

Unclassified



Weekly Webinar Series

**Protozoa, Chemical and
Cyanobacterial rules**

10 November 2021

The background is a solid teal color with a repeating pattern of overlapping, curved, arrow-like shapes. These shapes are arranged in a way that creates a sense of movement and depth, with some appearing to point towards the center and others away from it. The overall effect is a dynamic and textured background.

Welcome

Ko wai, ko au, ko tātou

Ko te wai ahau, ko ahau te wai.
He whakaaturanga tātau nō te wai.
Ko te ora te wai ko te ora o te
tangata.
He taonga te wai me tiaki.
Ko wai tātou.
Ko wai tātou.

I am wai, wai is me.
We are reflections of our wai.
The health of te wai is the health of te
tangata.
Wai is a taonga that must be protected.
Ko wai tātou.
We are wai. Wai is us.



What we will cover today

- **Current state**
 - Ray McMillan, Head of Regulatory – update on commencement
- **Topics:**
 - Peter Wood, Regulatory Team Leader, Palmerston North – Protozoa and Cyanobacterial rules
 - Jim Graham, Principal Advisor, Drinking Water – Chemical rules
- **Pātai / questions**
 - Opportunity to answer any further pātai / questions you might have



Commencement

Water Services Act and commencement

1	2	3	4	5	6	7	8
Introduction	1st reading	Health Select Committee	2nd reading	Committee of the whole	3rd reading	Royal assent	Commencement
28.07.20	08.12.20	10.08.21	21.09.21	23.09.21	28.09.21	4.10.21	15.11.21

Commencement

- Taumata Arowai will become the new drinking water regulator on **15 November 2021**. The Ministry of Health will remain the drinking water regulator until then.
- We've been working hard towards this milestone and are well resourced (with a team of 48) to take over as the drinking water regulator.
- Residual disinfection exemptions will not commence until 1 March 2022.
- Taumata Arowai wastewater and stormwater functions will not commence until 15 November 2023, to ensure we can prioritise drinking water regulation.

One step closer

- This week we have invited accredited laboratories to set up an account in Hinekōrako, our online self-service portal. Labs need to do this by 15 November 2021 so they can notify us of any MAV exceedances from this date.
- Hinekōrako will be the primary channel for drinking water suppliers and labs to share information with us. It's not a replacement for Drinking Water Online (DWO). If you use DWO you should have received an email from MoH to download your data.
- All suppliers currently registered with the MoH will have their supplies automatically transferred to Hinekōrako. Within the next three months, you'll receive an email from us to check your details and complete the registration process. We are taking a phased approach starting with large suppliers through to small suppliers.
- Unregistered suppliers have plenty of time. Four years to register and seven years to comply with the Water Services Act 2021.

Public consultation

- Drafts for new Drinking Water Quality Assurance Rules, Drinking Water Standards, Aesthetic Values, and Acceptable Solutions, are available on our website (taumataarowai.govt.nz/for-water-suppliers).
- The Water Services Act 2021 places clear obligations on Taumata Arowai to consult on these drafts. We welcome your feedback during public consultation, which is likely to be early in 2022.
- The existing Ministry of Health Drinking-water Standards for New Zealand will apply until the new rules and standards come into effect, which is likely to be **1 July 2022**.



Structure of the rules

Rule type codes and complexity levels

- **Rule type codes**

- G = General rules
- S = Source water rules
- T = Treatment rules
- D = Distribution rules
- WC = Water Carrier Service Rules
- PTE = Planned Temporary Event Drinking Water Supplies Rules

- **Rules complexity levels**

- 1 = simple
- 2 = moderate
- 3 = complex



Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PTE	



Rules modules

G		
S 1	T 1	D 1
S 2	T 2	D 2
S 3	T 3	D 3
WC	PTE	



Protozoa rules

Treatment processes and log credit allocations

- You will have determined the protozoa source water type, treatment log requirements (S3 rules).
- For bore water, you will have determined if your bore meets the sanitary bore head requirements (S3 rules).
- You must provide a protozoa barrier equal to or exceeding the log level identified by the protozoa source water type, treatment log requirements.



Treatment processes and log credit allocations

- Coagulation, flocculation and sedimentation process without filtration [0.5-Log]
- Coagulation, flocculation and direct filtration [2.5-3.5-Log]
- Coagulation, flocculation, sedimentation, and filtration [3-4-Log]
- Second stage filtration [0.5-Log]
- Slow sand filtration [2.5-Log]
- Membrane filtration [up to 4.0-Log]
- Cartridge filtration [2.0-Log]
- Ozone [0.25 to 3.0-Log]
- Ultraviolet light [up to 4-Log]



Key changes

- Processes not carried over from the Drinking-water Standards of New Zealand include:
 - Bank filtration
 - Diatomaceous earth filtration
 - Bag filtration
- UV disinfection can now provide 4-log credits



Coagulation, Flocculation, Sedimentation, Filtration

- Monitoring rule examples to achieve 3 log compliance:
 - Turbidity must not exceed 0.3 NTU for more than 5% of a day (rule T3.32)
 - Turbidity must not exceed 0.5 NTU for the duration of any consecutive 15-minute period (rule T3.33)
 - The log credit achieved is linked to the turbidity in the rules
 - Compare these rules with T3.36, T3.37, T3.40 and T3.41
- Assurance rule example:
 - All water must pass through the process (rule T3.31)
- Each treatment process has requirements and limitations – Refer Table 21 for conventional treatment



Membrane filtration

- Monitoring rule example:
 - If the turbidity of the membrane filtrate exceeds 0.1 NTU for more than 15 minutes the membrane unit must be shut down and not returned to service until it has passed a direct integrity test (rule T3.60)
- Assurance rule example:
 - Direct integrity tests must be performed on each membrane filtration unit at least daily (midnight to midnight) if the membrane filtration unit has been in service at any point during the day (rule T3.57)
- Requirements and limitations for membrane filtration found in Table 24 – includes certification/validation and direct integrity test requirements.

