

# ASSOCIATION connections

AUSTRALASIAN SLAG (IRON & STEEL) ASSOCIATION NEWSLETTER

www.asa-inc.org.au

## EDITORIAL

### Water – the very stuff of life.


It is only in recent years with the country in drought that those who live in the major cities have come to realize that water may not be limitless. The inconvenience of not being able to wash the car, wash down the house and driveway or even water the garden has made us stop and recognise how precious water is.

Governments have begun to respond to higher demand and less certainty of supply from rainfall (at least at present) by proposing all kinds of alternative water conservation and reuse options. However, reduce, reuse and recycle seems OK for paper and cans but strikes a highly emotive cord when it comes to water. Whilst there

are many techniques for polishing water even effluent from sewage treatment plants there are significant emotional barriers to overcome. Meanwhile, research and practice is demonstrating the viability of using various slag products for treating water to be used in irrigation of parks and public spaces and in cleaning up runoff and other 'used' water before it returns to the environment. An example of practice in Brisbane and of research conducted in New Zealand is reported in the *Insider* section of this issue.

The association remains active in the advocacy from slag products. It has participated fully in the Cement Industry Action Plan just released and continues to advocate to Government and industry the significant benefits in sustainability we can



offer through our products. As part of this ongoing advocacy and education, we are developing a strong program for our 2007 Conference – *Sustainability, Construction Materials and Your bottom line* – more of this in upcoming issues of *Connections*. Read on and learn more about developments in the slag industry both here and internationally. 

## IRON AND STEEL SLAG INDUSTRY CONTRIBUTES TO CEMENT INDUSTRY ACTION PLAN

In releasing the **Cement Industry Action Agenda** (June 20 2006) the Hon Bob Baldwin, MP Parliamentary Secretary for Industry, Tourism and Resources stated that "The release today of, the Cement Industry Action Agenda, *Punching above its Weight*, will help Australia's billion dollar cement industry sustain itself over the long-term."

"Next to water, concrete is the most used product on earth," Mr Baldwin said. "Australia's cement industry makes possible such engineering and architectural icons as the Sydney Opera House, the Snowy

Mountains Scheme, and the Adelaide to Darwin railway."

"This Action Agenda will strengthen links with all levels of government and benefit the wider regional community," said Mr Baldwin. "It provides strategies for working together to reduce skills shortages; ensure socially and environmentally responsible operations; and address increasing competition from imports."

"A key challenge for the industry is to continue to demonstrate to the community that its plants will continue to operate in a



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Chris Leon, Rob Williams, Bob Baldwin and Oscar Gregory launching the Action Agenda.

manner that is socially and environmentally responsible," said Mr Baldwin. "I am pleased that the industry is choosing to improve the sustainability of its operations by reducing greenhouse gas emissions and increasing the use of alternative fuels and raw materials."

Recognising the key part played by Iron and Steel slag products in support of this

Strategy, the Association actively participated in the development of the Action Agenda by Oscar Gregory from Bluescope Steel and Craig Heidrich – Executive Director of ASA

Importantly for the Iron and Steel Slag Industry, the resource sustainability goal is to;

- Increase the uptake of alternatives to fossil fuels, secondary materials and

supplementary cementitious materials by 2012

- to meet or exceed the quantities identified in the Technology Pathway Report.

And includes within the industry commitments. In relation to supplementary cementitious materials (SCM's), to:

- work with relevant industry associations to identify and overcome barriers to increased uptake of SCM's and, through joint representation, work to have any regulatory barriers addressed; and
- seek to increase the use of SCM's in cement and concrete to at least 29 per cent by volume by 2012.

For industry comment, contact Dr. Robyn Bain, Chief Executive, Cement Industry Federation on 6260 7222. For a copy of *Punching Above its Weight: the Cement Industry Action Agenda*, visit [www.industry.gov.au](http://www.industry.gov.au)

## *“Next to water, concrete is the most used product on earth”*

### Association Education activities attract further invitations

In line with our ongoing industry education program, we negotiated an invitation from the RTA NSW to deliver industry information on the following topics;

- 1 slag cements for concrete pavements
- 2 slag aggregate for concrete pavements
- 3 slag as a concrete sand
- 4 slag roadbases (steel furnace, blast furnace, bound and unbound)
- 5 slag aggregates for asphalt and sprayed sealing
- 6 long term availability and consistency of properties

This Industry presentation was made on Thursday, 17 August 2006.

