



INDUSTRY PROGRAMS



Australian and New Zealand Biosolids Partnership E-News

The Australian and New Zealand Biosolids Partnership (ANZBP) supporting the sustainable management of biosolids in Australia and New Zealand

We are pleased to send you the regular E-news covering significant issues, trends, events and resources in biosolids management as well as recent progress in the ANZBP project.

As specialists working in biosolids management, you are invited to share information on biosolids developments within your locality, as well as resources and activities that may be valuable to other ABP subscribers. These contributions, plus your comments on this E-news or the ABP website www.biosolids.com.au can be forwarded to the ABP Project Team- Andrew Speers aspeers@awa.asn.au or Ann Hinchliffe ahinchliffe@awa.asn.au.

Introduction from the Project Manager

I would like to open by firstly welcoming New Plymouth District Council and Tauranga City Council as Members of the Partnership. Both these Councils joined the ANZBP following a seminar given by some members in Auckland last month. It is great to have wider representation in New Zealand. We are hopeful of a few more members joining soon.

Members might note the name change of the Partnership reflecting greater NZ involvement

The Auckland Seminar was so successful that the ANZBP's Advisory Board is keen to hold similar events around the country. The next one will be in Hobart on 26th November, followed by Queensland in February.

I would also like to welcome Wannon Water from Victoria as a member. It is great to see the Partnership continue to grow.

I would also like to make some other introductions:

Firstly to our new Advisory Board members, Brendan Hanigan (Southern Water, Tasmania), Kevin Conna (Sydney Water, replacing Phil Broad) and Michael Naughton (Barwon Water, Victoria).

Secondly, I would like to introduce Kathleen Gleeson who has joined AWA and has responsibility, among other things, for helping to support the ANZBP.

There are several notable achievements to report in this *Newsletter*. Among these is the finalisation of the *Regulatory Review* which examined guidelines across Australian and New Zealand to highlight improvements that could be made. A report appears below.

Similarly, the *Community Attitudinal Survey* – designed facilitate the development of targeted communication campaigns to communities is well underway. A report on progress is also available in this *Newsletter*.

In the next week the ANZBP will also launch its new website. This will be clear and easier to use and will be updated more regularly with news and information.

In conclusion I sadly have to report the departure of our Chairman, Allen Gale who has left Goulburn Valley Water to take up a new post overseas. I wish Allen well and thank him of his tireless efforts in establishing the Partnership. The good news is that Nancy Penney from the Water Corporation (WA) has taken over as Chair.

I hope you find the newsletter of value, questions and comments can be directed to either myself, Andrew Speers, at aspeers@awa.asn.au or Kathleen Gleeson at kgleeson@awa.asn.au

ANZBP Information Roadshow

Water New Zealand and The Australian Water Association jointly sponsored an information seminar for the ANZBP at Watercare's Mangere Wastewater Treatment Plant on 6th October.

The seminar introduced the ANZBP to councils, utilities, consultancies and other relevant organisations. Presentations were given by Jim Bradley of MWH Global NZ on the status of biosolids management in New Zealand, Paul Darvodelsky of Pollution Solutions and Designs on the Regulatory Review recently undertaken by the ANZBP, and Allen Gale – former Chair of the ANZBP – on research being conducted by the ANZBP on community attitudes to biosolids. Project Manager Andrew Speers also provided information on how New Zealand biosolids managers and users can join the Partnership.

The seminar was a great success and generated significant interest in the Partnership. As a result, the Board has recommended such information seminars be conducted throughout Australia as well. The ANZBP Information Roadshow will travel the country beginning with Tasmania on Thursday 26th November. This seminar will coincide with the AWA Galah Dinner & Debate in Hobart and will be held at the Tasmanian Chamber of Commerce and Industry from 1pm. Presentations similar to those given in New Zealand will be given by Brendan Hanigan of Southern Water Tasmania, who will discuss biosolids management in Australia; Paul Darvodelsky who will look at the regulatory review; and Andrew Speers who will give information on subscriptions. There is no cost for the seminar; attendants just need to cover their own travel and accommodation expenses. Existing members are encouraged to attend or to invite individuals or organisations who may be interested. For more information or to register for the seminar contact Andrew Speers on aspeers@awa.asn.au.

