

# BACTERIAL TESTING OF COOLING TOWERS PROCEDURE

## SCOPE

This procedure applies to all buildings owned and/or under the control of Monash University within Australia. Instances whereby buildings fall outside the scope of this procedure should be referred to Monash Occupational Health & Safety (OH&S) for consideration.

## PROCEDURE STATEMENT

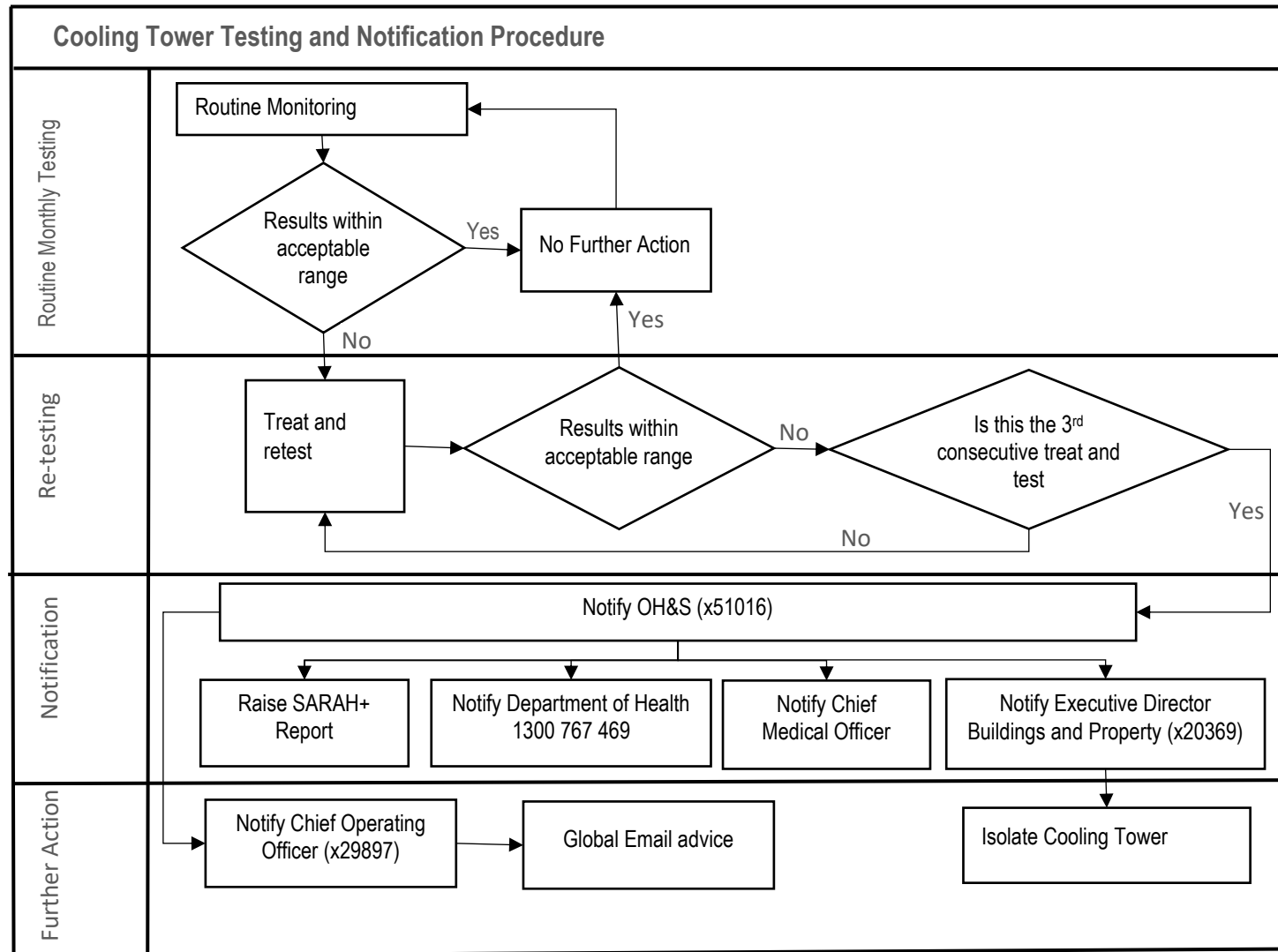
This procedure sets out the requirements for the treatment and notification of Legionella bacteria and elevated bacterial levels in cooling tower water and confirmed cases of Legionnaires disease at Monash University.

