

# Managing water quality and safety in spa and swimming pools

Tool Kit to manage water quality and control safety hazards in spa pools and swimming pools .

## Contents:

<b>Chapter 1</b>	<a href="#"><u>Purpose statement –aims and objectives of the Initiative</u></a>
<b>Chapter 2</b>	<a href="#"><u>Pre-considerations to running the Initiative</u></a>
<b>Chapter 3</b>	<a href="#"><u>Running the Managing Water Quality initiative</u></a>
Appendix 1(a)	<a href="#"><u>Appointment letter for LA enforced premises</u></a>
Appendix 1(b)	<a href="#"><u>Appointment letter for HSE enforced premises</u></a>
Appendix 2	<a href="#"><u>Premises self audit questionnaire</u></a>
Appendix 3	<a href="#"><u>List of Guidance publications</u></a>
Appendix 4	<a href="#"><u>'Knowledge Test' Questionnaire for spa pool operational staff</u></a>
Appendix 5	<a href="#"><u>Officer inspection pro-forma</u></a>

# Chapter 1

## Managing Water Quality and Safety in spa and swimming pools

### Introduction – Aims and Objectives of the Initiative

#### Health Challenge Wales

1. The key themes of Health Challenge Wales have been selected because they are considered to be those issues that constitute a significant proportion of the ill health that could be avoided in Wales. Preventing the spread of infection and reducing accidents and injuries are both key themes. This intervention addresses the prevention of a range of infections from the use of swimming and spa pools, and the risk posed by Legionella, the causative agent of Legionnaires' disease which is associated with spa pools in particular. The intervention also addresses the issues of accidents and injuries arising from slips and trips, manual handling of water treatment chemicals and poor chemical safety. It therefore directly addresses the aspirations of Health Challenge Wales.
2. Legionellae are widely distributed in the environment. They have been found in spa pools, hot and cold water systems, and water in cooling towers. Spa pools have the potential to cause infection because the water systems become contaminated with bacteria and the high temperatures of the water make considerable demands upon the disinfection and filtration systems making it easy for the bacteria to develop and spread if not adequately maintained. The jets from spa pools then produce aerosols containing legionellae which can then be inhaled and cause illness. During 2003, there were 27 cases of Legionnaires' disease in England where spa pools were identified as the source of infection, of which 3 resulted in death. In 2003-4 a year long study carried out by the HPA in collaboration with local authority environmental health officers surveyed over 100 spa pools. Out of 88 premises, 23 spa pools were found to contain legionellae bacteria. Sixteen of these had passed current accepted levels for routine microbiological parameters.
3. There are also other microbiological infections that can be transmitted via spa and swimming pools, including *Pseudomonas aeruginosa*, *Cryptosporidium* spp. and *Giardia Lamblia*. Guidance has been produced regarding controlling risks of infection from spa pools<sup>1</sup>, however evidence suggests that where water samples fail tests this is due to lack of knowledge and inexperienced staff.
4. This initiative also addresses other themes of *Revitalizing Health and Safety*, being slips and trips, manual handling of water treatment chemicals and chemical safety. There are no national figures collated for accidents and injuries occurring, whether to swimmers and pool users or to staff at swimming or spa pools. Where the incident gives rise to a notifiable accident the accident or injury is notified to the relevant local authority which will carry out an investigation. Where the accident or injury is not a notifiable accident it may be recorded in the accident book maintained

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<sup>1</sup> Management of Spa Pools - Controlling the Risks of Infection. London: Health Protection Agency, Health and Safety Executive; March 2006. ([http://www.hpa.org.uk/publications/2006/spa\\_pools/default.htm](http://www.hpa.org.uk/publications/2006/spa_pools/default.htm))

at the premises. This accident book may be inspected by the local authority office inspecting the premises.

5. Given the absence of national figures relating to accidents and injuries sustained by users of swimming and spa pools it is impossible to calculate the cost of the same. Costs are incurred by the NHS in providing treatment, where required. These costs can be considerable where there are incidents of head injuries, and the costs in personal terms to the affected individual and that person's family are large and long lasting. Costs are further incurred through loss of productivity where absences from work result from the injury sustained.
6. Figures produced by the Health and Safety Executive (HSE) show that over 30% of injuries requiring an employee to take 3 or more days of work and over 10% of major injuries are caused by manual handling. In the leisure industry 41% of notifiable accidents are caused by poor handling and lifting<sup>2</sup>. It is not possible to cost these injuries in terms of NHS treatment costs or loss of productivity costs, however it is recognized that manual handling injuries are one of the areas of greatest concern and that local authorities and the HSE are actively seeking to reduce the number of such injuries.
7. This intervention seeks to address the issue of water quality and particularly that of legionella, as well as both the issues of slips and trips to pool users and employees and of injuries sustained to staff through poor manual handling techniques. In doing so it addresses two key themes of Health Challenge Wales.

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<sup>2</sup> Booklet HS(G)96 - The costs of accidents at work (HSE).ISBN 0 7176 1343 7.

## Chapter 2

### Managing water quality and safety in spa and swimming pools

#### Running an Initiative

##### 1. Initial considerations

Initial considerations for this project have to be addressed, including;

- What is the target group?
- Will the outcome have the desired outcome?
- How can the target group be reached?
- Who are the key partners in the initiative?
- How will the initiative be evaluated
- Will the initiative deliver value for money?

##### 2. Target Group

The target group for this initiative is premises rather than persons. Any premises having a swimming pool or spa pool open for the use of members of the public and/or employees form the target group. These may be hotels, leisure clubs, local authority leisure centres and hospitals. Since the initiative can be run both by local authorities and by the HSE it is irrelevant whether the premises are inspected for the purposes of the Health and Safety at Work etc Act 1974 by the local authority or by the HSE.

