



Health & Safety Technical Guidelines

HS-TG-10

Swimming Pool Safety

Produced by

HSS – Facilities & GS Department

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1 Purpose

Swimming and water safety are life-saving skills, which provide thousands of people with the means to enjoy QU aquatic environment in a healthy, enjoyable and safe manner.

Although swimming pools (which should at all times be lifeguarded) offer a greater level of safety, the risk of accidents happening remains ever present.

Therefore the public has a duty of care for themselves and those within their charge when visiting pools.

Participating in swimming activities continues to be one of the population's favorite pastimes, as referenced within research carried out by many institutes.

The purpose of this document is to protect the health and well-being of all swimming pool users' including employees, students, contractors and visitors to Qatar University (QU) associated with swimming and water activities, as well as protecting QU property and the environment by functions by:

- preventing swimming and water activities related accidents and injuries;
- assuring all QU employees, students, contractors and visitors clearly understand operations and swimming pool related risks;
- reducing, controlling, or avoiding personnel exposure to all known or suspected health and safety risks;
- instituting adequate procedures to protect all property and the environment from damage and loss; and
- Requiring all QU employees, students, contractors and visitors to be in compliance with all guide lines and operations procedures.

2 Scope

This HS Technical Guideline applies to all operations and maintenance activities that may affect QU employees, students, contractors and visitors.

This HS Technical Guideline presents the minimum level of acceptable HS practices and requirements that are expected from all individuals (faculty, staff, and contractors) involved in the operations of the swimming pool facilities.

Abbreviations

AED: Automated External Defibrillator

BLS: Basic Life Support

CPD: Continuing Professional Development

DP: Designated Person

EAP: Emergency Action Plan

EMS: Emergency Services

ILS: International Life Saving

ISO: International Standards Organization

ISRM: Institute of Sport and Recreation Management
NOP: Normal Operations Plan

PA: Public Address

QU: Qatar University

QU HSMS: Qatar University Health & Safety Management System

3 Responsibilities

3.1 Top Management

QU top management shall allocate sufficient resources for the effective implementation of the HSMS, including the application of this HS Technical Guideline, and ensure that QU employees, students, contractors and visitors are aware of their responsibilities through appropriate regulation, delegation and communication.

The QU Top Management is also accountable for monitoring and reporting HS performance and appropriate programs and actions to ensure compliance with the QU HS Policy.

3.2 Other Accountabilities

In general, pool in charge (Section Head and Manager of students Sports activities) has a responsibility to ensure that the above requirements are in place. Pool in charge has a duty of care for all who enter their premises. This includes users and staff.

Some of the principle responsibilities may be summarized as follows:

- There is a written organizational training policy in place with an associated budget. This policy shall outline provisions for staff time used for training and identify who will present the various types of training. The QU Water Safety “Continuing Professional Development for Lifeguards” document recommends the following:
- A minimum of twelve hours per year is devoted to CPD for facility staff, divided as follows:
- Knowledge of the facility’s NOP and EAP – 6 hours. The practice of EAPs should receive most of the attention.
- The practice of Basic Life Support – 4 hours.
- Pool users Care issues – 1 hour.
- Swimming Fitness – weekly attention.
- There is a specific staff induction plan for new employees. This must include health, safety and Pool user’s service.
- The staff is properly supervised.
- Employees are appropriately qualified for their specific roles.
- There is a current Health and Safety statement for the facility.
- Risk assessments must be carried out on a regular basis with written reports available as evidence. These reports shall outline all actions taken in response.
- The facility has an up to date NOP.
- Outline EAPs for identifiable incidents.
- The facility has clearly visible Pool users’ information on display, including safety advice, rules and limitations.
- Facility is clean and tidy - including the plant room.
- Cleaning is on a regular basis. Equipment and chemicals used shall be checked to ensure they pose no danger to users.
- It is the Manager’s responsibility to ensure that all users follow the codes of conduct for the facility that is relevant to the activity being undertaken. Managers should ensure that elements include some of the conditions of hire, knowledge of safety equipment, some aspects of both the EAP and NOP and child protection procedures and general conduct.

Philosophy

Although swimming pools provide us with a safer place to swim than open water, needless deaths still occur. These are unacceptable when one considers the controlled environment of a swimming pool.

