



Report on public consultation:

Proposed changes to the regulation of water-cooling systems to prevent Legionnaires' disease in NSW

July 2017

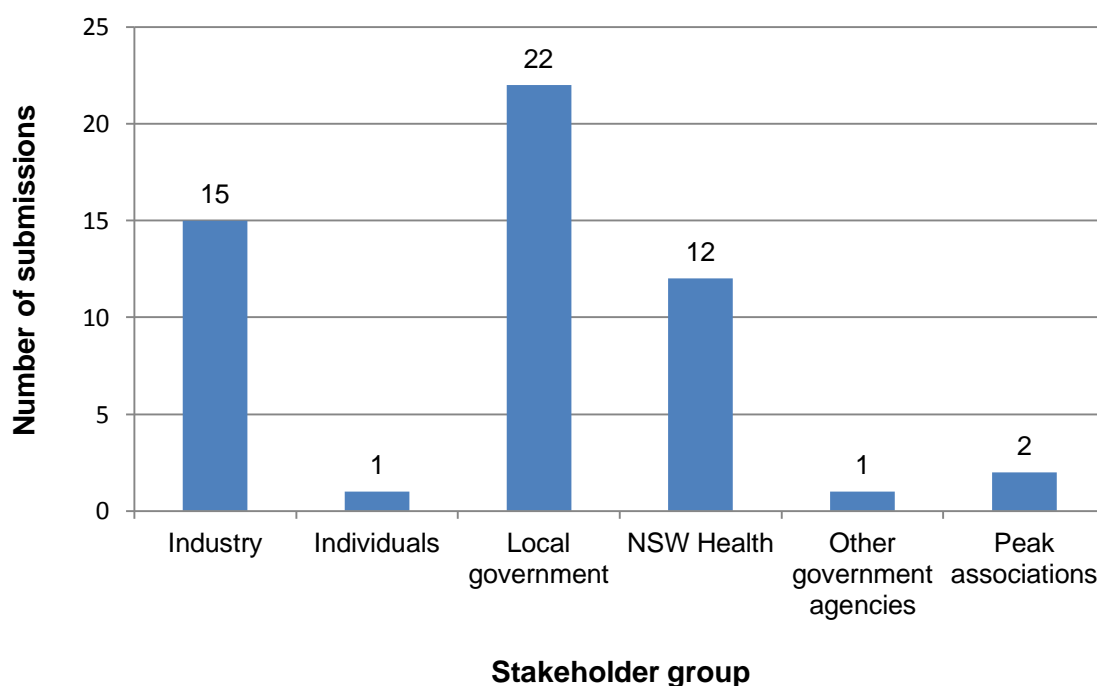
EXECUTIVE SUMMARY

This report presents the feedback received on the discussion paper entitled “Proposed changes to the regulation of water-cooling systems to prevent Legionnaires’ disease in NSW”, released for public consultation in December 2016.

The discussion paper presented the recommendations of the NSW Chief Health Officer’s Expert Panel, which was established in response to outbreaks of Legionnaires’ disease in the Sydney central business district in March and May 2016. The Expert Panel recommendations are provided on page 6.

During the consultation period NSW Health received 53 submissions, as shown in Figure 1 below.

FIGURE 1: SUBMISSIONS RECEIVED BY STAKEHOLDER GROUP



The recommendations below are based on the original Expert Panel recommendations, together with further consideration of submissions received during the public consultation.

RECOMMENDATIONS

1. Amend the *Public Health Regulation 2012* to require occupiers of premises containing water-cooling systems to ensure:

- 1.1. A risk assessment is performed in accordance with Australian Standard 3666 Part 3, and documented as a risk management plan (RMP), by a competent person, every five years.
- 1.2. Annual auditing of RMPs is performed by an independent auditor, and audit certificates are lodged with local government.
- 1.3. Monthly inspection, chemical analysis, and laboratory testing for *Legionella* and heterotrophic colony count (HCC) is performed by a duly qualified person, and local government is notified of critically high *Legionella* count >1,000 cfu/mL or HCC >5,000,000 cfu/mL.
- 1.4. Unique identification numbers are attached to individual cooling towers, to assist with outbreak investigation activities.
- 1.5. Requirements for remedial action in response to high levels of *Legionella* and HCC are clearly set out in the Regulation.

