Swimming Pool Safety Guide

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The information in this Document is by no means exhaustive and you may have specific hazards in your premises that it does not cover.

Contents

Introduction

There are health and safety issues that are specific and unique to the operation of swimming pools.

The aim of this Swimming Pool Safety Guide is to provide pool owners and operators with up to date information and guidance on the main risks associated with swimming pool operation. It also sets out suitable measures that can be taken to ensure so far as is reasonably practicable that a safe and healthy environment is provided for pool users and employees.

The information in this guide is recognised and generally accepted as good practice for pool operation, and it is designed to be used alongside the following documents:-

- Health and Safety in Swimming Pools a HSE Publication free to download as “HSG 179” https://www.hse.gov.uk/pubns/priced/ hsg179.pdf
- PWTAG (The Pool Water Treatment Advisory Group) Code of Practice “The Management and Treatment of swimming Pool Water” free to download https://www.pwtag.org/code-of-practice/
- “Swimming Pool Water, Treatment and Quality Standards for Pools and Spas” PWTAG, published 2017. Available from www.pwtag.org.uk (£65).

The above publications provide guidance on health, safety and water management issues that are specific to owners of swimming pools (Spas and Hot Tubs) in a commercial setting. It is recommended that all pool operators obtain and use copies of these documents.

The Law

What the law requires you to do

Every pool operator is responsible for the health and safety of employees, pool users and other people on the premises. The Health and Safety at Work etc. Act 1974 (HASAWA), the Management of Health and Safety at Work Regulations and others place general obligations on pool operators.

Some relevant key pieces of Legislation can be found on pages 7, 8 and 9 from HSG 179 “Managing Health & Safety in Swimming Pools and Annex A of the PWTAG CoP. It is an Employers Legal Responsibility to familiarise themselves with their legal requirements under the HASAWA 1974.

Must

In HSE guidance, ‘must’ is used only where there is an explicit legal requirement to take a certain action. ‘Should’ is used to indicate what to do to comply with the law – although duty holders are free to take other action if that would result in compliance.

Reasonably Practicable

When you see the term ‘so far as is reasonably practicable’ in this guidance it means balancing the level of risk against the measures needed to control the real risk in terms of money, time or trouble. However, you do not need to take action if it would be grossly disproportionate to the level of risk.

Risk Assessment

A risk assessment must be carried out to identify the hazards associated with the operation and use of your pool and to ensure the necessary steps are taken to reduce the risk of an incident.

When designing and operating a swimming pool these must be taken into account during the whole procedure.

The Pool Environment

It is important that the pool is designed to the appropriate standards and its surrounding areas are maintained in a safe, clean hygienic condition.

When designing your pool a number of issues will need close consideration. There is guidance available from many sources such as British Standards, PWTAG, Sport England, The swimming pool and Allied Trade Association (SPATA) that should be used as part of the initial design process.

- Use “Approved Companies” those with a proven track record in building pools,
- Take references and visit work that they have completed,
- If in doubt consult your local Environmental Health Officer they can help and guide you towards the right advice during the design stage.

Indoor/Outdoor Pool

- Outdoor Pools are exposed to more extreme environmental conditions than Indoor Pools,
- Outdoor pools need to have closely controlled access and be secured during closing time. High walls and fences may not be sufficient so you should assess the hazards as part of the risk assessment and take appropriate measures. This may mean the installation of intruder alarms/ lighting, in addition to fencing. Signs prohibiting unauthorised access and use of the pool should also be displayed in conspicuous positions, or around the pool,
- In the event of unauthorised access, pool covers should be designed to bear a person’s weight without trapping them,
- Indoor pools need to have efficient ventilation. Get this wrong and you can create unpleasant /hazardous conditions in the pool area,
- In Indoor Pools, the area including the changing rooms should be maintained at a comfortable temperature. As a guide the air temperature should be maintained at least **1°C** higher than the pool temperature. This will save the air becoming too moist and causing condensation. The buildings fabric also stays in good condition,
- Ventilation should be positive i.e. blown in. This means air will escape the pool area rather than draughts bringing cold air in,
- Lighting should be directed away from the pool water to prevent glare conditions for Lifeguards and users and be sufficient to allow all parts of the pool area and bottom to be seen clearly,
- Emergency lighting should be provided to light the way to safety in the event of a power cut and should be tested regularly,
- Glazing should be designed to an acceptable safety standard and marked so users can see it rather than walk into it,
- Changing facilities should be designed in line with current guidance i.e. changing rooms, toilets, showers, access to pool allowing people to shower properly before entering the pool,
- The pool surround and associated areas must be kept in a clean hygienic condition. Maintain a record of cleaning. Consult manufacturer’s recommendations for cleaning products and practices,

- Provide facilities (shoe racks etc.) where users can leave shoes, buggies outside the changing room pool area, this will prevent outside dirt being transferred onto the poolside and into the water,
- If there are steps into the pool handrails must be provided. All handrails within the pool environment must meet industry standards so as not to create a risk of entrapment between the treads and pool wall and be securely fitted,
- The floor area around the pool must be kept in good condition, cleaned regularly and any changes in level must be adequately highlighted.

Pool, Water Inlets, Outlets and Grilles

Water inlet and outlet grilles have in recent years been responsible for fatal accidents where persons and young children have become trapped by the pressure on the outlet and trapped in the apertures.

It is important that:-

- Where possible at least two outlets, spaced a minimum of two meters apart should be provided to the suction line,
- Where you have only one outlet seek advice on how the risk of entrapment can be reduced,water velocity through outlets should not exceed 0.5m/s.
- Outlet covers are secure , kept in good condition and tamper proof,
- The small aperture in swimming pool water inlets and outlet grilles must be 8mm or less (PWTAG CoP),
- Consideration should be given to providing an emergency stop button that shuts down circulation pumps and associated equipment,
- Daily visual checks of the inlets and outlets should be done and recorded. Closer Monthly inspections should be carried out and recorded. Any damage should be dealt with immediately.

Electricity

The main risks of electricity (shocks, burns, fires, explosions) are increased in the wet and corrosive conditions around pools. Precautions therefore need to be taken:-

- Socket outlets should not normally be located in wet areas. However where this is necessary they must be designed for this type of environment,
- Any sockets should be protected by a residual current device (not exceeding 30 milliamps). This must be checked daily and tested at least every three months by a competent person. It is advisable to record when checks have been completed,
- Any electrical equipment used near the poolside should be designed to withstand immersion. If not it must only be used when the pool is not occupied and fitted with a restraint (e.g. chain or barrier) so that it cannot fall into the pool. There are a number of battery operated equipment that can be used on the poolside eliminating the risk of equipment causing a substantial hazard on poolside,
- Appliances including audio equipment should be located in dry areas.
- Isolating facilities should be provided to enable parts of the installation to be disconnected to allow for routine maintenance / repair,
- It is important that the electrical installation and portable appliances are maintained in a safe condition.

Safety Signs

Signs are an important way of getting the message across and educating our swimmers. Consider pictorial signs for non-readers. Signs should also give advice on when not to swim i.e. “If you have had diarrhoea…” etc.

The following advice is taken directly from HSG179:

Safety signs should be considered as a part of your package of risk control measures. They can be used to warn the public where:-

- there are any sudden changes in depth and it is necessary to clearly mark the depth of water, especially at shallow and deep ends,
- it is necessary to show areas where it is unsafe to swim or to dive (and indicating any sudden changes in depth which could pose a hazard),
- there are slippery surfaces,
- it is necessary to provide instructions on the safe use of the pool and its equipment.