Hazards/risks which have been associated with past deaths or serious injury include the following:

- Inadequate supervision. This includes the lifeguard being absent, failure to identify a person in difficulty or inadequate response in an emergency.
- Health related issues at time of accident e.g. heart conditions, poor vision etc.
- Alcohol or food consumed before swimming.
- Youth and inexperience.
- Weak and non-swimmers straying out of their depth.
- Unauthorized access to swimming pools.
- Unsupervised diving activities.
- Diving into insufficient water depths.
- Dangerous behavior.
- Misuse of equipment.
- Cloudy pool water, which affects visibility of the pool bottom.
- The level of qualification of staff.

In order to ensure our swimming facilities are as safe as possible, the philosophy behind these guidelines is that we would encourage in charge to adopt a dual approach. This will include the following elements:

1. Awareness of the hazards and risks.
2. Prevention within the swimming pool.

4. Risk Assessment

The concept of Risk Assessment underlies all safety issues within these guidelines. The completion of regular Risk Assessments is a legal and mandatory requirement by QU health and safety management system (HSMS);

A proper risk assessment has five steps. These are as follows:

Step 1 Identify the hazards.

Step 2 Decide who might be harmed and how.

Step 3 Assess the risks and take preventative action.

Step 4 Record the findings.

Step 5 Carry out regular reviews and revise actions taken if judged to be necessary.

The above five items should be incorporated into the facility's Normal Operational Plan (NOP) and Emergency Action Plan (EAP) with necessary control measures outlined.

4.1 Risk and Hazards

More information regarding the completion of Risk Assessments will be found in the QU HSMS Manual Part 6 (Risk Management). Risk Assessments and the carrying out of risk assessments are also covered in the QU HSMS awareness training session to be conducted or requested from health and safety section personnel who can help in carrying out an effective and meaningful assessment.

4.2 Structural Considerations

The following are a number of guidelines which should be considered at the design:

- The prevention of unofficial access to premises should receive priority attention because of the extra dangers associated with swimming pools. This should receive a higher priority in the case of outdoor pools. Surrounding walls or railings should be of adequate.
- Pool covers may be used to support the prevention of unofficial access. These should not be considered safety features unless installed in a way that no one get underneath the cover.
- Access on to the poolside should be nearer the shallow end and include a barrier between pool entrance and pool edge.
- Entries at or near the deep end should be prevented at all times. A warning notice and/or a guard rail should be provided.
- The pool floor gradient should also receive attention. Sudden drops and/or steep inclines can present particular dangers for users. A slip resistant and non-abrasive finish should be provided on the end walls of the pool.
- Changes in depths should be clearly identified by the use of colour contrasted materials e.g. tiles or patterned finishes. The colors should not reduce the ability to see a body on bottom.
- The pool tank edge should be colour contrasted with the pool water to ensure it is visible to those in and out of the water.
- All pools should be designed with adequate storage space to ensure equipment that is not in use can be kept in a safe place. This will ensure that pool equipment will not create obstacles in and around the pool area and will prevent unsupervised use.
- Pool floors and the surrounds should be surfaced with non-slip materials and there should be appropriate signs in place to discourage running.
- Steps/ladders should be provided at the deep and shallow ends of the pool to ensure safe entry and exit. These can be permanent or removable. Attention should be paid to their design and location, to ensure they are safe, accessible and do not present an obstacle to safe supervision by the lifeguards. They should be fitted with handrails on both sides and these should overhang 750-950 mm above the pool surface. Steps should be flat and not tubular. Must be of sufficient strength and be firmly fixed to the poolside and should have treads which are slip resistant and have no sharp edges.
- Disability access should also be included in all pool designs e.g. ramps, recommended hoists.
- All ramps should have a slip resistant surface and handrails on both sides.
- Where it is intended to offer diving as an activity or as part of an activity, particular attention must be paid to water depths, height of the diving platform and forward clearance.
- Lighting should ensure that the bottom of the pool is clearly visible and that all signs can always be seen and read.
- Underwater lighting will help decrease the surface glare effects of other facility roof lights.
- Emergency lighting should be provided and regularly checked. A lighting failure can lead to panic

