undertake specific research projects and workshops on a consensus basis.

INAP and partners hope to lead the way for a truly global network on AD.

INAP Activities

The promotion of communications is one of INAP's main activities and the principal means to do this is the web page. The site (www.inap.com.au) provides information on INAP and regional partner organization activities, events, as well as general acid drainage news. It also allows access to acid drainage expertise and information - for both operating site personnel and the public - from anywhere in the world. The collective experience of INAP members is available via the web-based forum in which the public is invited to participate. In addition, a database is currently being developed to store publicly available AD industry information such as environmental impact assessments (EIA), case studies, and site summaries.

The dissemination of information is also promoted through meetings and workshops. INAP funds workshops and organizes them with partners regional organisations. Past workshops have been held on wet covers, water treatment, waste characterization and co-disposal. INAP also participates in, and holds meetings around important regional acid drainage events such as the Mining Council of Australia Sustainable Development meeting held in Newcastle, Australia in November 2002, the British Columbia-MEND Acid Rock Drainage meeting held in Vancouver, 2002, and the Heap Leach Closure Workshop held in Elko, Nevada in March 2003. INAP also hopes to actively participate in meetings in other regions such as the International Mine Water Association

(IMWA) congress in Johannesburg in May, 2003 and the International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production (SWEMP) to be held in Turkey in May, 2004.

In addition, INAP is one of the major sponsors and participants at the International Conference on Acid Rock Drainage (ICARD) to be held in Cairns, Australia in July 2002. ICARDs are the pre-eminent conferences for discussion of cutting-edge research and innovative technologies relevant to acid drainage. INAP has been a sponsor and had active involvement in past ICARDs. In addition to being an important player during conferences, INAP is exploring how to paly a role in the continuity of ICARD, for example by becoming the permanent home of ICARD papers.

Over the years, INAP has instigated and funded a number of key acid drainage prediction, prevention, and management research projects. Cutting-edge technologies are studied, AD measures at specific sites are examined, and literature reviews are undertaken to summarise acid drainage state-of-the-art. Examples of recent projects include:

- The Diffusive Gradient in Thin-films (DGT) study. Toxicity of water affected by mining is generally gauged by measuring total or dissolved metal concentrations. INAP funded a study to use DGT technology, which allows for in situ determinations of free-ion activity of the metals. This provides a more accurate representation of biological response to metal-containing water.
- Co-disposal of mine waste. Several INAP studies have focussed on the use of co-disposed waste rock and tailings for the construction of covers on mine waste dumps. This new approach to prevent AD offers interesting possibilities as a practical, effective, and low cost method.
- The Rum Jungle Cover study. When water infiltration through the dry cover constructed at the Rum Jungle waste dump in Australia was noted, a study was initiated to understand the medium and long-term behaviour of covers. The project documents the lessons learned for the design, use and long-term risk of covers.
- Dry Cover systems are one of the most common preventative measures used to control AD. INAP funded a study to meet the need to improve the mining industry's ability to accurately predict the long-term performance of covers.

As a network involving a number of companies, INAP is a suitable vehicle to seed fund and establish the foundations for certain key, large-scale projects such as:

- The Scale-up Project. Very little large-scale testing of the behaviour of sulphide containing waste rock piles has been undertaken because of the high costs involved. Such testing would significantly improve acid drainage prediction techniques, and thus improve early management of AD. INAP has funded a review and business plan for a Scale-up project. A complete project is designed to compare laboratory and small-scale pile testing of selected waste rock with field-scale testing.
- World-wide Guide to AD. Part of INAP's future projects includes the creation of a guide that summarising the best science and a risk based approach to AD management from initial discovery through to final closure. The guide would be designed to assist industry in providing high levels of environmental protection, assist governments in the assessment and regulation, and enable the public to have a higher degree of confidence in, and understanding of, acid prevention practices. A high level of industry, government, and stakeholder engagement would be necessary to keep the guide as a 'living document', evolving with time and intimately tied to current best practice.

The Future of INAP

Since it's inception, the International Network for Acid Prevention has become a proactive, global leader in the acid drainage field. INAP

will continue to support the minimization of acid liabilities in the mining industry through it's international members, linkages with regional acid drainage organizations, projects relevant to operations in many different countries, and meetings and workshops held world-wide.

Key efforts moving forward will focus on facilitating an international dialogue on acid drainge with partner regional organizations and other international associations. Plans to expand the network are in place and include seeking regional partners in Europe, South Africa, and South America. Groups dealing with acid drainage are invited to participate with INAP at meetings and workshops, through the web site, or by contributing to the newsletter. By engaging with a wider stakeholder group, INAP will continue to promote AD technologies and practices and help the mining industry deal with one of it's most serious environmental impacts.

How to Contact INAP

For more information, contact INAP through the Operating Committee Chair, Ross Gallinger or the Technical Manager, Anne-Marie Fleury.

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