

IMPROVING THE BIOSOLIDS MANAGEMENT SECTOR, THE AUSTRALIAN AND NEW ZEALAND BIOSOLIDS PARTNERSHIP, 2007 - 2012

G.M. Priest and A.J.H. Speers
Australian Water Association, Sydney, NSW, Australia

ABSTRACT

This paper examines the objectives and activities of the Australian and New Zealand Biosolids Partnership (ANZBP) during its five years of operation, 2007-2012, and explores its future direction and activities.

The relationship of the ANZBP's activities and research achievements are described in this paper, as is its relevance to the future objectives of the partnership and the biosolids management industry. The ANZBP believes that many of the biosolids management issues faced by Australian members are similar to those in New Zealand, and that many of the lessons of its members are transferable between countries.

This paper also reviews the Australian Water Associations' *Biosolids Management Position Paper*, developed in collaboration with the ANZBP, and will explore the activities of the ANZBP to encourage regulatory change in Australia and New Zealand.

KEYWORDS

Biosolids Management, Partnership, Community Engagement, Regulation

1 INTRODUCTION

The sustainable management of biosolids is an imperative. In Australia and New Zealand a number of emerging challenges are putting pressure on biosolids producers and managers, including:

- Increasing volumes of biosolids, arising from improved treatment processes, as well as significant quantities of stockpiled materials (especially in Melbourne).
- Rising landfill costs which make disposal of biosolids increasingly expensive. These costs are likely to increase further with the imposition of a price on carbon emissions, directing biosolids to other uses.
- Restrictions on the ways in which biosolids may be used and the qualities that must be achieved for various applications.
- Community pressure to manage waste streams sustainably juxtaposed with anxiety about the impacts of biosolids use on community and ecological health.
- Cultural concerns about the use, transport and disposal of human-derived waste materials outside the catchment of origin (Tāngata Whenua issues in New Zealand).

To respond to these challenges, members of the Australian and New Zealand water industry came together in 2007 to form the ANZBP. The ANZBP is a collective of utilities, consultants, academics and government bodies committed to the sustainable management of biosolids. Managed by the Australian Water Association (AWA), the ANZBP is guided by an Advisory Board of industry representatives.

The objectives of the ANZBP are to:

- Support public engagement with respect to the sustainable management of biosolids in Australia.
- Support the Australian and New Zealand water industry on technical and regulatory components of biosolids management.
- Establish a global network of parties interested in the sustainable management of biosolids.

The ANZBP's primary purpose is to support the water industry in informing both the industry and the wider community on appropriate biosolids management, and ultimate ownership of the ANZBP resides with the water industry. The core membership of the ANZBP is water utilities, which provides the majority of the financial support to enable the ANZBP to undertake the many components of the program.

The ANZBP membership also includes research and academic institutions whose research outcomes are critical in establishing the technical credibility of biosolids management approaches. A growing area of membership is smaller organisations engaged in biosolids management, such as consulting bodies and agricultural solutions businesses.

These objectives are achieved by:

- Engagement with stakeholders to help them make informed decisions regarding biosolids management.
- Formation of relationships with technical experts from across Australia and New Zealand.
- Provision of contacts for technical advice on biosolids related concerns/issues.
- Maintenance of the ANZBP Website – both the subscriber and public sites.
- Provision of legal support and tools for subscribers.
- Liaison with relevant Cooperative Research Centres, Crown Research Institutes and like research organizations.
- Advocating for the regulatory consistency throughout the region.

The ANZBP membership is core to the achievement of all these objectives. Whilst the ANZBP Administrative Team guides activities, the membership is consulted and engaged in most projects.

Major research products produced by the ANZBP for its members include the following:

- A Review of Biosolids Guidelines in Australian and New Zealand.
- A Survey of Community Attitudes to the Use and Management of Biosolids.
- An investigation of Australian and New Zealand Biosolids Production and End Use.

The information gathered in these resources, and others, form the basis for the communications activities of the ANZBP and support the development of other products, most importantly the AWA Biosolids Management Position Paper.

2 ACTIVITIES OF THE ANZBP

The ANZBP aims to provide the definitive resources to manage biosolids across Australia and New Zealand. The ANZBP has progressively built up its knowledge base during its existence, having completed a number of research projects in recent years.