### 1. Abbreviations

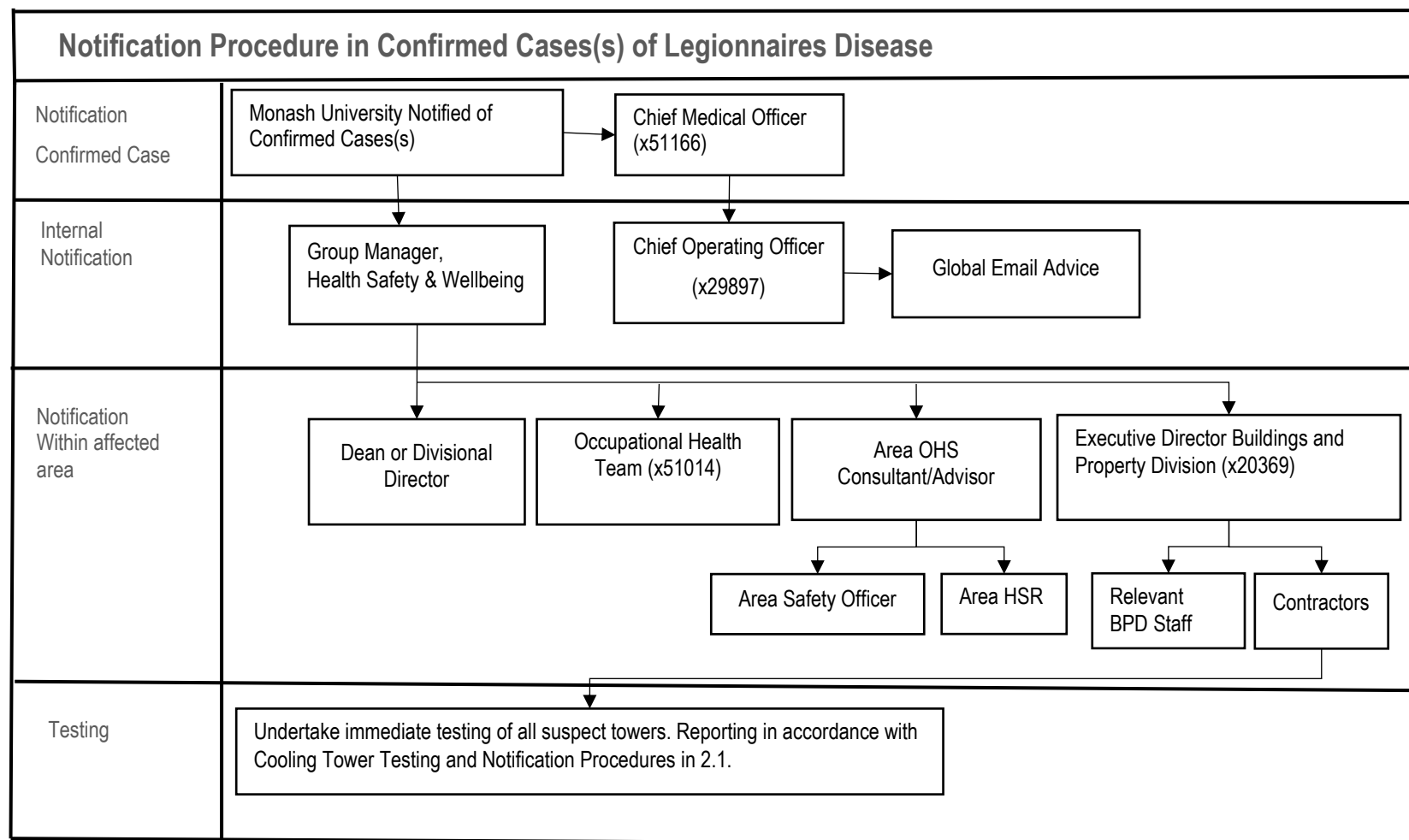
<b>CFU/mL</b>	Colony forming unit per millilitre of sample
<b>BPD</b>	Buildings and Property Division
<b>OHS</b>	Occupational Health and Safety
<b>OH&amp;S</b>	Monash Occupational Health & Safety team, led by the Group Manager, Health Safety & Wellbeing
<b>TBC/HCC</b>	Total bacteria count/heterotrophic colony count