2. Support the above regulatory amendments by:

- 2.1. Developing guidance on the roles and responsibilities of occupiers, risk assessors, auditors, authorised officers, industry, local government, and NSW Health.
- 2.2. Creating procedures and protocols for responding to the new regulatory requirements, for example, local government response to a notification of critically high *Legionella* levels in a water-cooling system.
- 2.3. Working to build capacity in the relevant workforces, for example, by outlining an education and training curriculum for stakeholders involved in managing water-cooling systems in NSW.
- 2.4. Ensuring that any changes to the Regulation have a sufficient lead in time for stakeholders.

INTRODUCTION

Cooling towers are at high risk of contamination by *Legionella* bacteria. Cooling towers usually sit on top of large buildings as part of the water-cooling system. They include a pool of water that is sprayed over pipes to cool the air inside the building. The water is then recirculated into the pool of the cooling towers. This pool of warm water provides ideal conditions for the growth of *Legionella pneumophila* as well other bacteria. Depending on the weather conditions, the water droplets from cooling towers can drift over the roof of the building and down into the street beside the building, or may be blown some distance away. People can be infected with *Legionella* bacteria if they breathe in contaminated water droplets.

Due to the risk of contamination, water-cooling systems must be regularly and carefully inspected, disinfected and, where necessary, cleaned and decontaminated. While regular testing is not necessary to keep the cooling towers clean, it can assist the maintenance process by providing a scientific basis and understanding of microbial loading in the system. Although previous sampling has estimated that 10% or more of cooling towers may be contaminated with various species of *Legionella* bacteria at any one time, most are never found to cause outbreaks of disease. The reason why some cooling towers are associated with outbreaks is unclear, but may include the level of contamination, weather conditions that promote *Legionella* growth, and survival in droplets (such as the level of humidity, sunlight, temperature and wind direction), and the proximity of susceptible people.

The NSW *Public Health Act 2010* (the Act) and *Public Health Regulation 2012* (the Regulation) sets out the installation, operation and maintenance requirements that apply to occupiers of premises containing “regulated systems”. Water-cooling systems are a type of regulated system. The Act and Regulation include requirements for managing water-cooling systems which are aimed at minimising the growth and spread of *Legionella* bacteria.

Under section 28-30 of the Act, an occupier of premises containing a water-cooling system must comply with the prescribed installation, operation and maintenance requirements. Under section 31 of the Act, the occupier of the premises must notify the local government within a month of a water-cooling system being installed. The local government must maintain a register of water-cooling systems installed on premises in its area. Under section 33 of the Act, in an outbreak of Legionnaires’ disease, the Secretary of the NSW Ministry of Health can direct an investigation and an authorised officer may order the occupier of the premises to take actions to maintain a water-cooling system.

The prescribed installation, operation and maintenance requirements are set out in more detail in the Regulation. An occupier of premises containing a water-cooling system must ensure that:

- The system is installed in accordance with AS/NZS 3666.1:2011 Air-handling and water systems of buildings—Microbial control—Design, installation and commissioning, as applicable to the specific system;
- The system is operated as required by AS/NZS 3666.2:2011 Air-handling and water systems of buildings—Microbial control—Operation and maintenance;
- There must be safe and easy access to a regulated system for the purpose of the cleaning, inspection and maintenance of the system;
- The water-cooling system must be equipped with a disinfection procedure that is in operation at all times and that is designed to control microbial growth so that:
 - The level of *Legionella* in the system is not more than 10 colony-forming units per millilitre, and
 - The heterotrophic colony count (HCC) in the system is not more than 100,000 colony-forming units per millilitre (cfu/mL).

If a level set out above is exceeded, remedial action must be taken as soon as practicable by a “competent person” or a person acting under the supervision of a competent person;

- A water-cooling system must be maintained in accordance with:
 - AS/NZS 3666.2:2011 Air-handling and water systems of buildings—Microbial control—Operation and maintenance, or
 - AS/NZS 3666.3:2011 Air-handling and water systems of buildings—Microbial control—Performance-based maintenance of water-cooling systems, but only if the occupier of the premises on which the water-cooling system is installed has notified the local government authority for the area;
- All tests carried out in the course of complying with the prescribed maintenance requirements for a regulated system must be carried out in a laboratory accredited by the National Association of Testing Authorities for that purpose; and
- The system must be certified annually by a competent person as being equipped with a disinfection procedure that is effective under the range of operating conditions that could ordinarily be expected for the system concerned. A copy of the most recent certificate at the premises must be kept and made available for inspection on request by an authorised officer.

A competent person is defined in the Regulation as a person who is a tertiary qualified chemist, chemical engineer, engineer or microbiologist and who has relevant expertise.

Notably, among other aspects required under the Regulation, the Australian Standards referred to in the Regulation require that water-cooling systems be:

- Inspected at least monthly and cleaned at least 6-monthly (AS/NZS 3666.2:2011), or
- Inspected and tested monthly and controls applied according to monthly testing results and other assessments (AS/NZS 3666.3:2011).