##### 3. Achieving the desired outcome

The purpose of this initiative is to raise water quality standards in swimming and spa pools and thereby reduce the risk of water borne infection, particularly legionella, and also to reduce accidents in the same arenas with particular defence to slip and trips and to accidents arising from poor manual handling of water treatment chemicals.

It seeks to tackle the underlying causes of poor water quality in pools and spa pools by raising staff awareness of the need for monitoring of water quality and of appropriate water treatment. It also raises awareness the risks posed by legionellae which require a different treatment regime and higher levels of awareness that may be outside the experience of members of staff. It promotes risk assessment in respect of water borne infection control, which should have the effect of raising awareness and promoting vigilance.

The initiative also seeks to raise awareness of the physical risks to pool users and to staff from slips and trips and to staff from manual handling of pool treatment chemicals. In doing so it should have the effect of reducing accidents attributable to these issues. In some cases such accidents are minor and are not reported, hence the effect of the initiative in this regard will not be measurable, however where the accident causes a major or significant injury it is reportable. A reduction in the levels

of such accidents reported to the local authorities and the HSE would reflect the ultimate effectiveness of this part of the initiative.

#### **4. Reaching the Target Group**

The target group, being premises are reached during the planned programme of inspections and visits carried out by enforcement officers from the local authorities and the HSE under the Health and Safety at Work etc Act 1974.

#### **5. Who are the key partners in the initiative?**

The key partners to this initiative are the Health and Safety team of the local authority and the HSE inspectors covering the same geographical area. In the pilot project the NPHS Food Water and Environment Laboratory at Llandough Hospital were also partners, since this was where the testing of water samples was undertaken.

#### **6. How will the initiative be evaluated?**

As noted in paragraph 3 above this initiative aims to reduce the spread of infection amongst users of swimming and spa pools, but it is acknowledged that measurement of this outcome is extremely difficult. Whilst it is possible that figures for those presenting at their GPs with water borne infections can be compared for before and after the intervention any reduction in such numbers cannot easily be attributed to the initiative, since so many other reasons can be contributing factors.

Similar problems can be encountered in identifying reductions of accidents from slips and trips, chemical safety and manual handling. It is possible to consider the number of accidents that have occurred at the premises related to the pool or its immediate environment prior to the intervention and after it. These figures can be taken from RIDDOR notifications to the local authority and HSE and entries in the accident book relating to non-notifiable accidents. A reduction in notifiable and non-notifiable accidents would suggest that the intervention has had a positive effect. Major injuries or even death can occur from one act or omission on the part of the operator of the pool and it is these incidents that the intervention seeks to address, as well as minor accidents that do not have such a debilitating effect.

However, numbers of reported accidents may be small both before and after the intervention. Although this does not detract from the value of the intervention it does mean that using reported accidents as the sole evaluation measure may not be sufficient.

Since these outcome measures alone do not provide a sufficient and practical evaluation tool a more effective approach to evaluating the initiative is to consider what changes, if any, are made to the manner in which the private pool operators conduct their business as the result of the initiative. Changes in behaviour can be assessed by comparing findings from the first visit to the premises with findings at the revisit (if enforcement notices are served) and the final visit at the end of the programme. Changes in procedures may be noted, as may changes to Risk Assessments or Operational Plans designed to reduce the risk of accidents or water

quality incidents occurring. These would suggest that the intervention has had a positive effect.

It is particularly important that these behaviour and practice changes occur in circumstances where the risks from spa/pool operation are not being effectively managed. The methodology used in the project allows enforcement officers to quickly identify premises where their risks may be inadequately managed, and to take appropriate remedial and/or enforcement action in order to address these problems. By focussing on the premises where the problems are most serious, the project allows the effective targeting of scarce enforcement resources to improve standards and protect the public.

The documentation used in the project has previously been trialled and positively evaluated in an intervention by the City of Westminster Council, so further evaluation of these data collection methods is not considered necessary.

Consistent use of project documentation allows the comparison and aggregation of results across the various premises involved in the study. The aggregated results can then be used to identify common areas of concern across the area, or within particular sectors.

Results from the spa pool operator 'knowledge test' can also be compared with the other findings related to the premises, in order to identify whether there is a link between staff knowledge and other outcomes, such as water quality samples or risk assessments.

## **7. Will the initiative deliver value for money?**

The costs involved in delivering this project are mostly 'start-up' costs relating to monitoring/sampling equipment and staff training.

- A one-day intensive training course for 7 enforcement staff on the operation and maintenance of swimming and spa pool water treatment systems' Training was delivered by an external consultancy, cost £600+VAT.
- Monitoring and sampling equipment was purchased: specifically a digital lovibond comparator (photometer), total dissolved solids meter and temperature meter. Total equipment cost £568.00.

Operating costs for the initiative are extremely cost effective. The inspections form part of the topic-based approach to health and safety enforcement, being focussed on a known problem with a structured approach. The health and safety enforcement team carry out the inspections as part of their normal function, and the only additional resources, required relate to payment for microbiological analysis of water samples. These were costed at £2.14 each for general microbiological analysis (for both swimming pool and spa pool water) and separate samples costed at £8.30 each for analysis of spa pool water for Legionella. Payment was required because these samples fell outside the existing service level agreement with the laboratory.

The initiative is therefore very good value for money, since the equipment and training costs obtained during the 'start-up' period will continue to be available to the local authority following the completion of the project, and operative costs are minimal.

## Chapter 3

### Managing water quality and safety in spa and swimming pools

#### Running a pool water quality management campaign

##### The campaign

The campaign aims to raise awareness of the risks of spread of water borne infections, including Legionella through swimming and spa pools and to reduce slips, trips and falls and manual handling accidents in the same arenas.

##### Preliminary steps

This initiative forms part of the normal topic-based inspection regime. Where breaches of the Health and Safety at Work etc Act 1974 or related relevant legislation are identified these should be dealt with by the enforcement officers as appropriate. It is not intended that this intervention should in any way interfere or conflict with the statutory regime.