## 2. Notification Procedures

### 2.1 Monitoring and actions process for Bacteria/Legionella Testing of Cooling Tower Water



## 2.2 Confirmed Case(s) of Legionnaires Disease



### 3. Responsibility for Implementation

3.1 A comprehensive list of OHS responsibilities is provided in the [OHS Roles, Responsibilities and Committees Procedure](#). A summary of the specific responsibilities with respect to bacterial testing of cooling towers is provided below.

3.1.1 **BPD (Services) staff must:**

- Manage the testing of HCC in the cooling tower water in order to detect the levels of Legionella species and HCC in accordance with the Public Health and Wellbeing Regulations 2019;
- Notify Monash Occupational Health & Safety (OH&S) if:
  - Any detection of Legionella species above 1000 CFU/mL, or
  - 3 consecutive detections of Legionella species from a Cooling Tower System; or
  - 3 consecutive elevated HCC (>200,000CFU/mL) are detected from the same Cooling Tower System);
- Advise OH&S of the need to re-test cooling tower/s water following notification from the Department of Health of confirmed case(s) of Legionnaires disease.

3.1.2 **Monash Occupational Health & Safety (OH&S) must:**

- When notified by BPD (Services) staff of Legionella detection and/or elevated HCC with results outside of the acceptable range in cooling tower water, communicate with all relevant parties within the University as detailed in section 2;
- When notified by the Department of Health of confirmed case(s) of Legionnaires disease, communicate with all relevant parties within the University as detailed in section 2.
- Publish Cooling Tower Summary of Results on OHS webpage.

### 4. Records

4.1 For OHS Records document retention please refer to:

[OHS Records Management Procedure](#).

## DEFINITIONS

A comprehensive list of definitions is provided in the [Definitions tool](#). Definitions specific to this procedure are provided below.

Key word	Definition
Total Bacteria Count/Heterotrophic Colony Count	Heterotrophic colony count is an estimate of the number of viable units of bacteria per millilitre of water made using the pour plate, spread plate or membrane filter test. It is used as an indicator of water quality in cooling water systems. HCC is also known as total bacteria count (TBC), total plate count or viable bacteria count test. It is reported as the number of colony forming units per millilitre of sample (CFU/mL). For the remainder of these procedures, bacteria levels will be referred to as HCC.
Cooling Tower System	A cooling tower, or a number of interconnected cooling towers that use the same recirculating water.

