

An Apostil from the Secretary General

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Dear Colleagues and Friends

Have you ever given a thought to what a Zero Waste Mine (let's call it ZWM) would look like? You should, because at our IMWA Symposium in 2010, in Sydney, Nova Scotia, we are planning to have a "Discussion about the Zero Waste Mine" as a Conference Theme. Don't say that a ZWM is impossible. It might be complicated at first, but both the idea of flying to the moon and the Mercedes C111 were merely visions when people first thought about them. What does flying to the moon and the Mercedes C111 have in common? Well, both came into the light of closer human investigation 40 years ago. Both projects were well ahead of their time, but nowadays we are used to satellites, turbo-diesel engines, and cars with improved aerodynamics (low c_d -values).

Many concerns about mining evolve because mine sites usually look ugly (Fig. 1—not necessarily from our point of view, but to many others) and produce large amounts of waste. This combination results in anti-mining campaigns around the world and usually, the anti-mining groups attract more media attention than the mine operator; rightly in some cases, wrongly in many others. It is time to try to change our attitudes and develop new ideas and innovative methods that will allow us to reduce our mining waste, perhaps to zero.

So, let's start to think about what the term "Zero Waste Mine" would mean (all right, you used an internet search machine and found the term on the web. But what we need should be beyond—far beyond—what is discussed there). The last real improvement in reducing waste in mining operations was the High Density Sludge (HDS) process. And since then? Nothing! Do you remember when the HDS process was first published? You might guess that there is some link with the C111 and landing on moon? Yes, nearly

40 years ago, in 1970, Kostenbader and Haines published their paper on the HDS process. And while the space industry and the car industry have significantly improved over the last four decades, we have lagged behind. But why? Because we didn't even consider that a ZWM was possible. But why shouldn't we backfill our tailings into an open pit (you might call that idea naive, but it has been done in the past, why not more often) or our waste rocks back to where they came from? I know, I shouldn't call it waste rock, but refer to it as mine residues—but does a euphemism really change that it is: a waste material?

Why do I think that such a mine is possible? Because I am optimistic. The first sewage water treatment plant was constructed in 1882 (Frankfurt/Main, Germany), the first wetland to treat a mixture of mine water and sewage water was constructed in the 1960s (Othfresen, Germany), and passive treatment of mine water became established in the 1980s. It's time again for a complete new development: operating our mines without producing waste.

But how shall we proceed to develop the ZWM? Think about it! If I knew, I might be a rich man already. In one of the next issues of "Mine Water and the Environment," you might find a small Technical Communication addressing the ZWM and some ideas where we—as part of the mining community—might start our work. But don't repeat work that already has been done; as Thomas Wildeman recently said in Skellefteå: read the existing literature before you start your research. IMWA was founded 30 years ago. In our fourth decade of existence, we should all contribute towards the development of a ZWM. IMWA, INAP, The Global Alliance, PADRE, WISA, MEND, ACMER, ADTI—we have so many colleagues organised and willing to improve the quality of our environment. If only a small portion of the research we do is directed to eliminating



Fig. 1 Abandoned Naracauli mine site in Italy (Sardinia)

mine waste, we should be able achieve ZWM in less than a decade. I believe that our mining community should commit itself to achieving the goal, before this decade is out, of opening the first Zero Waste Mine and operating that mine safely for the future benefit of our Earth.

Glückauf

Christian Wolkersdorfer

ICARD 09—Securing the Future

Between the 23rd and the 26th of June 2009, the 8th International Conference on Acid Rock Drainage (ICARD) took place in Skellefteå, Sweden. Over 330 professionals from 31 countries attended the conference.

Plenary sessions each morning were followed by three to four parallel sessions. Over the four days of the conference, over 130 talks and 60 posters were presented. The most widely covered topics were AMD assessment and prediction, waste and water management, and mine closure strategies. In addition, talks were given on impact assessments, abandoned mines, and “mining and society”.

