

# Guidance – Risk Management Plans

## Drinking Water - Safe Drinking Water Regulations 2015 – Regulation 8

### Purpose

The *Safe Drinking Water Act 2003* requires water agencies to prepare, implement and review risk management plans. The *Safe Drinking Water Regulations 2015* (the Regulations) specify other matters and the risks to be addressed in a risk management plan. The following guidance provides information to assist water agencies to implement these requirements and should be read in conjunction with the Regulations.

### Introduction

Water agencies must develop risk management plans which identify, assess and document the steps taken to manage risks to the quality of water.

Regulation 8 specifies the requirements of a comprehensive and detailed risk management plan. It identifies the matters which must be included in risk management plans and the risks which must be addressed by the plans. This includes processes and procedures to effectively manage any incident, event or emergency that may pose a risk to the quality of water.

Regulation 8 applies to all water agencies however there are some exceptions where certain sub-regulations may not apply to particular types of water agencies. These exceptions will be highlighted in the relevant parts of the following guidance.

This guidance uses the definitions from the Regulations. Many requirements of Regulation 8 will be familiar to water agencies. The following guidance has been prepared with a particular focus on the new or enhanced concepts and requirements included in the Regulations.

### Guidance

#### **Positions held: r. 8(1)(a)**

*A minor amendment to the previous Regulations*

The risk management plan must contain the organisational positions that have responsibility for managing hazards and risks to the quality of water. The positions that must be recorded in the plan will have responsibility for addressing hazards in the catchment, in source water storages, at treatment plants and in distribution systems. This may include water quality managers, water treatment operators/engineers and water network operators.

#### **Procedures for consultation: r. 8(1)(b)**

*A minor amendment to the previous Regulations*

The procedures for consultation between water storage managers and water suppliers in relation to water quality hazards and risks must be identified in each water agency's risk management plan.

The consultation procedures need to be focussed around identifying and managing risks to the water. Examples of consultation procedures may include memoranda of understanding, risk assessment workshops, a schedule of regular stakeholder meetings, operational planning meetings and the exchange of water quality results.

## **Emergency management: r. 8(1)(c)**

*A minor amendment to the previous Regulations*

Emergency management arrangements and procedures for dealing with an incident, event or emergency must be identified. Relevant emergencies include those that may adversely affect the quality of drinking water.

Where emergency management arrangements are detailed in emergency response manuals or procedures these must be clearly referenced in the risk management plan. Any such reference document must include the detail required by this regulation.

The methods for communicating to the public should consider the type of emergency events such as boil water advisories, do not consume advisories, widespread public complaint (e.g. taste, odour, colour, clarity) and cyanobacteria (blue-green algae) events.

A water storage manager may rely on a water supplier to communicate to the public in specified circumstances; and when this occurs it needs to be clearly identified in both risk management plans.

## **Water sampling program: r. 8(1)(d)**

*A new requirement of the Regulations*

This regulation applies to all water agencies and relates to routine sampling of all water. Water agencies must have a water sampling program which aims to collect samples of water to identify the hazards that may be present.

Some of the requirements in Regulation 8(1)(d) only apply to a water supplier and reflects the particular responsibilities they have in water sampling localities.

Further guidance is provided in **Appendix 1**.

## **Chemicals added: r. 8(1)(e)**

*No amendment to previous Regulations*

This regulation applies only to a water agency that has responsibilities for the operation of a drinking water treatment process and/or the distribution of drinking water.

Procedures and management systems should include information related to chemical specification, quality assurance in chemical receipt, chemical residual and

by-product monitoring, and chemical usage/consumption monitoring.

## **Competency and training: r. 8(1)(f)**

*A new requirement of the Regulations*

Employees and contractors of a water agency should be appropriately skilled and trained in water supply systems in order to take responsibility for the monitoring and management of hazards and risks to the quality of water. Positions which require competent staff may include water quality managers, water treatment operators/engineers, water network operators, water maintenance personnel and water samplers.

Where the risk assessment identifies staff competency and training as a control measure in a risk management plan, the plan must detail the appropriate competency and training required. Reference to competency based training plans or skill matrices that demonstrate competency can be incorporated in the risk management plans.

The *Victorian framework for water treatment operator competencies (2010)* is an example of a framework which can be implemented to demonstrate the training and competency of staff responsible for the operation of drinking water treatment processes.

## **Features of the system of supply: r. 8(1)(g)**

*Minor amendment to the previous Regulations*

Risk management plans must describe the infrastructure and system features which the water agencies are responsible for. Where applicable, this should include water catchments, stream diversions and transfer infrastructure, raw water storages, treatment processes and systems (such as water treatment plants, primary disinfection units, booster chlorinators) transfer mains and distribution systems.

Methods used to verify the effectiveness of the infrastructure and system features must consider how the performance of each is assessed. Validation of treatment process units and proof of performance monitoring are examples of the methods that should be considered.

The Australian Drinking Water Guidelines (ADWG) provides relevant information on the validation of

processes and validation monitoring (ADWG 2011 p.50, p.139).