- Emergency power back up should be available.
- Emergency exits from the poolside should be included in all pool designs.
- Where features, such as wave machines/slides, are being included in the design, the inclusion of built in recessed areas must be considered. While handrails and ropes are standard features included to assist users in and out of the water, they may become hazards in situations where users could become entrapped or thrown against them.
- Emergency stop buttons located near to or on the poolside will have a positive effect on general safety, where other features are to be included.
- All outlets/inlets should be fitted with grilles which will not interfere with their efficient operation, but which will prevent the trap of fingers, arms etc. Such grids should only be removable mechanically and should remain tightly secured at all times. Overflow channel grids must of course be easily detachable for regular cleaning purposes.
- Where possible the amount of glare caused by the glazing should be minimized, as this may affect the view of lifeguards and other users.
- A specifically defined First Aid Station should be designated. Full visibility of the pool from such a station is also desirable.
- For safety and teaching purposes, it is desirable to provide handrails on the walls of the pool, just above the water surface.
- A separate plant room should be included in all facilities to house and store the chemicals.
- Swimming pool staff must undertake regular checks for corrosion. Adequate ventilation should be provided in this room. Legal requirements regarding the need for correct labelling must be followed.
- Room space is recommended to be made available within the facility for ongoing staff training.

5. Working in the pool environment

5.1 Lifeguards

5.1.1 Qualification:

All lifeguards shall hold a Pool Lifeguard qualification; such qualifications shall contain two specific elements:

- Foundation knowledge
- Core skills e.g. swimming, lifesaving and basic life support.

In addition to the above qualification, lifeguards must undertake site-specific training, in-service and ongoing staff training.

5.1.2 Age:

Be a minimum of 16 years of age.

5.1.3 Employment:

In addition to the standard interview procedure, all applicants for the post of lifeguard must be tested for their fitness and ability to perform different types of rescues. The ability to perform Basic Life Support and to care for those with suspected spinal injuries shall also be tested. It is also essential that pool in charge take suitable measures to ensure that all staff is suitable to work with people aged under 18 as these make up a large part of the user numbers in many swimming pool

5.1.4 Duties of the lifeguard:

While these may vary between facilities, the following are functions, which shall be included:

- Correct supervision of the pool.
- Exercise an appropriate level of control over users.
- Apply the principles of preventative lifeguarding.
- Take appropriate action during incidents.
- Perform rescues.
- Treat suspected cases of suspected spinal injury.
- Provide First Aid, within the scope of one's qualifications.
- Provide Basic Life Support if necessary.
- Provide advanced Life Support if trained to do so e.g. AED, Oxygen etc.

5.1.5 Continuing Professional Development (CPD):

All lifeguards should undergo suitable training on a Semi-annual basis, under the supervision of suitably qualified personnel, to ensure skills are retained and improved.

This training should primarily involve staged scenarios during which the E.A.P. is tested and reviewed if necessary. Observation and surveillance techniques should also be part of such training scenarios.

This training must be recorded as evidence of ongoing professional development. Written evidence is the most useful way of tracking staff training and it may be required or relied upon at a later stage.

5.1.6 First Aid:

While it is not a general requirement that all Lifeguards should have an Occupational First Aid qualification, they should however have an awareness of basic First Aid.

Recommended that lifeguards receive training and qualifications in other relevant areas, including First Aid, use of AED and Oxygen equipment.

5.1.7 Physical and Mental Fitness:

Is the responsibility of the individual, but ongoing regular training sessions are advised, in addition to the requirements of CPD.?

Lifeguards are also personally responsible for issues such as hydration, nutrition, warmth and sun protection (if working at an outdoor facility). Lack of attention to these aspects of general health will greatly impair the lifeguards' ability to perform their duties.

The facility's risk assessments shall consider the lifeguard's standard of hearing and vision to ensure they are appropriate to the duties being undertaken.

5.1.8 Dress:

This should follow the internationally accepted guidelines (International Lifesaving Federation).

- Tracksuit bottoms, shorts and skirts should be red.
- Tops should be yellow.
- Uniforms should be appropriate to the situation, offering the lifeguard comfort while also ensuring that movement is not hampered.

5.1.9 Communications:

Lifeguards are at the front line of Pool user's education with regard to safe practices when using the pool and adjacent facilities. Therefore all lifeguards should have good communication skills. Lifeguards should carry whistles for communication with other team members and pool users. There should be a clearly defined alarm system in operation within the facility. This can be in the form of sirens, public address systems or other alarms.

Lifeguards should also have a direct line of communication in the event of an emergency. This can take the form of a telephone, two-way radio or alarm push buttons. The location of such an item of communications should ensure easy access for the lifeguard and immediate response by other facility staff and the EMS.

