



TECHNICAL NOTE

47 – Spa and hot tub technical operation after Covid-19 shutdown

July 2020

This guidance is specifically for spa pools and hot tubs run either in a commercial or business setting. It is likely that spa pools and hot tubs will have been shut since the early weeks of Covid-19, but some operators may have kept them full of water. This is the fifth in a series of PWTAG technical notes dealing with the COVID-19 pandemic, and should be read alongside TN44 *Disinfecting coronavirus*.

Commercial spas may be stand-alone, or integrated with a swimming pool water treatment system. This guidance applies particularly to the former, but may be applied to all. PWTAG advice on temporary closure included superchlorination prior to emptying. Hot tubs, which are self-contained factory units, should have had similar treatment. This guidance outlines their reopening and the ongoing challenge of managing them during the current pandemic. It provides a framework of good practice, recommendations and alerts – to be adapted by owners/managers to the specific requirements of their particular operation. Managers should of course be aware of the potential risks of COVID-19 transmission, but should not forget the possibility of the risks from *Legionella* and other infectious agents in spa pool systems, as outlined in the Health & Safety Executive's HSG 282.

Domestic spa pools and hot tubs used by household families in a permitted social bubble are not covered in this PWTAG technical note, although some of this guidance can be applied. However, if the household is following the current government guidance on distancing and association, spa pools and hot tubs should present no extra risks as long as they are carefully cleaned and disinfected.

Before opening, operators in commercial and business settings should check with their insurers about public liability cover in the light of COVID-19. Some insurers are applying a blanket exclusion of cover for liability resulting from COVID-19, while others are offering cover as normal – ie third party liability is insured subject to the claimant proving the operator has failed in their duty of care, resulting in third party accidental injury, illness or disease.

Operators should ensure they have up to date risk assessments (including a COVID-19 risk assessment) and schemes of control with health and safety guidelines that include COVID-19 – which can be demonstrated to their insurer should the need arise. These changes should also be reflected in the Pool Safety Operating Procedure (PSOP).



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Official public health advice

The advice in each of the four home nations may vary, so it is worth checking the relevant websites for any differences.

Public Health England advice is that hot tubs and spas should only be used in 'social bubbles' and should be emptied and cleaned after each rental as per best practice in HSG 282. When used in a family group, the hot tub/spa pool should be avoided if any member of the social bubble has COVID-19 symptoms. From 4 July, two households (ie two social bubbles) can interact, although hot tubs may have a limited capacity for the number of individuals that can use it while maintaining safe distancing. (<https://www.gov.uk/government/publications/staying-alert-and-safe-social-distancing/staying-alert-and-safe-social-distancing-after-4-july>)

For example, two families sharing a lodge could both use its hot tub – but not another visitor. One family in a lodge could invite another person to stay and use the hot tub.

Only those hot tubs and spa pools that can be used by such a social bubble can be used; thus public integrated spa pools attached to a swimming pool should not be used, even after 4 July. Commercial standalone spa pools can be used by up to two households forming a single social bubble with draining between use.

The problem of close contact and facing inwards in a hot tub is that bathers can spread COVID-19 if someone is infected. According to current evidence, *SARS-CoV-2* is primarily transmitted between people through the inhalation of respiratory droplets and contact. (<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features>). The design and size of hot tubs means that an individual is likely to be sitting in close proximity and facing another user so anyone infected, talking/laughing or sneezing/coughing, is likely to emit droplets containing COVID-19 close to another user. Such droplets contain both large droplets (>10 microns) and small aerosol droplets (<5 microns). The large droplets when released fall under gravity to surfaces not further than about 1-2m from the infected person. In a hot tub this means that the virus will be in the shared water or potentially another person's face. The air-jet circulation in hot tubs and spas with or without air-induction bubbles has the potential to spread contamination by generating aerosols directly from the pool water, carrying COVID 19.

