

SYNTHETIC BIOLOGY: Reducing pollution in waterways

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In Australia, many oceans, lakes, rivers, aquifers and groundwater have become polluted with contaminants and toxic substances.



Eventually, the pollution builds up to such a level that the waterways become uninhabitable for plants, fish and animals; and unsafe for human use.

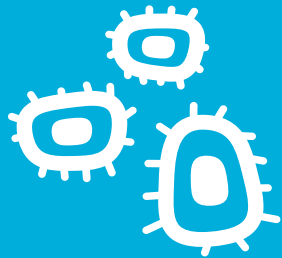
Currently, pollution in waterways is managed through the use of cleaning chemicals and remediating bacteria.



Manual clean-up



Water-cleaning chemicals



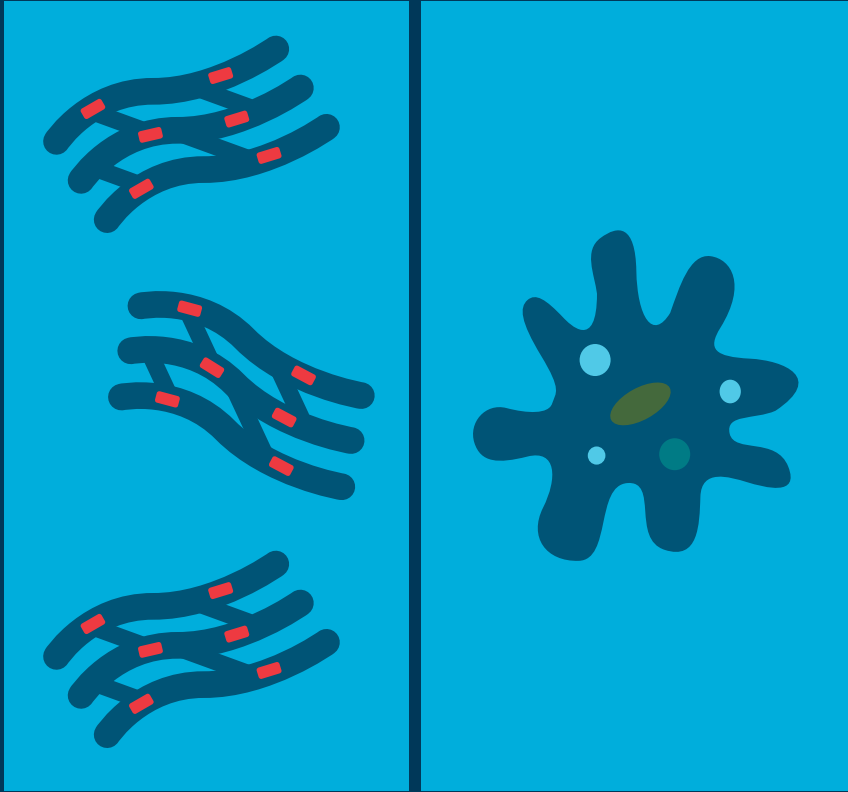
Beneficial bacteria

However, current methods are not keeping up with the rate or scale of pollution.

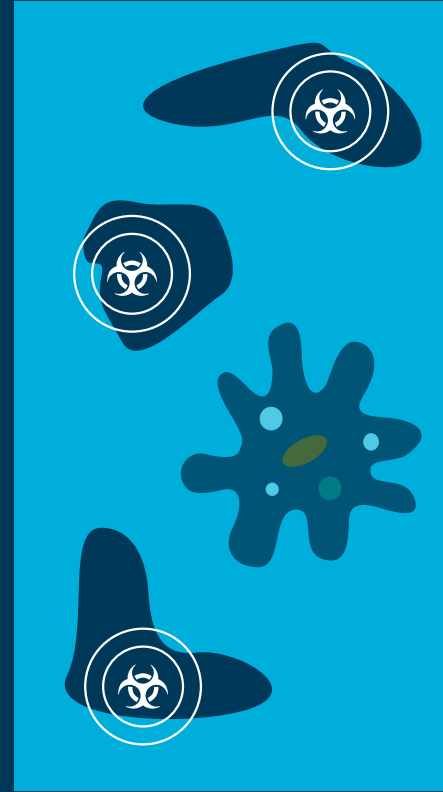


These methods are also labour-intensive, expensive and small-scale.