Field trips to Kiruna, the Skellefteå District, and Bergslagen (Fig. 2) were offered preceding the conference. The next ICARD will be in 2012 and will either be hosted by MEND in Ottawa, Canada, or ACMER/IMWA in Jackson, Mississippi, USA. Information about the conference will be posted at <http://www.securingskelleftea.se/>.

Romy Matthies, Newcastle upon Tyne, UK

New Mining E-journal Published

In mid-May, Verlag Glückauf in Germany announced a new specialist magazine named “Mining Reporter” at URL <http://www.mining-reporter.de>.

This e-journal is being made available free of charge by the well-known German publishing house VGE Verlag GmbH (Verlag Glückauf), specialised in publications for



Fig. 2 ICARD 2009 field trip to Bergslagen (photo: David Williams; The University of Queensland)

the mining and extractive industries. The list of contents includes technical articles on deep mining, tunnelling, opencast mining, mineral processing and preparation, the mining supplier industry and services sector, mining consultants and project planning.

Furthermore, the Mining Reporter portal includes additional features such as an industry press portal and a dedicated page for company presentations. Further opportunities are currently being planned and will be made available in the near future. This e-publication is the latest incarnation of the English-language version of Glückauf magazine that was published successfully as a trade-fair journal for fifty years, while the German edition has a pedigree that stretches back some 145 years.

Tradition with a future is the concept that will bring quality scientific knowledge to the global readership in a contemporary format. With an extensive network of industry contacts around the world, the New Mining Reporter hopes to achieve a wide international circulation.

Adapted from “The Mining Reporter Team”, May 2009

Abandoned Mines and the Water Environment

Environment Agency (2008): Abandoned mines and the water environment—ISBN: 978-1-84432-894-9

A recently published report by the Environment Agency, Scottish Environment Protection Agency (SEPA), and the Coal Authority outlines the current situation with respect to tackling pollution from abandoned mines.

Abandoned mines are one of the biggest pollution threats in Britain. Britain’s legacy of mining for coal, metal ores, and other minerals dates back to the Bronze Age. Many thousands of mines have been abandoned and now discharge mine water containing metals and other pollutants into rivers and aquifers. Other more recently closed mines are still filling up with groundwater and will start discharging in the future.

Nine percent of rivers in England and Wales, and 2% in Scotland are at risk of failing to meet their Water Framework Directive targets of good chemical and ecological status because of abandoned mines. These rivers carry some of the biggest discharges of metals such as cadmium, iron, copper, and zinc to the seas around Britain. 72% of failures to achieve the cadmium quality standard in freshwater are in mined areas. In some areas, important drinking water supply aquifers are polluted or threatened by plumes of sulphate and chloride.

The legal position in the UK is that no-one can be held liable for the pollution from most of these mines. Only since 1999 has the operator of a mine had any obligation to deal with the consequences of abandonment. The Environment Agency, SEPA, and Coal Authority are leading efforts to deal with this problem. Between them, they have made significant advances, mostly dealing with problems at coal mines. They have built 54 mine water treatment plants, which prevent 2,500 tonnes of iron and other metals from entering British rivers every year, protecting over 200 km of rivers and drinking water aquifers. Most of these plants are owned and operated by the Coal Authority, which works with the environment agencies to prioritise the worst discharges from closed deep coal mines and identify future problems.

Sustainable technology for treating coal mine water discharges is well developed, but cannot be used for most metal mine discharges. Some advances, including pilot-scale treatment plants, have been made but we need to develop passive treatment methods that do not rely on costly technology or substantial raw materials and power (Fig. 3). Abandoned metal mines are not only a source of pollution, they are a part of the British national heritage and an important reserve of biodiversity. Many sites are designated as Sites of Special Scientific Interest or Scheduled Ancient Monuments. The tin and copper mining areas of Cornwall



Fig. 3 Mine water treatment in a British reed bed (photo: Dave Johnston; Mine waters Technical Advisor, Environment Agency)

and West Devon have been declared a UNESCO World Heritage Site. This means that some treatment methods cannot be employed; however, a collaborative approach may help to deal with the pollution threat.