Following an outbreak of Legionnaires' disease in the Sydney central business district in 2016, an Expert Panel (the Panel) was established to review the current regulatory framework and determine if any new measures were required to strengthen the prevention and control of *Legionella* contamination in water-cooling systems. The Panel included public health physicians, environmental health officers, an infectious disease physician, a legal expert, industry experts, a mechanical engineer and local government. NSW Health also carried out initial consultation with the Office of Local Government, Local Government NSW, and the Victorian Department of Health and Human Services (DHHS) to investigate regulatory models.

The Panel noted that while the current regulatory framework in NSW was robust, it allows for varying levels of testing and inspection to be carried out by, or on behalf of, occupiers. This may not take into account the particular design of the water-cooling system and its particular risks for contamination. The physical design of the cooling tower is not usually considered where occupiers follow the maintenance requirements of AS/NZS 3666.2:2011, as many do, rather than AS/NZS 3666.3:2011.

The Panel considered that a risk management approach would strengthen the current regulatory framework for water-cooling systems in NSW. The Panel reviewed a range of models in Australia and internationally. Particular attention was given to the model used in Victoria, which includes risk management plans (RMPs) for individual water-cooling systems and independent auditing. The Panel noted that the Victorian model is already used by national organisations that operate in Victoria and NSW.

The Panel recommended that:

1. NSW Health should:
 - Develop a regulatory framework that requires minimum standards and a risk management framework for the operation of cooling towers
 - Build capacity in the relevant workforces.
2. Minimum standards include that all cooling towers are tested every month for *Legionella* and heterotrophic colony count and inspected at least monthly with the requirements to be determined by the risk management plan.
3. Building occupiers should:
 - Ensure that cooling towers are labeled with a unique identification number
 - Maintain risk management plans for each water-cooling system

- Demonstrate that compliance with each cooling tower's risk management plan has been audited annually by an independent auditor
 - Provide evidence of compliance with the risk management plan annually to the local government
 - Perform an online disinfection when required by an authorised officer.
4. Testing laboratories should notify cooling tower test results of:
- *Legionella* count >1,000 cfu/mL and
 - HCC >5,000,000 cfu/mL to the local government.
5. Local government should:
- Require additional testing of cooling towers and notification of results if required
 - Include evidence of compliance with risk management plans in the register of cooling towers.

In December 2016, NSW Health released a discussion paper entitled "Proposed changes to the regulation of water-cooling systems to prevent Legionnaires' disease in NSW". This paper called for submissions on a number of questions related to the Expert Panel's recommendations. The following sections provide an analysis of the submissions received, and provide further recommendations on the way forward for the management of water-cooling systems in NSW.

ANALYSIS OF SUBMISSIONS

EXPERT PANEL RECOMMENDATION – MAINTAIN RISK MANAGEMENT PLANS FOR EACH WATER-COOLING SYSTEM

Questions in discussion paper

4.1.1 What barriers might there be to occupiers complying with AS/NZS 3666.3:2011 and implementing a risk management plan?

4.1.2 Does the Victorian guide provide a useful template?

SUMMARY OF SUBMISSIONS

The discussion paper asked for feedback on changing the way water-cooling systems are maintained in NSW, from a prescriptive approach (AS/NZS 3666.2:2011) to a risk based approach (AS/NZS 3666.3:2011).

The majority of submissions **supported adoption of AS/NZS 3666.3:2011** for a consistent risk based approach across NSW, and **agreed that the Victorian guide provides a useful template for the RMP**. A **key barrier** identified for occupiers to comply with AS/NZS 3666.3:2011 and implement a RMP **is the implementation period**. Several submissions felt that the timeframe for occupiers and industry to familiarise themselves with the changes and make any necessary adjustments to their operations would take longer than 3 to 6 months.

Some submissions raised **concerns about inconsistencies between AS/NZS 3666.3:2011 and the Victorian guidelines for RMPs**. For example, the Victorian RMP has limited flexibility to change the risk classification of water-cooling systems, which may not reflect the control strategies used under AS/NZS 3666.3:2011. Further, **some submissions support an annual review of the RMP**, instead of the approach taken in AS/NZS 3666.3:2011, which requires a review of the RMP every five years, or when conditions change. A few submissions also felt that the **parameters of the risk assessment, such as location-related risk, are not as clear** in Table 2.1 of AS/NZS 3666.3:2011 compared with the Victorian RMP.