The first step in this initiative is to identify those premises that have swimming or spa pools or both for use by the public and/or staff. The local authority and the HSE should be aware of these premises from the database of premises already in their possession. Enforcement officers should also review previous complaint histories, RIDDOR accident reports and results of any routine pool water sampling to highlight any particular areas of concern. The same period should be used to identify accidents that have occurred in or around private pools and which are recorded in the Accident Book of all of the targeted premises to give a clear picture of the level of risk that is being addressed by the intervention.

The enforcement officers of the local authority and the HSE should agree a period over which the intervention is to run, and the commencement date. In the pilot project the intervention ran for approximately 6 months as part of the topic-based inspection regime. It was agreed that local authority enforcement officers would also deliver the intervention in HSE-enforced premises, with any enforcement issues being referred to HSE for further action.

A project plan can then be drawn up identifying all the premises in the target group, assignment of each premises to a particular enforcement officer, and provisional target dates for premises inspection.

Templates for the appointment letters, self-audit questionnaire, inspection pro-forma and spa pool operators' questionnaire were obtained from the HELA training website <http://www.trainingco-ord.org/>.

##### Implementing the initiative.

Enforcement staff would make contact with the manager of the premises to arrange an appointment for an inspection in the next few weeks. Following the contact (usually by telephone), an appointment letter ([Appendix 1\(a\)](#) or [Appendix 1 \(b\)](#)) dependant on

enforcing authority) and a self-audit questionnaire ([Appendix 2](#)) are sent out to the premises manager, together with a list of relevant guidance publications ([Appendix 3](#)).

The purpose of the self-audit questionnaire is to help the business to identify the key areas that need to be addressed in order to achieve good standards of control. By encouraging the business to complete this questionnaire in advance, the actual time required to carry out the inspection is significantly reduced, and it provides an opportunity for the business to take remedial action if areas of concern become apparent. This allows risk reduction measures to take place at an earlier stage than might occur, for example, if unannounced inspection visits were carried out.

During the inspection itself, a number of issues are addressed.

- Examination and discussion of the completed self-audit questionnaire with the pool manager, including identification of any problems and subsequent remedial action
- Audit of spa pool operational records to verify answers given to the self audit questionnaire
- Examination of risk assessments, operating procedures, training records and other relevant documentation relating to pool operations
- Inspection of the pool area, plant room, and other relevant areas, paying particular attention to layout, access, manual handling and chemical safety,
- Carrying out a chemical analysis of the water in the spa, and/or swimming pool to ensure that water quality is within the accepted operating parameters,
- Take water samples from the spa and /or swimming pool for general bacteriological analysis, including *Pseudomonas aeruginosa*.

At spa pools only, the following additional activities were also carried out:

- Use of a multiple choice questionnaire ( [Appendix 4](#) ) with the member of staff responsible for day to day routine maintenance of the water treatment system in order to assess their knowledge on the safe operation of spa pools
- Take a water sample from the spa or spas for analysis for *Legionella* bacteria.

A standard inspection form ( [Appendix 5](#) ) is used by enforcement officers to ensure consistency of approach. Following the inspection the water samples are taken to the laboratory within 6 hours. Liaison with the laboratory in advance of the inspection is necessary to ensure that the laboratory has sufficient and appropriate agar media available for the *Legionella* analysis.

Results of the microbiological analysis are notified to the business concerned in due course. If no issues are identified (either as a result of the inspection or sampling results) no further action is taken with regard to the premises. However, if problems have been identified and remedial action is required further investigation and enforcement activity may be necessary. This is considered on a case by case basis, proportionate to the severity of the problems identified. Where appropriate further water sampling for chemical and/or microbiological analysis may be required.

### **Further activity**

This initiative can be repeated after an agreed period to ensure that levels of awareness remain high. Its success in part can be measured by the amount of information retained by

staff working in the target premises, although this will be diluted by staff leaving and new staff being engaged.

It is also suggested that this initiative can be combined with the Private Pool Safety Initiative promoted by the Vale of Glamorgan Council and found in the Environmental Health Contributions to Health Challenge Wales Tool Kit Volume 1 – go to [http://www.cieh.org/library/Knowledge/Food\\_safety\\_and\\_nutrition/Diet\\_and\\_nutrition/08%20Private%20Pool%20Safety%20\(%20English\).pdf](http://www.cieh.org/library/Knowledge/Food_safety_and_nutrition/Diet_and_nutrition/08%20Private%20Pool%20Safety%20(%20English).pdf) for the English Language version or [http://www.cieh.org/library/Knowledge/Food\\_safety\\_and\\_nutrition/Diet\\_and\\_nutrition/08%20Diogelwch%20mewn%20Pyllau%20Nofio%20Preifat.pdf](http://www.cieh.org/library/Knowledge/Food_safety_and_nutrition/Diet_and_nutrition/08%20Diogelwch%20mewn%20Pyllau%20Nofio%20Preifat.pdf) for the Welsh language version.

## Appendix 1 (a)

Our Ref / Cyf: KD/PP/MT

Your Ref / Eich Cyf:

Date / Dyddiad: Xth January 2006

Dear Sir/Madam

**Re: Operation of Spa Pools in Cardiff – Spa pool management  
Inspection and testing project January – April 2006**

Further to our recent telephone conversation regarding swimming pool and spa pool management, I am writing to provide you with further information relating to the project and to confirm the appointment on .....

Employers who operate spa pools and swimming pools have duties under the Health and Safety at Work etc., Act 1974. However, following visits that have previously been carried out, we are aware that certain employers have difficulty in complying with regulations and guidance.

