

Drinking-Water Quality Management in New Zealand: A Shift from Quality Control to Quality Assurance

The Drinking Water Supply

The purpose of a drinking water supply is to provide a community with an adequate supply of water that is proven to be safe to drink.

Limitations of Standards

By the time monitoring results have been received, if the drinking-water is microbiologically contaminated many people may have already been infected (in some cases fatally).

Drinking-water Quality Management

There are two principal components to drinking-water quality management:

- Product quality control [QC]
- Monitors compliance with standards

QC tells you something has gone wrong after it had happened (The ambulance at the bottom of the cliff).

- Process quality assurance [QA]
- Uses "**risk management**"

QA tries to stop anything going wrong (closing the gate at the top of the cliff)

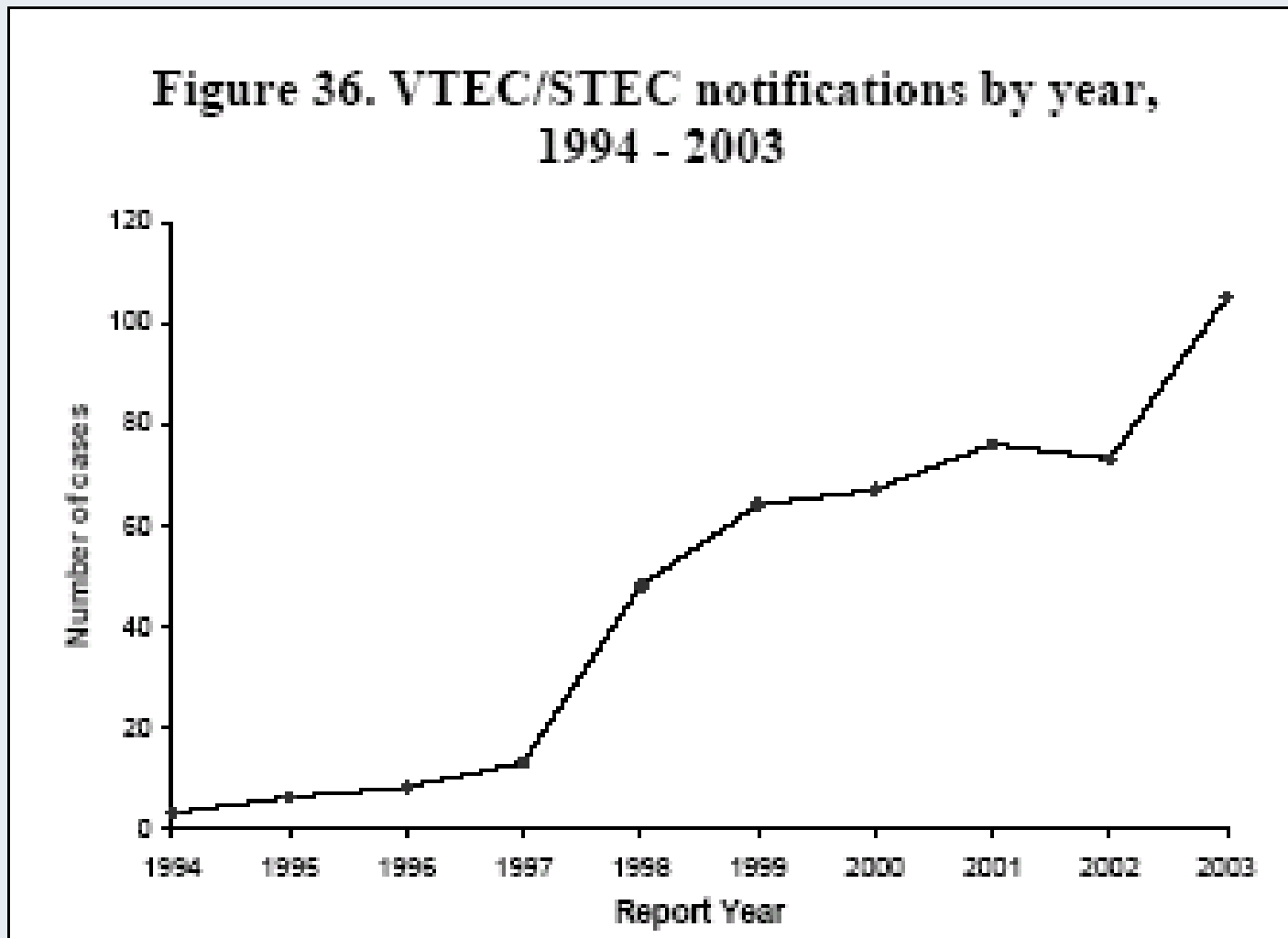
The New Zealand Scene

Background

In 2005 approximately 940,000 (24%) of New Zealanders were supplied with drinking-water that failed to comply bacteriologically with the criteria of DWSNZ:2000.