The smaller aerosol particles may stay airborne for hours and can be transported longer distances than the larger droplets. The size of coronavirus particles is 80-160 nanometres, so indoors they can stay airborne for hours, carried by airflows in the rooms or in the extract air ducts of ventilation systems; outdoors, they can be carried by the wind. Research has shown that *SARS-CoV-2* can remain



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infectious on certain surfaces from between two hours and nine days. The survival time depends on several factors, including the type of surface, temperature, relative humidity and the strain of the virus. See https://apps.who.int/iris/bitstream/handle/10665/331846/WHO-2019-nCoV-IPC_WASH-2020.3-eng.pdf?ua=1). It is known to last in aerosols for up to three hours (Doremalen et al 2020) so it can be directly inhaled by those sharing a hot tub, or even those in its vicinity.

Spa pools also have a much higher ratio of bathers to water volume than swimming pools, so their water has a higher concentration of organic material (and viruses) from bathers that can be carried in aerosols. And potentially contaminated aerosols may be generated by hot tubs and spas directly – even when there is no one in them.

Free chlorine/total bromine levels and pH values should be set for the design bather load of the hot tub/spa pool and this should not be exceeded, as it is important to neutralise any virus that may enter the water.

Now that outdoor spas and hot tubs are permitted to open in England on 11 July and indoor spas and hot tubs from 25 July, there is a need to have robust practices in place before opening.

1. Risk assessment

Spa pool and hot tubs have always presented particular infection challenges. So it is crucial that their operation during the pandemic is preceded and governed by a rigorous audit, including formal risk assessment. PWTAG has produced an audit checklist covering all this, which is appended here. It may be that operators following the risk assessment process judge that safe distancing is not possible inside and/or outside the pool and decide not to reopen.

Each manager or person in overall charge of health and safety for the spa pools and hot tubs must ensure there is a COVID-19 risk assessment in addition to those already in place in accordance with the Health and Safety at Work Act and associated legislation. (*ACoP L8 Legionnaires' disease: the control of legionella bacteria in water systems and HSG 282 Control of legionella and other infectious agents in spa-pool systems.*) They should then make sure that any risk assessment recommendations are developed and implemented to safeguard the health and safety of staff, users and visitors. This will involve reviewing the written scheme of control in the light of COVID-19.

Coronavirus is likely to be with us for some time, so the risk assessment will need to be reviewed regularly, in response to changes and growing knowledge. (Section 5 covers extra considerations for risk assessing pools using cyanuric acid or chlorinated isocyanurates).



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How managers should deal safely with users, in terms of distancing etc throughout the building and pool, is to be found on the websites of the Department of Digital, Culture, Media & Sport (DCMS, <https://www.gov.uk/government/organisations/department-for-digital-culture-media-sport>) and is dealt with further in this technical note.

The operator should have **written procedures** as well as risk assessments which define the safety policy. Within the Pool Safety Operating Procedure (PSOP) there should be two sections: a Normal Operation Plan (NOP) and an Emergency Action Plan (EAP). It should include management's assessments of hazards associated with all aspects of the spa/hot tub – physical, risk of infections and supervisory – as well as a section on its technical operation, which features water quality.

Where a spa shares water circulation with a swimming pool, the overall risk assessment should include considering whether it is safe to keep the spa open during this pandemic and more importantly whether social distancing is possible.

2. Reopening

Because the spa or hot tub may have been unused for a few months, it should be thoroughly cleaned and disinfected prior to reopening. If they have been left running, they should now be superchlorinated then emptied. Treatment prior to reopening should include:

- emptying and flushing out any existing water including from any balance tank
- procedures for flushing out the pipework (not be confused with biofilm removal through the use of chlorine dioxide)
- cleaning the internal and user-facing surfaces and removable jets with a cleaning solution of 1000mg/l of disinfection solution; chlorine dioxide-based products may be used (equivalent dosage concentrations should be recommended by the manufacturer). Any scale should be removed before disinfection
- filling with fresh water and superchlorinating to 50mg/l and pH as near to 7.0 as possible
- maintaining these levels of disinfection and pH for at least an 1 hour (or equivalent, eg 10mg/l for 5 hours); the circulation should be fully operating during this time, including filters, all associated pipework, jets and blowers
- at the end of this period, all water thoroughly sluiced out, including the filter and all pipework
- operation restarting as routine, ensuring target disinfectant and pH values are maintained .

