

Backflow Training for Drinking Water Assessors

Request from Jim Graham of MoH

- Technical and in depth
- Nationally applicable
- Problems faced by Water Suppliers
- Best Practice

Public Health Grading of Community Drinking-Water Supplies 2003

Q15: Indicate whether the legislative requirements relating to backflow are being implemented.

Where legislative requirements relating to backflow prevention are not being met, indicate whether the water supply contains a residual disinfectant (for example, chlorine, and complies with the requirements of Question 19(a) or Question 19(b)).

Q15: Backflow prevention

15	Backflow prevention (ignore this for bulk water mains)		
		<i>Tick only one box</i> Demerit Points	
	Legislative requirements met	<input type="checkbox"/>	(0)
		<input type="checkbox"/>	
	Legislative requirements not met, but residual disinfectant	<input type="checkbox"/>	(4)
		<input type="checkbox"/>	
	Legislative requirements not met, no residual disinfectant	<input type="checkbox"/>	(9)

Q24: Grading Demerit Points

Sum of demerit points	Grade	Description	
0–10	a1	Completely satisfactory, negligible level of risk; demonstrably high quality; meets Aesthetic Guidelines in Appendix B and has ISO 9001: 2000 accreditation.	
0–10	a	Completely satisfactory, extremely low level of risk	
11–20	b	Satisfactory, very low level of risk	
21–30	c	Marginally satisfactory, moderately low level of risk	
31–45	d	Unsatisfactory level of risk	
46 or more	e	Unacceptable level of risk	

Backflow Training for Drinking Water Assessors

**New Drinking Water Legislation
Tuesday, 9 October 2007, 5:21 pm
Press Release: New Zealand Government**

Hon Pete Hodgson Minister of Health
9, October 2007 Media Statement
New Drinking Water Legislation

Every New Zealander has the right to clean, safe drinking water, Health Minister Pete Hodgson said today.

A bill to protect and promote this right has been passed in Parliament today. The Health (Drinking Water) Amendment Bill introduces a risk management approach to drinking-water supplies with the maximum acceptable level of contaminants prescribed by drinking water standards.

[....]

Health (Drinking Water) Amendment Bill

“69ZZZ Protecting water supplies from risk of back-flow

“(1) This section applies if (*the approved public health risk management plan of*) a networked supplier (*indicates*) considers that there is a need to protect the networked system from risks of pollution caused by water and other substances on properties connected to the networked system.

69Z Duty to prepare and implement public health risk management plan

- “(2) A public health risk management plan prepared under **subsection (1)** must,—
- “(i) identify the public health risks (if any) associated with that drinking-water supply; and
 - “(ii) identify critical points in that drinking-water supply; and
 - “(iii) identify mechanisms for—
 - “(A) preventing public health risks arising in that drinking-water supply; and
 - “(B) reducing and eliminating those risks if they do arise; and
 - “(iv) include information about the estimated costs and benefits of the mechanisms referred to in **subparagraph (iii)**; and
 - “(v) set out a timetable for managing the public health risks that have been identified as being associated with that drinking-water supply; and

69Z Duty to prepare and implement public health risk management plan

“(3) Every drinking-water supplier’s public health risk management plan must be submitted by the drinking-water supplier to a drinking-water assessor for approval.

“(4) A drinking-water assessor—

“(a) must, within 20 working days after receiving a public health risk management plan submitted under **subsection (3)**,—

“(6) Every drinking-water supplier must—

“(a) take all practicable steps to ensure that the supplier’s public health risk management plan is approved under **subsection (4)** (*no later than 12 months*) within a 12-month period after the date on which this section begins

69ZZZ Protecting Water Supplies from risk of Backflow

“(2) A networked supplier may,—

“(a) if the supplier considers it desirable or necessary,—

“(i) install a back-flow prevention system in the network on the side of the point of supply for which the supplier is responsible for maintaining; or 5

“(ii) allow the owner of property to which water is supplied to install a back-flow prevention system that incorporates a verifiable monitoring system 10
(being a monitoring system approved by both the supplier and a drinking-water assessor):

69ZZZ Protecting Water Supplies from risk of Backflow

- “(b) require the owner of the property in respect of which the back-flow prevention system operates or the person who is required (whether under the Local Government Act 2002 or any contract) to pay for drinking water supplied to that property,—
 - “(i) if **paragraph (a)(i)** applies, to reimburse the supplier for the cost of that system (including the cost of installation, testing, and on-going maintenance); and
 - “(ii) if **paragraph (a)(i) or (ii)** applies, to repair or modify any back-flow prevention system that, in the opinion of the supplier, is not functioning adequately.

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Risk Summary

The event creating the greatest risk of backflow is not having properly operating backflow prevention devices installed at the boundaries of premises where contaminants could be drawn back into the mains (see D2.4.3).