Seminars are tailored to meet the specific needs of the specific sponsoring organizations. Association

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## PLAN NOW FOR **ASA'S 2007 CONFERENCE** – SUSTAINABILITY, CONSTRUCTION MATERIALS AND YOUR BOTTOM LINE

The organising committee is well advanced in its plans, and has put in place the people and facilities to make this a must for people in the construction industry, designers and specifiers as well as key people from industry and Government.

The conference will be held on May 4th 2007 Conference to be held at the Shangrila Hotel in the Rocks area of Sydney venue.

The general theme of the conference is Sustainability. Much is happening here and overseas that demonstrates the significant role that slag products can and do play in lessening the construction industry's environmental footprint on the earth and contributing to the durability of structures. Many well known structures in this country

and world wide have used slag products from the iron and steel industry to advantage.

Conference organizing committee members are bringing together a program that enables the Association to present updates on research and well as showcasing significant project and product applications. Given the Association's international connections and interaction with Government the presentations will inform and offer opportunities to improve the bottom line of commercial enterprises and achieve the sustainability objectives that the community increasingly demands.

Don't miss out on this significant event, block the time in your calendar and register your interest now

# Granulate ensures supply of irrigation water at Rocks Riverside Park in Brisbane



Rocks Riverside Park, Brisbane



image: www.rootzone.com.au

Vertical filter bed at Rocks Riverside Park Brisbane Dec 2004 when the reeds were newly planted.



Rocks Riverside Park, Brisbane

**Rootzone Australia** and Brisbane water entered into a project to provide class A water from sewage in a new 26 hectare irrigation urban park development on the banks of the Brisbane River. The aim was to model development in a sustainable manner and to irrigate the park by means of recycled treated waste water of some kind.

Of the options considered, water mining and low technology reed bed treatment was chosen on the basis of its low environmental footprint, ability to function unattended for prolonged periods with stable output parameters and delivery of water at less than half the cost of other options. Construction of the Rootzone Australia

(RTZA) vertical and horizontal filter beds was completed in September 2004, with Commissioning during January 2005. The total area of both beds is 2500sqm and together they contain around 2000T of granulate supplied by Sunstate Cement.

The subsurface flow constructed wetlands have a more than 20 year history of use in Europe for treating domestic and municipal waste water and in the USA for the treatment of municipal sewage in small villages. The design of this installation includes the use of RTZA's proprietary media and slightly more complex process paths design, able to meet South Australian and Queensland draft class A water guidelines.

Subsurface flow constructed wetlands offer the potential advantages of virtually zero energy requirements, no need for operators or skilled technicians, long periods between inspections and minimal maintenance and the ability to withstand relatively large swings in both volume and input quality without deleterious effect on output quality.

(Source: Tony Towndrow Rootzone Australia: [www.rootzone.com.au](http://www.rootzone.com.au))



# Iron and Steel Slag research demonstrates potential for treatment of Stormwater Pollution

**Impervious surfaces** are a major contributor to urban stormwater impacts. Stormwater has been identified as a major contributor to water quality degradation as it can have significant concentrations of harmful pollutants that can adversely affect the receiving aquatic environment. Materials that can remove harmful pollutants and can be incorporated into stormwater treatment devices offer part of the urban stormwater solution. Previous research into the use of iron and steel furnace slag aggregates as a water filtration medium has demonstrated high adsorptive capacity for various metals and phosphorus and the removal of fine particulates in the source solution. This project tested filter material designed to remove contaminants while maintaining high hydraulic performance and provide data on the potential environmental effects and effectiveness of different iron and steel slags produced in New Zealand and Australia for remediation of stormwater pollution.