When refilling a spa or hot tub, rapid dissolving calcium hypochlorite or sodium hypochlorite solution at 5mg/l free chlorine per 1000 litre capacity should be added at the start. This will ensure that there is no pipework which is not chlorinated as the water level rises.



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Microbiological testing (including for *Legionella*) will be even more important than usual to demonstrate there are no infectious agents present in the spa pool or hot tub water system.

3. Bather capacity

In normal times, spas and hot tubs will have a bather capacity determined by their size, seating arrangements and hydraulics. This is dealt with in the PWTAG books *Swimming Pool Water*, and *Hot Tubs for Business*. Although properly disinfected water should inactivate the COVID-19 virus, users need to be protected from spread by both contact and aerosols.

So each spa and hot tub operator should calculate the bather capacity appropriate to its dimension, shape and type of use, while maintaining the statutory distancing between bathers. This includes their getting in and out. There is detailed guidance on this from DCMS and Swim England. Spa pool and hot tub managers will need to consider issues like:

- separate times/sessions for vulnerable groups – over 70s and others more susceptible to infection (eg giving them first session while the water quality is at its optimum)
- people with disabilities
- hotel and holiday settings
- access for the disabled
- use by children.

It may be that a one-at-a time rule will be the best option for spa pools with shared access.

Each hot tub used in a business setting has a manufacturer stated seating capacity which must not be exceeded. However, for a family from one household or in a social bubble, there will be no need for distancing when using a hot tub while staying at a holiday lodge for example. Currently, two social bubbles are allowed (see Public Health England's advice above).

Hot tubs and spa pools are not intended to be used continuously: a 15-minute session followed by a five-minute rest period allows optimum disinfection to be maintained. Efforts should be made to ensure users adhere to this regime.

4. Water replacement

This is important and is highlighted in HSG 282. A commercial spa's water should be replaced when the number of bathers has reached 100 times the volume in m³. Where a hot tub is used as a business activity, the total water volume should be replaced each week, or after each rental, if sooner.

5. Primary disinfection

With adequately disinfected water, the main risk from COVID-19 is through airborne respiratory transmission from a person carrying this virus to others within a critical vicinity and from contact with



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contaminated surfaces – not from waterborne transmission. The available evidence shows that the physical effect of the spa pool/hot tub water and an appropriate relationship between free chlorine level and pH value should inactivate the virus within 15-30 seconds. The dilution of virus in the water volume will also reduce the risk of exposure and transmission.

The table below gives details for safe spa pool operation during this pandemic, for a range of disinfectants. (There is also a note on cyanuric acid and chlorinated isocyanurates at the end of this section.)

Disinfectant	Minimum residual (mg/l)	pH value
Sodium/calcium hypochlorite (or chlorine gas)	3.0	7.0-7.4
Trichloroisocyanuric acid/ dichloroisocyanurate dihydrate	5.0	7.0-7.2
BCDMH	4.0	7.0-7.4

The lower the pH the more easily chlorine kills microorganisms. To deal with the COVID-19 virus, a chlorine residual of 3mg/l is considered to be effective at a pH of 7.0 but as pH increases so should the free chlorine. Most spas and hot tubs routinely operate with a free chlorine reserve of 3-5mg/l. If operators cannot realistically achieve a pH below 7.4, the free chlorine will have to be at the top of this range as long as the pandemic continues.

Before using trichlorisocyanuric acid, operators should check with the equipment supplier whether the use of this material is permitted, as the warranties may be invalidated if this material is used.

The tables below give some details for both chlorine and bromine disinfection and variation with pH.

pH value	Minimum free chlorine concentration for integrated spas (mg/l)	Minimum free chlorine concentration for stand-alone spas (mg/l)
7.0	1.5	3.0
7.2	1.7	3.5
7.4	2.0	4.0

pH value	Minimum total bromine concentration for integrated spas (mg/l)	Minimum total bromine concentration for stand-alone spas (mg/l)
7.0	4.0	4.0
7.2	4.0	4.0
7.4	4.0	4.0

Combined chlorine concentrations should be maintained at less than half the free, never more than 1.0 mg/l and as low as possible.