Some submissions felt that **building owners or facility managers, and not occupiers, are the more appropriate “responsible person”** for implementation of the RMP and compliance with AS/NZS 3666.3:2011. Owners and facility managers often have more control of site activities, knowledge of building design and location of records, and are more easily accessible for day to day issues and emergencies. However, a few submissions were also **concerned about transfer of the RMP when ownership changes** (especially when the owner is located interstate or overseas).

Several submissions felt that **further clarification is needed around the “competent person”** responsible for undertaking risk assessments and developing RMPs. The submissions recommended that competent persons should possess tertiary education in engineering or science; practical experience in cooling tower operation and management; an understanding of risk management and AS/NZS 3666.3:2011; and independence from the person or corporation employed to maintain the water-cooling system, in order to avoid conflict of interest.

Several submissions were also concerned that the **small pool of competent persons in NSW will result in high initial costs** for occupiers and small businesses. Many submissions also felt that the **administrative burden** may be a barrier and suggested standardised, electronic record keeping of RMPs for ease of access.

The majority of submissions agreed that the **Victorian guide provides a useful template for RMPs**. Strengths of the template identified include the focus on cooling towers in populous areas, corrective actions based on microbial tests, maintenance of a listing of approved auditors, revocation of auditors, avoidance of conflict of interest, and annual RMP review. The **major barriers identified in the Victorian guide** are that the RMP template: is designed to be **completed by the building owner** (who may not have the necessary expertise); does not address **updated work practices** (such as online monitoring and reporting); and may lead to **some risks not being addressed**, due to the generic nature of the checklists which require only “yes/no” responses.

DISCUSSION

NSW Health considers that the adoption of AS/NZS 3666.3:2011 and implementation of RMPs will strengthen the current regulatory framework. Several organisations currently using AS/NZS 3666.3:2011 will not experience barriers in complying with the Standard. However, a grace period of additional months is likely to be required for occupiers currently not using AS/NZS 3666.3:2011, such that they can make necessary adjustments to their operations and implement the RMP.

The Victorian approach to managing water-cooling systems is tailored to its particular geographic, jurisdictional, epidemiological and workforce needs. While the Victorian RMP provides a useful template, it cannot be applied to NSW without significant amendment. Some elements of the Victorian approach which do not follow AS/NZS 3666.3:2011 are felt to be useful to NSW (for example, annual review of RMPs). However, other elements will require different interpretation in NSW (for example, the definition of competent persons able to prepare RMPs). It is felt that the combination of a predominantly risk based approach (following AS/NZS 3666.3:2011) with minimum standards (following some components of AS/NZS 3666.2:2011 such as monthly testing) will ensure an effective minimum safety net for minimising the risk of Legionnaires’ disease outbreaks.

If the recommended changes are made to the Regulation, it will be important for NSW Health to develop guidance to describe the roles and responsibilities of occupiers, risk assessors, auditors, authorised officers, industry, local government, and NSW Health. This will assist stakeholders to respond to the new regulatory requirements, for example, local government response to a notification of critically high *Legionella* levels in a water-cooling system.

If the recommended regulatory changes are made, there will need to be sufficient lead in time for stakeholders to be aware of changes, and implement the new regulatory requirements. It will also be useful to work towards building capacity in the relevant workforces, for example, by outlining an education and training curriculum for stakeholders involved in managing water-cooling systems in NSW.

Based on Victorian and industry estimates, it is estimated that the costs to the occupier of implementing the recommended regulatory changes may be approximately \$320-820 per annum (or \$1600-4100 every five years). These are based on estimates of: (1) water-cooling system registration fee, approximately \$100 (one-off), (2) commissioning a RMP, approximately \$500-2000 (every five years), depending on the complexity of the system, and (3) commissioning an audit and certification of a water-cooling system, approximately \$200-400 (annually). There are likely to be some additional costs involved in complying with the new regulatory requirements (such as occupier notifications to local government). However, some new requirements (such as monthly laboratory testing) may already be performed by some occupiers.

In line with the current requirements in the Act, it would be an offence if an occupier fails to comply with the proposed new prescribed requirements.

CONCLUSIONS

- 4.1.1 The barriers to compliance with AS/NZS 3666.3:2011 include the lack of an immediate ability to comply with the recommended regulatory changes, and lack of clarity around the definition of an appropriate person for developing the RMP.
- 4.1.2 The Victorian guide provides a useful template for developing RMPs. However, different requirements in NSW include: the RMP has to be developed by a competent person (not a building owner), and the need to address risks in more detail (rather than through “yes/no” responses). The Victorian guide will be considered when developing the RMP template in NSW; however, this it will have to take into account the geography, jurisdictions, case distribution, and workforce needs in NSW.