The effectiveness of such systems should be continuously monitored.

5.1.10 Lifeguard Numbers:

QU HS recommends that at least one appropriately qualified lifeguard should be on duty at all times within the pool area, regardless of the level or type of activity taking place. When there is only one lifeguard on duty, suitably trained back-up must be available and easily contacted.

5.1.11 Non Programmed activities:

Constant poolside supervision during all non-programmed activities is essential. Having a qualified lifeguard on duty at all times within the pool area is important when one considers factors which are outside the immediate control of the pool staff. These include the following:

- Users may suffer from health problems (cardiovascular, respiratory, disabilities).
- Alcohol or food may have been consumed before swimming.
- Youth and inexperience.
- Weak or non-swimmers may stray out of their depths.
- Diving or falling into insufficient depths.
- "Responsible persons" in charge may be unaware of the potential dangers associated with aquatic activities.
- Adherence to facility rules regarding hygiene may also be compromised.
- Signs and safety guidelines will not guarantee that appropriate behavior will be followed.

5.1.12 Programmed Activities:

Lifeguard cover during programmed activities is also recommended.

Participants, age, experience and the qualifications of those in charge must be considered when carrying out the risk assessment.

Regardless of user numbers or activities taking place, all international guidelines agreed and state that immediate poolside lifeguard supervision is necessary when

- The pool has water deeper than **1.5 m**.
- The pool water area is greater than **170** square meters.
- Diving from the poolside is allowed.
- There is a poolside feature or equipment posing additional risk.
- There are sudden changes in water depth.
- Where access is not restricted.
- When the pool will be used by children aged less than **15** years.
- When crowded conditions are expected.

Due to the wide variety of swimming pool facilities and the many ways in which pools are used, it is difficult to make specific recommendations with regard to lifeguard numbers.

The following table outlines minimum recommended lifeguard numbers for different pools of varying sizes. The recommended minimum number of lifeguards in busy conditions is also shown below.

Table 1

Pool Size (m)	Area (m2)	Min No.	Min No. during Busy periods
20 x 8.5	170	1	2
25 x 8.5	212	1	2
25 x 10	250	1	2
25 x 12.5	312	2	2
33.3 x 12.5	416	2	3
50 x 20	1,000	4	6

Programmed activities taking place in swimming pools with a large water area may operate under the supervision of fewer lifeguards than that shown in the above table.

Where pool facilities include special features such as diving boards, etc., the number of lifeguards on duty should be increased.

The shape of a swimming pool will also influence the numbers on duty. All parts of the pool should be under the direct supervision of a lifeguard.

Fewer lifeguards may be required in pools with a water depth of 1m or less. Conversely, extra supervision may be required if water depths are greater than 2m. An extensive area of water may also require more supervision, regardless of depth.

Inappropriate illumination, poor acoustics, glare, poor ventilation, crowded conditions, turbulent waters and cloudy water are all aspects of swimming pools, which should be considered when deciding on appropriate lifeguard numbers.

These factors may also have a negative influence on the efficiency of the lifeguards' supervision (concentration, visibility or audibility). Lifeguard and duty structures should be arranged to counteract such negative influences.

Visibility through water will become a problem in pools which are **16m** wide or more.

50m pools require extra attention in that visibility through the water and access to users in need of assistance becomes more difficult. Also, a number of different activities may take place in pools of this size at any one time, all with their own lifeguard demands.

Where the pool is receiving specialist use, such as lane/fitness swimming, club swimming, advanced swimming classes, then the numbers of lifeguards on duty may be decreased if the

risk assessment indicates that the safety of the facility users is not compromised in any way. It is essential that all pool in charge have clearly documented guidelines for hire to outside organizations. These will be part of the facility's Normal Operational Plan. In such instances, consideration must be taken of the competencies of those in control of the particular activity. It is advised that all such users are familiar and competent in the actions required within the facilities' EAP. Participation in training should be a requirement of all contractual arrangements. Those who take charge of aquatic activities, such as swimming classes, and who have Pool Lifeguard qualifications can provide an essential part of the team during an emergency. Their qualifications should be considered when carrying out risk assessments. Their presence will also influence the numbers of lifeguards required at any particular time.

5.2 Further Supervision Considerations

A risk assessment will also guide the Pool staff in the levels of supervision or checking required for:

- Showers and other washing facilities.
- Seating.
- Floors.
- Equipment (hair dryers etc.).
- Toilets.