E. coli O157

**Figure 36. VTEC/STEC notifications by year,
1994 - 2003**



Outdated Legislation

Public health aspects of drinking-water and waste management come under the nuisance provisions of Health Act 1956 and are directly derived from the UK Public Health Act of the 1870s

Fragmented Legislation

In 1995 there were 180 separate statutes relating to drinking-water. This situation has been largely tidied up in the last 10 years, but there are still 5 main statutes, some of which overlap

The Drinking-Water Legislation [1]

- Drinking-water suppliers to take all practicable steps to comply with standards
- Drinking-water suppliers to take all reasonable steps to supply wholesome water
- Laboratories must be approved by Ministry of Health
- Public not to deliberately or recklessly take actions that could contaminate drinking-water supplies.
- be on the Register of Community Drinking-water Supplies in New Zealand.

The Drinking-Water Legislation [2]

- All reticulated supplies, whether privately or publicly owned, are subject to the Bill.
- Supplies supplying populations >25 people for more than 60 days of the year
- Tankered water deliverers, seaports and airports are suppliers and are required to write PHRMPs.
- Accredited drinking-water assessors will monitor compliance and verify PHRMPs.
- Requirements for temporary water supplies

The Drinking-Water Legislation [3]

- Assessors to be accredited for the purpose by an internationally recognised accreditation body
- Assessors role is to verify the compliance of drinking-water suppliers with the provisions of the Act, principally the standards and implementation of a satisfactory PHRMP
- D-G of Health to publish information about the compliance of the drinking-water supply with the Act

Demonstration that all practical steps have been taken

The PHRMP procedures provide one way of demonstrating that all practicable steps have been taken.

The PHRMP

- o identifies the nature and magnitude of public health risks inherent in the water supply process
- o specifies what preventive and corrective procedures should be in place to manage /mitigate each risk
- o specifies the preventive and corrective procedures that could be taken by the supplier to manage /mitigate each risk
- o specifies the supplier's programme over the next 3-5 years for managing the risks

identifies any risk that the supplier will not be managing and explains and justifies why that risk will not be managed.

Proposed Health Act Legislation [3]

- Implementation is to be phased in over 5-6 years.
 - Large supplies first (2yrs to comply)
 - Small (25 – 5000) in 5th--6th year.
- Most features of the proposed legislation are already in place.)

3 Yr Moratorium

Implementation rolled over until
2012

Public Health Risk Management Plans (PHRMPs)

The value of having a PHRMP

- Sampling provides only a 'snapshot' of water quality
- There may be a delay between sampling and results
- Preparation of a PHRMP requires the supplier to think about what risks could exist in the supply and how to avoid them.
- The PHRMP gives a comprehensive assessment of public health risk
- Risks are ranked in order of severity
- Effective prioritisation of improvements
- Water supplier takes 'ownership'
- Most effective means of ensuring safe water

PHRMP in the drinking water supply management framework

The exact form of a PHRMP will depend on the management framework of the drinking water supply.

The PHRMP must operate in the context of:

- Statutory requirements
- National water quality targets
- Drinking water guidelines and standards
- Availability of resources
 - Financial
 - Technical

Tools of drinking water supply quality management

The PHRMP is one of the set of drinking water quality management tools available to regulators and suppliers. The use of the tools should be integrated, so that they combine to function as a mutually supporting system.

The tools include:

- Standards and guidelines
- Public awareness (Published annual review and report on the performance of the supply and the quality of the water)
- Register of Approved Laboratories
- Public Health Performance Grading of Supplies

Drinking-Water Standards for New Zealand 2005 (Amended 2008)

Water Quality Standards

The DWSNZ specify the minimum standards of quality of drinking-water that will ensure that it is safe to drink (i.e. potable). This is done by;

- specifying the Maximum Acceptable Values (MAV) allowable for determinands (substances and attributes) of public health concern in the water.
- Detailing minimum monitoring and sampling requirements
- Details actions taken when a transgression occurs

What are the main changes in the new Standard

- Log credit system for protozoa compliance.
- Inclusion of ultra violet disinfection as a means of inactivating protozoa
- A new chapter on cyanobacteria.
- A future warning about viruses
- A new chapter specifically covering small supplies (<500 people).
- A new chapter specifically covering Tankered water suppliers.

Drinking-Water Assistance Programme (DWAP)

The Drinking-Water Assistance Programme

- In May 2005 the Government announced a \$154 million (incl GST) assistance package to improve drinking-water systems in NZ.
- \$132.5 Million over 10 years for a capital assistance programme (CAP).
- 17.5 Million over 7 years for a technical assistance programme (TAP).
- Temporarily suspended pending review of criteria

The CAP Process



CAP

(Subject to meeting CAP criteria)

TAP

1. On the register
2. Write PHRMP
3. Optimise existing processes
4. Participate in a community group



Water Supplier

- Provide Training
- Provide Technical Support
- Facilitate the community group
- Assist with the CAP Application

TAP Facilitator

Ministry of Health Target

- The Ministry of Health target is to have at least 95% confidence that all the country's water supplies comply with the Standards for at least 95% of the time.