Appendix 1 Template for cooling tower system risk management plan

Components and format of a risk management plan

Generally, a risk management plan (RMP) should have a number of basic components, including:

• site and contact details

• assessment of each of the critical risks

• summary of the overall risk classification

• details of the system (collected during the risk assessment process)

• attachments or references to other documents, such as operational plans and shut-down procedures.

There is no prescribed format for an RMP. This template is provided as a guide, but other formats may be used.

About the template

The template is designed to be completed:

• by operators of cooling tower system, or landowners who have cooling tower systems on their land

• after reading this guide

• after completing a thorough risk assessment, as outlined in this guide.

This process will meet the requirements of the Public Health and Wellbeing Act 2008 for development of an RMP.

An RMP must be developed for every cooling tower system on the site. It must be made available to an authorised officer of the Department of Health and Human Services on request.

Implementation of the operational program outlined in the RMP would also meet the requirements of the Public Health and Wellbeing Regulations 2009.

An electronic version of the template (in Word) is also available,[[1]](#footnote-1) and can be modified for development of an RMP.

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| Disclaimer  This document is intended only as a general guide to the development of risk management plans for cooling tower systems. No warranty as to the completeness of the information is given. The Department of Health and Human Services and its employees disclaim all liability and responsibility for any direct or indirect loss or damage that may be suffered through reliance on any information contained in, or omitted from, this document. No person should act solely on the basis of the information contained in the document without obtaining appropriate professional advice about obligations in specific circumstances. |

Site and key contact details[[2]](#footnote-2)

| Record | Details |
| --- | --- |
| Site location (property address) |  |
| Number of cooling towers in system |  |
| Cooling tower system number17 |  |
| Registration period18 |  |
| Tower location reference (if one exists) |  |
| Site owner’s name and contact details (Include company name, and contact person’s business and after-hours telephone numbers) |  |
| Cooling tower system owner’s name and contact details (Include company name, and contact person’s business and after-hours telephone numbers) |  |
| Person responsible for day-to-day operation of the cooling tower system (Include company name, and contact person’s business and after-hours telephone numbers)19 |  |
| Water treatment provider’s name and contact details (Include company name, and contact person’s business and after-hours telephone numbers) |  |
| Water sampling or laboratory contractor name and contact details (Include company name, and contact person’s business and after-hours telephone numbers) |  |
| Department of Health and Human Services Legionella Team | 1800 248 898 |

Critical risks

Stagnant water

| Risk control strategy for stagnant water | Assessment of the cooling  tower system | Operational or tower system improvement response20 |
| --- | --- | --- |
| Install a timer connected to a recirculating pump set to operate at least once a day to circulate the water | Is the system (or part of the system) idle for more than a month?   Yes  No |  |
| Where the system (or part of the system) is idle for more than a month, is a recirculating pump with a timer fitted to automatically circulate the water at regular intervals, to prevent it becoming stagnant?   Yes  No21 |  |
| Remove or activate any ‘dead legs’ | Are there dead legs in the system?   Yes  No |  |
| Other22 |  |  |

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| Risk classification for stagnant water23  A  B  C  D |

Nutrient growth

| Risk control strategy for nutrient growth | Assessment of the cooling  tower system | Operational or tower system improvement response24 |
| --- | --- | --- |
| Identify sources of environmental contamination and, where possible, reduce the amount of contamination | Are there factors in and around the site that may lead to environmental contamination and an increase in the level of nutrients in the water of the cooling tower system?   Yes  No |  |
| If ‘Yes’, can you reduce the levels of contamination?   Yes25  No26 |  |
| Control corrosion | Do you have a corrosion control program?   Yes  No27 |  |
| Increase the frequency of cleaning | How frequently is the tower cleaned?28 |  |
| Protect the basin and ‘top deck’ of the tower from sunlight | Are any of the wetted surfaces exposed to sunlight?   Yes29  No |  |
| Reduce the water temperature, where possible | Can the water temperature of the tower be reduced?   Yes30  No31 |  |
| Other32 |  |  |

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| Risk classification for nutrient growth33  A  B  C  D |

