



Technology suppliers' perspectives

based on Street map 8

Water is being recycled all over Australia for a variety of uses. To protect the health of people and the environment, treatment technologies used in water recycling schemes need to meet the performance targets specified in the *Australian Guidelines for Water Recycling*. Across Australia, there is currently no consistent approach to validating treatment technologies against these guidelines. The Australian Water Recycling Centre of Excellence has engaged Water Quality Research Australia to deliver a national framework for validating treatment technologies.

Manufacturers, resellers and installers of treatment technologies have to date played an important role in recycling water safely and reliably. They are highly supportive of the national framework because of the clarity it will provide, the potential competitive advantage of having a validated technology, and the time and cost savings in having to validate a technology only once.



Photo sourced from Seqwater

What is validation?

The *Australian Guidelines for Water Recycling (2006)* require that a treatment technology or process be validated before the water recycling scheme is operational. Validation is the confirmation that the treatment technology meets the specified performance targets. The guidelines describe the concept of and need for validation but do not specify how the validation should be done.

Finding out what technology suppliers want

The project team, comprising researchers, industry specialists and regulators, surveyed the views of technology suppliers to find out what they need and want from a national validation framework. The suppliers who responded to the survey included manufacturers and/or installers of:

- activated sludge systems
- media filters
- membrane systems
- membrane bioreactors
- oxidant dosing systems
- UV disinfection systems.

A strong response to the survey was obtained from membrane suppliers suggesting they are well versed in the validation of their technologies. The response was mixed for the other technologies, with many suppliers saying they do not validate their technology as the responsibility to validate is generally on the end user.

Current issues with validation

For some suppliers, local validation is not possible with suitable services not currently offered in Australia.

Some suppliers expressed a level of confusion and frustration with different validation requirements from different authorities, as well as with difficulties obtaining validation evidence that will satisfy these in different project applications.

The costs of validation vary significantly depending on technology type but costs in excess of AU\$100 000 are not uncommon.

Some suppliers do not validate their technologies for a number of the above reasons.

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Requirements

Based on feedback from suppliers, the project team makes the following recommendations in relation to a national framework and related policies:

- Reduce the burden on regulators to assess technology efficiency in project specific validation processes.
- Review the current protocol which uses the worst-case scenario on every process train.
- Match the project specific validation evidence requirements to the purpose to which the recycled water will be used and the size of the scheme or the impact currently the same regulations are in place for both large and small schemes.
- Streamline the review process by ensuring reviewers of submitted validation paperwork are knowledgeable in the technology type.
- Introduce measures to ensure more timely approvals.
- Introduce measures to clearly define the jurisdictional pathway for validation.
- Develop consistent definitions for recycled water quality that is fit for consistently defined purposes for all states and territories, (the US drinking water guidelines could be used as a reference).



Photo sourced from Sydney Water



Photo sourced from Seqwater



Implications of the proposed framework for technology suppliers

The proposed national validation framework would require technology suppliers to have their treatment technologies validated and certified by an accredited third party. They would need to review evidence from international studies for applicability, commission the validation studies, engage analytical facilities to conduct validation testing, and submit the validation results to an oversight entity or agency for certification.

If the supplier has evidence that their technology meets the requirements of validation, or it has been validated in another jurisdiction or country, but they have not directly or formally validated it in Australia, they can commission an independent body to assess the data and provide a validation report. This practice is already quite common as companies often produce their own data for quality assurance purposes.

Suppliers would also be invited to provide advice to committees and participate in technical working parties.

Fees levied by an oversight agency for certifying and maintaining validation data and certificates would be incurred by the technology supplier. For previously un-validated technologies, fees for analytical services for validation studies would also be incurred. These costs could be added to the development costs of the technology.

Advantages of the proposed framework for technology suppliers

Overall, suppliers' views on a national validation framework were positive with most respondents expressing support for the proposed framework. The key advantage, as they see it, is that certification gives them a commercial competitive advantage for the technology.

Other advantages put forward by suppliers:

- Suppliers of the same technologies would have equal opportunities.
- Validation to an internationally recognised standard would offer treatment guarantees to operators and regulators and could potentially be accepted as validation evidence by regulators in other countries.
- Suppliers could compete with imported technologies that have had internationally obtained validation accepted by regulators.
- The industry would have clear, well established targets for validation.



Challenges

Cost in implementing the new framework was the main concern for nearly all technology suppliers who responded to the survey.

This included:

- increased costs for maintaining validated systems
- increased costs due to extended project timelines
- the financial burden on small-market companies.

Other concerns were:

- the length of time to implement a national framework
- the potential that a useful outcome is not achieved
- the potential lack of recognition for international validation
- validation may be too conservative.

Confidentiality was also raised as an issue in relation to storing validation data with an oversight entity.



Photo sourced from Seawater

Research gaps

The following research projects have some support from a number of technology suppliers:

- Develop guidelines for validating membrane bioreactor systems and UV disinfection systems.
- Correlate log removal values with other performance indicators on new and aged membranes. The log removal value of a membrane changes as the membrane ages so it is important to use a range of techniques to assess its performance over its lifetime.
- Evaluate the potential performance of reverse osmosis membranes which are capable of achieving much higher log removal values than are currently attributed to them.
- Evaluate particle counters for on-line monitoring of membrane performance. A particle counter is an instrument that measures the number and size of particles passing through it.
- Develop a case study of a current validation process, from start to finish, identifying the difficulties faced by suppliers in having their technologies validated.

National Validation Framework factsheet suite

This brochure is based on a 'road map' report funded by the Australian Water Recycling Centre of Excellence. The 'road map' describes a national approach for validating treatment technologies, and was based on extensive consultation with stakeholders.

This brochure is one of a series that describes the outcomes of the first stage of this national validation project.

Other brochures in the series cover:

- > An overview of the draft National Validation Framework
- > Perspectives of water recyclers, technology suppliers and regulators
- > Validation of various treatment systems
- > Building capacity in the industry

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