Cartridge filtration

- Monitoring rule examples:
 - Turbidity does not exceed 0.5 NTU (or 1.0 NTU if a 1-micron cartridge is used) for more than 5% of the day (rule T3.66)
 - Turbidity does not exceed 1.0 NTU for the duration of any consecutive 15-minute period (rule T3.67)
- Assurance rule examples:
 - All water must pass through the cartridge filtration process (rule T3.63)
 - Rule designed to minimise pressure surges onto the cartridges (rule T3.64)
- Requirements and limitations for cartridge filtration found in Table 25 – includes cartridge certification.

UV disinfection

- Monitoring rule examples:
 - UV dose
 - must meet or exceed the required dose for at least 95% of the day (rule T3.79)
 - must not be less than required dose for any consecutive 15-minute period (rule T3.80)
 - Turbidity must not exceed 5.0 NTU for the duration of any consecutive 15-minute period (rule T3.81)
 - UV Transmittance (UVT) for which the reactor has been validated
 - must meet or exceed 95% UVT for at least 95% of the day (rule T3.82)
 - must not be less than 80% of the lowest UVT for the duration of any consecutive 15-minute period (rule T3.82)
- Assurance rule example:
 - All water must pass through the UV reactor
- Requirements and limitations for UV found in Table 28 – includes calibration requirements and UV validation

Chemical rules

The basis of chemical rules

- Rules apply to:
 - Determinands in source water > 50% of MAV
 - Chemicals added during treatment (including contaminants in a treatment chemical)
 - Chemicals formed as a result of a treatment process



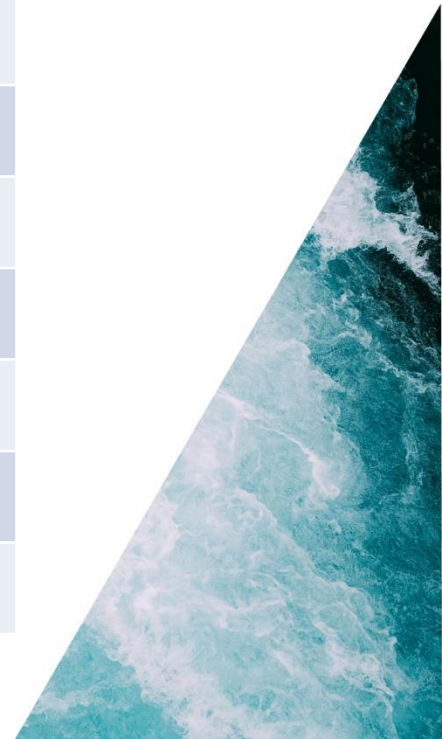
The basis of chemical rules

- 15 samples over 12 months to determine:
 - Standard typical range
 - Elevated typical range
- Event based monitoring also required



Treatment chemical determinand monitoring

Treatment Chemical	Determinands/parameters to monitor
Al-based coagulants/flocculants	aluminium, antimony, cadmium, copper, chromium, lead, mercury, nickel
Fe-based coagulants/flocculants	antimony, cadmium, copper, chromium, lead, mercury, nickel
Polyacrylamide (polyelectrolyte)	Acrylamide
EP-DMA (polyelectrolyte)	Epichlorohydrin
Chlorine (gas)	FAC
Hypochlorite	FAC
	ClO_3^- , ClO_4^- , BrO_3^-
Ozone	BrO_3^-
Permanganate	Mn
Fluoride (in any compound)	F^-



Treatment chemical determinand minimum sampling frequencies

Minimum sampling frequency		
Standard typical range determinands (Typical value < 50% MAV)	Elevated typical range determinands (Value range 50% - 100% MAV)	Fluoride ClO_3^- , ClO_4^-
Annually	Monthly	Weekly



Cyanobacterial rules

Cyanotoxin rules

- You will have determined cyanotoxin source water risk, low, medium, high (S3 rules)
- If the risk is medium or high, cyanobacteria/cyanotoxin response plan must be prepared (vigilance levels, alert levels, monitoring)



Cyanotoxin rules

- If cyanobacteria is identified in the source water, monitoring must be undertaken in accordance with the cyanobacteria/cyanotoxin response plan (rule T3.93)
- If cyanotoxins are identified in the treated water, testing must be undertaken in accordance with the cyanobacteria/cyanotoxin response plan (rule T3.94)
- If cyanotoxins in the treated water exceed the MAVs, a “do not use advisory” must be issued (rule T3.95)



Pātai | Questions?