In addition:

4.1.3 The competencies and independence of competent persons able to undertake the risk assessment and prepare RMPs will need to be defined.

EXPERT PANEL RECOMMENDATION – DEMONSTRATE COMPLIANCE WITH RISK MANAGEMENT PLANS THROUGH ANNUAL CERTIFICATION BY AN INDEPENDENT AUDITOR

Questions in discussion paper

4.2.1 What challenges might arise from the requirement for third party auditors, and how might these be overcome?

4.2.2 What competencies are required for auditors?

SUMMARY OF SUBMISSIONS

Many **submissions asked for more details** regarding the changes proposed by the new regulatory model.

The majority of submissions supported and **agreed to the use of third party auditors** in principle. However, a number of submissions **did not agree that an audit could be carried out off-site**. Submissions recommended that auditors should carry out a minimum of one inspection on-site before certification can be given; subsequent annual audits could be off-site (desk-based) provided that the auditing process does not reveal a substantial change to the functioning of the water-cooling system. Submissions have also identified the **need to include penalty and offence provisions** where poor quality or inappropriate audits have been carried out.

One submission stated that authorised officers in local government or public health units may not be able to carry out the role of auditor as this may constitute a conflict of interest. Additionally, some responses identified that there may be a **gap in the number of suitably qualified auditors** compared with the number of water-cooling systems in NSW. This may particularly be the case in rural and regional NSW.

The majority of submissions have **recommended that NSW Health develop an approval process for auditors**, as formal training and guidelines are currently not available. Some submissions suggested that NSW Health should **investigate models of third party auditing** which are currently operating in NSW, such as the contaminated land auditing program. Many submissions have recommended that auditors possess a bachelor degree in chemistry, engineering, or mechanical engineering; competencies in relevant ISO standards; and relevant industry experience.

DISCUSSION

NSW Health considers that independent (third party) auditing of RMPs will provide important oversight of the operation and maintenance of water-cooling systems in NSW. Different models of conducting audits were discussed by submissions to the discussion paper. NSW Health considers the Victorian model of annual off-site (desktop) audits of RMPs to be the most appropriate approach. This is based on the fact that the off-site audit model: has already been implemented in another jurisdiction; is easier for industry to comply with (as many companies operate in both NSW and Victoria); and poses a lower financial burden on occupiers (as the cost of off-site audits would be less than on-site audits).

The off-site audit model is proposed while noting that auditors may have the scope to recommend on-site auditing, and that authorised officers will also have the ability to perform on-site inspections. Examples of triggers for on-site follow-up include: responding to failed audits, and responding to a notification of critically high levels of *Legionella* or HCC. Furthermore, NSW Health will continue to monitor the off-site audit model. The impact of the proposed regulatory changes on the control of *Legionella* can be evaluated, and changes to the auditing model can be made in the future, if appropriate.

If the recommended regulatory changes are made, there will need to be clear parameters regarding independence requirements (that is, the relationship between auditors, risk assessors, water treatment companies, and occupiers). This may include the ability to revoke auditor status of non-compliant or poorly performing auditors. The availability of a suitable number of qualified independent auditors will be addressed by: understanding current workforce capacity; developing training modules through TAFE; and exploring models used in other states such as Victoria.

CONCLUSIONS

- 4.2.1 The challenges of requiring third party auditors include: the gap in the number of suitably qualified auditors at present; the current lack of approval process for auditors; and differing views on whether audits could be carried out off-site. This will be addressed by establishing guidelines, standards, qualifications and an approval process for independent auditors.
- 4.2.2 The competencies required for auditors may be developed by considering: tertiary qualifications; competency with relevant ISO and Australian Standards; and relevant industry experience. NSW Health can provide further support through the development of forthcoming guidance documents.

In addition:

4.2.3 Further guidance can be developed to support stakeholders (including occupiers, risk assessors, auditors and authorised officers) in developing and reviewing the RMP.

EXPERT PANEL RECOMMENDATION – SUBMIT EVIDENCE OF COMPLIANCE WITH RISK MANAGEMENT PLANS TO LOCAL GOVERNMENT REGISTERS OF WATER-COOLING SYSTEMS

Questions in discussion paper

4.3.1 Are there any barriers to providing evidence of compliance to local government?

4.3.2 What evidence of compliance should be required?

SUMMARY OF SUBMISSIONS

Many submissions supported the requirement of submitting evidence of compliance with RMPs to a database. The current requirement for local governments to maintain a register of cooling towers in their area was highlighted as a barrier by most respondents. This responsibility was presented as being costly, and involving administrative burdens. In response, several submissions **recommended a state-wide database of cooling towers managed by NSW Health.**

Another barrier identified by a majority of submissions was the **authorised officers' level of qualification.** Authorised officers unfamiliar with the technical management of water-cooling systems may be unable to assess compliance with RMPs. Further, many respondents highlighted **inconsistent approaches to the inspection of cooling towers by authorised officers** across different organisations. Some submissions recommended an opt-out mechanism for those local government areas where there are no registered water cooling systems in operation.