Where signs are provided, pool operators should:-

- maintain safety signs,
- ensure that signs are located in appropriate positions and unobstructed, for example by equipment or plant,
- explain the signs to employees, and tell them what they should do when they see a safety sign, particularly in relation to bathers,
- maintain the depth of water in accordance with the information displayed.

Signs advising users not to swim should use words such as:-

- If you have had diarrhoea, do not swim until symptom free for 48 hours,
- If you have been diagnosed with Cryptosporidiosis or Giardia infection don’t swim within 14 days of the last diarrhoea incident,
- Do not swim if you currently have a contagious illness,
- Do not swim if you are under the influence of drugs or alcohol.

These are just examples, you will also need a poster advising the swimmers of the Nappy Policy and Pre swim Hygiene Policies on site.

Safe Use and Supervision of Pool

In order to comply with the law it is important that the pool is operated with the safety of the user in mind. This will mean you will need to do a suitable and sufficient risk assessment.

That should result in a clearly written safety plan normally called a “Pool Safety Operating Procedure” (PSOP) which consists of a “Normal Operating Plan” (NOP) and an “Emergency Action Plan” (EAP), see further information later in the guide. This should identify all the pool rules which should be displayed in changing rooms, pool entrances and poolside.

HSG 179 advises the following points should be taken into account when undertaking your risk assessment. A guide in appendix 9 will be a useful tool when looking at the risks:

The risk assessment must include an assessment of the level of supervision required. Consider the following when carrying out your risk assessment:-

- the nature of the pool (public, school, hotel, holiday park etc.),
- pool design (for example layout, access from changing rooms),
  - pool water area,
  - pool depth,
  - abrupt changes in depth,
  - pool and pool hall features (for example glare, reflections, blind spots),
- the age and ability of pool users, if known;
- occupancy levels,
- nature of activities in the pool (children’s play session, club swimming, swimming lesson),
- pool features posing additional risk, for example features creating turbulent water, use of inflatable equipment, flumes, diving boards etc.
- if diving is permitted,
- the ability to enforce house rules for safe behaviour,
- access/admission arrangements, for example unrestricted access to hotel residents, child to adult supervision ratio.

Careful recording and consideration of any incidents or near-misses at the pool will help to ensure that safety arrangements remain relevant. The NOP should draw attention to any particular risk factors and provide information on the control measures to use.

Having undertaken a risk assessment, if you decide you do not need constant poolside supervision then the following are considered as essential:

- You will need to determine how often a member of staff goes to check the pool, to make sure the pool rules are being followed,
- Providing poolside supervision in specified circumstances and/or at specified times,
- Signs in pool area showing depth of water, especially at deep and shallow ends,

- Signs indicating that the pool is not staffed and drawing attention to simple rules of use and safety displayed by the entrance, changing room and pool area,
- Poolside alarm and a clear and simple notice of how to summon help,
- The alarm must be checked daily and recorded,
- Easily accessible rescue equipment, suitable for the size and type of pool (poles, throwing ropes and buoyancy aids) with instructions for use must be available by the poolside. These should also be checked daily and records kept,
- The person responsible for responding to emergencies must be trained in pool rescue, resuscitation techniques and first aid and must be on call at all times when the pool is available for use,
- The use of technology and drowning detection systems
- Maximum bather loads must be set. A guide to this is where the pool is 1.5 m deep at its deepest - divide the surface area by 2.7. This is generally the maximum amount of people the pool should physically hold. It is only a starting point, and also needs to take into account the pool type and turnover, please see the PWTAG CoP point 3.7 – 3.10,
- Lone bathing should be discouraged as if the bather gets into difficulty they may not be able to summon help,
- Avoiding steep gradients that may take pool users unawares,
- Admission Policies should be in writing and enforced.
    - Control and monitoring of the number of people allowed to use the pool at any one time,
    - No children allowed under the age of 16 unless accompanied by a responsible adult,
    - Generally it is a 2:1 (child to adult) ratio that may be changed to 1:1 where the child is under the age of 4,
    - You should determine your Admissions Policy through your risk assessment.

Constant poolside supervision (watching the water) by lifeguards provides the best assurance of pool users' safety.

Lifeguards

Where you need or want to provide constant poolside supervision you should provide a sufficient number of trained Lifeguards.

The following table provides guidance on the suggested number of Lifeguards for standard rectangular pools with no diving, features or specialised equipment. This should be increased if there is diving, inflatables, slides, chutes or large areas of deep water. You may need to carry out a Lifeguard Zone Visibility Test (LZVT). This would highlight any areas of the pool surface or pool basin floor where a casualty cannot be seen from any particular lifeguard position, especially those furthest away and closest to the lifeguard position.

Based on a lifeguard zone and the ability to apply the 10:20 rule as a starting point, the table below sets out the indicative numbers of lifeguards. The table describes a range of conventional rectangular pools, when used for swimming sessions and water activities which are not programmed. It does not include consideration of factors such as the use of diving boards or any other special equipment, which would potentially increase the numbers indicated. It is not a legal requirement, nor should it be used in isolation, but you may find it useful when considering your own poolside supervision needs.

Approximate pool size: m	Area: m^2	Number of lifeguards indicated by LZVT	Number of lifeguards indicated by LZVT for busy conditions
20.0 x 8.5	170	1	2
25.0 x 8.5	212	1	2
25.0 x 10.0	250	1	2
25.0 x 12.5	312	2	2
33.3 x 12.5	416	2	3
50.0 x 20.0	1000	4	6

N.B If you have one Lifeguard you must ensure they have means of calling for assistance in the event of an emergency.

Duties of Lifeguards

Key functions of a Lifeguard are to:-

- Observe the pool to anticipate problems in all areas,
- Enforce the pool rules to prevent unsafe behaviour,
- Rescue people in trouble and give immediate first aid,
- Be physically fit and mentally alert,
- Be adequately trained to ensure competence is maintained.

The Employer must ensure that Lifeguards are:

- Properly supervised,
- Clear about their duties,
- Know who is in charge,
- Provided with adequate training,
- Provided with distinctive clothing and whistles to communicate with bathers and summon help. Note: Red shorts/ skirt and yellow shirts are internationally recognised,
- Given regular breaks,
- Provided with suitable clothing/ sunscreen to protect them from the sun if they work outside. Consider the frequency of breaks and the provision of shade and drinking water.

Qualifications and training for Lifeguards

All lifeguards should hold a current nationally recognised pool lifeguard qualification from an accredited organisation (eg The Royal Life Saving Society UK) and an appropriate first aid qualification. Skills and knowledge must be maintained through refresher training. Lifeguards should regularly practice emergency procedures including rescues, first aid, power failure, toxic gas

release, use of alarms and other equipment. Training records should be kept.

Hire of Pool to Outside Organisations

It is important that where the pool is hired to outside organisations adequate supervision is maintained. If it is agreed that the outside organisation is to provide cover, this should be clearly detailed in the hire agreement and the pool operator must ensure that supervision by adequately trained persons is provided.

- It must be agreed in advance with the pool hirer who will provide the necessary supervision, and the number and competencies of any lifeguard,
- Where agreement is reached that the hirer will provide supervision, you are responsible for ensuring that the agreed level of supervision by competent persons is provided,
- Where the hirer shares use of the pool with the general public, you retain primary responsibility for the safety of pool users,
- You should put measures in place to ensure that the conditions of the hire agreement are being met (through random checks). See Appendix 10 for a checklist on what to include in the hire agreement.

The Plant Room

The plant room needs an area for:

- storage of chemicals,
- space for testing water,
- Safe access to plant and equipment should be provided.

