



**Cawthron runs the largest commercial Biotoxin testing laboratory in the world. We deliver crucial results to our vibrant shellfish industry in a cost effective and timely manner, through the development of world leading technology.**

## LEADERS & INNOVATORS IN BIOTOXIN TESTING

Cawthron is the centre of excellence for Marine Biotoxin management and testing. We have all your testing requirements for marine biotoxins covered. That is what makes us unique.

Our Microalgae and Biotoxin Laboratories are world class, and our research teams and marine consultants provide a strong network of expertise.

Our aim is to find out what you want and offer advice on how to achieve your testing objectives.

## MICROALGAE TESTING

Cawthron has the only ISO 17025 accredited Microalgae laboratory in New Zealand, offering quality marine and freshwater microalgae analysis.

Operating since 1993, the Microalgae laboratory provides early warning of risks associated with toxic species at over 110 sites around the coast of New Zealand.

Microalgae monitoring can reduce shellfish testing in approved Regional Programmes.

## BIOTOXIN TESTING BY LC-MS

Our Biotoxin Laboratory was the first to achieve ISO 17025 accreditation for Biotoxin analysis in the world.

The laboratory was set up in response to industry dissatisfaction with the traditional methods of biotoxin testing. These methods relied on animal bioassay testing that was ineffective and slow. Samples tested by Cawthron are recognized as being tested to the highest standards of quality and scientific excellence.

We use "state of the art" LC-MS (Liquid Chromatography Mass Spectrometry) technology to give you the benefit of:

- **Speed** - results available next day
- **Specificity** - eliminates false positives, testing exclusively for biotoxins
- **Sensitivity** - ability to monitor levels of toxins below closure limits
- **Safety** - early warning of toxin levels well below health guidelines
- **Selectivity** - ability to determine levels of specific toxins (eg yessotoxins)
- **Sustainability** - testing does not require live animals

LC-MS is used to detect:

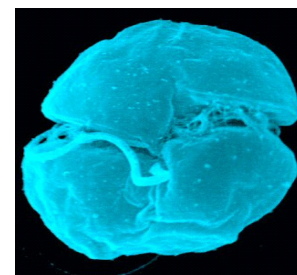
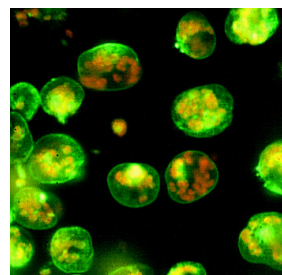
- Amnesic shellfish poisoning (ASP) toxins
- Diarrhetic shellfish poisoning (DSP) toxins
- Neurotoxic shellfish poisoning (NSP) toxins
- Pectenotoxins (PTXs)
- Yessotoxins (YTXs)
- Other novel toxins
- Internationally significant toxins not yet found in NZ or Australia such as Azaspiracid (AZAs)

## EXTRA FOR EXPERTS

In some cases, samples may require more detailed examination as part of investigations into unusual toxicity or novel algae. Cawthron has available a range of bioassays and algal identification techniques to conduct these investigations.

Cawthron fosters an important link between routine monitoring and research groups; a two-way exchange of information is vital for extending our knowledge of Harmful Algae Blooms (HABs) in New Zealand.

One example of this is the development of the use of DNA probes for identifying toxic microalgae. DNA probes are now used routinely by the Microalgae Laboratory to aid management decisions in bloom situations.



## SUPPORTING THE EXPORT BRAND

In 1993, biotoxin monitoring was ramped up rapidly in response to a threatening bloom. At first, testing relied heavily on slow, unreliable and unsustainable mouse bioassay test methods. Costs were high – totaling several million dollars annually.

Cawthron already had extensive experience with HABs, and invested heavily in research to demonstrate that phytoplankton monitoring could provide valuable support for the flesh-testing programme. By the mid-90s, routine phytoplankton testing had become an accepted tool, reducing costs and providing rapid early warning of impending events.

As the shellfish industry matured, questions were raised about the continued reliance on mouse-based testing. Many considered it ineffective, unsafe and impractical. Importing countries began to talk of bans on products tested on animals.

The shellfish industry approached Cawthron to see if new alternatives were feasible.

In mid 2000, a new Biotoxin Monitoring Programme was developed by industry and Cawthron. In December of that year the Cawthron Biotoxin lab was born. Working with MAF (now NZ Food Safety Authority), our goal was to 'change the world' – to persuade regulators in North America and Europe to change their shellfish testing requirements. We are well on the way to achieving our goal with many of our milestones now a reality.

As well as safeguarding the kiwi consumer, our goal is to underpin the 'brand' for New Zealand's export shellfish, by playing a key role in the world's best biotoxin management programme.

New Zealand shellfish are sustainably grown by the world's best growers, in the world's cleanest waters, processed by the world's best processors, under the watchful eye of the best sanitation and biotoxin programmes. A marketer's dream product!



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## THAT'S NOT ALL WE CAN DO FOR YOU

### *Consultancy services*

Our experts can work with you on projects from researching and compiling reports, to designing complete monitoring programmes.

### *Harmful Algal Bloom (HAB) Research – the HABTech Programme*

Cawthron's research team is actively investigating all major toxin groups to protect public health and the shellfish industry from the effects of HABs.

### *Cawthron Microalgal Culture Collection*

This internationally significant collection of toxic marine microalgae allows us to grow bulk cultures, which are the key to our new testing methods and HAB research.

## CAWTHRON IS COMMITTED TO:

- Introducing faster and more reliable methods of marine biotoxin analysis, combined with microalgae monitoring to provide a comprehensive and efficient system to detect HABs and their toxins.
- Providing information to develop a streamlined system of sampling and shipping shellfish and water samples to the laboratory for testing.
- Liaising with public health regulators to facilitate development of acceptable sampling schedules for a particular growing area.
- Advising on interpretation of toxin data and associated microalgae information.
- Collaborating regularly with NZ & international researchers for studies on all major toxin groups and microalgae species.



Version 2 2006