Dates for the remainder of the country have not yet been finalised, but the intention is to take the Roadshow to Brisbane and Melbourne in February 2010, to Sydney in June 2010, to Perth in October 2010 and to Adelaide at a date to be advised. More information will be distributed to subscribers at a later date. To register your interest, please contact Andrew at the above address.

Regulatory Review to be Published

The review of biosolids regulations in Australia and New Zealand is now at the printer. It will be distributed to all members of the ANZBP shortly. This is an important piece of work. As members will recall its intent was to identify inconsistencies in regulation among the guidelines that exist in the various jurisdictions. This serves two purposes:

- To identify inconsistencies that are justified (e.g. inconsistencies might exist due to different soil conditions in different areas) and which can then be explained to the community; and
- To identify inconsistencies that can't be justified and which, therefore, could be rationalised.

The *Review* looked at all guidelines directly applicable to biosolids management in Australia and New Zealand, and at some seminal documents from overseas (e.g. the US 40CFR Part 503 rule and the Safe Sludge Matrix).

It considered whether consistent regional, national, or international (Australia and New Zealand) approaches are desirable.

The *Review* includes some fundamental recommendations. While these are still to be considered by the ANZBP Advisory Board and by members themselves, they provide food for thought. Among the key findings:

- There are inconsistencies in guidelines from region to region, and in many cases there is no need for these inconsistencies to exist
- It would be in the interest of all – producers, users and regulators – to improve consistency and regulators and other stakeholders should work together to achieve this end

- Odour associated with biosolids is the factor that will most reduce the community's confidence in the use of biosolids. Many guidelines are deficient in the way they deal with odour reduction. Further research in this area is justified.
- Australian and New Zealand guidelines are significantly more stringent than the European and US regulations.
- Guidelines should be based on sound science with a proportionate risk basis and should have as their objective sustainable biosolids use;
- The list of regulated compounds should be reviewed and can be significantly reduced for most circumstances;
- Guidelines should have only two contaminant grades (A and B) and two pathogen grades (A and B) with any biosolids un-stabilised, unsuitable for use or ungraded remaining unclassified;
- Sampling requirements should be streamlined;
- Management restrictions and guidance should be reduced and be more performance based rather than descriptive (e.g. instead of limiting storage time at the farm, rely on a performance objective for prevention of fly strike, odour, groundwater pollution or the like);
- Allowable end uses and associated controls should be rationalised on the basis practicality and operating experience gained over the past 20 years.

The *Regulatory Review* will be posted to the subscribers-only ANZBP Website once it's published.

Later in the year consideration will be given as to how these recommendations should be responded to. One option might include development of a "Best-Practice" manual; another would be to develop a "Model Regulation".

A copy of the brief for this project is available in the Research Section of the ANZBP website.

Overview of Community Attitudinal Survey

The second major research initiative currently being undertaken is a review of Community Attitudes to biosolids management. This project is being done by Urbis Pty Ltd which has a wealth of experience in social research.

The research is being carried out in stages. The first is to speak to key stakeholders (regulators, producers, users, transporters, academics, etc) to understand the issues they consider are most critical in framing community attitudes. From this will be identified list of questions and discussion points that will be used as the basis for both qualitative and quantitative analysis of community attitudes.

Importantly, the sample set of community groups interviewed is biased as to give greater weight to those groups who may in some way have been affected by biosolids management in the past. This is done in recognition that community attitudes in this area are fickle. While, generally, it could be expected that people will generally be in favour of processes that reduce waste and recycle nutrients, their views may change rapidly and completely when faced with the use of biosolids near their own regions. Thus, more people are recruited from areas in which biosolids may be generated or used than more remote areas so that we may better understand the particular biosolids-related issues of concern raised by the community.

Particular attention will be paid in the project to Maori cultural values with respect to the management of human-derived waste, as such values will be particularly important in shaping approaches in New Zealand.