The majority of submissions **supported the provision of evidence of compliance** with RMPs, by key stakeholders, to local government registers of water-cooling systems. Documentation such as the completed RMP (or certificate of RMP completion), audit certification, inspection reports, and cleaning reports could be provided to local government in an approved form. Local government authorities stated that submitting evidence of compliance could be **associated with an annual fee.**

DISCUSSION

The *Public Health Regulation 2012* states that each local government authority must maintain a register of water-cooling systems installed in its area. Allowing some local

government authorities to opt-out from keeping a register of cooling towers is not considered appropriate. Local government areas with no water-cooling systems will not receive any registrations, and areas with even a low number of cooling towers may still be at risk of Legionnaires' disease. However, in response to submissions, options for a state-wide database of cooling towers will be considered further by NSW Health.

NSW Health can help support authorised officers, and other stakeholders, to ensure they understand their roles and responsibilities. NSW Health will establish clear guidelines to assist local government in carrying out inspections of non-compliant water-cooling systems. This can include updating the current 2004 NSW Code of Practice, establishing clear guidelines to assist local government in carrying out inspections of non-compliant water-cooling systems.

CONCLUSIONS

- 4.3.1 The major barrier to providing evidence of compliance to local government is the inconsistent maintenance of cooling tower registers across local government areas in NSW. This will be addressed by considering the standardisation of data fields collected by local government, and by scoping out possible state-wide database solutions.
- 4.3.2 The evidence of compliance could include a certificate of RMP completion, and a certificate of audit. These could be provided in an approved form to ensure consistency across NSW.

In addition:

- 4.3.3 NSW Health should develop a plan for ongoing education and training to stakeholders involved in managing water-cooling systems in NSW, and provide training if appropriate.

EXPERT PANEL RECOMMENDATION – MONTHLY INSPECTION AND TESTING OF WATER-COOLING SYSTEMS FOR *LEGIONELLA* AND HETEROTROPHIC COLONY COUNT (HCC)

Question in discussion paper

4.4.1 Should monthly testing of cooling towers for *Legionella* and HCC be a minimum requirement?

SUMMARY OF SUBMISSIONS

The majority of submissions **supported monthly laboratory testing and inspection of cooling towers** for *Legionella* and HCC as a minimum requirement. However, a few submissions objected and **felt that RMPs should take a purely risk based approach** to determine the minimum frequency of testing and inspection (that is, based on the risk profile of the system and not necessarily perform minimum monthly testing). The submissions argued that it will be **onerous for small businesses** and particularly for **occupiers of premises with multiple cooling towers**.

A few submissions raised **concerns that monthly testing cannot be performed during periods of seasonal shut down** and draining of water cooling systems, which typically take places over a period of a few months. Similarly, the frequency of testing and inspection of systems that remain filled but non-operational is not clearly specified in AS/NZS 3666.3:2011.

Some submissions were concerned about **inconsistent record keeping of laboratory results**. Two submissions suggested that a central database or consistent template should be administered by NSW Health to record test results. A few submissions also raised concerns about the independence of the party responsible for sampling water-cooling systems.

DISCUSSION

Monthly inspection and testing of cooling towers allows direct assessment of the effectiveness of *Legionella* control activities, as high levels are associated with inadequate cleaning or disinfection of the cooling tower. Using monthly inspection and testing as a minimum standard in addition to the risk based approach will help to: ensure uniform practice across NSW; identify when systems are not functioning appropriately; and allow remedial action to be taken. In this regard, the minimum standard would apply to large and small businesses that own cooling towers.

AS/NZS 3666.3:2011 (section 3.2.2) allows the risk assessment to recommend variations to monitoring frequency if appropriate to the site (for example, additional

monitoring during summer months and reduced frequency of monitoring during winter). This can be reflected in RMPs.

Electronic record keeping could assist occupiers with administration. Electronic records are currently used in industry, where water treatment providers are able to upload test results to an online database. Possible options for a state-wide database of cooling towers will be investigated.