Major resources of the ANZBP include the following products for members:

- *A Review of Biosolids Guidelines in Australian and New Zealand* which includes recommendations for development of a model regulation to align biosolids management guidelines.
- *A Survey of Community Attitudes to the Use and Management of Biosolids* which identifies level of acceptance of use of biosolids, matters of critical concern to the community, and who they see as the most credible sources of information.
- *A Biosolids Legal Register* documenting all of the regulatory and legislative requirements for biosolids management Australia-wide.
- *A Biosolids Literature Compendium* of current research in biosolids downstream of the point of stabilisation.
- A discussion paper on *Biosolids, Climate Change and Carbon Management*, exploring the interactions between biosolids management and the Australian Government's Clean Energy Futures Legislation Package and the corresponding Carbon Pricing Scheme.
- An investigation of *Australian and New Zealand Biosolids Production and End Use*, the first accurate research done in quantifying the source, processing method and final end-use of biosolids produced nationally.

These products have been addressed at previous Biosolids Specialty Conferences and Ozwater events, and will not be discussed here. Further information can be found on the ANZBP website: www.biosolids.com.au.

2.1 A COMMON POSITION

An objective of the ANZBP is to provide information to promote community acceptance of biosolids; it's therefore vital to understand community objections such that they can be taken into account in developing effective, widely-endorsed and sustainable biosolids management options. The aforementioned Survey of Community Attitudes to the Use and Management of Biosolids has helped to inform ANZBP policy in regard to communicating with the public.

Upon the completion of the projects discussed above, the ANZBP recognised the need for a document that discusses the current state of biosolids management and provides a vision of sustainable biosolids management. The ANZBP chose to communicate its position that biosolids are a valuable product that can be used safely and sustainably. Their use is consistent with the principle of waste minimisation and use and that applying biosolids to land closes the nutrient cycle, reducing land degradation and returning fertilisers to the soil. The ANZBP therefore approached AWA to offer support and leadership in the development of an industry position paper which could be used as a communications tool.

The AWA, supported by its Board and a committee of ANZBP members, developed a position paper which declares that:

- Biosolids are a valuable by-product of the wastewater treatment process and that their use represents an appropriate use of a resource and closes the 'nutrient loop'.
- Biosolids are currently regulated to protect human health and the environment; noting that there is much room for improvement to make the biosolids management process more efficient.

- Governments should seek to introduce consistency in regulation and that AWA/ANZBP will encourage governments to introduce reforms accordingly.

The Position Paper is a tool that will serve to educate those unfamiliar with biosolids management practices and delivers a scientifically justified message and position. The information will also assist those familiar with biosolids management practices, as sufficient technical data is included to provide an informative resource. The information provided by AWA in the paper seeks to be factual, unbiased and open.

The following is the core narrative of the Position Paper:

Biosolids is a by-product of the sewage treatment process. Managed in line with carefully designed practices for treatment and application, biosolids is a safe and potentially useful soil-like material that has relatively high nutrient value and soil enhancement characteristics.

There are a number of uses to which biosolids may be put. The use chosen reflects the quality of the biosolids produced. Lower grades of biosolids may be used for landfill, while the highest grades are used for agricultural application.

Inorganic sources of phosphorus and essential macro-nutrient are declining globally and prices are likely to rise in future. Biosolids are nutrient-rich, so their use may help to defray the increasing cost of phosphorus. Use of biosolids also represents a closing of the nutrient 'loop', returning nutrients to the land from which they were derived in the first place.

Research by the ANZBP has suggested that the community is generally supportive of the use of biosolids, with those (such as farmers, and householders who live in areas in which biosolids are used or produced) who have had some experience or contact with biosolids being more supportive than the general community.

Australia has some of the strictest regulations and guidelines to control the use of biosolids, significantly stricter than those that apply in the EU or the United States. The multi-barrier approach that is characteristic of these regulations ensures that biosolids are safe for the use for which they are intended.

While Australian regulations are strict, unnecessary inconsistencies exist between the various states and territories and the Commonwealth. These inconsistencies cause confusion for consumers and the community generally and add to costs. There are strong grounds for a review of regulations to reduce inconsistencies, while maintaining the effectiveness of regulations in protection community and environmental health and wellbeing (AWA, 2012).

With an established industry position, a key objective of the ANZBP is therefore to promote sustainable use of biosolids and support the development of an improved regulatory structure for Australia and New Zealand, exploring opportunities to harmonise the numerous regulations and management requirements across the jurisdictions.

The Position Paper will form the core of an ANZBP communications campaign to raise awareness of biosolids management and use amongst all levels of Government, the general public and other parties identified by the ANZBP and AWA.