This research is being undertaken so that biosolids producers – the ANZBP members – can develop communication strategies that respond directly to community concerns. Interestingly, both the Water Environment Research Federation and the Australian Research Centre for Water In Society have highlighted the need to understand community views in developing such strategies. A the Executive Summary of the WERF Report and the ARCWIS paper are available in the Research Section of the subscribers-only section of the website

The Community Attitudinal Survey will be completed by the end of January/early February and the full report will be available to Subscribers at that time.

A copy of the brief for this project is available in the Research Section of the ANZBP website.

Literature Compendium

The ANZBP will shortly issue a tender for the compilation of a Literature Compendium. The Compendium is intended to identify published work relevant to the ANZBP's activities and to rank the outcomes according to relevance and importance. The Compendium will cover research undertaken in the past five years – unless there is a particularly important piece of work that lies just outside this timeframe – and will be focussed on leading-edge treatment processes from the point of stabilisation, processing and refinement, transportation, incineration and co-generation, application, and community attitudes (e.g. well received communications campaigns and those that have failed).

As with other ANZBP tenders, this brief has been sent out to only a select group of consultants. However, if a subscriber has the capacity to undertake this work, or has used a consultant in the past that they would recommend, there is no barrier to further groups participating. Contact project Manager, Andrew Speers for further information (aspeers@awa.asn.au)

A copy of the brief is available in the Research Section of the subscribers-only website.

Name change, from ABP to ANZBP

The Australasian Biosolids Partnership (ABP) has officially been renamed The Australian & New Zealand Biosolids Partnership. The name change reflects more explicitly the valuable contribution made by New Zealand in sustainable biosolids management. Correspondence, marketing material and the website are being gradually altered to reflect this change.

ABP Research Corner

This is a new section of the newsletter and aims to provide a snapshot of some of the latest research results relating to topical issues in the sustainable use of biosolids. Every newsletter, selected research articles published in the period since the last newsletter will be selected and the results and implications highlighted. Detailed results can be sourced from the citations provided if the material raises your interest.

An initial search of the ISI Web of Science literature database indicated that since January 2009 there were 447 scientific articles published with either "sludge" or "biosolids" in the title. Here are two we thought might be interesting based on current issues facing beneficial use of biosolids in Australia and New Zealand.

Carballa M, Omil F, Lema JM (2009) Influence of different pretreatments on anaerobically digested sludge characteristics: Suitability for final disposal. *Water Air and Soil Pollution* 199, 311-321.

This paper discusses the link between biosolids treatment processes and their suitability for final beneficial use, and indicates the change to a more life-cycle thinking in the treatment process design for biosolids. Conventional biosolids treatment - mesophilic digestion (37oC) followed by thermophilic digestion (55oC) – was compared to alkaline pre-treatment (pH12 for 24h), thermal treatment (130oC for 1h) and ozonation (20 mg O3/g TSS for 2h) in terms of the physical and chemical quality of the final biosolids produced. The alkaline and thermal treatments provided the biosolid materials with the best qualities for agricultural reuse due to lower pathogen levels and better dewatering properties.

Sanchez ME, Lindao E, Margaleff D, Martinez O, Moran A (2009) Bio-fuels and bio-char production from pyrolysis of sewage sludge. *Journal of Residuals Science and Technology* 6, 35-41.

This paper represents what we might see in the future at our conferences here in Australia, where pyrolysis of wastewater sludges might be examined as a processing option in the future, to fit into a C-based economy. Pyrolysis is combustion in an inert atmosphere and can be modified to produce different qualities and quantities of gases, oils or solid charcoal materials (biochar). There is much interest in biochar use in agriculture in Australia (and globally) at present, due to the potential C credits possible. This paper presents a chemical characterisation and energy value of the gaseous, oil-based and char-type products after pyrolysis of anaerobically stabilised sewage sludge. The gas produced had a reasonable calorific value, the oils were low S and could have application for fuel oil, and the biochar also had a good calorific value but contained high sulphur, making off gases a potential problem. Agricultural applications of the biochar were suggested, but not evaluated in this paper.

