



The International Network for Acid Prevention

An organization of international mining companies that seeks the prevention of acid rock drainage (ARD) and metal leaching in support of responsible mineral development.

1. Summary
2. GARD Guide Update
3. 10th ICARD
4. Sulfate Treatment Workshop
5. Case Study Competition
6. Global Alliance
7. Global Soil-Cover Guidance Document
8. Technical Director's Report
9. Upcoming Events

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1. Summary

The first half of 2014 has been eventful for INAP. In February, following the 2014 SME Annual Meeting in Salt Lake City, INAP and ADTI members hosted a Sulfate Treatment Workshop that was very well attended with over a 120 attendees from 5 countries. In March, the technical director attended the Elko Mining Roundtable. He then met with the Animus River Stakeholder Group's brainstorming session in April to determine a path forward for their InnoCentive Challenge to treat the mine-influenced waters of the Animus River. INAP's Spring OpCom meeting was hosted by Freeport in Tucson, AZ. It included two very interesting field tours – the first to their Sierrita Pilot Plants and the next day to their reclamation site in Bisbee, AZ. The INAP Technical Director was invited to make a presentation on the GARD Guide to two Centers of Excellence in Science at the University of South Australia at the end of April. He also presented at a short course and delivered a plenary address at the 8th Australian Workshop on Acid and Metalliferous Drainage (AMD) in Adelaide, Australia.

INAP, with the support of the Global Alliance, continues to be actively involved in promoting the GARD Guide with short courses, presentations and workshops on the Guide. INAP has begun to focus its GARD Guide education and promotion on developing regions, such as South America, Africa and Asia. The 8th Australian AMD conference in Adelaide was hosted by SMIKT, April 28-May 2, 2014. At least six of the presenters referenced the GARD Guide and it was cited by others as well. IMWA, who will be participating with the 2015 ICARD in Santiago, Chile, is holding their 2014 conference in Xuzhou, China on August 18-22.

2. GARD Guide Update

INAP has decided **NOT** to officially translate the entire GARD Guide into other languages. After vetting Spanish translations, we feel that the integrity of the document may be compromised. Instead, our focus will be to regularly update the Guide to keep the English version at the forefront of ARD issues. As reported previously, the executive summary of the GARD Guide has been translated into Spanish and French with a possible Turkish version in the works, thanks to GA members ADTI and MEND.

Groups are welcome to translate sections to meet their needs for their own use.

The GARD Guide Secretariat continues to get requests for a hard copy of the GARD Guide. INAP is committed to maintain the Guide as a web-based document free to all users. However, we are in the process of creating a PDF version of the GARD Guide, which will enable easier printing of the GARD Guide for those who are interested. It is scheduled to be completed by mid-July 2014.

INAP is pleased by the acceptance of the GARD Guide by numerous stakeholders. In 2011, the US EPA had a large section of the GARD Guide translated into Spanish and added it as an appendix to the mining guidance document they prepared for Central American countries under the Central American Free Trade Act (CAFTA). Also, recently, INAP has been

requested by the U.S. BLM to develop a distance learning module on the GARD Guide for the training of field personnel.

The need for broader adoption of the GARD Guide best practices within the mining industry has also been recognized by the International Finance Corporation (IFC). At the PDAC Conference in Toronto, Jon Middleton, of IFC, stated that the GARD Guide would be referenced in future mining guidance documents. INAP has also been requested to participate in the review of the IFC Mining Guidance Document update.

In February of 2014, Dr. Anthony Hodge, president of the International Council of Mining and Metals (ICMM) stated that they want INAP's support to integrate the GARD Guide principles into their programs.

3. 10th ICARD

The historical and current development of mining in South America has generated important environmental impacts. As a result, both local communities and authorities are enforcing stricter environmental requirements on new and existing projects. Among the environmental impacts caused by mining activities, mine water management and acid mine drainage are major challenges and concerns.

In an effort to address these issues, Gecamin and SANAP will be hosting the 10th ICARD jointly with IMWA in Santiago, Chile on April 20-25, 2015. Short courses and workshops will be held on Monday and Tuesday. Registration and a Welcome Reception will be on Tuesday afternoon and evening. English will be the language of the conference with simultaneous translation available for the sessions on Wednesday through Friday. Saturday will include technical visits. The selection of papers is in process. Sponsorship and industry support have been positive.

The venue is the lovely Santiago Sheraton. The 10th ICARD promises to be a great program. Save the date: 4/20-25/2015, and join us in beautiful Santiago, Chile.