The report outlines further work needed in many areas, including:

- sustainable treatment methods for metal mines;
- a national strategy for cleaning up pollution from abandoned non-coal mines;
- technology to recover energy and resources from mine water and treatment residues;
- monitoring of mine water flow and quality at the catchment scale;
- understanding the impacts of past discharges on sediment quality and ecosystem health; and
- developing remedial methods that are sensitive to industrial heritage and other protected sites.

Copies of this report are available from: <http://publications.environment-agency.gov.uk> or enquiries@environment-agency.gov.uk modified from “Environment Agency”, Science Summary SCHO0508BNZT-E-P

New Members

We welcome our following new members:

Stuart BROWN, Redland Hill, United Kingdom
 Odile BRUNEEL, Montpellier Cedex 05, France
 Steve CHAPPELL, West Perth, Australia
 Ingrid DENNIS, Bloemfontein, South Africa
 Johannes DRIELSMA, Brussels, Belgium
 Michael DROBNIEWSKI, Herne, Germany
 Ryan ELLINGTON, Rivonia, South Africa
 Paul FERGUSON, Vancouver, Canada
 Keith FERGUSON, North Vancouver, Canada
 Janos FOLDESSY, Miskolc, Hungary
 Hagen FRANKENHOFF, Herne, Germany
 Denver HARPER, Bloomington, USA
 Anna KLUZA, Tom Price, Australia
 Lars-Åke LINDAHL, Stockholm, Sweden
 Herminio NIETO, Lima, Perú
 Bjorn OHLANDER, Luleå, Sweden
 Kent REEVES, Woodland, USA
 Jean ROBERGE, Ottawa, Canada
 Ken ROLLINGS, St. John's, Canada
 Angus ROWLAND, Rivonia, South Africa
 Tom RUTKOWSKI, Lakewood, USA
 John SENKO, Akron, USA
 Gideon STEYL, Bloemfontein, South Africa
 Teresa Maria Fernandes VALENTE, Braga, Portugal
 Magdalena WORSZA-KOZAK, Wrocław, Poland.

We hope that our new colleagues will benefit from and contribute to the extensive mine water knowledge and expertise gathered within our group of international experts. Please use your membership number in any correspondence, especially money transfers with IMWA. You can find it easily on your journal's address label, in front of the word "GES".

Lee C. Atkinson, Treasurer, Lakewood, Colorado, USA; Chris Wolkersdorfer, Secretary General, Cape Breton, Canada.

Back Issues

Members who recently joined IMWA can find a complete index (issues 1–28) of the *International Mine Water Association Journal* and *Mine Water and the Environment* at our web-page: www.IMWA.info. Volumes 17(1), 18(1), 19(2), 20(1), and 21(1), as well as proceedings of the 7 and 8th IMWA Congresses are still available for \$ 15.00 (U.S.) a copy. Some other back-issues are available on request—copies of single pages at \$ 0.60 (U.S.) each. Please add \$ 5.00 (U.S.) for shipping/handling. You can also access the journal on line, using <http://www.imwa.info/springer>. You can download an overview of European mine water issues from IMWA's web page or use the following Digital Object Identifier: <http://dx.doi.org/10.1007/s10230-005-0081-3>.

Past IMWA issues, published before the year 2000, can be accessed with your private login and password that you received with your last membership status or by e-mail.

Chris Wolkersdorfer, Sydney, Cape Breton, Canada.

EU money transfers

According to European law, EU money transfers (in EURO) must not cost more than national money transfers if you use IMWA's IBAN and BIC numbers (they must also be printed on your bank's money transfer statements). The banks are not allowed to charge extra costs. If they do so, please contact your national Complaint Body (see below). Please keep in mind: EU money transfers are not international money transfers! This law does not apply to Andorra, Monaco, Switzerland, San Marino, and the Holy See.