We believe that most employers do not do this deliberately. Problems often occur because managers have too much to do and put off what they perceive to be “less important” tasks until they can find the time to do them. However, some managers never attach the right priority to the safe management of spa pools and swimming pools. This may happen because they do not realise that:

- ◆ Poor management of spa pools/swimming pools can result in outbreaks of disease. Some outbreaks associated with spa pools can cause serious ill health or even death (e.g. Legionnaires’ disease).
- ◆ An outbreak of disease can have devastating effects on a health related business. Publicity and word of mouth may drive customers away. Courts may impose substantial fines. Many small businesses may not survive.
- ◆ Where an employer does not have the necessary skills themselves, they have a statutory duty to appoint a competent person to advise them on controlling the risks that arise from spa pools/swimming pools.

I have enclosed a self-audit form to help stop this happening to you. The form identifies most of the matters that you need to address to provide good standards of control.

I have also enclosed:

- ◆ A list of publications which provide guidance on the safe operation of spa pools
- ◆ The Health and Safety Executive's guidance leaflet "Need help on health and safety?"

Please look through the form and answer all the questions. If you are unsure about any technical matter, please contact the person you have appointed to advise you on the health and safety aspects of operating your spa pool/swimming pool. If you do not understand a question, you should contact me on the direct line telephone number or e-mail address at the bottom of this letter.

While most businesses may welcome our help, we recognise that one or two employers may be less diligent in protecting the health and safety of those who use or maintain spa pools. We have a duty to help protect customers and staff from such employers and will do this by inspecting all the swimming and spa pools in Cardiff, from late January to April this year.

As you are already aware, the inspection will take place prior to the end of April 2006. During the inspection, I will need to meet:

- ◆ A member of the management who understands how the pools are operated and managed;
- ◆ Someone who carries out routine maintenance to the plant (e.g. backwashing and ensuring that the dosing equipment delivers the right amount of chemicals); and
- ◆ A member of staff who carries out routine chemical testing.

Before I visit, please ensure that you have answered all the questions on the enclosed form. If you have taken any remedial action, please record this. By doing so, a considerable amount of time on the day of the inspection will be saved.

When I visit, I will:

- (a) Collect the form;
- (b) Examine the answers;
- (c) Look to see if you have identified any potential problems and, where you have done so, see if you have completed any necessary remedial action before the visit;
- (d) Carry out investigations to verify some of the answers that you have given on the form;
- (e) Ask the manager or member of staff who routinely maintains the plant to complete a short multiple choice questionnaire designed to assess their knowledge of the safe operation of spa pools;
- (f) Ask you for more information should I think that you may not be complying with the law;
- (g) Take some water samples for testing and bacteriological analysis;
- (h) Examine risk assessments, training records and operating procedure documents.

Please inform me during the inspection if you think that you have taken any alternative measures to comply with the law, or where you have started to take action to address a deficiency.

If any problems are discovered it may be necessary to inform the Health and Safety Executive (HSE) so they can take enforcement action. The action will be proportionate to the seriousness of the offence. This may consist of any, or all of the following:

- ◆ Advice/letter;
- ◆ Service of an Improvement Notice requiring remedial work;
- ◆ Service of a Prohibition Notice requiring the spa pool to be switched off until specified action has been taken; or
- ◆ Prosecution.

The advice and warning contained in this letter will be taken into account when deciding which type of enforcement action would be appropriate.

Please do not hesitate to contact me if you have any queries about these proposals, or would like a large print version of the letter or form.

Yours faithfully

**Name**  
**Title**

**Enc. List of publications sheet**

**Premises Self-Audit Form**

**HSE's 'Need help on health and safety'**

**HSC's 'What to expect when a health and safety inspector calls'**

## Appendix 1(b)

Our Ref / Cyf: KD/PP/  
Your Ref / Eich Cyf:

Date / Dyddiad: Xth January 2006

Dear Sir/Madam

**Re: Operation of Spa Pools in Cardiff – Spa pool management  
Inspection and testing project January – April 2006**

Further to our recent telephone conversation regarding swimming pool and spa pool management, I am writing to provide you with further information relating to the project and to confirm the appointment on .....

Employers who operate spa pools and swimming pools have duties under the Health and Safety at Work etc., Act 1974. However, following visits that have previously been carried out, we are aware that certain employers have difficulty in complying with regulations and guidance.

We believe that most employers do not do this deliberately. Problems often occur because managers have too much to do and put off what they perceive to be “less important” tasks until they can find the time to do them. However, some managers never attach the right priority to the safe management of spa pools and swimming pools. This may happen because they do not realise that:

- ◆ Poor management of spa pools/swimming pools can result in outbreaks of disease. Some outbreaks associated with spa pools can cause serious ill health or even death (e.g. Legionnaires’ disease).
- ◆ An outbreak of disease can have devastating effects on a health related business. Publicity and word of mouth may drive customers away. Courts may impose substantial fines. Many small businesses may not survive.
- ◆ Where an employer does not have the necessary skills themselves, they have a statutory duty to appoint a competent person to advise them on controlling the risks that arise from spa pools/swimming pools.

I have enclosed a self-audit form to help stop this happening to you. The form identifies most of the matters that you need to address to provide good standards of control.

I have also enclosed:

- ◆ A list of publications which provide guidance on the safe operation of spa pools
- ◆ The Health and Safety Executive's guidance leaflet "Need help on health and safety?"

Please look through the form and answer all the questions. If you are unsure about any technical matter, please contact the person you have appointed to advise you on the health and safety aspects of operating your spa pool/swimming pool. If you do not understand a question, you should contact me on the direct line telephone number or e-mail address at the bottom of this letter.

While most businesses may welcome our help, we recognise that one or two employers may be less diligent in protecting the health and safety of those who use or maintain spa pools. We have a duty to help protect customers and staff from such employers and will do this by inspecting all the swimming and spa pools in Cardiff, from late January to April this year.