The intended audience of the Position Paper is quite broad, ranging from established ANZBP stakeholders through to parties that are likely to have very little awareness of biosolids. The ANZBP Communications Strategy, developed in 2011, provides a plan to disseminate the Position Paper to a variety of interest groups.

Members of Parliament and Government bodies are core groups that have been rated as having high information needs. Members of Parliament that are associated (via a portfolio), or have an interest in agriculture and/or management of water and waste will be a priority to reach.

Findings from the ANZBP Community Attitudinal Survey indicate there is a generally positive attitude within the community on biosolids which places the ANZBP in a good position.

The ANZBP's research report, *Community Attitudes to the Use and Management of Biosolids* (ANZBP, 2010) however, found an inherent threat in the overall lack of knowledge about biosolids in the community is misinformation or a fear campaign. This poses a risk where an ill-informed community could quickly escalate into a negative market response from the food retailers (to protect their position and customers) to the detriment of the biosolids industry. The ANZBP therefore needs to manage communications cautiously.

Another group that the ANZBP would like to include in communications activities is food quality assurance organisations and food-retailers. Food quality assurance is generally based on sound science, though it can also be influenced by industry groups and food retailers. The Position Paper therefore addresses health and safety concerns and provides it in a non-partisan manner for consideration. The ANZBP is currently working with Freshcare, the national, on-farm assurance program for the Australian fresh produce industry, to ensure the correct information is available to make informed decisions.

The Position Paper will be instrumental in responding to media enquiries for both the ANZBP and its members.

2.2 WORKING WITH REGULATORS

The ANZBP seeks to promote regulator and government support for efficient and sustainable biosolids management at both federal and state levels. Indeed the ANZBP has a number of regulators in its membership and has set membership fees at a level which encourages participation. Through its membership and communication, the ANZBP maintains close liaison with relevant regulatory bodies to pursue optimum biosolids management structures and approaches.

To promote these relationships and objectives, a workshop was held at AWA's Biosolids Specialty Conference VI in June 2012, where ANZBP Subscribers and various biosolids management stakeholders sat down with Australian State Biosolids regulators and explored the difficulties biosolids producers, users and regulators face in efficiently managing biosolids as a resource.

A common concern of attendees was the multiple levels of regulator involvement in biosolids approval and management, and the confusion that often arises due to jurisdictional differences, varied sampling regimes, land application requirements and technology approvals processes.

The group did note that the Australian biosolids industry and its regulators did work well together and clear and strong messages of prevention of harm existed.

The group discussion proposed a number of regulatory changes that would address some of the identified confusion. A suggested industry regulatory structure that was documented at the meeting consisted of the following:

- An Australian National Biosolids Management Guideline, which unlike the current National Guideline, would be enforceable. The Guideline would be a high level performance based document which focuses on mitigating offenses and poor management outcomes, and consider the need to manage risk effectively.
- Simple State based regulation that promulgates the application of the National Guideline.

The recommendations of this workshop demonstrate an appetite for change in the sector, and support the recommendations of the AWA Position Paper. The ANZBP will drive the regulatory change agenda and ensure the correct stakeholders are engaged in the process.

The ANZBP would also like to open this discussion to New Zealand and explore the potential for a shared Guideline.

2.3 COLLABORATIVE EFFORTS

The ANZBP seeks to nurture National and International partnerships through its ongoing communications and funding of research activities.

The ANZBP is supporting networking domestically through roadshows – highly successful workshops which continue to draw excellent attendance numbers. To mid-2012, the ANZBP had run around a dozen events across Australia and in New Zealand during the preceding 4 years. Events include a combination of presentations on ANZBP research activities and updates from ANZBP members undertaking their own research. Feedback from the events has been extremely positive, ensuring the events will continue to be a key activity of the ANZBP. The ANZBP will be present at the Land Treatment Collective Conference in Blenheim in April 2013.

In a further effort to promote improved collaboration across Australia, regular email communications reach a broad network of members and stakeholders. This service has been important to keep the ANZBP and other biosolids groups aware of each-others activities.

A close relationship exists between the ANZBP, the AWA Biosolids Specialist Network, the Victorian Water Industry Association's Biosolids Taskgroup and the NSW Biosolids Taskforce. To date this has allowed collaborative work to be carried out and coordinated responses provided to enquiries. State-based Biosolids committees currently play a valuable role in addressing issues of particular need for their state that the ANZBP may not be able to address at a National level.