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Operators should test the spa/ hot tub water for free and combined chlorine and pH at frequent, regular intervals. PWTAG recommends testing a commercial spa before bathing starts and every two hours after that. Results should be recorded and initialled, and senior staff immediately notified if they are not within the specified range. All resulting actions should be documented.

Water testing of hot tubs at least twice a day is advised in HSG 282, as confirmed by risk assessment. This frequency may need to be increased during COVID-19 and PWTAG recommends every two hours. The test results should be recorded and retained for over 5 years.

The efficacy of the disinfectant will vary with pH and the minimum concentration achievable will depend on the spa pool design. Integrated commercial spas often rely on the disinfection system of the main pool to which they are attached and cannot be run at a higher disinfectant reserve. If measuring the water balance, lowering the pH will affect values. Therefore other parameters may need to be adjusted to keep the Langelier index to the required value

NOTE Cyanuric acid and chlorinated isocyanurates Cyanuric acid is known to reduce the disinfectant efficacy of free chlorine, significantly increasing the contact time needed to kill a range of pathogens (eg adenovirus, hepatitis A virus and the protozoan *Cryptosporidium*). It is therefore reasonable to assume that this is also the case for the COVID-19 virus. Such reduction in efficacy is likely to provide the potential for virus survival and thus cross infection via the pool water.

PWTAG's recommendation during this pandemic is that spas and hot tubs (including those sited outdoors) using cyanuric acid or chlorinated isocyanurates should maintain cyanuric acid levels below 100mg/l and free chlorine at least 5mg/l. This may mean replacing more water than usual. It is important that the risk assessment (involving the manufacturers) takes account of the use of chlorinated isocyanurates during this pandemic. As a reminder, many manufacturers of headrests state that the use of trichlor invalidates their warranty; and at least one manufacturer of acrylic spas shells states that using trichlor in their hot tubs invalidates their warranty.

6. Secondary disinfection (UV and ozone)

Secondary disinfection will assist in removing pathogens from the water. However, the recommended free chlorine levels and pH values (in the tables above) are required whether secondary disinfection is used or not, as it is the amount of residual disinfectant present in the pool water that is crucial to deactivating the virus. Secondary disinfection is not recommended with bromine disinfectants.

7. Circulation and hydraulics

In order to get good dilution of any released virus particles and to ensure the distribution of free



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chlorine/total bromine such that the risk of infection is minimised, it is important to maintain the circulation of the spa pool or hot tub water at 100%.

As the virus is probably inactivated more quickly than it can be physically removed, the emphasis should be on maintaining sufficient residual of free chlorine/total bromine throughout the spa/hot tub water.

It is also important to remove any contaminated water as soon as possible, through the hydraulics and circulation system. This is more readily achieved in a deck-level spa pool with 80-100% surface water removal. Suction outlets and skimmers will not achieve the same contamination removal rate, so it is important that they are kept clean and free from debris.

Booster and air jets should be run and operated daily and before opening a commercial spa for the day.

8. Aerosols created by equipment

COVID-19 is readily carried and transmitted via droplets and aerosols. Virus shed from users into the water can be aerosolised by the booster and air jets. Maintaining free chlorine levels and total bromine levels at the given pH values in this guidance is therefore essential. Operation of booster and air jets are another potential source of contamination by bathers. It is therefore important to ensure the booster jets are regularly circulated with water chlorinated to at least 3mg/l. Air jets should be disinfected at least weekly with a solution of 50mg/l free chlorine.

9. Bather hygiene – showers etc

For commercial spas, everyone using the building should wash or otherwise disinfect their hands as they enter and as they leave. Managers should enable and encourage this. Hot tub users should use the toilet and shower beforehand.

Pre-use showering is a vital contribution to ensuring disinfectants are available for the COVID-19 virus – rather than being used to oxidize organic material coming off users. They should be actively encouraged to shower with soap and water while maintaining the statutory physical distancing, where applicable. Operators should provide soap dispensers to encourage this.

In some circumstances, managers of commercial spas may consider encouraging showering at home before use. This is clearly less than ideal: for example, staff will not know if this showering has really happened.