As you are already aware, the inspection will take place prior to the end of April 2006. During the inspection, I will need to meet:

- ◆ A member of the management who understands how the pools are operated and managed;
- ◆ Someone who carries out routine maintenance to the plant (e.g. backwashing and ensuring that the dosing equipment delivers the right amount of chemicals); and
- ◆ A member of staff who carries out routine chemical testing.

Before I visit, please ensure that you have answered all the questions on the enclosed form. If you have taken any remedial action, please record this. By doing so, a considerable amount of time on the day of the inspection will be saved.

When I visit, I will:

- (a) Collect the form;
- (b) Examine the answers;
- (c) Look to see if you have identified any potential problems and, where you have done so, see if you have completed any necessary remedial action before the visit;
- (d) Carry out investigations to verify some of the answers that you have given on the form;
- (e) Ask the manager or member of staff who routinely maintains the plant to complete a short multiple choice questionnaire designed to assess their knowledge of the safe operation of spa pools;
- (f) Ask you for more information should I think that you may not be complying with the law;
- (g) Take some water samples for testing and bacteriological analysis;
- (h) Examine risk assessments, training records and operating procedure documents.

Please inform me during the inspection if you think that you have taken any alternative measures to comply with the law, or where you have started to take action to address a deficiency.

If any problems are discovered it may be necessary to take enforcement action. The action will be proportionate to the seriousness of the offence. This may consist of any, or all of the following:

- ◆ Advice/letter;
- ◆ Service of an Improvement Notice requiring remedial work;
- ◆ Service of a Prohibition Notice requiring the spa pool to be switched off until specified action has been taken; or
- ◆ Prosecution.

Any enforcement action will accord with our enforcement policy. The advice and warning contained in this letter will be taken into account when deciding which type of enforcement action would be appropriate.

Please do not hesitate to contact me if you have any queries about these proposals, or would like a large print version of the letter or form.

Yours faithfully

**Name**  
**Title**

**Enc. List of publications sheet**

**Premises Self-Audit Form**

**HSE's 'Need help on health and safety'**

**HSC's 'What to expect when a health and safety inspector calls'**

**Appendix 2**

**PREMISES SELF AUDIT FORM**

Please complete the following section: .....

Name and address of your premises: .....

.....

.....

.....

.....

Form completed by: .....

Position: .....

Please answer the questions by ticking the appropriate Yes/No (Y/N) column. You do not need to answer questions marked “\*” unless they apply to you.

Where you have answered “no” to any question, you are either not complying with the law, or are not following best practice and should seek professional advice as soon as possible.

If you answer “no” to a question and you later complete any corrective action, please write in the date that you finished the work in the “completed” column. DO NOT use this column for anything other than recording the completion date of remedial action.

**When I visit your premises, I will collect and examine the form. Should any of your answers indicate that you may not be complying with the law, I will ask you for details of any alternative measures that you may have taken to comply with the law. I will also carry out investigations to verify some of the information that you have provided on the form.**

Although this form covers most of your legal duties relating to the operation of spa pools/swimming pools, it does not cover every duty/situation and is not a substitute for a thorough and systematic risk assessment.

Please contact me if you do not understand a question, or have difficulty in answering it.

Thank you for your co-operation.

<b>Risk Assessment 1 – Have risk assessment been carried out and are they up to date</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
<p>Have risk assessments been carried out on the following risks? If yes, please write in the date of most recent assessment below each bullet point.</p> <ul style="list-style-type: none"> <li>• Risks to the health of people using the spa pool/swimming pool (e.g. from microbes such as Legionella and Pseudomonas). <i>Date carried out</i> _____</li> <li>• Risks to the safety of people using the spa pool/swimming pool (e.g. slips and falls, drowning). <i>Date carried out</i> _____</li> <li>• Risk from use of water treatment chemicals (a COSHH assessment). <i>Date carried out</i> _____</li> <li>• Risk to staff who manually handle water treatment chemicals (a manual handling risk assessment). <i>Date carried out</i> _____</li> <li>• Risk to people entering, leaving and working in the plant room (e.g. safe access and egress, electrical safety, tripping hazards). <i>Date carried out</i> _____</li> </ul> <p><b>Note:</b> Risk assessments should be reviewed regularly. The assessment relating to ill health to people using the pool should be reviewed at least every two years.</p> <p>Are the assessments kept on site and have employees who may be affected by the risks been informed of the significant findings of the assessments.</p> <p>Have there been any major changes to the design or construction of the plant, water treatment system or work systems since the risk assessment(s) was/were carried out or reviewed?</p> <p><b>Note:</b> Risk assessments should be reviewed when there are significant changes to the work or plant design.</p> <p>Since the risk assessment was carried out or reviewed, have there been any accidents or illnesses associated with the spa, or have the results of bacteriological monitoring been poor?</p> <p><b>Note:</b> Risk assessments should be reviewed whenever there is reason to believe that the existing assessment is no longer valid (e.g. the control measures have failed to protect peoples' health, or an accident has occurred).</p>			

<b>Risk Assessment 2</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
<p>Have the assessment(s) been carried out by a person or persons with sufficient skills to enable them to identify all of the measures that you need to take to comply with health and safety at work legislation.</p> <p><b>Note:</b> The assessor, should be aware and have an understanding of the following matters relating to the risk that they are assessing:</p> <ul style="list-style-type: none"> <li>• The legal requirements,</li> <li>• The relevant guidance and Approved Codes of Practice</li> </ul> <p>In addition, those assessing:</p> <ul style="list-style-type: none"> <li>• The health risks to those using the spa/swimming pool should have an understanding of the design and operation of spa</li> </ul>			

<p><i>pools/swimming pools, and</i></p> <ul style="list-style-type: none"> <li><i>Electrical safety should have access to, and an understanding of, the significance of the last electrical inspection and test report.</i></li> </ul>			
Is the name of the person who carried out the assessment recorded?			
Is the date of the assessment recorded?			
Is there a maximum time limit set for review of the assessment?			
Does the person with management responsibility for ensuring that risk assessments are reviewed know the circumstances under which the assessment should be reviewed immediately?			
Where the assessor(s) have made recommendations, have they been properly addressed?			