4. Sulfate Treatment Workshop

On February 27-28, 2014, INAP hosted a successful Sulfate Treatment Workshop in Salt Lake City. Over 120 participants from 5 different countries gathered for the 2-day event. The program consisted of 21 technical presentations, a panel discussion of 6 experts covering various aspects of sulphate impacts, community issues and industry responses. At the end of the morning session on the second day, the attendees broke into six groups to discuss a selected focus topic. At the conclusion of the break-out session, they reconvened to present and discuss their findings. Following the workshop the group toured Rio Tinto's Reverse Osmosis plant that is treating a groundwater sulfate plume.

Prior to the workshop an article on the Sulfate Workshop was published in the November edition of Mining Engineering. The success of the workshop was due to the energetic and able planning committee, composed of ADTI members and service providers. INAP also wants to thank our sponsors, Veolia Water, Golder and Associates and Arcadis as well as Brian Vinton and Ian Schofield of Rio Tinto for organizing a great field trip.

It has been recommended /requested to have a similar workshop at the 10th ICARD focusing on sulphate issues in South America.

5. Case Study Competition

INAP is working with the Global Alliance to organize an ARD prevention and mitigation case studies competition. These case studies would illustrate the methods and principles presented in the GARD Guide. INAP believes that these case studies are great teaching tools and that they illustrate commitment of mining companies to sustainable mining. Hence, they are useful tools in communicating with communities, regulators and NGOs. Thus, they are useful additions to the INAP website and future presentations.

The competition would be for the best brief (4-5 page) case study from the published literature. The contest would recognize both the author of the summary case study as well as the original authors. Many of the academic community believe that this is an excellent project for students and new hires to: 1) acquaint them with new and existing technologies and 2) seek support from the original authors and develop a mentor- apprentice relationship. The competition will be on two levels: 1) at the region organized by the GA members with INAP support, and 2) at the international level organized by INAP. All winners will be recognized at the 10th ICARD. Many of the Global Alliance members have already indicated that they are willing to participate in supporting this competition with volunteers and funds. These case studies may then be included in the INAP case study compendia.

INAP has also instituted a practice for member companies to present relevant case studies at each of our OpCom meetings. We believe that these examples may ultimately be used within the INAP case study compendia. Case studies that have been recently presented include “Lessons learned from the Rain Waste Repository” by Newmont Mining, “Design of the Goldstrike Soil Cover” by Johnny Zhan, Barrick Gold and the “Sierrita Pilot Plant Facility” by Brett Waterman, Freeport McMoRan Copper and Gold.

6. Global Alliance

INAP’s profile continues to grow internationally. The Global Alliance (GA) is an important part of this growth. The GA is key to having the GARD Guide promoted in their areas of the world. INAP reiterates that the success of the GARD Guide is dependent on its being used on the local level.

Countries throughout the world are developing and mandating more stringent regulations and mine closure criteria. Chile and Peru are examples of this. The question raised was how to engage regulators in understanding and using the GARD Guide information without making them feel “bought” by the mining companies.

The Global Alliance expressed interest in the development of a less technical, shorter GARD Guide for use with stakeholders who do not have the level of expertise required to understand the document adequately. Several of the groups already have outreach educational programs for use with schools.

Global Alliance Activities and Areas of Focus (as reported at the March 2014 GA Conference call)

- **ADTI – workbooks –“ Prediction” is nearing completion and “Sampling and Monitoring” workbook is finished**
 - Suggested to link workbooks on INAP web-site
 - Suggested to link workbooks on GARD Guide web-site
 - Suggested to reference all of the ADTI workbooks within the GARD Guide
 - Good task for ADTI
- **IMWA – journal which publishes over 100 papers annually, review of ideas on mine water treatment**
 - 12th IMWA Congress 2014 – CUMT, Xuzhou, China (Aug 18-22, 2014)
- **SANAP – 10th ICARD and IMWA 2015**
 - Santiago, Chile (April 20-25, 2015)
- **SMIKT – ongoing workshops**
 - Australian AMD conference, Adelaide (April 28-May 2, 2014)
 - Over 100 registrants, 43 papers, 4 posters
 - AMD monitoring post set up in Papua, New Guinea
 - Center of Excellence recently set up between the University of Queensland and several universities in Santiago, Chile
- **MEND – ongoing workshops including annual BC MEND conference**
 - Has some excellent case studies that could be used in the GA Case Study Contest
- **WRC – ongoing workshops regarding water issues**
 - Has many reports and documents which would be useful to GA members

A Global Alliance Conference Call will be held on June 24 and June 26, 2014.