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10. Ventilation

Outdoor spas and hot tubs, with appropriate disinfection and pH, and bathers correctly distancing where necessary, should provide a relatively safe environment.

Indoor spas and hot tubs will benefit from reducing recirculation and increasing the proportion of outside air to reduce contamination generally, including disinfection byproducts and any airborne viruses. It is recommended that any ventilation system which normally runs with recirculation should, where possible, maximise the input of outside fresh air. There is further guidance on the CIBSE website <https://www.cibse.org/coronavirus-covid-19>

11. Cleaning

There will be an increased requirement for cleaning around the spa pool and the changing rooms for these shared facilities. How the spa pool operator accomplishes this depends on the design of the changing areas, as all have unique characteristics to be considered and programmed accordingly. A full and deep clean of all areas should be done before opening.

PWTAG Technical note 44 (*Disinfecting coronavirus*) has details on disinfection methodology. And there is further guidance on gov.uk: COVID-1:cleaning of non-healthcare premises

The potential for aerosol production during cleaning should be risk assessed. Only hypochlorites (1,000mg/l), chlorine dioxide and sodium bicarbonate should be used for cleaning surfaces. Proprietary cleaning materials should not be used as they may contain detergents which can compromise the efficacy of disinfection and produce foam. Cleaning cloths, brushes etc should not be taken from one spa pool/hot tub to another because of the risk of cross- contamination. Single-use disposable cloths can be used, or cloths to be reused should be laundered at 60°C or above.

Cleaning should be weekly or between rents, if this time is shorter.

Recommended inspection and cleaning action

What to inspect	Recommended action
Waterline	Clean scum line with a fresh damp cloth/plastic scouring pad using sodium bicarbonate or hypochlorite.
Skimmers and the surrounding area	Clean with a solution of 1000mg/l free chlorine.
Covers	Clean both sides with a concentration of 100mg/l free chlorine. Dry and store in a clean area when not in use. A cover lifter should be used and designed to ensure the cover is kept off the ground at all times when not in use.



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Headrest	Remove and clean all sides and housing by wiping over with 70% ethyl alcohol wipes after each use.
Jets and any accessible pipework	Remove, inspect and clean as necessary using a solution of 50mg/l free chlorine or 20mg/l chlorine dioxide and a 1-hour contact period. Pipework flushing products can also be employed.
Water clarity	Review control strategies as cloudiness may indicate: <ul style="list-style-type: none">• low disinfectant concentration• the hot tub left unused• failure of the circulation pump• incorrect dosing of water treatment chemicals resulting in the presence of undissolved chemicals• incorrect filter cleansing procedures• algal/bacterial growth• hot tub overloaded• presence of foam.

For the health and safety of both staff and bathers, any containers used for cleaning purposes should be labelled: eg either as used equipment that has not yet been cleaned and disinfected; or as cleaned and disinfected equipment. Disinfectants should be stored safely and securely.

Cartridge filters should be replaced or washed at 60°C, (a dishwasher set at 60°C can be used (unless advised otherwise by the dishwasher or filter manufacturer) but a power washer should not be used. The filters should be soaked in a chlorine solution and allowed to dry before reuse. An indelible marker can identify the cartridge to a particular accommodation. Cartridges for disposal should be double bagged and left for 72 hours first.

12. *Cryptosporidium*

Although it is known that the COVID-19 virus can be shed in faeces, it is a respiratory virus and transmission via the respiratory tract is the main concern. Nevertheless, accidental faecal releases should be monitored and dealt with, mainly to reduce the risk of spreading the chlorine-resistant organisms *Cryptosporidium* and *Giardia*. This is fully covered in PWTAG **Technical note 2, Faecal contamination**.

There should be a written procedure, as part of a spa pool/hot tub's Emergency Action Plan, stating what to do in the event of a faecal incident. Staff should be trained in these procedures, and the training recorded.

The PWTAG book **Hot Tubs for Business** has more detail, including an Appendix on making 100mg/l strength chlorine solutions using different donors.



