

Purified Recycled Water

Water for a Healthy Country

National Research
FLAGSHIPS
Water for a Healthy Country



CSIRO scientists are providing world-class science to advance the knowledge and understanding of purified recycled water to ensure safety and consumer acceptability.

CSIRO researchers are providing world-class science to ensure purified recycled water is safe. They are part of a world-wide network of ecotoxicologists, environmental and social scientists, microbiologists and advanced water treatment experts who are constantly researching all aspects of water recycling.

Water safety

Australia has developed world-leading drinking water and recycled water guidelines to protect public health. The use of purified recycled water for drinking purposes is covered under the "Augmentation of Drinking Water Supplies" section of the Australian Water Recycling Guidelines, which includes information and directions on risk assessment and management processes to ensure water safety. These guidelines have been endorsed

by the Environment Protection and Heritage Council, the Natural Resources Management Ministerial Council and the National Health and Medical Research Council.

Purified recycled water is subject to advanced water treatment and undergoes significant testing and checks. The guidelines for production of purified recycled water are designed to ensure that recycled water will be safe, and can be delivered at a higher standard than tap water that we drink now.

Supported by world-class science

Scientific knowledge and expertise underpins the information and requirements contained within the Australian Water Recycling Guidelines and international guidelines developed by the World Health Organisation.



> Purified recycled water undergoes more tests and checks than the water we currently drink from our taps.



> The introduction of purified recycled water into the drinking water supply is an important option to improve Australia's long-term water security.

CSIRO is conducting water research throughout Australia that is of national and international importance to identify opportunities and increase knowledge to facilitate potable and non-potable recycling of reclaimed water and stormwater via aquifers and reservoirs. Our experts provide independent advice on the reuse of water in the areas of technical feasibility, public health, environmental sustainability and risk assessment and monitoring.

CSIRO's Water for a Healthy Country Flagship program has invested \$25 million over five years in the Queensland Urban Water Security Research Alliance.



> Clarifier at Luggage Point Water Reclamation Plant, Queensland.

The largest project in the research alliance is the Purified Recycled Water project. Along with research partners in the University of Queensland and Griffith University, we continue to advance the knowledge and understanding of the seven-barrier treatment process that has been installed to ensure the health and environmental safety of purified recycled water.

World's best technology and expertise is used

In South East Queensland purified recycled water is produced through a seven-barrier treatment process and undergoes a strict testing regime. The design and operation represent the most comprehensive level of water treatment undertaken on any water recycling project in the world.



The barriers include source water control, tertiary sewage treatment, microfiltration, reverse osmosis, advanced oxidation, the use of natural processes in reservoirs and final water treatment and disinfection.

The seven-barrier treatment process is designed to be fail-safe. The water is subject to water quality monitoring and testing at all stages of the seven-barrier process to ensure quality and safety of the water and to facilitate immediate intervention in supply if the water fails to comply with safety guidelines.

Recycled water use around the world

Reusing water is not a new concept for Australia and the world. Water recycling for supply via the discharge of treated sewage to a river has been going on for a long time in Europe, North America and Australia. Many towns and cities that draw their supplies from rivers inadvertently use some recycled water that has been discharged upstream.

The level of treatment technology that is being employed for purified recycled water in Australia and the consequent margins of safety are at least as great as for other water reuse schemes around the world.

> Interior of a reverse osmosis treatment plant. Reverse osmosis is one of the stages in the seven-barrier treatment process to produce purified recycled water. Photo: IStockphoto

Long term water security

Australia needs to ensure water security in a drying and variable climate, particularly in high population areas where rainfall and runoff have declined significantly. The combined effects of climate change and population growth have led to significant water deficits in some areas, despite ongoing efforts to reduce per capita water consumption.

Purified recycled water can provide a reliable, climate-resilient and economically sound source of supply, which can be an important component of a diversified and robust water supply portfolio.

For further information:

Water for a Healthy Country

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CSIRO and the Flagships program

Australia is founding its future on science and innovation. Its national science agency, CSIRO is a powerhouse of ideas, technologies and skills. CSIRO initiated the National Research Flagships to address Australia's major research challenges and opportunities. They apply large scale, long term, multidisciplinary science and aim for widespread adoption of solutions.