Poor water quality

| Risk control strategy for poor water quality | Assessment of the cooling  tower system | Operational or tower system improvement response34 |
| --- | --- | --- |
| Ensure comprehensive water treatment program | Do you use two or more biocides in some form of rotation?   Yes  No35 |  |
| Is the system continuously treated with a biodispersant?   Yes  No36 |  |
| Do you use a biodispersant that is compatible with the other chemicals in use (including chlorine) during the disinfection, cleaning and re-disinfection process?   Yes  No37 |  |
| Do you treat the water with anticorrosion chemicals?   Yes  No38 |  |
| Have you developed performance indicators that are frequently measured to confirm that the water chemistry is under control?   Yes39  No40 |  |
| Test for HCC | How frequently do you test for HCC? |  |
| Test for Legionella | How frequently do you test for Legionella? 41 |  |
| Manage HCC | What HCC do you allow before you take remedial action?   200,000 CFU/mL   Less than 200,000 CFU/mL42 |  |
| Respond to high HCC results | How do you respond to a high HCC test result?   We follow Figure A143   We follow Figure A244   We follow our own response plan45 |  |
| Respond to the detection of Legionella | How do you respond to Legionella being detected in a sample?46   We follow Figure A347   We follow another plan that still meets the requirements of the Regulations48 |  |
| Respond to the detection of Legionella on two or more occasions within a 12-month period | How do you respond to Legionella being detected in a sample on two or more occasions during a 12-month period49?   The RMP is reviewed, in addition to the required actions (refer to Figure A3)   Other (provide details) |  |
| Label the cooling tower system | Is the cooling tower and cooling tower system labelled with the CTS number?   Yes50  No51 |  |
| Ensure appropriate bleed-off rates to prevent a build-up of solids | Is an automated bleed-off device installed?52   Yes  No53 |  |
| Install automated biocide dosing device | Do you have an automated biocide dosing device?   Yes  No54 |  |
| Install automated dosing devices for all chemicals and agents | Do you have automated dosing devices for all chemicals and agents?   Yes  No55 |  |
| Select an appropriate point for chemical dosing | Does the chemical dosing occur well away from the sampling point for bacterial tests?   Yes  No56 |  |
| Provide a dedicated water sampling point | Are water samples always taken from the same point?   Yes  No |  |
| If ‘Yes’, is that point clearly labelled with the CTS number?57   Yes  No |  |
| Has a sampling tap been fitted?   Yes  No |  |
| Install a side-stream filter if environment is dirty | Is the environment around the tower dirty?   Yes  No |  |
| If ‘Yes’, do you have a side-stream filter?   Yes  No58 |  |
| Other59 |  |  |

CFU = colony forming unit; CTS = cooling tower system; HCC = heterotrophic colony count

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| Risk classification for poor water quality60  A  B  C  D |

Deficiencies in the cooling tower system

| Risk control strategy for deficiencies in the cooling tower system | Assessment of the cooling  tower system | Operational or tower system improvement response61 |
| --- | --- | --- |
| Review the system design against AS/NZS 3666 | Has a review been conducted?   Yes  No62 |  |
| Can any improvements be made to the system design to reduce risks?   Yes63  No64 |  |
| Review current performance of system | Has a review been conducted?   Yes65  No66 |  |
| Develop operating and maintenance manuals | Have operating and maintenance manuals been developed?   Yes  No67 |  |
| Review the useful life of the system and plan to replace it at an appropriate time | When was the tower built? |  |
| Do you have a program to replace it?   Yes68  No69 |  |
| Install a modern, high-efficiency drift eliminator | Is a modern, high-efficiency drift eliminator fitted to every tower in the system?   Yes  No70 |  |
| Are the drift eliminators in good condition?   Yes  No71 |  |
| Have the drift eliminators been certified by the manufacturer as meeting AS/NZS 3666?   Yes  No72 |  |
| Use suitable materials for external components | Have you reviewed the condition of the tower structure?   Yes73  No74 |  |
| Use suitable materials for internal components | Have you reviewed the materials and condition of the internal components of the tower system?   Yes75  No76 |  |
| Other77 |  |  |

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| Risk classification for deficiencies in the cooling tower system78  A  B  C  D |

Location and access

| Risk control strategy for location and access | Assessment of the cooling  tower system | Operational or tower system improvement response79 |
| --- | --- | --- |
| Understand the extent of potential exposure to the cooling tower | Is the cooling tower system located in an acute health or aged residential care facility?   Yes80  No |  |
| If ‘No’, is the cooling tower system located within 500 m of an acute health or aged residential care facility?   Yes81  No |  |
| Minimise access to tower and surrounds | How many people have access to the tower and its surrounds?82   Very high numbers83   High numbers84   Moderate numbers85   Low numbers86 |  |
| Are warning signs87 displayed around the tower?   Yes  No88 |  |
| Is the area around the cooling tower system used as a gathering place for staff and visitors, particularly smokers?   Yes89  No |  |
| Is access to the tower restricted?   Yes  No90 |  |
| Relocate the tower to a more remote site or less contaminated environment (where possible) | Have you reviewed whether it is possible to relocate the tower to a safer location?   Yes91  No92 |  |
| Ensure that there is a safe and stable area for maintenance workers to access the cooling tower system | Have you reviewed the working environment for maintenance workers?93   Yes94  No95 |  |
| Other96 |  |  |