<b>Risk Assessment 3 – The assessment on ill health arising from the operation of the pool.</b>			
<b>Did the assessor(s) review if the following matters are suitable/sufficient/adequate:</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
The design and quality of the make up water supply?			
The design and construction of the pool and associated fittings?			
The size and design of the filtration plant, turnover rate of the pool water and maximum bathing load?			
The control system used to operate the air blower fan? <i>Note: The control system should prevent customers from operating the fan unless there has been an adequate rest period for the water treatment system to recover between uses of the fan.</i>			
The water treatment system used to control microbial growth?			
The frequency and extent of routine maintenance, checking and testing, including: <ul style="list-style-type: none"> <li>Biological monitoring? _____</li> <li>Chemical monitoring? _____</li> <li>Backwashing? _____</li> <li>Routine cleaning of the spa and balance tank _____</li> <li>Routine cleaning and disinfection of the system? _____</li> <li>Emergency cleaning and disinfection of the system? _____</li> </ul>			
The microbiological control limits?			
The water treatment control limits?			
The written description of the action to take in the event of predictable circumstances that increase the risk of illness (e.g. where examination or tests reveal that the plant is operating outside the control limits or where there are indications that the plant has caused infection to users)?			
The knowledge and abilities of all those responsible for the safe operation of the plant (i.e. do they know enough to carry out their particular responsibilities and are they able to do them)?			
The operation and maintenance instructions not covered above?			
The design of and completion of the plant log book?			
The management reporting arrangements?			
The timely rectification of faults identified by routine maintenance and			

monitoring?			
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<b>Responsibilities and Reporting Arrangements</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is there an up to date document showing the communication lines between the various people and companies with responsibilities for the safe operation of the spa pool/swimming pool? Are telephone numbers provided for use in emergencies?			
Does the document set out the extent of people's responsibilities?			
Are significant defects reported to the responsible person at the earliest opportunity?			
Is there a deputy to cover for the responsible person when they are absent?			
Are there adequate arrangements to cover for the absence of personnel who carry out routine testing and maintenance?			

<b>Training Competency</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Has the responsible person and their deputy been adequately trained and do they understand their responsibilities?			
Have the people who carry out routine examinations tests and maintenance AND those who provide cover in their absence been:			
<ul style="list-style-type: none"> <li>• Adequately trained and instructed, and</li> <li>• Do they understand their responsibilities?</li> </ul>			
Has staff received suitable instruction and training and is this updated? <i>Note: It is unusual for people to remember everything they have been told – refresher training may be needed.</i>			
Are training records kept on site?			

<b>Routine Operation Procedures</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Are there written procedures for the routine operation of the spa pool/swimming pool			
Do these procedures include: The frequency AND the procedures to be used for:			
Testing of the pH? .....			
Testing of the free and combined chlorine levels? .....			
Testing of the total dissolved solids (TDS)? .....			
Microbiological testing? .....			
Backwashing? .....			
Cleaning of the balance tank? .....			
Dumping all the water in the spa pool system? .....			
Cleaning and disinfection of the spa pool/swimming pool? .....			
Cleaning and calibration of any test probes installed in the system (e.g. REDOX and pH probes) and hand held meters? .....			
Replacement of the filter media?			

<b>Start Up Procedures</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is there a written procedure for start up of the plant if it has been drained down or not operated for four weeks or more?			
Does the procedure call for the disinfection of the whole plant before use?			

<b>“Out of Control” Procedures</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Are there adequate written procedures for dealing with a significant loss of control and serious contamination?			
Do those procedures clearly state the circumstances under which the pool should be closed?			
Do these procedures cover the discovery of Pseudomonas, Legionella or in the event of an outbreak of Legionnaires Disease?			
Are there detailed written method statements for cleaning and disinfecting the spa pool/swimming pool in the event of an outbreak of disease or the detection of high numbers of Legionella/ Pseudomonas aeruginosa?			

<b>Routine Operation and Maintenance – Manuals and Logs</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is there a suitable operation/maintenance manual kept on site?			
Is there an up to date schematic drawing of the: <ul style="list-style-type: none"> <li>• Spa pool/swimming pool system _____</li> <li>• Make up water system _____</li> </ul>			
Does the schematic show the location of all valves?			
Are the written operation and maintenance procedures kept readily available for those who need to use them?			
Are the written operation and maintenance procedures kept up to date, and are they in a form that enables easy retrieval of information (e.g. kept in a logical order in a folder with a contents section)?			
Is the logbook completed satisfactorily?			

<b>Spa Pool/Swimming Pool – Design, Physical Condition, Facilities and Notices</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is the spa pool/swimming pool kept clean and in good condition?			
Are the surrounds, overflow and gratings to the pool kept clean and in good condition with no evidence of slimes?			
Is there a shower nearby?			
Are prominent notices posted requesting users to shower before using the spa pool/swimming pool?			
If the pool may be used by children and the spa pool or swimming pool is over 1.2 metres deep, is there a warning notice saying that children must be supervised?			
Are water/airflow inlets and suction outlets designed to minimise the risk of entrapment of customers' toes/fingers/hair and are they maintained in that condition?			
Does anything more need to be done to ensure, so far as is reasonably practicable, that people can get in and out of the pool safely?			
<b>Note:</b> Remember that air bubbles injected into the pool may obscure the steps and bottom of the pool. Consider if the following may be needed:			
<ul style="list-style-type: none"> <li>• Handrails</li> <li>• Colour contrasting tiles/underwater lights</li> <li>• Surfaces with greater grip than at present.</li> </ul>			

Where needed, is there adequate surveillance of the spa pool/swimming pool?			
<i><b>Note:</b> Not all pools will require surveillance. The need for surveillance should be judged on the likelihood of an accident occurring and the potential severity of the accident. These should be balanced against the costs of providing adequate surveillance. You should have regard to the design, location, number of people using the pool and the types of people using the pool (e.g. children or the infirm).</i>			
Does the control system for the air blower fan for the spa ensure that customers cannot switch the air blower back on again unless there has been an adequate, pre-timed rest period to allow the water treatment system to recover?			