## GOVERNANCE

Parent policy	<a href="#">OHS&amp;W Policy</a>
Supporting procedures	<b>Monash University OHS Documents</b> <a href="#">Legionella and cooling towers OHS information sheet</a> <a href="#">OHS Records Management Procedure</a> <a href="#">OHS Roles, Responsibilities and Committees Procedure</a>
Supporting schedules	N/A
Associated procedures	<b>Australian and International Standards</b> <ul style="list-style-type: none"> <li>• ISO 45001:2018 Occupational Health and Safety Management Systems</li> <li>• AS/NZS 3666 Air-handling and water systems of buildings - Microbial Growth</li> <li>• 3666.1: 2011 Design, installation and commissioning</li> <li>• 3666.2: 2011 Operation and maintenance</li> <li>• 3666.3: 2011 Performance-based maintenance of cooling water systems</li> <li>• AS/NZS 4276.1: 2007 Water microbiology - General information and procedures</li> <li>• AS/NZS 3896: 2017 Waters-Examination for legionellae including Legionella pneumophila</li> </ul> <b>Other Documents</b> <a href="#">Guide to Developing Risk Management Plans for Cooling Tower Systems</a> , Public Health Division, Department of Health, Victoria <a href="#">Cooling Tower System Risk Management Template</a> , Public Health Division, Department of Health, Victoria 2011
Related Legislation	Public Health and Wellbeing Act 2008 Public Health and Wellbeing Regulations 2019 Building (Legionella) Act 2000 Building (Legionella Risk Management) Regulations 2001 Building (Legionella Risk Management) (Amendment) Regulations 2002 Health (Legionella) Regulations 2001 Occupational Health and Safety Act 2004 Occupational Health and Safety Regulations 2017
Category	Operational
Approval	Chief Operating Officer & Senior Vice-President 12 October 2023
Endorsement	Monash University OHS Committee 20 September 2023
Procedure owner	Group Manager, Health Safety & Wellbeing
Date effective	14 October 2023
Review date	14 October 2026
Version	6.0
Content enquiries	<a href="mailto:ohshelpline@monash.edu">ohshelpline@monash.edu</a>

## DOCUMENT HISTORY

Version	Date Approved	Changes made to document
3	April 2009	Notification procedures for prescribed action levels for bacterial/legionella testing of cooling tower water, and confirmed case/s of Legionella Disease, v3
4	June 2014	<ol style="list-style-type: none"> <li>1. Changed title to Bacterial Testing of Cooling Towers Procedure</li> <li>2. Added link to definitions document</li> <li>3. Updated responsibilities section to name maintenance and minor work as the responsible section of FSD for testing.</li> <li>4. Added tools associated with this document.</li> </ol>
4.1	May 2016	<ol style="list-style-type: none"> <li>1. Updated flowchart with contact details</li> <li>2. Changed names to reflect changes in organisational structure</li> </ol>
5	May 2017	<ol style="list-style-type: none"> <li>1. Updated to reflect changed organisational structure in Buildings and Property Division</li> <li>2. Updated flowchart to clarify triggering of additional actions after 3rd positive test.</li> <li>3. Updated Records, Compliance and References sections</li> </ol>
5.1	August 2017	<ol style="list-style-type: none"> <li>1. Updated logos in header</li> <li>2. Updated OHS Regulations to 2017</li> </ol>
5.2	September 2020	<ol style="list-style-type: none"> <li>1. Added references to Building (Legionella) Act and Building (Legionella Risk Management) (Amendment) Regulations 2002</li> <li>2. Reference to superseded Health Act 1958 replaced with Public Health and Wellbeing Act 2008</li> <li>3. Removed references to AS/NZS 2243.1: 2005 Safety in Laboratories Part 1 - Planning and operational aspects and 2243.2: 2006 Safety in Laboratories Part 2 - Chemical aspects as irrelevant</li> <li>4. Updated reference to AS/NZS 3896: 2008 to AS/NZ 3896: 2017</li> <li>5. Removed reference to deleted information sheet Risk management of cooling towers OHS information sheet</li> </ol>
5.3	July 2021	<ol style="list-style-type: none"> <li>1. Updated certification logo to ISO 45001 in the footer</li> <li>2. Added the Standard ISO 45001 under "Associated procedures" in the Governance table</li> <li>3. Updated OHS Policy under 'Parent Policy' to OHS&amp;W Policy</li> </ol>
6.0	October 2023	<ol style="list-style-type: none"> <li>1. Updated reference for Group Manager, Health Safety &amp; Wellbeing</li> <li>2. Clarified the definition for a Cooling Tower System</li> <li>3. Updated the flow charts for notifications</li> <li>4. Updated the reporting requirements as per the updated Regulations</li> <li>5. Updated references to DHHS with Department of Health</li> <li>6. Reference to AS/NZS 2031.2 removed as not relevant</li> <li>7. Updated Public Health and Wellbeing Regulations to 2019 from 2009</li> <li>8. Removed duplicate reference to Public Health and Wellbeing Act 2008</li> </ol>