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| Risk classification for location and access97  A  B  C  D |

Risk assessment summary

|  |  |
| --- | --- |
| Critical risk | Risk classification98 |
| Stagnant water |  A  B  C  D |
| Nutrient growth |  A  B  C  D |
| Poor water quality |  A  B  C  D |
| Deficiencies in the cooling tower system |  A  B  C  D |
| Location and access |  A  B  C  D |
| Are there any other considerations that may affect the overall risk assessment of the cooling tower system? |  |
| Overall cooling tower system risk classification category |  A  B  C  D |

Attachments99[[3]](#footnote-3)

Operational program

Recommended operational programs based on risk classification

|  |  |  |  |
| --- | --- | --- | --- |
| Program A | Program B | Program C | Program D |
| Weekly inspection | Monthly inspection (2 weeks after service) | Monthly inspection (2 weeks after service) | Monthly service |
| Fortnightly service | Monthly service | Monthly service |
| HCC and Legionella tested at a minimum of once each month | HCC and Legionella tested monthly | HCC tested monthly  Legionella tested every 2 months | HCC tested monthly  Legionella tested every 3 months |
| Six monthly cleaning, or more frequently where environmental contamination (e.g. dust, soil, building works) is a problem | | | |

HCC = heterotrophic colony count

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| --- | --- |
| Element | Response |
| Describe your maintenance program |  Department of Health and Human Services program A |
|  Department of Health and Human Services program B |
|  Department of Health and Human Services program C |
|  Department of Health and Human Services program D |
|  Self-developed |
|  Developed by consultant |
| If self-developed or developed by consultant, complete remainder of table | |
| Service frequency |  Weekly |
|  Fortnightly |
|  Monthly |
| HCC testing frequency |  Monthly  Every ………… week(s) |
| Legionella testing frequency |  Every 3 months  Every ………… weeks/months |
| Tower cleaning frequency |  Every 6 months  Every ………… months |
| Inspection frequency |  Every ………… weeks/months |

Monitoring and review

| Element | Response |
| --- | --- |
| Date that the RMP is due for review |  |
| Name and title of person responsible for the review |  |
| Date that the RMP was reviewed |  |
| Are all site and key contact details accurate? Has the Department of Health and Human Services been notified of any changes? |  Yes  No |
| Is the cooling tower system currently registered with the Department of Health and Human Services? |  Yes  No |
| Does the RMP require amendment? |  Yes  No |
| Was the review conducted as a result of a triggering event?100 |  |
| If the RMP requires amendment, dates that the amendments were due and completed | Due |
| Completed |

Communication

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Details | | | |
| List parties (names and contact details) who will be informed in the event of a positive Legionella test | Category | Name and title | Telephone | Comment |
| Staff |  |  |  |
| Occupational health staff or contractors |  |  |  |
| Unions |  |  |  |
| Building owner |  |  |  |
| Other building occupiers |  |  |  |
| Medical officer |  |  |  |
| Staff counsellors |  |  |  |
| Department of Health and Human Services Legionella Team |  | 1800 248 898 or email legionella@health.vic.gov.au |  |
| Media liaison officer |  |  |  |
| Company spokesperson |  |  |  |
| Chief executive |  |  |  |
| Other (specify) |  |  |  |

Endorsement of risk management plan

|  |  |
| --- | --- |
| Name and position of person responsible for  risk management plan |  |
| Signature | Date |

1. [www.health.vic.gov.au/legionella/index](http://www.health.vic.gov.au/legionella/index) [↑](#footnote-ref-1)
2. The Public Health and Wellbeing Act 2008 requires the department to be notified in writing within 30 days of any change in ownership, address or any other contact details by the owner of the land (or their agent) on which the cooling tower system is located.

   17 This is marked on the Certificate of Registration supplied by the department.

   18 The department registers cooling tower systems for 1, 2 or 3 years. The registration period is included on the certificate of registration.

   19 This person has the authority to approve the disinfection of the system on request of the department. It is not the water treatment service provider. [↑](#footnote-ref-2)
3. 99 Other information that can be appended to the RMP includes site plan, photographs, schematics of water flows, cooling tower makes and models, and basic system parameters (e.g. system volume, system heat rejection capacity, system operating temperature). [↑](#footnote-ref-3)