PWTAG CoP 2019 states “Plant rooms should be adequately sized and not used for general storage or for storing hazardous chemicals, unless appropriate precautions are taken”

A well designed plant room built for commercial use will have:

- Two access points w,
- A medium rate filter
- An automatic dosing system
- A coagulant dosing system
- Storage areas for chemicals
- A drench shower
- A sink for cleaning testing equipment and hands etc.

It is likely some of the plant rooms already built will not have these items. They are more likely to have:

- A High-rate filter,
- A method of chemical dosing called “ Hand Dosing”,
- Coagulant tablets,
- Chemicals stored alongside or on top of each other,
- No facilities for cleaning and hygiene.

In those circumstances great care must be taken when using/handling chemicals and working in the plant room. Procedures for hand dosing with chemicals will need to be written down and suitable and sufficient personal protective equipment provided when dealing with chemicals.

Maintenance

Due to the wet and corrosive nature of the pool and associated areas, a system of correct and regular maintenance by competent persons is essential. In particular:

- Manufacturers’ guidance on maintenance requirements for pumps, heaters, dosing equipment, boilers, filters etc. should be complied with,
- Filters should be opened up and inspected internally at least once per year
- If any works need to be undertaken when the pool is open, suitable precautions must be taken to protect the public,
- Boilers should be thoroughly examined on a regular basis by a competent person,
- Ventilation systems should be examined regularly,
- Pumps and automatic dosing systems where installed should be serviced yearly,

- Asbestos was often used in boiler rooms around the boiler and for lagging pipes. Boarding containing asbestos materials may have been used in the construction of your shower rooms or in other facilities you provide. In most cases if the asbestos material is in good condition it can be left in place. However, if any asbestos needs removing you must seek the advice of a specialist as the work may need to be carried out by a licensed asbestos removal company,
- All maintenance should be recorded even if this is just cleaning and changing a chemical injector,
- All records of work undertaken in the plant room should be recorded, for example; delivery of chemicals, backwashing and changing filter baskets etc.

Pool Water

Pollution is introduced almost continuously into a pool mainly by bathers. It is important that this pollution is minimised and dealt with by appropriate water treatment including disinfection and educating bathers to use the toilet and shower before swimming.

Problems that may arise if there is inadequate treatment are:

- Irritation of bathers and poolside staff's skin, eyes and respiratory system,
- Possible illness of pool users,
- Unclear opaque, cloudy water.

Treating pool water the correct way will maintain clean, clear sparkling water.

Maintaining correct chemical levels are just one part of keeping your pool water in an excellent condition. Good filtration and backwashing practices are equally important management controls.

Filtration, backwashing, turnover time are functions of the circulation system that ensure the clarity of the pool water is maintained and aids the removal of bacteria following disinfection.

Turnover is the time taken for the entire volume of the water in the pool to be treated, filtered, heated, and returned to the pool, in hours. The shorter the turnover the more frequently and thoroughly the pool water is being treated. If sand filters are used, back washing should be carried out when the pool is not in use at the end of the bathing day. If the filters are backwashed when bathers are in the pool, then suitable precautions should be taken to protect bathers from the reduction in pool water level.

In terms of clarity, a readily identifiable mark must be clearly visible at the deepest part of the pool e.g. sump cover.

If the bottom of the deep end is not clearly visible, the pool must be closed and remain closed until clarity is restored.

To ensure an effective filtration system, the addition of a coagulant (flocculant) is required. This aids the removal of suspended material by producing a floc which can be easily trapped by the filter. A coagulant should be dosed continuously by chemical dosing pumps. Coagulants are particularly crucial in removing the cysts of cryptosporidium and Giardia, which are small protozoan, resistant to disinfectant and introduced to the pool via bathers and faecal contamination. Cryptosporidiosis is more common in children aged between one and five years and is highly infectious. Patients can shed the cryptosporidium oocysts for up to two weeks after the symptoms have ceased. A person who has had cryptosporidiosis or Giardia should not swim until at least 2 weeks after the symptoms have ceased. A notice to this effect should be displayed near the pool entrance.

Pool Water Disinfection

Chemical Testing and Standards

A key part of maintaining safe water conditions for your bathers involves maintaining correct chemical levels. Guidance on chemical standards are explained in the PWTAG Document “Swimming Pool water, Treatment and Quality Standards” 2017 and the PWTAG “Code of Practice The Management and Treatment of swimming pool water 2019”.

The PWTAG Code of Practice provides pool operators with a structured plan for the technical operation of their pool.

The code ensures that the technical operation of a pool meets quality standards that provide a healthy experience for swimmers using recognised and established practices, techniques, engineering and design. For this reason, all UK pools are encouraged to follow it.

The code covers swimming pools as defined in British and European standards:

Swimming pool type 1 – pools where the water-related activities are the main business (e.g. communal pools, leisure pools, water parks, aqua parks) and whose use is public.

Swimming pool type 2 – pools which are additional services to the main business (e.g. school, hotel, camping, club, therapeutic) and whose use is public.

Specific guidance from the Code covers levels of chlorine and pH, testing frequencies and what to do in the event of faecal contamination. When writing PSOPs this guidance should form the basis of your NOPs and EAPs.

Disinfectants can be harmful to bathers if they are not correctly used and kept to Industry accepted levels.

It is therefore very important that chemical levels are checked on a regular basis.

When dosing is manual (by hand or a manually adjusted pump or erosion feeder) the pool should be tested for chlorine and pH levels prior to use,

AND EVERY 2 HOURS UNTIL CLOSING,

AND at least THREE times a day where Pools have an automatic dosing system

It is very important that the chemicals in the pool are maintained at the correct levels, these are discussed further in this section. There is also a list of standards at the back of this guide.

It is important that any test equipment is kept clean and that tablets are in date. Staff must know how to carry out tests correctly and know what action is required where chemical levels do not meet recommended levels.

Some Key points from the CoP

Free Chlorine levels in pools without UV disinfection:

- 1 mg/l or below to a minimum of 0.5mg/l.

- With UV as low as 0.5 mg/l

This assumes Monthly Microbiological Monitoring standards are achieved and maintained.

Outdoor Pools using a Stabilised Chlorine, Spas, Hot Tubs, Hydrotherapy Pools:

- 3-5 mg/l

Combined chlorine less than half the free chlorine and >1mg/l

pH levels:

- 7.2-7.4 should be the target when using chlorine-based disinfection.

Testing Frequencies

Pools with Automatic dosing systems:

- Minimum 3 times a day including one before opening.

Pools that are hand dosed or use an erosion or constant rate feeder:

- Every two hours whilst the pool is open and one test after closing.

Swimming pools, Spas, Interactive water features:

- Microbiological Testing should be done monthly through an Accredited UKAS registered laboratory. If the pool is seasonal a test should be undertaken once the pool is up to the correct chemical standards and before it opens for use.

Test Kits

There are a number of test kits available on the Market. They fall into 2 categories. Both systems have advantages and disadvantages.

Comparator: Using a coloured disc and measuring your prepared sample of pool water against the colours on the disc.

Advantages: simple easy to use, long standing accepted method of testing water, no technology or batteries involved.

Disadvantages: Limited amount of tests, subjective, as it is based on colour perception, therefore would not be suitable for use by a person who is colour blind.

Photometer: Using a system where the levels of chemicals are measured using a beam of light which passes through the prepared sample.

Advantages: Gives a more precise reading, can do more tests depending on units capabilities. Easy to use, no need for colour perception.

Disadvantages: Needs calibrating annually, replacement battery, cost.