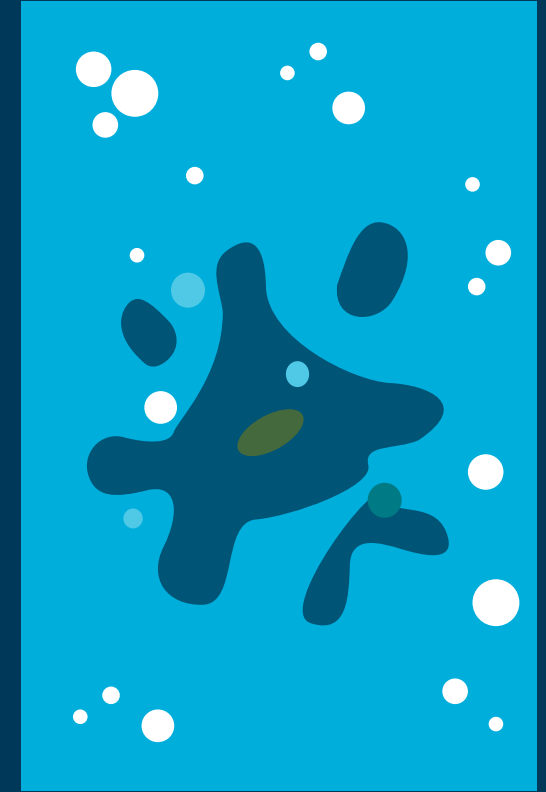




With new synthetic biology technology, it is possible to use heart muscle cells to create pseudo-organisms that move (pulsate) in water.

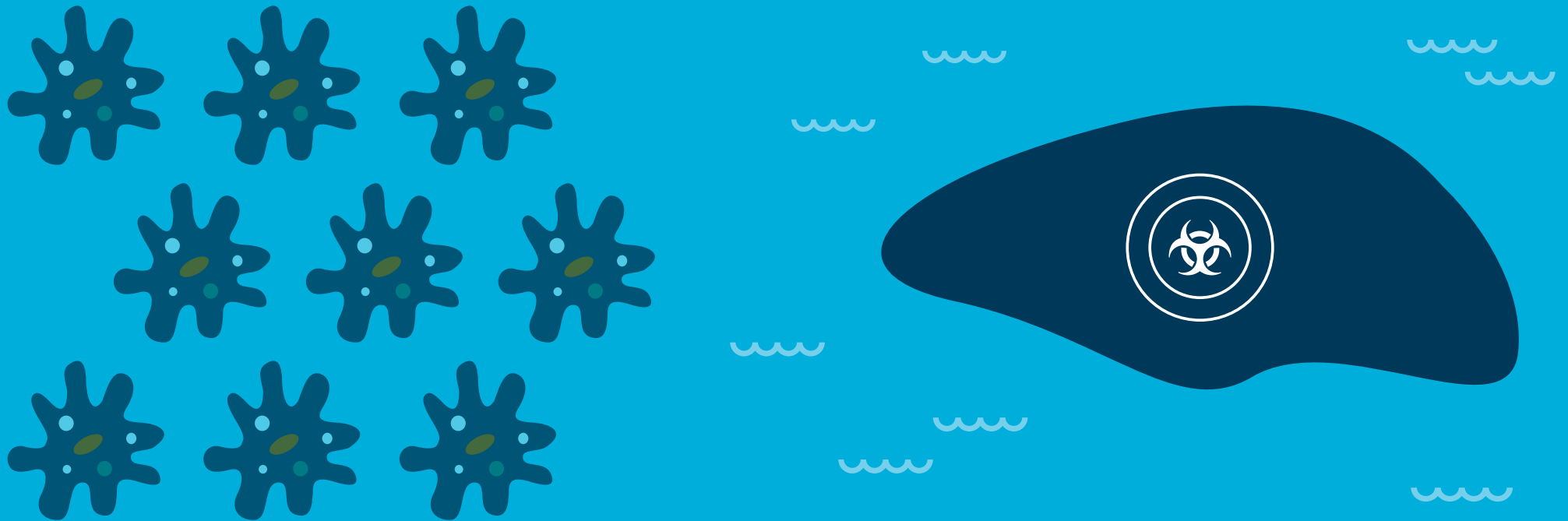


The pseudo-organism targets, breaks down and removes pollution in the water.



The pseudo-organism cannot reproduce. After a defined period of time, it would disintegrate in the water, leaving no trace.

These pseudo-organisms could be designed to not only remove pollutants, but to also be attracted to areas of high pollution.



This technology could help to restore polluted waterways in Australia so that they are once again safe for humans, plants, and other animals.



This technology would likely be approved and/or regulated by:

**The Office of the Gene
Technology Regulator**

**The State-based
Biological Control Act**

**The Environment Protection and
Biodiversity Conservation Act**

**The State-based
Department of Fisheries**

Together these regulatory bodies and standards would ensure that:

- The research and development occurs under controlled laboratory conditions, and
- Any environmental, ecological and health risks or concerns are properly reviewed and addressed.



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