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Audit checklists

Spa pools and hot tubs have an inherent risk of causing Legionnaires' disease and other infections unless managed appropriately. This is even more important during the COVID-19 pandemic. It is a legal requirement that every spa pool or hot tub used in a business setting has a risk assessment for the control of Legionella and other infectious hazards. Before reopening a spa pool/hot tub during the continuing pandemic the risk assessment must be reviewed and the written scheme of control (the NOP) and the emergency action plan (EAP) updated as appropriate.

In the wake of COVID-19 the ability of people to enter, use and exit the pool/tub while maintaining the current national government guidance on safe distancing must be assessed. If this cannot be complied with, or without modifying the maintenance and operating procedures, then the pool cannot be reopened. Whenever the national guidance is revised the risk assessment will need to be reviewed. The provision of hand wash/hand sanitiser stations must also be considered. All staff will need to be retrained in line with the changes before reopening the pool/hot tub.

The following checklists are designed to help the Responsible Person (RP) audit the arrangements that they have in place to control the risk of infection from the spa pools/hot tub they are responsible for. This will include a physical inspection of the pool and its components.

This is a check on the RP's knowledge of the system and also the knowledge of those who play a role in controlling the risk from the system – for example, maintenance personnel and water treatment contractors.

The checklists are not risk assessments. They have been prepared on the basis that the employer has already identified that there is a risk system(s) in the workplace and that they need to put in place (or review) the measures that prevent or control the risks of infection. However, the first checklist addresses a number of issues relating to the risk assessment so that the RP can audit the assessment process itself.

The system checklist takes the user through the recommended measures in the *Approved Code of Practice and Guidance on the Control of Legionella bacteria in water systems* (HSE L8) so that the RP can audit the arrangements they have in place or intend to put in place. A negative answer to any of the questions indicates that there is a need to review and adjust the arrangements that are in place. If appropriate adjustments are not possible the spa pool/hot tub should not be reopened.

The checklists do not give guidance on how to achieve control; this should be done after consulting HSE L8 and PWTAG technical notes and Hot Tubs for Business for detail on control measures and how they are put in place and monitored.



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Using the system checklist requires a physical inspection of the system as well as examining the management procedures and paperwork in place, and talking to those who have responsibilities for the control regime.

The checklists cover only spa pools/hot tubs: the employer will also need to assess whether there are other sources of risk (such as the changing rooms and showers) and put in place appropriate control measures (see HSG 274 part 2).

The risk assessment

Have you included?

- Name of auditor
- Date of audit
- Date of review
- Action required (list)
- Those responsible for completing the actions
- Date completed

And answer these questions:

- Did you consider whether you could eliminate the risk? (Your primary duty under COSHH is to prevent the risks of exposure. Although this may not be possible when running a spa pool or hot tub, there is still a duty to minimise the risk as far as reasonably practicable.)
- Have procedures been put into place to ensure that control measures being used are maintained, monitored and tested?
- Did the risk assessment consider the need to monitor user compliance with safe distancing?
- Did the risk assessment address the need to plan for foreseeable accidents, incidents, emergencies and changes in national government policy and was the EAP updated to reflect these?
- Was the risk assessment carried out with competent help and advice?
- If there are more than five employees in your organisation, did you record the significant findings of the risk assessment?
- Did you consult employees about the risk assessment and the control measures?
- Have you identified the circumstances that would require a review of the assessment? (Your assessment should be reviewed whenever it is suspected it is no longer valid, for example if national government advice changes or there is a significant change to the system or to personnel.)

Managing the risks: roles and responsibilities

- Are the name, job title and contact information for the following listed?
 - duty holder