It is not recommended to rely on domestic test strips for commercial pools.

Microbiological Testing

It is important that microbiological monitoring is carried out on a regular basis. This is necessary to ensure that the pool is being adequately disinfected and that no person is being exposed to any harmful micro-organisms in the pool.

This should be done on a monthly basis for pools open all year, if seasonal, one should be done before you open and monthly whilst open. This type

of testing is carried out by specialist laboratories. The local Environmental Health Department may be able to provide a list of laboratories which carry out water testing.

A management system must be in place to ensure the correct action is taken if poor results are received, guidance on action to be taken can be found.

in the PWTAG Code of Practice. There is guidance on what are satisfactory microbiological standards at the back of this guide.

Legionella

Legionella is a bacterium that can cause a severe type of pneumonia called Legionnaire's disease. People get Legionnaire's disease when they breathe in small droplets of water(aerosols) that contain Legionella bacteria. Legionella can be found in man-made water systems such as hot and cold-water systems, swimming pools, spa pools, water features, which are poorly designed and/ or inadequately maintained. Operators must undertake a risk assessment and implement measures to ensure that water systems are designed correctly, adequately maintained and properly cleaned and disinfected. Further guidance is available from https://www.hse.gov.uk/legionnaires/other-risk-systems.htm

Record Keeping

Records of all test results and any corrective action required should be kept for a minimum of 5 years. An example of a Log Sheet can be found in Appendix 8.

Chemical Storage

The handling, use and storage of chemicals is probably the area of work that is undertaken in a plant room or on poolside that has the greatest potential for serious accidents or incidents to occur.

Chemicals can be dangerous and should be handled with great care whilst using the appropriate Personal Protective Equipment (PPE).

Understanding the risks associated with the chemicals you use is vitally important. Some simple rules are:-

- Acids, Alkalis and oxidising agents should be stored separately,
- Calcium Hypochlorite is an oxidising agent which means it can combust with other organic materials. Store this separately to other chemicals,
- If you can't store in separate rooms segregate by storing in specially designed cabinets and/ or segregate by distance with robust and substantial barriers preventing cross contamination.

Control of Substances Hazardous to Health (COSHH)

COSHH regulations require an assessment to be undertaken of the hazards created by storing handling and using chemicals.

However the following specific precautions should be taken with swimming pool chemicals:-

- Chemicals should be kept upright in a clearly marked, cool, well ventilated

and locked store. They must not be kept in direct sunlight,

- They must be correctly and clearly labelled,
- Acids, alkalis, oxidising agents stored separately,
- Liquid chemicals must be kept in bunded areas (Bunds retain liquids that spill or leak from containers),
- Correct personal protective equipment that protects a person from one or more risks to their health & safety such as gloves, goggles, aprons, boots, and respirators must be provided and Staff trained in their use. See example picture,
- Facilities for hand washing should be easily accessible,
- Where there is no readily available water supply near where the chemicals are being handled, then an eye wash station must be provided in the event of a spillage of chemicals,
- There must be suitable, written procedures in place to deal with the handling, storage, mixing and dosing of chemicals, these are Normal Operating Procedures (NOPs),
- There must be suitable, written procedures in place to deal with spillages and uncontrolled release of toxic gas. These are called Emergency Action Plans (EAPs),
- Staff must be trained in the use of their NOPs, EAPs and training recorded,
- Properly designed equipment should be used to transfer liquids from one container to another e.g. manual transfer pump,
- Disinfectants must not be stored with other chemicals e.g. oils, solvents, cleaning materials, paint etc.
- Respirators should be provided near the plant room entrance.
- Make sure the cartridges are in date and frequently replaced. Employees working with chemicals on a regular basis should be provided with their own respirator and trained in its use,
- Chemicals being injected under pressure from a pump should have the chemical delivery pipe sheathed to protect others from leaks, holes, splits or bursts.
- Safety Data Sheets should be kept for chemicals stored and used on site.

Pool Safety Operational Procedures

Under the HASAW 1974 section 2(2)(c). Employers are required to train, inform, instruct and supervise employees. Informing them of the work you require them to do today is a vitally important way of setting the standards and procedures you want them to follow. This information will be set out in your Pool Safety Operating Procedures (PSOPs).

The Pool Safety Operating Procedures (PSOPs) must include what you do during normal operation (NOP) and things you would do in an emergency (EAP).

Normal Operating Plan Procedures

In Appendix 2 and 3 there is a blank NOP and EAP that can be adopted for your Pool.

The NOP sets out your Pool Operation or how you run your pool safely on a daily basis and should include:

- A plan showing pool dimensions, changes in depth, any features, location of safety equipment pool alarms, fire alarms, emergency exit routes and other relevant information
- Potential risk factors- e.g. pool depth, diving, slides, water clarity and quality, maximum bathing loads, activities, users at risk etc.
- Dealing with the public- e.g. arrangements for communicating safety messages, poolside rules for customers and for lifeguards, signage, admission policies, controlling access etc.
- Duties of lifeguards -supervision levels, training, competency etc.
- Systems of work- including lines of supervision, call out procedures, work rotation and maximum poolside working times.
- Details of alarm systems and emergency equipment, maintenance arrangements- location, action to be taken on hearing the alarm, testing arrangements.
- First aid provision and training, including equipment required, its location, arrangements for checking it, first aid training.
- Conditions of hire to outside organisations,
- General information, e.g. key holders, maintenance arrangements, cleaning schedules/procedures, call out procedures etc.

Please note these are only examples, you must write your own to reflect your pool.

Emergency Action Plan

The Emergency Action Plan provides details of the action to be taken should something foreseeable happen or go wrong.

Some emergency situations you need to consider are:

- Overcrowding,
- Disorderly behaviour,

- Poor water clarity / visibility,
- Outbreak of fire,
- Lighting/ structural failure,
- Emission of toxic gases,
- Injury to bather,
- Discovery of a casualty in the water,
- Faecal/Blood/ Vomit release in pool,
- Substandard Microbiological results,
- Insufficient chemical levels in the pool water etc.

This Plan should provide details of how to evacuate the pool and the building.

Staff must be trained in the NOP and EAP and where the pool is hired to outside organisations the hirer must have copies of the NOP and EAP, and understand them.

Please note these are only examples you should write your own procedures to reflect your pool.

Training

Staff must receive training in the pool operating procedures and must be competent to carry out their duties. Training records should be held on site and kept up to date.

Pool operators must be competent to operate the pool plant and handle chemicals. Pool plant training should be provided by an accredited body. There are a number of organisations that provide industry-based training leading to an approved level of qualification. There is a list of approved training providers available on the following website.

https://www.pwtag.org/approved-training-organisations/

- Level 3 Pool plant operators Certificate - Any employee engaged in plant room work such as mixing chemicals, storing and handling chemicals, backwashing etc should be trained to this level. One member of staff per shift should hold this qualification or be on call to respond to plant room issues.
- There are recognised pool water testing courses available for those responsible for carrying out routine pool water testing. These provide basic information and skills necessary to competently test swimming pool (and spa water) and to provide an understanding of the outcome of those tests.
- Pool operators must provide information and training for those involved with the storage and handling of chemicals, the use of PPE and the use of respiratory protective devices, spill procedure.
- Where the Risk Assessment establishes that the pool will not be constantly supervised, staff should have completed the Emergency Pool Responder Qualification and be available to respond to any water based incidents.

The PWTAG CoP recommends a useful model for pool technical staffing requirements. (See section 2, pages 9-12).