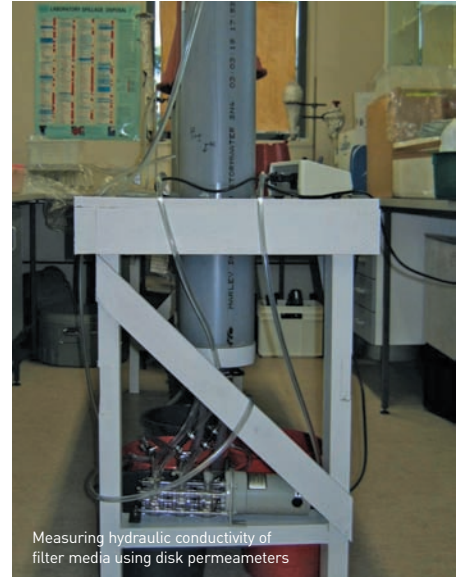
All the six slags tested have potential as stormwater filter media as they reduced the concentrations of arsenic cadmium, copper, lead, nickel, zinc, phosphorus and nitrogen in the artificial stormwater.

The best slag for neutralising the acidity in stormwater are BF1 and MS1 (limited to runoff pH >4). The MS1 steadily declined in



Applying artificial stormwater to filter media columns

pH value (from 8 to 6) indicating less buffering capacity than the other slags and so should only be used to treat runoff with pH >4 (i.e. not acid industrial runoff). EAF1 is the best slag for use where the receiving waters are already alkaline. Slags with leachate of pH >9 could be used where the receiving waters are already alkaline, such as in areas of limestone. However, site-specific ecological risk assessment may be needed for slag use in and around small water bodies with limited dilution volume due to high pH adversely affecting aquatic plant growth. The slags with leachate above pH 10



Measuring hydraulic conductivity of filter media using disk permeameters

are also probably suited to treating highly acidic stormwater such as found in acid mine drainage (Ziemkiewicz 1998).

Literature research also indicates slag may be suitable for treatment of landfill leachate, domestic, industrial and agricultural wastewater, and acid mine drainage, as well as treatment of stormwater.

(Source: An Assessment of Iron and Steel Slag for treatment of Stormwater Pollution – Landcare Research (NZ) research report for Australasian Slag Association – this report can be accessed on line at [www.asa-inc.org.au](http://www.asa-inc.org.au))

### Company Members

A primary role of our Association is to bring together Slag Producers, Processors, Customers and Suppliers to the Slag industry. Our activities cover Technical Developments, Plant Operations and Processes, Education and Promotion. If you would like more information on the Association and how you can become involved, just complete the information section at the end of this newsletter. Current membership is as listed below.

Australian Steel Mill Services Pty  
BlueScope Steel Ltd (Port Kembla)

Brambles Equipment Ltd  
Brambles Industrial Services Ltd (Whyalla)  
Concrete Pty Ltd  
CSIRO CMIT  
EcoCem Pty Ltd  
Fractum ApS  
HiSmelt Ltd  
Holcim NZ Ltd  
Hunter Mill Services Pty Ltd  
Komatsu Australia Ltd  
MultiServ Australasia Pty Ltd  
MultiServ (UK)  
OneSteel Limited (Whyalla)  
University of Newcastle

University of Wollongong  
Premium Tyre Service Pty Ltd  
Readymix Holdings Pty Ltd  
Roads & Traffic Authority of NSW  
Slag Cement Sdn Bhd (Malaysia)  
Smorgon Steel Ltd (Melbourne)  
Smorgon Steel Ltd (Newcastle)  
Steel Cement Ltd  
SteelServ Ltd (NZ)  
Steelstone Services  
Sunstate Cement Ltd  
Wormald Fire Systems Ltd

**Personal Members**  
Anderson, L

Dobson, G  
Gregory, G  
Hanley, P (Hon.)  
Hinczak, Dr, I (Hon.)  
James, W (Hon.)  
Jones, D E (Hon.)  
Heaton, B (Hon.)  
Maric, M  
Prosser, S D (Hon.)  
Venour, M (Hon.)/Hon

### Related Associations

National Slag Association (US)  
Nippon Slag Association (Japan)  
European Slag Association (EU)

# MATERIAL CLASSIFICATION DATA SHEETS PROVIDE CERTAINTY

As a co-product from the manufacture of iron and steel, slag products have been widely used but not always well understood. There has from time to time been the erroneous assumption, that because these materials are co products of manufacture that there must be some uncertainty about their environmental performance not withstanding their strongly acknowledged contribution to the construction industry.