<b>Plant Room – Design, Physical Condition, Electrical Safety</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is there safe means of access to the plant room?			
Does the size and layout of the plant room and the lighting enable people to carry out their tasks safely?			
Is the balance tank kept clean and in good condition (with no evidence of slimes)?			
Are make up water pipes insulated?			
Is hot and cold water blended before entering balance tank and, if so, is the blended pipework the minimum length that it can reasonably be?			
Is the spa pool/swimming pool water distribution system free of bypasses around the heater elements?			
Does the make up water supply have any blind ends where water stagnates?			
Are adequate precautions taken to control electrical safety risks? (e.g. equipotential bonding/earth bonding, electrical equipment examined)?			
Are electrical circuits protected by an RCCD's? Are RCCD test buttons operated at least once per month and is a log sheet kept of these tests?			

<b>Use of Handling of Chemicals</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Is the location of the water treatment chemical store and water treatment dosing equipment conducive to the safe manual handling and safe use of those water treatment chemicals?			
Are all chemical containers prominently labelled?			
Are all tubes for dosing chemicals into the pool positioned and/or fixed in a way that will prevent strain being put on the connections that could lead to chemical leaks occurring?			
Is the personal protective equipment needed to handle the water treatment chemicals (e.g. goggles, gloves, aprons) kept readily available and is it in good condition)?			
Have all staff that handle chemicals been trained in their safe use?			
Are adequate procedures in place to deal with chemical spillages?			
Where Chlorine or Bromine compounds are used, are adequate emergency procedures in place to deal with the release of Chlorine/Bromine gas by the accidental mixing of acid compounds with the biocide?			

Are staff fully aware of these procedures?			
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<b>Routine Monitoring and Maintenance Logs</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Do the logs show that appropriate remedial action has been taken to deal with faults (e.g. spa pool/swimming pool closed?)			
<b>Do the logs show that the following maintenance, inspection and tests are being carried out when they should be done?</b>			
pH and biocide checks			
Backwash			
Drain and refill			
Disinfection			
TVCC's (laboratory colony counts)			
Dip slides			
TDS/Conductivity			
Legionella			
Calibration of all sensors (e.g. pH sensor) – both in-line sensors and hand-held sensors			
Replacement of the filter media			

<b>Bacteriological Samples</b>	<b>Y</b>	<b>N</b>	<b>Completed</b>
Are bacteriological samples sent to a laboratory with UKAS accreditation for the tests they conduct for you?			

## Appendix 3

### List of Publications

- Swimming Pool Water:- Treatment and Quality Standards 1999  
Pool water treatment advisory group  
ISBN 07176 17726
- Managing Health and Safety in Swimming Pools 2003 HSG179  
HSE Books  
ISBN 07176 26865
- Management of spa pools Controlling the risks of infection  
HSE/Health Protection Agency  
Available from Health Protection  
Agency £10.00.  
ISBN 0 90114480 0
- Legionnaires Disease The control of legionella bacteria in water systems.  
ACOP and guidance L8  
(2<sup>nd</sup> Edition) 2000 HSE Books  
ISBN 0717617726
- Legionnaires Disease: Controlling the risks associated with using spa baths.  
HSE information sheet [www.hse.gov.uk](http://www.hse.gov.uk)

## Appendix 4

### SPA POOL OPERATORS QUESTIONNAIRE

Name .....

Premises .....

Job Description .....

1. Spa pools must be carefully operated to reduce the chances of people from suffering from: (tick any that are applicable)
  - a) Legionnaire's Disease
  - b) Ear, eye and skin infections
  - c) Dermatitis
  
2. The main reason for using chlorine or bromine in spa baths is to:
  - a) Adjust the pH
  - b) Get rid of dirt
  - c) Control the growth of micro-organisms
  - d) Make the water smell nice
  
3. When chlorine is used, the spa water should normally contain chlorine at a concentration of:
  - a) 0.2-0.6 parts per million
  - b) 0.6-3.0 parts per million
  - c) 3.0-5.0 parts per million
  - d) 4.0-9.0 parts per million
  
4. Which one of these is one of the main reasons for measuring the pH. (tick the one answer which is most appropriate)
  - a) Because it indicates if water is being wasted
  - b) To stop chemicals being wasted
  - c) To ensure that the chlorine or bromine can work properly

5. The recommended pH of a spa pool is between:
- a) 7.6 and 8.4
  - b) 7.2 and 7.8
  - c) 7.8 and 8.6
  - d) 8.2 and 8.8
6. The first thing you should do if there is no chlorine or bromine in the spa during opening hours is to: (tick one answer)
- a) Close the spa pool
  - b) Leave the pool open, but immediately hand dose more chlorine or bromine into the system
  - c) Leave the pool open, but adjust or arrange for adjustments to be made To the automatic dosing equipment
7. How often should back washing be carried out? (tick one answer)
- a) Four times a day
  - b) Daily
  - c) Weekly
  - d) Monthly
  - e) Once every three months
8. Back washing is carried out to: (tick the most appropriate answer)
- a) Increase the pH
  - b) Get rid of excess sand in the filter
  - c) Keep the drains clean
  - d) Clean out dirt trapped in the filter
9. What could happen if the chemical used to adjust the pH is mixed with the chlorine or bromine disinfectant? (tick one answer)
- a) There is no immediate danger, but the chemicals may react and cancel out each others effect
  - b) There is no danger and the chemicals will be just as effective
  - c) The chemicals become a solid mass which jams up the dosing equipment
  - d) A poisonous gas is given off