Step 1: What are the hazards?	Step 2: Who might be harmed and how?	Step 3: What are you already doing?	What further action is necessary?
Risk of Drowning	Customers (if they become unconsciousor cannot swim properly). Staff (during rescue)	◗ Lifeguards on poolside ◗ Trained and competent lifeguards ◗ Displaying safety signs ◗ Lifeguards on rotas ◗ Admission policy in place ◗ Pool rules displayed and enforced. ◗ Adult: child ratio set. ◗ Maintain pool water clarity. ◗ Poolside alarm	◗ Reduce glare on the pool, to ensure lifeguards can see all areas of the pool. ◗ Place staff in a better position to avoid glare & staff rotation at differentpoints. ◗ Add clearer signs to show the depthof water. ◗ Clear 'No Diving 'signs.
Hard to Observe Areas: Swimmers getting into difficulty without thelifeguards knowing.	Customers could be put at risk if they get into trouble.	◗ Trained lifeguards ◗ Placing lifeguards in sensible positions around the pool & job rotation ◗ Displaying clear safety signage in these areas	◗ Increase the number of lifeguards in these areas. ◗ Reposition staff if the area is not supervised properly.
Body, limb, finger, toe: Entrapment on pool outlets and inlets.	Customers can be trapped by suction, could lead to drowning	◗ Outlets and inlets designed to reduce risk. Outlet velocity does not exceed 0.5m/s. ◗ More than one outlet /grid to reduce the risk of covering by one swimmer. ◗ Gaps in grilles designed to the correct size of 8mm or less. ◗ Panic alarms to alert staff to issue ◗ Staff trained to respond if swimmer trapped. ◗ Emergency pump cut off switch on poolside / in office	◗ Visually check the outlets daily recording condition and replacing if damaged/missing. ◗ Closer (in Pool) Monthly check recording condition and replacing if damaged/missing. ◗ Replace if damaged or loose. ◗ Advice for swimmers if someone is trapped. ◗ How to summon help

Example Swimming Pool-Risk Assessment

Loss of pool water quality due to inadequate treatment: Cloudy water, drowning risk, contaminated water can cause Infectious disease, gastroenteritis, skin irritation, skin infections, asthma.	Customers, staff, illness from ingestion of water containing pathogens. (microorganisms causing illness) also Cryptosporidium and Giardia that cause gastroenteritis. Inhalation of aerosols containing legionella, skin infection. (Pseudomonas aeruginosa), Asthma from excessive disinfection by - products in the air.	◗ Pool plant maintenance program ◗ Pool water testing procedure ◗ Staff complete recognised training in pool plant maintenance and water testing. ◗ Corrective actions established for results out of parameter. ◗ Pool test logs recorded and reviewed. ◗ Daily and weekly testing regime ◗ Monthly microbiological sample sent to UKAS accredited water laboratory. ◗ Immediate response to loss of clarity. ◗ Pool safety operating procedures in place, reviewed annually or post incident. Staff trained; knowledge refreshed. ◗ Reliable water test equipment ◗ Test equipment kept clean. ◗ Addition of coagulant ◗ Display of signage displaying when swimmers should not swim. ◗ Legionella risk assessment, control measures in place and recorded.	◗ Review procedures in line with PWTAG CoP update if required. ◗ Clear reporting lines set out in procedures. ◗ Display pre-swim hygiene notice.
Exposure to harmful chemical: Burns, asthma**,** dermatitis	Staff, customers, contractors	◗ COSHH assessment carried out. ◗ Chemicals kept in locked store. ◗ Acids and alkalis stored separately. ◗ Safety data sheets in plant room. ◗ Full PPE provided ◗ Regular checks of PPE ◗ Staff trained in safe handling, use and storage of chemicals. ◗ Good housekeeping	◗ Review COSHH assessment ensure covers all chemicals on site. ◗ Refresh staff training.

Step 1: What are the hazards?	Step 2: Who might be harmed and how?	Step 3: What are you already doing?	What further action is necessary?
Hair entanglement	Customers can become trapped and drown	◗ Staff trained to respond immediately. ◗ Scissors/cutting equipment in box in office. ◗ panic alarm for public to alert staff	◗ Check scissors or cutting equipment in place at weekly check
Slips, Trips and Falls: Slippery changing room floors, spills on the floor, uneven surfaces, equipmenton floor.	Customers Staff Trades All could be harmed if they trip over things left on the floor or slip on a wet surface.	◗ Cleaning up spills & ensure that equipment is stored properly. ◗ Signage ◗ Regularly clear pooling water. ◗ Staff wear sensible shoes. ◗ Specialist cleaning products used to add a non-slip barrier. ◗ Clear colour contrast between areas with a change of level.	◗ Placing non-slip mats in areas whichare high risk. ◗ Consider anti-slip flooring. ◗ Ensure that equipment can be storedin a suitable receptacle. ◗ Change the colour of the pool edgeso that the edge is clear obvious.
Water Slides: Walking into them, injuryin the splashdown pools, slippery stairs.	Customers & Staff Collision between people, slip on stair case.	◗ Clear sightline between the launch platform and splashdown pool ◗ A 2m gap between the bottom of the slide and the floor ◗ Use the correct sized splashdown pool. ◗ Make sure the splashdown area is clear of other users. ◗ Have the correct sized stairs on the slide. ◗ Using a non-slip surface for the stairsand launching platform	◗ Place cameras or traffic light systems so staff at the launch platform know when the splashdown pool is clear. ◗ Place impact-absorbing padding on parts of the slide which are below 2min height. ◗ Place rails to stop other people getting in the pool. ◗ If the stairs are too wide, add a barrier to split circulation. ◗ If stairs are too narrow, investigate g wider stairs fitted.

Step 1: What are the hazards?	Step 2: Who might be harmed and how?	Step 3: What are you already doing?	What further action is necessary?
Access: Slipping off steps, steps/ladders being in the way of other swimmers, getting caught inthe ladder.	Customers could be harmed when they try to enter/exit the pool if they slip and bangtheir head or get trapped between the rungs.	◗ Making sure the handrails and stepsare secure. ◗ Using non-slip steps ◗ Use of wide steps. ◗ Keeping the space between the steps and pool wall to a minimum	◗ Replace steps which do not have enough grip or are not wide enoughto be used safely. ◗ Tighten handrails and steps if they are not secure. ◗ Talk to designers to see if there is a better choice of ladders for the pool. ◗ Ensure regular maintenance is carried out.
Abrupt Changes in Floor levels: People could trip and lose their balance if they don't see the change in level.	Customers, staff, trades visiting. Not noticing change of level, causing trip and fall.	◗ Signage to indicate where the floor level changes e.g. 'Mind the Step.' ◗ Non-slip surfaces in these areas ◗ Handrails are available	◗ Add handrails to both sides of stepsif they aren't already in place. ◗ Provide high-visibility floor tiles at changes in the floor level. ◗ Provide good lighting so that peoplecan see the changes in floor level. ◗ Look at removing the changes in level to see if it would be possible
Inadequate Spacing Between Lockers and/or Cubicles: Open doors could cause an injury.	Customers and staff could be injured if locker doors areleft open and they walk into them.	◗ Signage in place asking for lockerdoors to be shut. ◗ Ensure a gap of 1.5m between twrows of lockers; and a gap of 1.2m between lockers and cubicles	◗ Move lockers or cubicles so they are the correct distance apart. ◗ Asking the manufacturer about ways to keep the doors shut. ◗ Provide warning signs if they are not already in place