To properly inform debate on this matter, the slag industry, over the years, has conducted extensive environmental leachate testing research on blast furnace, steel furnace and electric arc furnace slag. In 2004 the Association on behalf of its members conducted further extensive research reported in *Australasian (iron and steel) Slag Association Inc. Material Classification of Iron and Steel Slag By-product Waste Classification Investigation*

*Report 2004*. This report is available by contacting the Association.

In order to make the conclusions of this work more generally available, a series of Material Classification Data Sheets, one each for blast furnace, steel furnace and electric arc furnace slags. These are available from member companies and from the Association.

Under NSW Environmental law, it is the producer's responsibility to classified materials they produce. The conclusions of this current work are in line with earlier testing i.e. based on experimental results all of the slag products tested can be classified by producers as INERT.

Copies of the data sheets and other environmental research reports on iron and steel slags are available from member companies or from the Association website (environmental section) at [www.asa-inc.org.au](http://www.asa-inc.org.au)

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members provide well qualified people from their staff to deliver the presentations. This ensures that there is a connect between the customer and supplier and that questions are able to be answered on the basis of real time experience.

For some years now, the Association has conducted presentations at a number of Universities as well as providing in house seminars to customers, specifiers, designers and Government agencies. To negotiate a seminar to suit your particular needs, please Contact ASA and discuss the date, content, duration and location. Seminars are provided at no cost to the recipient organizations and in some cases can contribute to an individual's ongoing professional development commitment.

For further information email [info@asa-inc.org.au](mailto:info@asa-inc.org.au) or view the website at [www.asa-inc.org.au](http://www.asa-inc.org.au)

## PRESENTATIONS:

A key focus of the Association is ensuring that Universities and their Engineering and Architecture students and lecturers have an appreciation of slag products. Tailored presentations are also available upon request for representatives from Engineering and

Construction organizations Government Departments and Councils.

### Up Coming:

- University of Wollongong
- University of NSW
- Monash University

- Australian Defence Forces Academy
- Queensland University
- Melbourne University
- University of Western Sydney
- University of Newcastle
- Australian National University

Australasian Slag Association: **Technical Seminars**



To arrange a technical presentation for your workplace contact [info@asa-inc.org.au](mailto:info@asa-inc.org.au)

A one day **Conference** on

**Sustainability, Construction Materials and your Bottom Line**

# SUSTAINABILITY & SLAG

**4th May 2007 Shangri-La Hotel 176 Cumberland Street The Rocks Sydney**

Register your interest today at [www.asa-inc.org.au](http://www.asa-inc.org.au)



# CSIRO RESTRUCTURES DIVISION OF MANUFACTURING AND INFRASTRUCTURE TECHNOLOGY


Over many years, Association member organisations have been involved with the CSIRO in North Ryde NSW and Highett in Victoria, conducting joint and contract research work, investigating and developing uses for supplementary cementitious material in concrete. News of the cessation of cementitious material research at North Ryde NSW raised questions in the industry about future contract and joint research in this area. The following response to our enquiry comes

from Vicki Tutungi (Chief, CSIRO Manufacturing & Materials Technology).

The "CSIRO has not closed its division of Manufacturing and Infrastructure Technology, but it has been restructured and renamed. The newly named division of Manufacturing and Materials Technology will continue to operate out of North Ryde and Highett. Manufacturing and Materials Technology will also continue to maintain some expertise in cementitious materials, but all of this work will be

undertaken at Highett.

As I am sure you will understand, it is sub-optimal for CSIRO to continue to maintain two small but similar capabilities on two separate sites. CSIRO has been consolidating its activities across the whole organization over the last 3 years and this is part of the overall consolidation. Our lead scientist in this field is Dr Kwesi Sagoe-Crentsil who, of course is Highett based and can be contacted on 03 9252 6350. We will also continue to offer a range of consulting services to the building and construction industry around product development and acceptance."