Many facilities include some or all of the above as part of the lifeguard's duties. If so, the safety of pool users should not be compromised while such duties are being undertaken. Consideration should also be given to the completion of these extra duties during busy times. This may require senior levels.

5.3 Teaching and Coaching:

The role of the Coaches within aquatics is one that is integral to the delivery of safe and effective activities to the benefit of the users. Coaches hold a very different role to that of a lifeguard. However the Coaches and lifeguard should always be encouraged to work as a team to ensure safe practice is being carried out in the water. Where the Coaches do not hold a full pool lifeguard qualification there must be a qualified lifeguard on duty.

5.4 Qualifications and Ratios:

Pool In charge should ensure that best practice is being followed by all users e.g. Coaches/Users ratios. A written risk assessment is necessary to determine specific ratios within each facility. Factors which must be considered include:

- Qualification of Coaches and helpers.
- Skill level of participants.
- Age of participants.
- Swimmer background e.g. cultural, special needs.
- Water depths.
- Space available for the activity.
- Other water users.
- Safety equipment.
- Learning / teaching aids.
- Emergency backup including lifeguard supervision and first aid.
- Reporting procedures.
- Pool layout e.g. features

The following are some standard ratios, which may apply when above safety factors considered.

Table 2

Adult and Infant (Baby) classes	12 pairs classified as 1 adult and 1 child 12 :1
Non swimmers and beginners	12:1
Improving swimmers	20:1
Mixed ability groups	20:1
Competent swimmers (able to swim 25 m on front and on back and tread water for 2 min)	20:1
Synchronized swimmers	20:1
Diving	12: 1 (Beginners)
	15:1 (Competitive)
Water polo training	20:1
Aerobics in deep water	20:1
Aerobics in shallow water	30:1
Competitive swim training	30:1
Disabilities swimming	8:1
	This can vary based on the disability type

5.5 Coaches Responsibilities

Coaches must be trained and able to carry out their role in the pool's Emergency Action Plan (EAP). They must ensure that the swimmers understand and regularly practice their response in an emergency. The emergency procedures to evacuate the water and summon assistance are practiced regularly in accordance with the requirements of the Emergency Action Plan.

Pool In charge must be able to justify their decisions regarding lifeguard/Coaches numbers in a legal and moral context.

5.6 The Assistant Coaches

An individual who holds approved level qualification of swimming teaching/Coaching should be interviewed by the Pool in charge person as a trainee, and must not have sole responsibility for the delivery of any programmed aquatic activity within a facility. The role of the assistant Coaches is to assist fully qualified Coaches.

There is a huge benefit to facility in charge in having these assistant Coaches as part of the team, as they can provide additional assistance and supervision to help maintain a safe aquatic environment. Whilst the most favorable option is to have all Coaches working from the pool deck, some can be used in the water to help Coaches on dry land.

Recommended ratios for the use of the assistant Coaches under the supervision of appropriately qualified Coaches is as follows:

(4:1), 4 swimmers to 1 Assistant Coaches,

This ratio should be reviewed during Risk Assessments on a continuous basis.

5.7 Working Conditions:

Similarly to lifeguards, swimming Coaches also require consideration when working in the swimming pool due to the unique pool environment. Relevant breaks will help Coaches maintain their concentration and efficiency at all times. Swimming Pools present a number of additional problems when compared to many other working environments. Noise levels, glare, user numbers, types of activities taking place and heat can all interrupt the lifeguards' concentration and efficiency, if ignored. The NOP should clearly outline a system for rotation among lifeguards. This will allow for breaks from the supervision of demanding areas, will allow for an increase or decrease of lifeguard numbers in line with expected or current usage and will allow lifeguards to exchange information relevant to the ongoing safety of users. Rotation systems can be time, break or non-poolside duty based.

Where rotation systems exist it is important to ensure that supervision continues during all changeovers. Lifeguards should be able to scan their area of responsibility within **10** seconds and be able to get to an incident within **20** seconds. This is the internationally recognized practice known as the 10-20 system and is a specific level of response for effective safety in swimming pool facilities.

The practice of EAPs will serve as a suitable check on the effectiveness of this system.

The use of a permanent or moveable elevated chair may be helpful to lifeguards. Effective use should be determined by a Risk Assessment. To ensure the development of an effective team it is recommended that regular team meetings be held and regular practice and review of EAP procedures are undertaken. Part time/temporary staff should also be included in such meetings and practices. Lifeguard qualifications should be revalidated at least every two years.