7. Global Soil-Cover Guidance Document

The emphasis on mine-waste management at the 9th ICARD and other international meetings reflect the need to develop best practice in waste-management repositories including soil-cover system design guidance. In response to this issue, INAP has contracted with Michael O’Kane Consulting to prepare a guidance document for soil-cover systems covering multiple climate conditions where mining is prevalent, (Temperate, Arid, Semi-arid and Tropical). INAP has received a draft of the document, which is in review by INAP members. The final document is scheduled to be completed in March 2015, so that it can be presented at the 10th ICARD in April of 2015.

In addition to the staff of OKC, international mine-closure experts are participating as a technical advisory group to assure the quality and breadth of this guidance document. Significant use of case studies will be applied and generic case studies will be used to illustrate various design techniques that apply to the diverse climatic regions.

8. Technical Director’s Report – Terrence Chatwin

- **INAP is Creating Value for its Members**
 - By Learning from One Another
 - Presentations – True Value of Water – Anglo American, Goldstrike Covers – Barrick
 - Mine and Facility Tours – Sierrita Pilot Facility and Bisbee Mine Waste and Tailings Closure – Freeport
 - Sharing Lessons Learned – Risk Review Screening Program – Rio Tinto
 - By Being Recognized as Leaders in Sustainable Mining
 - By Expanding Capacity of all Stakeholders
 - GARD Guide recognized as the most up-to-date compilation of global ARD Prevention Best Practice
 - US EPA translated the GARD Guide Executive Summary into Spanish and attached it as an addendum to the Mining Guidance Document sent to the Central American governments under the CAFTA program.
 - At the 2013 PDAC in Toronto, IFC announced that the GARD Guide would be referenced in future IFC Mining Guidance Documents.
 - At the 2014 AMD Workshop in Adelaide, over half a dozen presentations quoted or used figures from the GARD Guide and all promoted its use.
 - INAP and the Global Alliance are sponsoring a Case Study Competition – Winners to be recognized at the 10th ICARD.
 - A brief synopsis of published case studies
 - Also recognizes the original author
 - To be collected into a compendium of case studies
 - 10th ICARD

- Submit abstracts by 6/16/14
- Soil Covers Guidance Document – 1st draft is being reviewed by INAP members
- INAP-ADTI Sulfate Treatment Workshop – Salt Lake City, UT – Feb 27-28, 2014
 - 120 Attendees, 3 sponsors, 22 presentations, panel discussion, break-out sessions and site tour
- By Growing Collaborative Partnerships
 - Global Alliance – is showing strong support for the promotion of the GARD Guide, the Case Study Competition and the Soil-Cover Guidance Document Review. WRC and others have declared the desire to host the 11th ICARD in South Africa
 - IFC – is referencing the GARD Guide in their mining guidance document and invited INAP to review and comment on their mining guidance documents
 - ICMM – is recognizing the value of the GARD Guide and our other products and desire to work with us to promote our efforts in ARD prevention
 - Animus River Stakeholder Group – working to select winners in the InnoCentive Challenge
- **Current Projects**
 - Workbook on Predicting ARD using Geochemical Mathematical Models
 - Continuation of the Diavik Country Rock Test Pile Program
 - Soil Cover System Design Guidance Document

9. Up-Coming Events

Don't miss the following upcoming meetings that relate to acid drainage:

- **2014 ASMR Annual Meeting**
June 14-19, 2014, Oklahoma City, Oklahoma, USA
- **12th IMWA Congress 2014**
August 18-22, 2014, Xuzhou, China
- **38th British Columbia Mine Reclamation Symposium**
September 22-25, 2014, Prince George, BC, Canada
- **Mine Closure 2014**
October 1-3, 2014, Johannesburg, SA
- **Tailings and Mine Waste '14**
October.5-8, 2014, Keystone, Colorado, USA

- **21st BC/MEND ARD Workshop**
December 3-4, 2014, Vancouver, BC, Canada
- **2015 SME Annual Meeting and Exhibition**
February 22-25, 2015, Denver, Colorado, USA
- **PDAC Convention**
March 1-4, 2015, Toronto, Ontario, Canada
- **Water Week Latin America 2015**
March 23-27, 2015, Vina del Mar, Chile
- **Mine Water Solutions 2015**
April 12-15, 2015 | Vancouver, Canada
- **10th ICARD and IMWA 2015**
April 20-25, 2015, Santiago, Chile
- **2015 ASMR Annual Meeting**
June 6-11, 2015, Lexington, Kentucky, USA