Further information: details on the services offered [www.cmit.csiro.au](http://www.cmit.csiro.au) or contact John Clampett on 03 9545 6122 

## SLAG – "THE ULTIMATE RENEWABLE MINERAL RESOURCE"

The video has proved to be very useful to many members. New additional footage has been incorporated demonstrating the beneficial properties of slag in various large-scale projects completed in recent years. The video (15mins duration) outlines slag's historical beginnings through to the various types of slag produced in a modern production process today.

Copies are available to members at a cost of \$15.00 each, non-members \$20.00 plus postage and handling.

## CD TECHNICAL RESOURCES

ASA produces a number of high quality technical guides (i.e. the new – "A Guide to the use of Iron and Steel Slag in Roads" and the "Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing") bulletins, newsletters and general industry information on current issues. The Education and Promotion Committee has developed a Technical Compendium on CD; an invaluable readily accessible reference tool for engineers, specifiers, consultants, government authorities, and slag users. A limited number of hard copies are also available. Copies are available to members at a cost of \$15.00 each, non members \$20.00 – plus postage and handling. Updated CD's will be available for registered users as new material is added.



## AUSTRALASIA NEWS

### AUSTRALASIAN RESEARCH REPORT WELCOME IN EUROPE

A message from Euroslag group:

"I thank you for your letter by which you send us the report "An Assessment of Iron and Steel Slag for treatment of Stormwater Pollution – Landcare Research". May be you know that in Germany and in other states of Europe (Netherlands, Sweden) we are discussing very intensive about the environmental behaviour of blast furnace and steel slags. Therefore it was very interesting for us to read the results of the report and the ability to use slags as filter media for stormwater. I think it would be useful for us to think about such an application in Europe too."

**Heribert Motz**

**Chairman of EUROSLAG**

**JIM YOUNG** – Has taken up a new appointment as General Manager Blue Circle Southern Cement for Victoria and Tasmania as from 3rd July 2006. Prior to this he was General



Manager of Sunstate Cement in Brisbane. Jim has strongly supported ASA, hosting a meeting each year of the Technical and Education and Promotion

Committees at Sunstate Cement Offices.

**GARETH WARD** has been appointed the new General Manager Sunstate Cement in Brisbane. Gareth was previously Production Manager Cement and lime for Adelaide Brighton in Western Australia.



**VIJAY JOSHI** – ASMS – Following a number of presentations with local authorities in India, Vijay Joshi demonstrated how to use slag in road construction. Last month Vijay visited for a week long holiday in India. He used local, Electric Arc Furnace Slag, screened to produce 40 mm well graded road base product. Local council and Public Works Department (PWD) have never used slag before in road construction. Vijay oversaw slag roadbase production, structural pavement design and construction.

(Source: ASMS newsletter)

### AWARD FOR UPGRADE OF ILLAWARRA REGIONAL AIRPORT

Shellharbour City Council was awarded the Design and/or Construction of a Local Government/Public Works Project Award for its "Upgrade of Illawarra Regional Airport" project at

the IPWEA NSW Division Excellence Awards on Monday 22nd May 2006 in Sydney.

This project attracted four new aviation related businesses to the airport. The airport runway has been upgraded to cater for the introduction of Regular Passenger Transport (RPT) operators. This \$1,000,000 upgrade was constructed with assistance from Council's partners – the NSW Department of State and Regional Development, Wollongong City Council, Kiama Municipal Council, BlueScope Steel, Cleary Bros and ASMS. (Source: ASMS newsletter)

## INTERNATIONAL NEWS

The 5th European Slag Conference – Inviting Australasian participation

The board of EUROSLAG has decided to plan the 5th European Slag Conference for 19-21. September 2007 in Luxembourg.

The conference will include reports from the main steel producing countries in the world, we would be very happy if an Australian representative would be able to give us a report about the "Slag situation" in your country and/or about the results of the research work you sent us. A call for papers for the conference was sent out in May and is available through the ASA Office or:

Details of the conference will be published in due time on the EUROSLAG website [www.euroslag.com](http://www.euroslag.com) 