6. First Aid Provision

A specifically defined first aid station should be adjacent to the swimming pool area of the facility which is easily reached by the Emergency Services (EMS). Its location should be clearly located.

First aid equipment should include the following:

- A removable screen or curtain to protect the privacy of the casualty.
- A medical examination couch with blankets and pillows.
- Hot and cold water.
- Good ventilation.
- A nearby toilet.
- Stretcher, Wheel Chairs, Spinal Board.
- AED (Automatic External Defibrillator), Oxygen and Suction Equipment, if properly trained.
- A fully stocked First Aid kit, with clearly defined restocking levels.

7. Safety Equipment

This can be defined as follows:

General Safety Equipment:

This should include throwing items such as ring buoys and throw bags/ropes and reaching aids such as poles. A variety of such items should be available and accessible to lifeguards on duty as they have general and specific application. Lifeguards should be able to access a piece of safety equipment in approximately 5 seconds.

All pools should have a minimum of one ring buoy/throw bag and one reaching pole on each side and be mounted approx. 1.33m high on the walls to ensure clear visibility and access by all including children and those with disabilities.

Ideally lifeguards should always have an item of safety equipment in their possession. This can include any of the above mentioned items such as a rescue tube or can buoy.

Other items of equipment, which should be available and accessible for the working lifeguard, include spinal boards, AEDs and Oxygen equipment. Full training in their use must be provided. The recommendations of the relevant training authorities should be followed with regard to re-validation and ongoing-training. Records must be kept by Pool In charge to ensure best practices are followed.

All facilities should have a fully stocked First Aid box. Its location should be clearly identifiable with markings. All such boxes should be fully stocked with clearly defined re-stocking levels and a clear procedure as to who is responsible for the re-stocking of items when necessary. The level of First Aid provision and where this will be delivered shall be defined in the facility's NOP.

All safety equipment should be of a type approved by QU health and safety and all lifeguards should be trained in its correct use. Practice for the effective and correct use of rescue equipment should be included during staff training as part of accident scenarios (EAPs). This equipment should be in good repair and be subject to daily checks which are recorded.

Personal Safety Equipment:

This should include items such as gloves, masks and protective clothing.

Communication systems should also be included under this heading because many operate as back up to the lifeguard during an emergency. Included here is access to telephones, push button alarm systems, portable radio alarm systems and whistles or bells.

All approved Safety Equipment should be used and stored in accordance with the manufacturers' Guidelines and should be checked regularly.

Pool staff should be trained and familiar with the safe use and storage of this equipment. Safety equipment should be checked daily and a record made of the outcome of such checks.

8. Communications

Areas which shall be attended to include communications between poolside staff, supervisors and staff, the public and facility staff, and with the press and with the Emergency Services.

The facility's NOP should clearly define the existing lines of command. It should also define who is ultimately responsible for issues such as dealing with Pool users and in particular, communicating with the Press. Normally, this role is fulfilled by the facility in charge person.

Lifeguards and others responsible for safety should be able to attend to their areas of responsibility without distractions. It will of course be necessary for such personnel to communicate with members of the public and Pool users but this should be limited and within their areas of responsibility. Unnecessary and prolonged communications are a source of distraction.

A clear procedure for call out should be defined and practiced on occasion. This procedure shall define

WHO makes the contact and WHEN they make it. All staff members should have a thorough knowledge of how to call the EMS and under what circumstances they should be contacted.

All facilities should have a clearly identifiable telephone which can be used for contacting the EMS. Relevant contact numbers should be clearly displayed.

Lifeguards should have a means of communicating with other facility staff when there is an emergency. This is particularly important when a facility has occasion to have a single guard on duty. This can take the form of sirens or alarms. Portable 'push button' alarm systems may also be considered.

An audible PA system for communications with facility Pool users should be in place in all facilities. This will be important in emergencies and for general communications. This system should be checked for efficiency and audibility at regular intervals. This will be necessary when one considers the abrasive effect of some of the chemicals being used in modern swimming pools and other variables, which will influence the acoustics.

Lifeguards should know and practice defined systems for communication between themselves. These can be through the use of whistles, hand signals or buzzers. Again, consideration must be given to the many possible barriers to communications within the swimming pool environment, such as glare, noise and acoustics.