The most important preventive measures are to:

- make sure correctly operating backflow prevention devices are installed at premises where contaminants could be drawn back into the mains (see D2.4.3)
- make sure all backflow prevention devices are regularly inspected and tested (see D2.4.3).

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Event:

**WATER PRESSURE IN THE DISTRIBUTION SYSTEM LOWER THAN PRESSURE
IN SUPPLIED PREMISES
NO, INADEQUATE, FAULTY, OR INCORRECTLY INSTALLED BACKFLOW
PREVENTION DEVICE**

Possible hazards: *Germs; chemical determinands.*

Level of risk: **High**

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Cause:

D2.4.1.1 A pressure drop in the reticulated system.

D2.4.1.2 An elevated pressure in the premise(s) supplied as compared to the reticulated system.

D2.4.2.1 The backflow prevention device not actually connected, or connected improperly.

D2.4.2.2 An illegal cross connection to the reticulated system.

D2.4.2.3 The backflow prevention device may have failed safe, but may then have been removed to maintain the water flow and not been replaced.

D2.4.2.4 No backflow prevention device installed because of insufficient knowledge of activities on the premises.

D2.4.2.5 Failure of backflow prevention device.

D2.4.2.6 Vandalism or accidental damage.

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Preventative Measures:

- Installation of one of the following backflow prevention devices depending on the level of risk to the supply:
 - reduced pressure backflow prevention device
 - non-testable double check valve
 - testable double check valve
 - air gap.
- Annual inspection and testing of backflow prevention devices
- Ensure that only appropriately qualified persons are permitted to carry out connection work undertaken for the water supplier.
- Replacement, where necessary, of backflow prevention devices.
- Implementation of a comprehensive spare parts policy.
- Develop guidelines in conjunction with local authority so that the supply engineer is informed of changes in the use of premises by the part of the authority concerned with the registration of building modifications.
- Where necessary, provide lockable enclosures for backflow prevention devices.

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Checking preventive measures

What to check

- Testing and inspection records.
- Microbiological quality.
- Chemical determinands (when there is reason to suspect contamination).

Signs that action is needed

- Reports by consumers of gross contamination of tapwater.
- Unexplained fluctuations in chemical and microbiological water quality.
- E. coli* or coliforms detected in 100 mL water sample.
- Concentrations of targeted chemical determinands are more than 50% of their MAV.

PHRMP Guide

Distribution System– Backflow Prevention ref D2.4

Corrective action

- Determine reasons for low system pressure and rectify if possible.
- Identify the premises from which backflow occurred and install appropriate device (*see D2.4.2*).
- Check on qualifications of staff undertaking connections.
- Repair/replace.
- Protect from future damage.

How to Prepare and Develop a PHRMP for Drinking Water Suppliers

Likelihood scale

Likelihood ranking	Description
Rare	May occur only in exceptional circumstances (once in 1000 years)
Unlikely	Could occur (once in 100 years)
Possible	Might occur at some time (once in 10 years)
Likely	Will probably occur (once in 1 or 2 years)
Almost certain	Is expected to occur in most circumstances

Consequence scale

Consequence ranking	Description
Insignificant	Insignificant
Minor	Minor impact for small population
Moderate	Minor impact for big population
Major	Major impact for small population
Catastrophic	Major impact for big population

How to Prepare and Develop a PHRMP for Drinking Water Suppliers

This gives the following estimates of risk:

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	High	High	Extreme	Extreme	Extreme
Likely	Moderate	High	High	Extreme	Extreme
Possible	Low	Moderate	High	Extreme	Extreme
Unlikely	Low	Low	Moderate	High	Extreme
Rare	Low	Low	Moderate	High	High

NZWWA Backflow Code of Practice for Water Suppliers

7. WATER SUPPLIER RESPONSIBILITIES

- 7.1 Determination of risk
- 7.3 Asset management and record keeping
- 7.4 Testing of backflow preventing devices
- 7.5 Backflow policy and procedures
- 7.6 Contingency plans
- 7.7 Staff training

8 CUSTOMER RESPONSIBILITIES

- 8.3 Change of use
- 8.4 Building Act responsibilities
- 8.6 Payments
- 8.7 Customer ownership of containment devices -

NZWWA Backflow Code of Practice for Water Suppliers

- 9. STANDARDS AND PROCEDURES
 - 9.2 Installation requirements
 - 9.4 Design standards

- 10 CONTAINMENT DEVICE TESTING

- 11 APPROVED BACKFLOW TECHNICIAN (ABTs)
 - 11.1 ABT qualifications
 - 11.2 ABT register

- 12 BACKFLOW PROTECTION ON FIRE LINES

Backflow Training for Drinking Water Assessors- Workshop

- Technical and in depth
- Nationally applicable
- Problems faced by Water Suppliers
- Best Practice

1 days learning compressed into 2 hours (yeah right)