Master Class

AWA's Master Classes aim to boost professional skills and expertise in management and delivery of critical water services. Some classes are focussed on specific technical competencies, others on delivery, financing, leadership and legal aspects of water businesses. All the classes combine a mix of theory and practice, including class exercise and discussions.

On November 30th and December 1st in Sydney a Master Class on **Disposal and Reuse of Water and Wastewater Treatment Wastes**. There are still a few places available for this important event.

As regulators tighten discharge requirements and landfill sites are closer or removed far from urban centres, pressure builds on water utility and industry service providers on finding viable, technical solutions. Top of the list needs to be the focus on sustainable solutions – reuse, re-constitution or re-deployment of a waste product – so that the process is seen as value-add rather than an expense for an institution or utility.

Speakers include:

- Paul Darvodelsky, PSD (and member of the Advisory Board of the ANZBP)
- Prof. Howard Fallowfield, Flinders University, SA
- Neil Paler, Osmoflo
- Surietha Katupitiya, Sydney Water
- Brace Boydon, Black and Veatch
- Georgina Kelly, NSW Dept of Primary Industry

Topics include:

- Water treatment sludges -Alum and ferric
- Fouling on membranes, cleaning and autopsy
- Stormwater harvesting and concentrate management
- Innovative ways of disposing of water treatment sludges
- Emissions from wastewater treatment processes and their capture
- High-rate algal ponds for energy production

Master Classes are run over two days and there is a maximum of 30 attendees per class to encourage discussion among participants. This Class will look at solutions for dealing with a major problem for the water and wastewater industry – its wastes and by-products.

Register on line at www.awa.asn.au/events/masterclass

Website upgrade

The biosolids website is currently undergoing a major upgrade and renovation. Up until recently much of the data and information on the site was outdated or inaccessible, and so it was decided that both the public and subscriber sites would be given a facelift.

The new site will be live shortly, and up until that time the old site will be fully accessible. The new site will be modernised with a more user friendly layout, and will be much more visually appealing than the previous site. Content will be added and updated where applicable. Members are strongly encouraged to contribute content to the new site, and can contact the ANZBP project team, Andrew Speers (aspeers@awa.asn.au) or Kathleen Gleeson (kgleeson@awa.asn.au) if they wish to do so.

Due to the change, login details will be slightly different. Your username to login to the subscriber's site will remain the same; however your password will change to 'biosolids'. Once you login initially with this password, you should change your password. If you require assistance with login details or with the site itself, contact Andrew Speers on the details above.

Biosolids case studies for ANZBP website

As part of the website upgrade that is currently underway, we are hoping to significantly increase the number of subscriber case studies on the site. Case study templates were recently forwarded to all members, and they are also available to download in the case study section of the biosolids website. We would be grateful if you could fill out the form if you are involved in a case that would be of interest to other members, and return it to aspeers@awa.asn.au or kgleeson@awa.asn.au.

Related to this, we hope to add more photos to the public component of the website. Making the site aesthetically appealing is important in encouraging visitors to explore the various pages. If you have relevant photos that could be used on the ANZBP website, please forward them to Andrew Speers or Kathleen Gleeson at the above address.

Odour Issues an On-going Problem

It appears that a high dewatered solids content and the potential for odour generation go hand-in-hand. The move to more advanced sewage treatment processes results in a greater rate of biosolids production. In turn, operational costs rise due to the cost of transport and end use application and management of biosolids, leading to pressure to achieve better dewatering of solids. Centrifuges are the most common form of dewatering among major utilities nationwide. More and more frequently, however centrifugal dewatering produces biosolids that are extremely odorous. The research shows there is a very distinct curve in odour potential which peaks at about 4 days, after which the odour potential reduces.

Research indicates the cause is likely to be the metabolism of proteins released during dewatering through mechanical lysis and whilst in storage. These form a range of sulphides, with methyl and dimethyl sulphide being some of the worst. The research shows there is a very distinct curve in odour potential which peaks at about 3-7 days, after which the odour potential reduces.

Research indicates that any centrifuge will give greater odour potential – the difference between high speed and conventional centrifuges being relatively small. On the other hand a research shows a belt filter press gives relatively low odour potential, which is attributed to the low shear. This must be balanced however by the fact that belt filter presses often give a lower dewatered solids content and resulting high mass of biosolids to be managed.