The ANZBP Project Manager plays a role in providing a central contact point for enquiries from the public, industry and government. Due to its repository of information and access to a network of members, the ANZBP has been able to support members in the provision of information and responses to media enquiries.

It should be noted that whilst the ANZBP provides a support in its communications role for the biosolids industry, it does not lead communication. Each organisation will need to tailor its messages and should therefore be responsible for delivery of their own specific messages.

3 FUTURE ACTIVITIES & RESEARCH

In recent years the ANZBP has sought to move towards a leveraged funding model, where alliances enable co-contribution of funds (or effort) to complete projects. Funding and project contribution may therefore be sought from Government, through forming partnerships with Research Institutions/Universities and linkages with International biosolids management bodies.

To date the ANZBP has focused on undertaking research to develop a better understand of the environment in which it must operate, including regulatory considerations, perception of biosolids and an awareness of existing technical research. These projects informed the developmental years of the ANZBP, assisted the development of research and communication strategies, and most importantly, identified further gaps in knowledge within the biosolids management community.

In a new phase of research activity, the ANZBP is now keen to move on from this foundation research and establish a solid base of technical understanding. The results of this research will be valued tools for members, but will also be instrumental in creating confidence in the biosolids industry by delivering results on a national level.

Research themes identified by the ANZBP as priorities for the future have been articulated in the following technical projects, either under development or currently being delivered:

- **Odour Generation from Biosolids:** An investigation of the sources of, and ability to control odour generated while treating and storing biosolids. Odour has been identified as a key risk factor for public acceptance in the use of biosolids. Guidelines are also deficient in the way they address odour management issues. The ANZBP is supporting work currently being undertaken by the Water Corporation of Western Australia.

- **Organic Compounds in Biosolids:** This research will help to determine the presence of trace organics in biosolids and whether they pose any risk to human health or the environment. This project is being undertaken by the Water Environment Research Foundation (US) and is supported by the ANZBP.
- **Alternative Uses for Biosolids:** A research project is being considered that will explore the suitability of biosolids products beyond current beneficial uses. Outcomes of this project may further inform marketing and promotion of biosolids products by ANZBP members.
- **Volatile Solids Destruction in Storage Lagoons:** Determination of the volatile solids destruction, which occurs in liquid biosolids (sludge) lagoons as a function of storage time and other key parameters (temperature, configuration, mixing). This project could be expanded in future to examine solids destruction in dewatered biosolids (sludge) storage.
- **Industrial Contaminant Inputs to Biosolids:** This research will help to determine the sources, levels and impacts of Industrial contaminants in biosolids and identify means to better manage contaminant inputs.
- **Pathogen Pathways to Biosolids:** This research would be of a similar vein to the Industrial Contaminants project, however with a focus on Pathogen inputs to biosolids and risk management.

Input is currently being sought from members (via a round of telephone consultation) to identify other topics of research or activities, with suggestions to participate in future research welcomed.

With its members, the ANZBP is exploring the development and delivery of a capacity building event. The suggested audience for training are regulators and those new to the biosolids management industry. Potential content considered to date includes general wastewater treatment processes, biosolids management practices and benefits, state and federal regulation, basic calculations and risk management.

The ANZBP is also considering facilitating an international investigation tour in the future. The international network of the ANZBP would assist in the development of an informative schedule of travel. Demand for such a trip is currently being explored.

The ANZBP recognizes the need to pursue greater involvement with NZ biosolids management bodies and intends to undertake this by delivering targeted projects of more relevance to the NZ water industry, including reviewing the needs of NZ biosolids production facilities and an improved understanding of Tāngata Whenua issues. The ANZBP Project Manager welcomes contact from members and non-members alike to assist this process.

4 CONCLUSIONS

The ANZBP is an example of a successful Industry endeavour. Whilst there have been some excellent products developed in recent years to assist members and stakeholders, much effort is still required to encourage regulatory change in the biosolids management space.

Sustainable biosolids management is an imperative. The ANZBP is therefore undertaking research that aims to both improve member knowledge and practice, and also boost community confidence.

Inconsistency in regulation can work against community acceptance of biosolids use. Inconsistency in regulation also causes confusion and increase costs for the industry. Different classifications, monitoring requirements and the like can make biosolids management difficult and more costly, particularly in border areas. Guidelines across Australia and New Zealand should therefore be consistent, be based on science and should support the sustainable use of biosolids.

The AWA Biosolids Management Position Paper has been developed to communicate this need and will be the key tool of the ANZBP to further this position.

ACKNOWLEDGEMENTS

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