10. When there is heavy use the measurements of the level of chlorine or bromine should be taken: (tick one answer)
- a) At least four times a day
  - b) When the pool opens and when it closes
  - c) Once a day
11. The water in the spa pool should be emptied out and the spa pool disinfected about every: (tick one answer)
- a) Day
  - b) Week
  - c) Month
  - d) Three months
  - e) Six months
12. When using chlorine as part of the normal water treatment system in a spa, the amount of combined chlorine should not exceed: (tick one answer)
- a) 10 part per million
  - b) 0.5 parts per million
  - c) 1 part per million
  - d) 3 parts per million
  - e) 5 parts per million
13. The main reason why all parts of the spa system, including the pool itself, should be kept clean is: (tick the one most relevant answer)
- a) To stop the spa being damaged
  - b) To stop the pH being raised
  - c) To make sure that people do not feel dirty when they leave the spa
  - d) To control the chance of making people ill

## **Answers to spa pool operators questionnaire**

1. all of them (a), (b) and (c) [one mark for each]
2. (c) Subtract 1 mark for (a)
3. (c) Subtract 1 mark for (a) **do not subtract any marks if they do not use Chlorine**
4. (c)
5. (b) Subtract 1 mark for (d)
6. (a) Subtract 1 mark for (b)
7. (b) Subtract 1 mark for (d) or (e)
8. (d)
9. Subtract 1 mark for (a), (b) or (c)
10. (a)
11. (b) Subtract 1 mark for (c), (d) or (e)
12. (c)
13. (d) Subtract 1 mark for (b)

**Maximum marks = 15**

**Less than 10 marks indicates serious concern as to competency (unless the member of staff got questions wrong because they are not responsible for a particular function, or they do not use chlorine on site).**

## Appendix 5

### OFFICER INSPECTION FORM

Inspecting Officer's Name(s)			
Name of Premises			
Name of Business			
Full Address of Premises		Head Office Address (H & S Officer Name if applicable)	
		Registered Office Address	
Inspection Date		Previous date of inspection of spa pool/swimming pool	
Number of Spa Pools/Swimming Pools and names/locations if more than one pool			
Operating at time of inspection		If NO – last date it operated	

People met during review of Spa Pool/ Swimming Pool (include names and positions)	
Managers/Supervisors	
People who conduct daily tests	
Others	

M & E Contractor (Maintenance and Engineering Contractor)	
Name of Company	
Principal Office Address	

Principal Office Telephone Number	
Main Contact + Position in Organisation	
Site Contact(s) (if different from above)	

<b>Water Treatment Contractor</b> (complete name all cases – other boxes only where needed)	
Name of Company	
Principal Office Address	
Main Contact and Telephone Number	

<b>Risk Assessments</b>	
Is the assessment of biological risks up to date?	
Is the manual handling assessment up to date?	
Is the COSHH assessment for water treatment chemicals up to date?	
Where the assessor(s) have made recommendations, have they been properly addressed?	

<b>Management and Training</b>	
Is there an up to date document showing the communication lines between the various people and companies with responsibilities for the safe operation of the spa pool/swimming pool?	
Do the people who carry out routine examinations tests and maintenance appear to have been adequately trained and instructed, and do they understand their responsibilities? (use the prepared question set on at least one person- attach question set to this form) (spa /operator test)	

<b>Log Book</b>	
Since the risk assessment was carried out or reviewed, have the results of bacteriological monitoring been poor? (examine bacteriological result over the last	

year)

If poor results, was appropriate  
action taken at the time?

Do the logs show that the following tasks are being carried out at the appropriate intervals and that appropriate remedial action is taken to deal with fault (examine all records for the last six weeks)	
pH and oxidising biocide checks	
Backwash	
Drain and refill	
Disinfection	
Dip Slides	
TDS/Conductivity	
Legionella	

<b>Physical Inspection</b>	
Is the pool and spa kept clean and in good condition?	
Is the balance tank kept clean and in good condition (with no evidence of slimes)?	
Are the surrounds, overflow and gratings to the pool and spa pool kept clean and in good condition with no evidence of slimes?	
Is there safe means of access to the plant room?	
Does the size and layout of the plant room and the lighting enable people to carry out their tasks safely?	
Are there any obvious inadequately controlled electrical risks in the plant room?	

<b>O &amp; M Manuals</b>	
Is there an operation/maintenance manual kept on site? Does it appear to be suitable (skim through a few pages)?	
Do the written operation and maintenance procedures appear to be kept readily available for those who need to use them?	
Are they in a form that enables easy retrieval of information (e.g. kept in a logical order in a folder with a contents section)?	
Do those procedures cover the discovery of Pseudomonas, Legionella or in the event of an outbreak of Legionnaires Disease?	

<b>Accidental Release of Chlorine/Bromine Gas</b>	
Where Chlorine or Bromine compounds are used, are adequate procedures in place to minimise the risk of release of Chlorine/Bromine gas by the accidental mixing of acid compounds with the biocide and are emergency procedures in place if this occurs?	

<b>Officers Test Results at Time of Visit</b>		
Occupancy in pool		
Free/Total Chlorine reading	Free	Total Chlorine
Free/Total Bromine reading	Free	Total Bromine
Temperature		
TDS		
pH		

<b>Officers Test Results at Time of Visit</b>		
Occupancy in spa		
Free/Total Chlorine reading	Free	Total Chlorine
Free/Total Bromine reading	Free	Total Bromine
Temperature		
TDS		