To date the mechanism which causes greater odour and potential solutions have not been defined or identified. In addition and anecdotally there are a large number of centrifuge plants which operate around the world without producing an odorous biosolids. So it appears there must also be an upstream process cause or possibly even other causes which finally result in more odorous biosolids.

This is a further area of potential research for the ANZBP.

New members to the ANZBP

Since the previous newsletter, Wannon Water has become a subscribing member of the ANZBP. Wannon Water operates in the southeast corner of Victoria and has a strong biosolids reuse record.

We have also been joined by New Plymouth District Council based in the Taranaki region on the west coast of the New Zealand's North Island and by Tauranga City Council on the Bay of Plenty

The ANZBP Advisory Board now has three new members: Michael Naughton, Coordinator, Recycled Water & Biosolids at Barwon Water; Brendan Hanigan, Leader, Urban Wastewater Treatment at Southern Water; and Kevin Conna, Manager, Operations Services at Sydney Water Corporation.

Engaging ANZBP subscribers

In the coming weeks and months a greater effort will be made to engage directly with subscribers to the ANZBP. This will start with a teleconference between the Project Manager and subscribers scheduled for Wednesday 25th November at 3pm EDST. Topics for discussion during this teleconference include priority issues for the Partnership, the ANZBP website, and the Partnership's progress. All subscribers are strongly encouraged to be involved. You can register your intention to join the teleconference by contacting Andrew Speers aspeers@awa.asn.au.

In addition, a face-to-face subscribers meeting has been proposed to coincide with the Biosolids Specialty Conference V in Sydney on Wednesday 2nd June 2010. The meeting will look specifically at outcomes of the regulatory review and the community attitudinal survey.

International, Australian & New Zealand news

Peak phosphorous is approaching according to the Australian Farm Journal. Peak phosphorous – when demand outstrips supply – is predicted to occur between 2040 and 2100. This would have a huge impact on Australian agriculture unless farmers adapt to new ways of growing and fertilising crops. This could mean using less phosphate-based fertilisers, reducing fertiliser loss between application and harvesting, or replacing commercial fertiliser with other alternatives such as biosolids or recycled urine. Australia has limited reserves of

phosphorous in Queensland, but the majority of phosphate used in Australia is imported, an expensive and short term option. A later article in Stock Journal claimed that land application of biosolids was the most viable solution to the impending phosphate shortage.

Water Corporation has supplied 4000 dry tonnes of biosolids to **The Forest Product Commission (FPC)** to be applied in the **Myalup Pine Plantation**. According to the Department of Environment and Conservation, and the FPC, an application rate of 30 dry tonnes per hectare boosts pine tree growth without impacting on ground water. The spreading ends in November.

EnerTech Environmental opened The United States' first commercial **biosolids-to-energy** facility. The plant turns treated sewage sludge into fuel. The finished product is 95% solids and interchangeable with coal, and is utilised by cement kilns in Southern California. At full capacity the plant will be able to take 700 tonnes of biosolids to produce 170 tonnes of fuel per day.

A campaign by the non profit **Centre for Food Safety** has resulted in a **public outcry** in San Francisco over the Public Utilities Commission's decision to hand out free biosolids compost. This is despite the fact that the biosolids comply with appropriate guidelines and have been acknowledged as safe, even by the Centre for Food Safety.

A couple who sold their home and hobby farm in Warkworth, Ontario, Canada did so due to **illnesses** they claim were the result of biosolids application on a neighbouring farm. The couple claim biosolids were causative of the respiratory disease, kidney dysfunction and diarrhoea they experienced, and they have been vocal opponents of the land application of biosolids since.

Guidelines relating to the use of biosolids and sludge in **Canada** are in a state of flux in various parts of the country, primarily as a result of public pressure. Stricter guidelines for the land application and storage of biosolids were announced in Nova Scotia, while an outright ban was placed on the use of sludge as a fertiliser in Elgin.

For more on these news items and others, see the news section of the ANZBP subscribers' site.