Step 1: What are the hazards?	Step 2: Who might be harmed and how?	Step 3: What are you already doing?	What further action is necessary?
Fire Equipment: Could cause an injury.	Customers, staff and works people could all trip over or walk into equipment that is sticking off the wall, causing injury.	◗ Keeping equipment as close as possible to the wall. ◗ Place signage to show location of equipment. ◗ Daily checks	◗ Move equipment out of the walkways. ◗ Place equipment into a recess in the wall
Electric Equipment: Electric shock could causeinjury or death.	Customers, staff or contractors could be harmed if equipment is misused or makes contact with water.	◗ Use sockets which meet current regulations. ◗ Place sockets above floor level so they are less likely to get wet. ◗ Making sure wires are not trailing over the wet floor. ◗ Routine inspection and checks of electrical installation and portable appliances by competent person.	◗ Remove sockets if they are not needed. ◗ Replace sockets which do not meetthe current requirements. ◗ Remove sockets which are close to water source. ◗ substitute electrical appliances for battery operated ones

Learner/Training Pools: Jumping into shallow wateror onto steps, slipping on steps.	The customers, particularly young children, could be injured if they tried to jump onto the steps in the pool. Carers and children could be injured if someone wereto fall on the steps whilst carrying a child.	◗ Signage to be displayed explaining unsuitable for jumping into pool. ◗ Use steps which have a gap no larger than 140mm and a width of atleast 300mm. ◗ Supply handrails to help people getin and out of the pool. ◗ Children not to be left unattended	◗ Provide rails around the edges ofsteps ◗ Provide suitable & sufficient handrails ◗ Contrast the steps against the colour of the pool floor ◗ Make sure the step treads are slipresistant
Freestanding Columns/ Features: Could obstructsight lines, could reduce circulation space, corners could injure.	Customers could be harmedif lifeguards cannot watch them properly; anyone couldbe injured by a sharp corner.	◗ Ensure no sharp edges. ◗ Place lifeguards so that they can seepast features. ◗ Making sure the circulation space issafe i.e. 1.5m	◗ Move staff so they have a clear viewof pool ◗ Ask professionals about removing ormodify features ◗ Place clear warning signs
Unauthorised access: Potential drowning	Intruder	◗ Pool entrance locked when not in use. ◗ Safety Signage at entrance. ◗ Outdoor pool, fenced, secured entrance with high level lock.	◗ Safety rules included in units of accommodation.

This is not an exhaustive list of what you should include within your risk assessment, each premises is different. You should consider hazardous substances and ill health as a result of poor water quality.

Risk assessment completed by ……

Date completed …… Review date……

Normal Operating Procedure Checklist

Name of Pool: . . . . . .

Date: . . . . . .

Person responsible for drawing up this plan: . . . . . .

Pool Dimensions: . . . . . .

Depth: . . . . . .

Review Date: . . . . . .

Plan of Pool

(Include in this section a plan and profile (showing changes in depth) of your pool. Detail location of any features and safety equipment, e.g., access,slide, including poolside alarms, fire alarms, emergency lighting and emergency exits first aid and other relevant information.)

The following areas of the pool create potential risk factors:

. . . . . .

. . . . . .

. . . . . .

. . . . . .

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(Detail any area of high-risk factors in the pool such as electrical, structural, or chemical lhazards. Detail what arrangements are in place for communicating safety messages to the public.)

Method for controlling access to the pools:

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Maximum Bathing Load

The total number of persons permitted in the pool is:. . . . . .

Bather access to the pool will be controlled by: . . . . . .

When maximum bather load is reached the following action will be taken:

. . . . . .

. . . . . .

First Aid Supplies

The First Aid kits are located: . . . . . .

. . . . . .

The following first aid equipment is also provided: . . . . . .

. . . . . .

The person responsible for maintaining first aid equipment is:

. . . . . .

Accident reporting

All accidents/incidents should be recorded. The accident book is kept:

. . . . . .

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) puts duties on employers, the self-employed and people in controlof work premises to report certain serious workplace accidents, occupationaldiseases and specified dangerous occurrences. More information, together with details of how to make a report, can be found at www.hse.gov/riddor

Lifeguards' Duties and Responsibilities

The main tasks of the Lifeguard are: . . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

All lifeguards will hold a current lifeguarding qualification.

The following number of Lifeguards will be on duty: . . . . . .

Lifeguard Positions: . . . . . .

. . . . . .

. . . . . .

The Lifeguards will wear the following distinctive clothing:

. . . . . .

. . . . . .

. . . . . .

The following are the lines of supervision for the pool:

. . . . . .

. . . . . .

. . . . . .

Times

Lifeguard Maximum Poolside Times: . . . . . .

Call Out Procedures: . . . . . .

Contact telephone numbers: . . . . . .

Operational Systems

The following procedure is to be followed when the pool is closed:

. . . . . .

The methods used for preventing access are:

. . . . . .

. . . . . .

. . . . . .

Alarm Systems and Emergency Rescue Equipment

The following emergency rescue equipment is provided at the stated locations:1. . . . . .

. . . . . .

2. . . . . .

3. . . . . .

4. . . . . .

5. . . . . .

Location of alarms . . . . . .

. . . . . .

. . . . . .

These must be tested by. . . . . .

. . . . . .

How often . . . . . .

. . . . . .

Alarm Procedure

On hearing the alarm: . . . . . .

. . . . . .

The nearest telephone is: . . . . . .

Refer to the EAP for detailed information on what action should be taken in an emergency.

Fire safety

Location of Fire safety equipment. . . . . .

. . . . . .

Checked daily by. . . . . .

Maintenance

It is important all emergency equipment/alarms are maintained in a safe condition. If something becomes damaged/unsafe, or does not work correctly,then it should be immediately reported (detail maintenance procedures below)

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Detailed Work Instructions

Cleaning Duties: pool surround . . . . . .

Pool bottom . . . . . .

Pool equipment . . . . . .

Pool cover . . . . . .

Shower heads (cleaning and descaling) . . . . . .

Toilets . . . . . .

House Rules

Detail here any of your own specific house rules you may have.

On the Poolside: . . . . . .

. . . . . .

. . . . . .

. . . . . .

In the Water: . . . . . .

. . . . . .

. . . . . .

Pool Disinfection

Documented procedure for all water testing and actions if outsideparameters.

Acceptable free chlorine level between . . . . mg/l and..... mg/l

The combined chlorine level should be no higher than..... mg/l

pH will be maintained in the range . . . . to . . . .

Weekly tests. . . . . .

Pool water tested by . . . . . .

Frequency of pool water testing . . . . . .

. . . . . .

. . . . . .

Pool water is sampled for microbiological quality every. . . . . .

Samples are taken by . . . . . .

Samples are analysed by (laboratory details) . . . . . .

Addition of coagulant to aid filtration efficiency, dosed continuously . . . . . .

. . . . . .

Hire Arrangements

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Emergency Action Plan Checklist

This document details what action should be taken in emergency situations.

Overcrowding

The maximum bather load for the pool is: . . . . . .

If the maximum bather load is reached the following procedure will be taken to control admissions:

. . . . . .

. . . . . .

. . . . . .

In the event of a bather disobeying house rules, the following procedure shouldbe followed:

. . . . . .

. . . . . .

. . . . . .

Water Clarity

The water clarity must be sufficient at all times to enable you to see all points of the pool and bathers. If the pool clarity becomes poor then the pool must becleared of bathers and kept closed until the clarity is restored.

UNDER NO CIRCUMSTANCES SHOULD THE POOL REMAIN OPEN WHENTHERE IS POOR POOL CLARITY.

Outbreak of Fire

If there is an outbreak of fire and an alarm sounds, the following procedureshould be followed:

. . . . . .

. . . . . .