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- responsible person
- nominated deputies
- maintenance and service providers (where applicable)
- Are the roles and responsibilities of all your staff involved in the control regime clearly defined in writing, including contractors?
- Have they all received appropriate training including retraining in line with the COVID-19 precautions?
- If external contractors are used, are their roles and responsibilities clearly defined in writing?
- The demarcation between contractor and occupier needs to be defined – ie who does what. But remember that using contractors does not absolve you of the responsibility for ensuring that the control regime is carried out.
- Have you checked the competence of contractors? For example, you should ask about experience and qualifications, how their staff are trained, and whether they are a member of a professional organisation/recognised trade body, for example the Legionella Control Association.
- Have you considered all other health and safety issues (eg COSHH assessments for handling of water treatment chemicals, working in confined spaces, electrical safety and ease of access to parts of the system)?
- Are appropriate records being maintained?
- Have you provided relevant health and safety information to users, eg in the form of posters or notices relating to pre-use hygiene, maximum numbers of users, duration of use etc?
- Is there a clear description of the spa pool/hot tub's system (including make, model, year of manufacture and type), component parts and associated equipment. And there should be an up-to-date schematic diagram including:
 - system plant, eg filters, strainers, pumps, non-return valves
 - standby equipment, eg spare pumps
 - associated pipework and piping routes
 - associated storage tanks
 - water supply.
 - maximum bather load to comply with safe distancing

SPA POOL /HOT TUB

Record details of the spa pool/hot tub below (ie make, model, year of manufacture, type). You should complete a checklist for each spa pool/hot tub.

Managing the risks – the written scheme (NOP)

- Is there a written scheme for controlling the risk from exposure to disease-causing microorganisms including *Legionella*, SARS-CoV-2 (the virus that causes COVID-19)?



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- Does the scheme contain an up-to-date plan of the system (a schematic plan is acceptable)?
Does the plan show:
 - all system plant, eg filters, strainers, pumps, non-return valves
 - all standby equipment, eg spare pumps
 - all associated pipework and piping routes
 - all associated storage tanks
 - origin of water supply.
- Does the scheme contain instructions for the operation of the system?
- Does the scheme contain details of the checks that are to be carried out (and their frequency) to ensure that the scheme is effective?

Design and construction

- Can the surfaces of the materials used be disinfected with 1000mg/l chlorine? Check with manufacturers/supplier.
- Is all pipework (including for air) accessible for maintenance, draining, cleaning and disinfection?
- Has the bather load been reassessed to comply with current national government advice on safe distancing to prevent COVID-19 including for safe entry and exit from the pool?

Operation and maintenance

- Is the system in regular operation?
- Is there a system in place for monitoring user compliance with safe distancing and pool use
- Is there an operations manual?

Water treatment programme

- Is there a water treatment programme in place?
- Is chlorine at 3-5mg/l used to control microbiological activity?
- Are disinfectant chemicals dosed continuously?
- Is the pH maintained between 7.0 and 7.4?

Monitoring

General

- Are the (revised) safe operating limits for each parameter being measured known and recorded in the operating manual?
- Is the corrective action for 'out of limit' results known and included in the operations manual?
- Are results of all tests and checks recorded, together with details of any remedial action taken (if required)?
- Is there a daily check?



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- to make sure that the system is operating as described in the operations manual
- of the cleanliness of the water in the system
- of the cleanliness of water-line and skimmer housing.

Biocides

- Is the control level required known and recorded in the operations manual?
- Is the rate of release/rate of addition of biocide known and recorded?

Microbiological

- Are microbiological tests for indicator organisms carried out monthly?
- Are samples for Legionella taken at least a quarterly?
- Are all microbiological results recorded so that trends over time can be seen?
- Are there procedures in place for actions following adverse monitoring results?
- Have the circumstances when more frequent sampling may be required been identified and recorded?

Cleaning

- Is there a written procedure for regular cleaning of the system and frequently contacted surfaces in line with PWTAG technical note TN44?
- Are frequently touched surfaces around commercial spa pools cleaned at least every two hours and around hot tubs at least weekly and after each let – whichever is most frequent?
- Have the circumstances when emergency cleaning and disinfection of the spa pool is required been identified?
- Are procedures in place for a chosen method of cleaning and disinfection including procedures for neutralizing biocides in water if necessary?

Other procedures

Is there a procedure for?

- short periods (up to 1 month) without letting
- mothballing / laying up and recommissioning
- restarting after COVID-19 lockdown including a full recommissioning if the pool has been out of operation without continuous disinfection
- predictable untoward events eg power cuts; non delivery of chemicals; case of infection notified; customer complaint, leakage etc, including noting them in the daily log and recording actions taken.