Here is the link to the EU payment legislation: http://www.imwa.info/eu_payment. If you have problems with your bank (and they often cause problems in this matter), your country might have a national Complaint Body: http://ec.europa.eu/internal_market/payments/crossborder/complaintbodies_en.htm. Please help yourself and IMWA to save money by complaining if your bank does not accept EU or SEPA money transfers.

Lee C. Atkinson, Treasurer, Lakewood, Colorado, USA; Chris Wolkersdorfer, Secretary General, Sydney, Cape Breton, Canada.

Forthcoming Events

September 7–9, 2009, Thatcher, Arizona, USA

Mine Water Treatment Workshop—Two days of presentations covering the following topics: HDS Precipitation, Ion Exchange, Reverse Osmosis, Sulfate Removal, Microbiological Treatment, Passive Treatment, ARD Prevention, Emulsion Passivation, Electrochemical Treatment, Modified Ferric Oxide, Sulfide Precipitation, Pit-Water Treatment; thomas_claridge@FMI.com.

September 14–18, 2009, Berlin/Potsdam, Germany

Second International FEFLOW User Conference (FEFLOW 2009); <http://feflow2009.dhi-wasy.de>; feflow2009@dhi-wasy.de.

September 15–17, 2009, Perth, Western Australia

Water in Mining 2009—From concentrator to community—protecting our license to operate. The aims for WIM 09 are to update progress in areas previously identified as important in WIM 03 and WIM 06 (and other national and international forums) and to raise emerging issues that require attention for research, management and policy formulation; <http://www.ausimm.com.au/content/docs/wim2009.pdf>; otetfong@ausimm.com.au.

September 13–17, 2009, Bariloche, Argentina

Eighteenth International Biohydrometallurgy Symposium; www.ibs2009.org.ar; info@ibs2009.org.ar

October 19–23, 2009, Pretoria, South Africa.

IMWA 2009 Symposium

The conference's 28 technical sessions have been divided into the following technical themes:

- Environmental best practice guidelines
- Mine closure
- Active mine water treatment
- Passive mine water treatment
- Management of brines and sludges
- Integrated water resources management
- Geochemistry and impact prediction
- Management and rehabilitation of mine residues
- Water management issues in open pit mining
- Water management issues in underground mining
- Management of radioactivity in mine water

The conference programme has been structured to incorporate a total of 90 papers, arranged as follows:

- 6 keynote papers and presentations
- 84 technical papers and presentations

A further 75 abstracts were selected for incorporation into the poster sessions.

The adjudication of abstracts and selection as either a full paper with oral presentation or as a poster, was undertaken by a peer review process through an International Scientific Committee with representatives from various countries around the world.

<http://www.IMWA.info>; imwa2009@IMWA.info

November 1–4 2009, Banff, Canada

Tailings and Mine Waste '09

The conference will bring together the technical community to discuss the state of the art with respect to tailings and mine wastes and to discuss issues related to the impact of mine wastes on the environment.

<http://www.ostrf.com/seminars>; malostaz@ualberta.ca
September 5–12 2010, Sydney, Nova Scotia, Canada.

IMWA 2010 Symposium

<http://IMWA2010.cbu.ca>; IMWA2010@cbu.ca
June 21–23 2011, Aberystwyth, Wales, UK

Frontiers in Environmental Geoscience

<http://www.minersoc.org/pages/meetings/frontiers-2011/frontiers-2011.html>; njp@aber.ac.uk

September 4–11 2011, Aachen, Germany

11th IMWA Congress

<http://www.IMWA.info>; imwa2011@IMWA.info

2012, Denpasar, Bali, Indonesia

IMWA 2012 Symposium

<http://www.IMWA.info>; imwa2012@IMWA.info