CONCLUSIONS

4.4.1 Monthly testing of cooling towers for *Legionella* and HCC should be a minimum requirement.

EXPERT PANEL RECOMMENDATION – MANDATORY NOTIFICATION OF MONTHLY TEST RESULTS WHEN *LEGIONELLA* COUNT >1,000 CFU/ML AND HCC >5,000,000 CFU/ML

Question in discussion paper

4.5.1 Are the levels for notification of *Legionella* and HCC appropriate?

SUMMARY OF SUBMISSIONS

The majority of submissions supported **the mandatory notification of high *Legionella* count and HCC results** to the appropriate regulatory authority. Some submissions **objected that notification levels should be lower**, with suggestions ranging from >10 to >500 cfu/ml for *Legionella* count, and >100,000 to >2,500,000 cfu/ml for HCC.

A few submissions supported **laboratory results being reported directly to NSW Health or the relevant public health unit for investigation, rather than the local government**. This was due to concerns about local government capacity to receive notifications, and knowledge of appropriate actions to take. A few other submissions felt that local government should only be notified where a system has had persistently high results.

Some submissions suggested laboratories should notify test results to local government. However, submissions had **concerns regarding the ability of laboratories to identify cooling tower locations, contact details, and the appropriate local government authority for sending reports**. Alternatively, some submissions suggested that **laboratories should notify results to the occupier** or responsible person identified in an RMP, who would then notify the relevant local government.

DISCUSSION

The recommended levels for notification recognise that lower levels of *Legionella* and HCC will require the occupier to take action under the relevant RMP. AS/NZS 3666.3:2011 requires escalated control actions to be undertaken at different levels of *Legionella* and heterotrophic microorganisms. The notification levels can be amended if necessary, over time.

Local government is the appropriate regulatory authority to act on elevated results from water-cooling systems, based on their local knowledge of risks and the built environment, and their existing enforcement powers and compliance activities under the Act. NSW Health intends to support local government in this role by providing training and technical support to authorised officers, and by consulting with local government to include fees for the regulatory activities undertaken.

CONCLUSIONS

4.5.1 Notification of monthly test results when *Legionella* count >1,000 cfu/mL or HCC >5,000,000 cfu/mL in the water-cooling system is appropriate.

EXPERT PANEL RECOMMENDATION – MANDATORY LABELING OF COOLING TOWERS WITH A UNIQUE IDENTIFICATION NUMBER

Question in discussion paper

4.6.1 Should occupiers be required to provide clear and unique labelling of water-cooling systems?

SUMMARY OF SUBMISSIONS

There was nearly unanimous **support for the mandatory labelling of cooling towers with a unique identification number**. The unique identification number would provide a useful link between the water-cooling system and supporting documents (laboratory reports, audit certifications, and registration documents) which may be submitted to the state-wide database.

Many submissions commented that the unique identification number should be accompanied by **geographical map coordinates to determine the exact location of cooling towers across NSW**.

One submission did not support the proposal, suggesting that unique labelling of water cooling systems is already provided by the manufacturer. Several submissions suggested that the **responsibility** for ensuring there is an identification number

should be **on the owner of the property rather than the occupier**, although the occupiers should be aware of their responsibilities. Penalties for not displaying the identification number were suggested by some submissions.

DISCUSSION

Labelling cooling towers with unique identification numbers will support effective regulatory oversight, as well as outbreak investigation by local government authorities and NSW Health. These roles can be further supported by geographical mapping of cooling towers across NSW.

Specific suggestions on how the identification number could be introduced, including the possibility of a state-wide system and the type of information included, will be considered further during the implementation phase.

CONCLUSIONS

4.6.1 Occupiers of premises should be required to provide clear and unique labelling of cooling towers.

In addition:

4.6.2 The ability to geographically map cooling towers through the state-wide database should be investigated.

EXPERT PANEL RECOMMENDATION – REQUIREMENT TO PERFORM ONLINE DISINFECTION WHEN REQUIRED BY AN AUTHORISED OFFICER

Question in discussion paper

4.7.1 Should authorised officers have the power to direct an occupier to perform a precautionary online disinfection of water-cooling systems in response to a notified case or cases of *Legionella* even before there is laboratory evidence of contamination?

SUMMARY OF SUBMISSIONS

There was **broad support for this proposal** which was considered a good precautionary measure given the potential risk to public health. The need to ensure that disinfection orders were applied conservatively, and where clearly warranted, was a commonly expressed reservation to this proposal.