Lighting Failure

If the pool lighting should fail, lifeguards should instruct and assist bathers toleave the pool, and if necessary, the building.

Bathers should not return to the building until normal lighting is restored. Emergency lighting is provided at the following locations:

. . . . . .

. . . . . .

. . . . . .

Structural Failure/Emission of Toxic Gases

Remove public from the area where the damage is and evacuate as necessary,call emergency services as necessary. Ensure that the following procedure is also followed:

. . . . . .

. . . . . .

. . . . . .

Serious Injury to Bather

Sound Pool Alarm if applicable.

The following Procedure must be taken: . . . . . .

. . . . . .

. . . . . .

. . . . . .

Note Spinal Injury: If this is suspected, appropriate handling must be carriedout to ensure the risk of further injury is minimised.

Discovery of Casualty in Water

Guidelines for Lifeguards in cases of emergencies in a pool.If you

find a casualty you should:

. . . . . .

. . . . . .

. . . . . .

Note: In the event of an emergency, it is important to keep full details of the incident.

Diarrhoea and Vomiting

The pool should be kept clear of excrement and vomit. If either are found in thepool, the following action must be taken:

. . . . . .

. . . . . .

. . . . . .

Unacceptable pool water quality

Detail action to be taken when free/combined chlorine and or pH values are outof scope, or in the event of an unsatisfactory microbiological pool water sampleresult.

. . . . . .

. . . . . .

. . . . . .

Play Equipment and Swimming Pool Slides - Checklist

A Guide to Inspection, Design and Condition

Consider width of staircase, condition of stair treads. Slides should not allowa running start. Interior surfaces should be smooth. Riders should be safely ejected off the end of the slide.

The run-out area should, where possible be in a separate pool. Landing poolsshould be safely designed.

Maintenance

There should be routine maintenance for all areas, including slide, floors,splash tanks, etc. This should include daily checks before opening.

Signage

Signage should be clearly displayed, indicate how the slide must be used andheight restrictions where appropriate. Signs containing post use instructions, may also be needed e.g. on leaving the splash tank. All signs must conform tocurrent Safety Signs Regulations.

Supervision

There must be a sufficient number of supervisors to see all parts of slide andbe able to control usage. The following must be prohibited:

- people going down in pairs,
- people too close to one another,
- people standing up on the slide and
- people not leaving pool.

If the slide is very large, there will need to be communication between a supervisor at the top and the bottom for example by use of radios.

Slide Checklist

Is the slide adequately maintained?. . . . . .

Is there a daily inspection routine? . . . . . .

Is the slide and staircase safely designed? . . . . . .

Is the entry and landing area safely designed? . . . . . .

Is supervision of the slide satisfactory? . . . . . .

Are there adequate notices on how the slide should be used? . . . . . .

Comments: . . . . . .

. . . . . .

. . . . . .

. . . . . .

Inflatable checklist

A separate risk assessment carried out? . . . . . .

Do the Inflatables create blind spots? . . . . . .

Has the lifeguard position/s been reviewed? (Possibly in the pool)

. . . . . .

. . . . . .

. . . . . .

Are the inflatables cleaned regularly? Need to be cleaned by hand monthly andrecorded?

. . . . . .

. . . . . .

. . . . . .

(Please note specific safety controls in relation to the use of inflatables must be included).

Diving Boards/Diving - Checklist

Checklist for diving from the poolside

Is diving restricted to a certain area of the pool? . . . . . .

Does the diving area have a minimum depth of 1.5m? . . . . . .

Is there a procedure for prohibiting running dives?. . . . . .

Is there adequate forward clearance of at least 7.6m
to prevent contact with the other end of the pool? . . . . . .

Are there adequate “No diving” signs where diving is not permitted? . . . . . .

Is there adequate supervision of the diving area? . . . . . .

Comments: . . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Checklist for diving boards

Is the board in good condition and adequately maintained? . . . . . .

Is the board surface slip resistant? . . . . . .

If the platform is more than 2m above the floor, is it guarded? . . . . . .

Is there adequate supervision of the area? . . . . . .

Are there procedures to prohibit diving during busy periods? . . . . . .

Is there adequate clearance from surrounding structures?. . . . . .

Comments: . . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Daily checklist

Name of Pool: . . . . . .

Person completing checklist: . . . . . .Date: . . . . . .

Item	Satisfactory Y/N							Comments
	M	T	W	T	F	S	S	
Access around pool safe, e.g. paving in good condition								
Steps into pool secure in good condition								
Pool tank safe, e.g. No loose tiles, fitting secure								
Lifesaving equipment in place and in good working order								
All safety signs visible, in place and in good condition								
Poolside alarm tested and clearly marked								
Chemical store secure and clearly marked								
Different chemicals segregated								
PPE in good condition in place								
Pool test kit clean and intact								
Pool test carried out and documented and levels correct								
First aid kit in place and fully stocked								
Electrical Appliances in good condition and RCD* tested								
Pool outlet covers in place and intact								
Slides – visual inspection done; signage displayed								
Diving boards visual inspection								
Measures in place to prevent unauthorised access to pool								
Changing rooms clean and in good order								

* RCD – Residual Current Device

Appendix 7

Swimming Pool Disinfection - Recommended Levels

Chemical

Sodium Hypochlorite & Calcium Hypochlorite	
Free Chlorine	1 mg/l or below (to an absolute minimum of 0.5 mg/l. This assumes a pH value of 7.2 and satisfactory microbiological monitoring results) Free chlorine levels above 3mg/l should not be necessary in any pool using hypochlorite.
Combined Chlorine	Should be less than half the free chlorine and no more than 1mg/l, no matter what the level of free chlorine.
pH Value	7.2 – 7.4 should be the target when using chlorine-based disinfectants.
Chlorinated Isocyanurates	
Free Chlorine	3– 5.0 mg/l
pH Value	7.2 – 7.4 (the lower the pH the better the disinfection)
Cyanuric Acid Levels	These should be tested once a week until levels are consistent when this can be increased to monthly. Recommended levels no more than 150mg/l.

Please note: Adding 60 mg/l of Cyanuric Acid to an outdoor pool using hypochlorite at the start of the season will help to stabilise your free chlorine levels, especially when there is strong sunlight.

Bromochloro-dimethylhydantoin (BCDMH)	
Total Bromine	4.0 – 6.0mg/l
pH Levels	7.2 – 7.8

It is important that these levels are strictly adhered to as bathers exposed to this chemical can suffer skin irritation and rashes.

Sodium Bromide Plus Hypochlorite	
Total Bromine	1.5 3.5mg/l
pH Value	7.8 – 8.2
Total Alkalinity	100mg/l
Alkalinity	
Acceptable Range	80 – 200 mg/l

Correct alkalinity ensures effective coagulation and a stable pH when using acidic disinfectants. Alkalinity should be measured weekly using alkalinity test tablets.

Total Dissolved Solids (TDS)

This is the sum of the weight of soluble material in the pool. TDS levels increase with addition of pool chemicals, bather pollution etc. The pool water is compared with your source water (e.g. mains) using an electronic meter. TDS should not be allowed to increase more than your source water by 1000mg/l. Dilution by replacing up to 30 litres of water per bather per day should help keep TDS to an acceptable level.

Calcium Hardness

This is the measure of the calcium salts in the water. Recommended levels are between 80 - 200 mg/l; below this figure, the water can be corrosive to the fabric of the pool plant, above can lead to scale deposits. It should be checked weekly using appropriate tablets.