**Activities and measures: r. 8(1)(h)**

*No amendment to previous Regulations*

The activities and measures taken to monitor and manage hazards must be included. This may include catchment monitoring programs, cyanobacteria (blue-green algae) monitoring, water quality monitoring, mains cleaning programs, mains repair and replacement processes and asset inspection programs.

Methods used to verify the effectiveness of the activities and measures may include analysis and evaluation of monitoring programs, reviews of water quality data and consumer satisfaction surveys.

ADWG provides relevant information on preventive measures for water quality management and verification of water quality (ADWG 2011 p.27, p.37, p.62).

**Operational performance: r. 8(1)(i)**

*A new requirement of the Regulations*

This regulation applies only to a water agency that operates and maintains drinking water treatment processes.

This requirement aims to ensure adequate monitoring and alarming of water treatment processes is in place to avoid water treatment process failures.

Critical control points in the drinking water treatment process are where control can be applied and where the effective operation of the process is essential to maintaining safe drinking water. Critical control points should consider any downstream controls and the performance range of the control to effectively prevent the supply of unsafe drinking water.

Critical control points must be monitored and target criteria should be set. A response or corrective action should be initiated when the target criteria or response limits are not met. This is demonstrated by Figure 1.

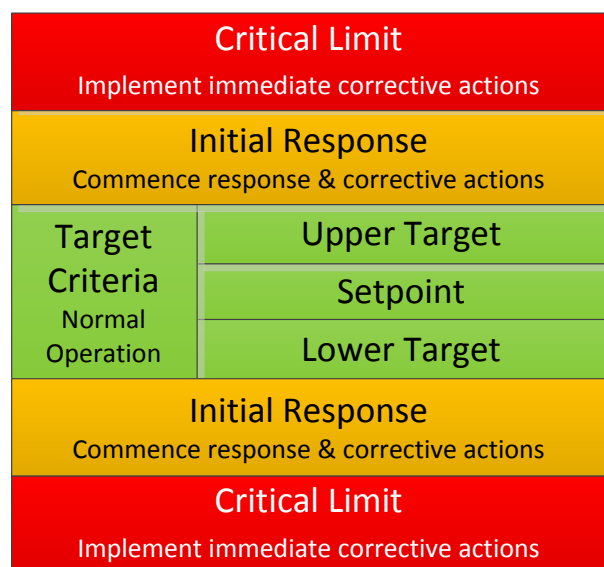
The operational objective should be for critical limits to never be reached. If a critical limit is reached, immediate corrective action must occur. Critical limits must have a prescribed tolerance in both value and time that distinguishes acceptable from unacceptable

performance at a critical control point. There may be both lower and upper bounds of acceptability.

Corrective actions applied when a critical limit is reached should include steps which ensure water which may be a risk to health, is not supplied and re-establishes process control. Examples of corrective actions include chemical adjustments, selection of alternative sources, or full plant shutdown.

ADWG provides relevant information on operational procedures and process control and operational monitoring (ADWG 2011, p.31, p.123).

**Figure 1: CCP limits and actions**



**Quantify microbial hazards: r. 8(2)**

*From 1 January 2016 a new requirement of the Regulations*

This regulation is applicable to water agencies that operate and maintain drinking water treatment processes of untreated water (primary treatment).

The water agency must detail in their risk management plan the methodology used to determine the effectiveness of the treatment applied to the hazards present in the raw water source.

This requires a description of the approach taken to estimate the level of pathogenic micro-organisms that could be present in raw water and the extent to which the treatment process is effective in their removal or inactivation.

Further guidance is provided at **Appendix 2**.

Assessment of hazards in raw water may be undertaken directly or indirectly. This can include catchment characterisation informed by existing raw water data. Determining treatment capability may use either credible published data on treatment performance, or through on-site validation of treatment performance.

This knowledge should establish the operational limits at which the treatment process is effective. It should also inform the critical limits associated with the critical control points related to managing the microbial quality of drinking water.

### Identifying risks: r. 8(3)

*No amendment to previous Regulations*

When developing risk management plans, water agencies are required to identify risks that may arise from hazards in water and/or hazardous events. Hazardous events may include the transfer of water, storage of water, distribution system operation or other incidents or events that may lead to the presence of identified hazards in water. These hazards may be present in either untreated or treated water systems.

Risk workshops should be used to revise risk management plans. They should be used to consider potential hazards to water quality and the potential pathways by which these hazards can enter water supply systems to keep the management of hazards and risks relevant and up to date. Any proposals for asset upgrades or process modifications should also be assessed to ensure that any capital or operational changes will not pose a risk to the quality of water.

## Appendix

Appendix 1: Water sampling program: r. 8(1)(d)

Appendix 2: Quantify microbial hazards: r. 8(2)

## Related information

DHHS, Guidance - Risk management plan audits: Regulations 9, 10, 11

NHMRC, NRMCC (2011) *Australian Drinking Water Guidelines* Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.

VicWater and DHS, *Guidelines: Victorian framework for water treatment operator competencies*, August 2010

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