Specifically, some submissions argued that authorised officers should have clear **guidance on the level of evidence and circumstances required to trigger a disinfection order**. Some also commented that authorised officers needed to be competent by training, knowledge, and experience to make the decision. An alternative suggestion was that the power to order disinfection should rest with a senior officer in NSW Health, or that it should be a joint decision between local government and NSW Health. Others argued that the need for ordering disinfection should be relatively low, given that this situation should be pre-empted by a good RMP; in such cases, disinfection should already have occurred.

Clarification was sought in some of the submissions regarding: who the order for disinfection can be given to; the need to ensure safe and easy access to the site; and that the process should not be more onerous than the process outlined in AS/NZS 3666.3:2011. The need for **terminology to be consistent** (“decontamination” versus “disinfection”) was highlighted in several submissions. A penalty for non-compliance was suggested by some submissions, while others commented that timeframes needed to be realistic to take into account industry capacity to respond to large-scale directions.

Submissions which were supportive of this proposal also commented on the **cost of the disinfection**, and the potential to interfere with the dosing levels in RMPs.

DISCUSSION

It is important to balance public safety with the potential costs to companies and individuals. Ordering an online disinfection is a preventative, time-sensitive action, and a necessary component of protecting the public’s health against Legionnaires’ disease. Requiring a senior person or joint decision to be made before a disinfection order was given would result in delays that could lead to the further spread of a Legionnaires’ disease outbreak.

Notification of a human case of Legionnaires’ disease can be suggestive of a potential outbreak; similarly, notification of critically high levels of *Legionella* or HCC in a cooling tower can also suggest a potential outbreak. In both circumstances, prompt investigation and remedial action is required. In most cases, it would be expected that remedial action would be in accordance with the RMP and/or prescribed requirements. However, when there are high levels of *Legionella* or HCC, it is considered appropriate for authorised officers to have a power to be able to direct remedial action, for example, through online disinfection of cooling towers.

While section 33 of the *Public Health Act 2010* provides authorised officers with the power to issue maintenance or remedial directions (such as online disinfection of a cooling tower, when investigating an occurrence of Legionnaires’ disease), this power requires there to first be an outbreak. It is considered more appropriate, from

a public health and safety perspective, to have processes in place to ensure that remedial action occurs when there is a high risk of an outbreak occurring.

NSW Health notes that the remedial action required will depend on the levels of *Legionella* or HCC. Further, NSW Health recommends that the required remedial action should be clearly articulated in the Regulation, with the remedial action required generally in line with Table 3.1 and 3.2 of AS/NZS 3666.3:2011.

Setting out the required remedial action in the Regulation will ensure that occupiers and other stakeholders are aware of necessary action to take to mitigate risks to the public. Further, if there was a failure to comply, regulatory action could be taken against occupiers. This would include the improvement notices and/or prohibition orders for occupiers who fail to comply.

CONCLUSIONS

- 4.7.1 Section 33 of the *Public Health Act 2010* already provides authorised officers with the power to issue maintenance or remedial directions (such as online disinfection of a cooling tower, when investigating an occurrence of Legionnaires' disease).
- 4.7.2 NSW Health recommends that the Regulation clearly set out the remedial action required of occupiers in response to high levels of *Legionella* and HCC, and allow improvement notices and prohibition orders to be issued against occupiers who fail to comply with the required remedial action.

EXPERT PANEL RECOMMENDATION – REQUIREMENT TO PERFORM ADDITIONAL TESTING WATER-COOLING SYSTEM WHEN REQUIRED BY AN AUTHORISED OFFICER

Question in discussion paper

4.8.1 Should local government be able to require additional testing and notification of the results if required to assess the risk of contamination?

SUMMARY OF SUBMISSIONS

The majority of submissions **supported additional testing of water-cooling systems** and notification of results if required by local government. However, a few submissions raised **concern over unclear parameters for the risk of contamination**, and the possible roles and actions that authorised officers could take to address this potential risk.

DISCUSSION

It is important for occupiers and other stakeholders to understand and manage the risks associated with the operation and maintenance of water-cooling systems. One way of understanding and managing the risk is to conduct laboratory testing of water-cooling systems.

NSW Health recommends that testing be required at various different stages. This includes: minimum monthly testing; additional testing as required by the RMP; and testing required as part of remedial action in response to high levels of *Legionella* or HCC. The requirements for testing should be clearly set out in the Regulation as a prescribed requirement. This will ensure that appropriate regulatory action, including improvement notices and prohibition orders, can be taken against occupiers who fail to comply.

CONCLUSIONS

- 4.8.1 NSW Health recommends that the Regulation clearly set out the testing required of occupiers and allow improvement notices and prohibition orders to be issued against occupiers who fail to comply with the required testing requirements.