Microbiological Levels

	Satisfactory Levels
Colony Count (37oC)	No more than 10 cfu/ml
Total Coliforms	Absent in 100ml
Escherichia coli	Absent in 100ml
Pseudomonas aeruginosa	Absent in 100ml for all spas and whirlpools

Swimming Pool Log Sheet

Pool: . . . . . Week commencing: . . . . . .

Date		Time	Temp.	Free Chlorine	Total Chlorine	Combined Chlorine	pH	Action & Initials
Mon	1							
	2							
	3							
	4							
	5							
Tues	1							
	2							
	3							
	4							
	5							
Weds	1							
	2							
	3							
	4							
	5							
Thurs	1							
	2							
	3							
	4							
	5							
Fri	1							
	2							
	3							
	4							
	5							
Sat	1							
	2							
	3							
	4							
	5							
Sun	1							
	2							
	3							
	4							
	5							

Weekly tests

Date	Test	Standard	Result	Example Corrective action	Action Taken
	Calcium Hardness	80-200 mg/l		Add Calcium Chloride to increase	
	Total Alkalinity	80-200mg/l		Add Sodium Bicarbonate to increase	
	Total Dissolved Solids	1000 mg/l above mains water		Add fresh water to reduce	
	Cyanuric Acid	50-100 mg/l over 200 can cause “chlorine lock”		Add fresh water to reduce	

Date	Test	Standard	Result	Example Corrective action	Action Taken
	Calcium Hardness	80-200 mg/l		Add Calcium Chloride to increase	
	Total Alkalinity	80-200mg/l		Add Sodium Bicarbonate to increase	
	Total Dissolved Solids	1000 mg/l above mains water		Add fresh water to reduce	
	Cyanuric Acid	50-100 mg/l over 200 can cause “chlorine lock”		Add fresh water to reduce	

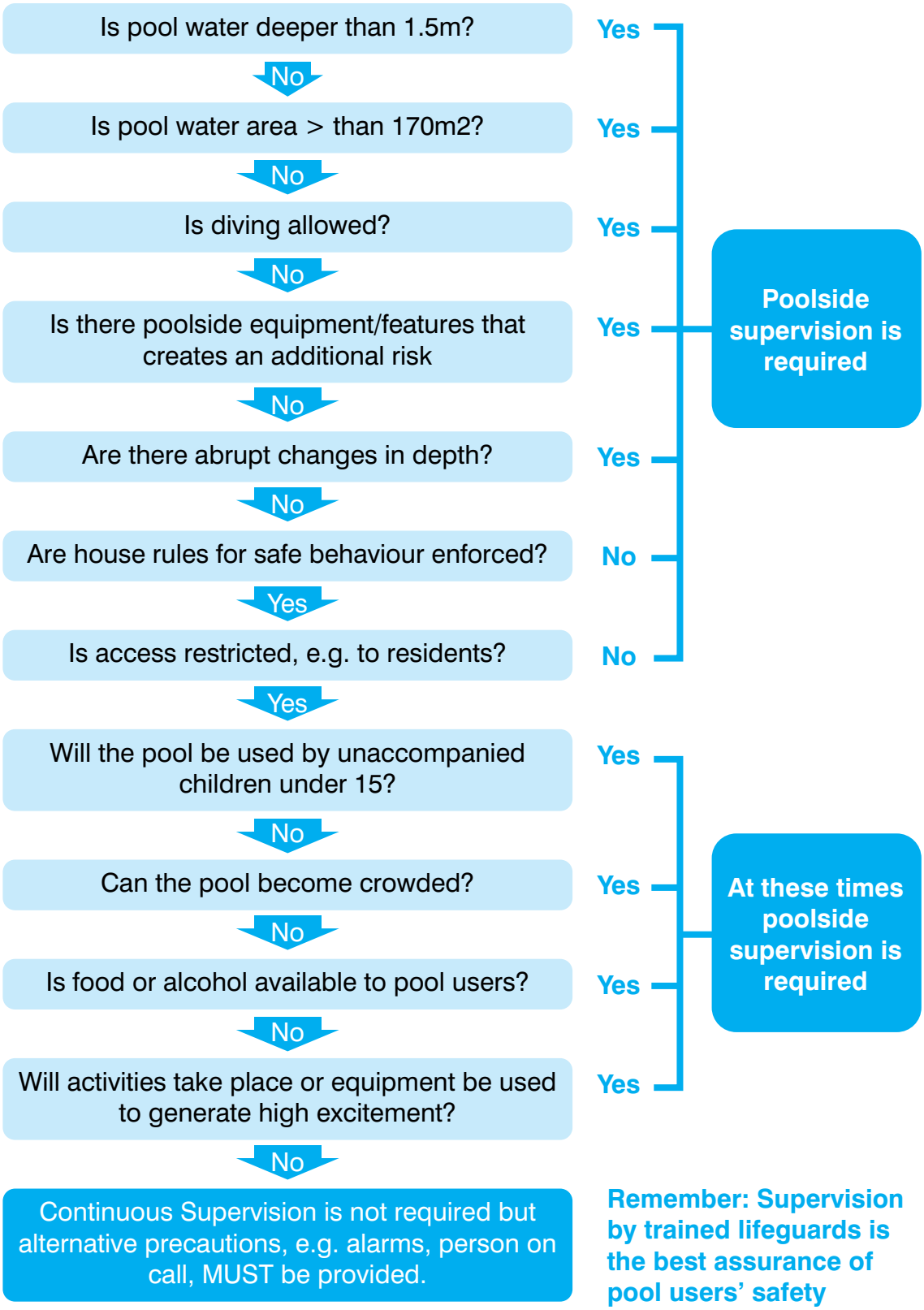
Date	Test	Standard	Result	Example Corrective action	Action Taken
	Calcium Hardness	80-200 mg/l		Add Calcium Chloride to increase	
	Total Alkalinity	80-200mg/l		Add Sodium Bicarbonate to increase	
	Total Dissolved Solids	1000 mg/l above mains water		Add fresh water to reduce	
	Cyanuric Acid	50-100 mg/l over 200 can cause “chlorine lock”		Add fresh water to reduce	

Date	Test	Standard	Result	Example Corrective action	Action Taken
	Calcium Hardness	80-200 mg/l		Add Calcium Chloride to increase	
	Total Alkalinity	80-200mg/l		Add Sodium Bicarbonate to increase	
	Total Dissolved Solids	1000 mg/l above mains water		Add fresh water to reduce	
	Cyanuric Acid	50-100 mg/l over 200 can cause “chlorine lock”		Add fresh water to reduce	

Appendix 9

Do You Require Constant Poolside Supervision?

This flowchart is a guide to determine if you need a Lifeguard at your pool.



Remember: Supervision by trained lifeguards is the best assurance of pool users' safety

Hire of pool to outside organisations: checklist of points for inclusion in contracts.

a) Information on numbers participating and their swimming skills.

b) Name of hirer's representative(s) who will be in charge of the group.

c) Numbers and skills/qualifications of lifeguards to be present during the session; and whether these will be provided by the hirer or by the pooloperator.

d) Hirer to be given copies of normal and emergency operating procedures,and to sign to the effect that these have been read and understood.

e) Specific agreement on the respective responsibilities of the pool operator and the hirer for action in any emergency. A distinction needs to be drawnbetween:-

   (i) Emergencies arising from the activities of the group using the pool.

   (ii) Other emergencies (structural or power failures, etc.).

   Responsibility for the latter will remain with the pool operator who willtherefore need to have competent staff in attendance during the hire session.

f) Any rules of behaviour to be enforced during the session.

g) Any advice on safety to be given to participants, e.g. on avoiding alcohol andfood immediately before swimming.