QU is now a multi-cultural organization. With different languages in use, the use of communications other than verbal is recommended as a solution, particularly as emergency signals. This action will also be suitable for those who may be visually impaired.

Swimming pool facilities must also consider those with hearing problems. This will be achieved through the use of some form of visual communication system combined with other recommended methods. Emergency lighting, both permanent and incident specific (e.g. flashing) will suit.

Communication with children should always be conducted in an open environment. A private conversation can be held in a public place which safeguards not only the child but also the adult.

8.1 Safety Signs

Signs fall under the following three categories and should follow the colour scheme recommended by the International Standards Organization:



- Prohibition – indicate activities which are not allowed or show areas where a particular activity will present a danger e.g. diving. Such signs should be on a white circle with red edging and should contain a black pictogram indicating the danger.



- Warning – indicate where there may be a danger if some caution is not exercised e.g. changes in depth, slippery surfaces. This type of sign should be on a yellow triangle with a black edge and black symbol.



- Mandatory – outline procedures that must be followed in order to ensure Pool users safety and satisfaction e.g. safe practices when swimming. These should be on a blue circle with white outlined symbols.

Using pictograms will ensure that non-readers understand relevant messages. Pool in charge can choose suitable pictograms which will help maintain a safe pool environment in accordance with the International Standards Organization.

The use of auditory signals can also be used to supplement written signs e.g. to indicate that the wave machine is being turned on. Such signals will also greatly assist the visually impaired.

It is essential that all signs are easily seen and suitably placed in relation to the message being displayed. Pool in charge and lifeguards must ensure that all signs remain free from obstruction e.g. towels, Clothing etc. It is also essential that the information displayed on any sign is up to date and accurate. For Example, changes to the pool layout may affect the accuracy of information on any particular sign.

All signs should be subject to regular inspections as part of the facility's ongoing risk assessments, with necessary follows up maintenance and updating as required.

Common signs currently in use include the following:

- Water depth.
- Deep end/shallow end.
- Hygiene rules.
- Prohibited activities.
- Use of equipment e.g. fins, buoyancy aids.
- Prohibiting the use of photographic equipment e.g. cameras, camera phones should be placed at the entrance to all pools and at other suitable locations throughout the facility.

Regulations for the swimming pool should be placed beside the entrance and must be easily read by visitors. They should also be displayed at other central areas around the pool facility.

Rules and regulations will be facility specific and should be influenced by the facility's written Risk Assessments. A list of standards and common regulations that should be considered for display to the public will include the following:

- Opening and closing times.
- Hygiene rules.
- Use of changing rooms.
- The supervision of young children.
- Use of glass bottles.
- Swimming ability required for specific activities e.g. entry into deep end.
- Use of equipment.
- Chewing gum.
- Use of swimming hats.
- Use of any type of photographic equipment, in line with child protection policy.

8.2 Normal Operation Plans

It is a mandatory HS requirement that all facilities shall have a written operational plan. This outlines the general operation and safety measures of the swimming pool. They shall include the following:

- Line of authority.
- Pool regulations.
- Responsibilities and functions of the various members of staff.
- Details of the pool, to show design, depths, access and other facilities.
- Hazards and how they are to be controlled e.g. diving
- Risks and how they are to be dealt with e.g. slippery floors after cleaning.
- Control of admissions. This should outline maximum user loads and security arrangements to prevent unauthorized access when the pool is closed or during specific activities.
- All swimming pools should have a clearly defined Child Admission Policy.
- A minimum water area of 3 sq. m per person is recommended. The capacity of the plant water treatment system will also be a key factor when determining maximum user loads.
- Again, a thorough risk assessment will be necessary to ensure maximum user numbers are set for various circumstances e.g. children, disabilities
- Pool shape and depth needs to be considered in busy periods. User loads will be assessed at the point of reception and numbers should be communicated. Risk Assessments may include a particular section of the pool if unusually busy.
- Lifeguard duties and responsibilities
- Staff training, qualifications and arrangements for continuing professional development.
- Management of special features and events.
- Use of pool equipment.
- Management of the pool when being used by specialist groups e.g. clubs, special needs.
- First aid facilities and equipment specifications and availability and how they managed.
- Pool safety equipment available and where it is located.
- Conditions of hire.
- Actions to be taken in cases of non-conformity.

8.3 Mobile Phones

Mobile phones and their use should be prohibited from defined areas within the facility. A risk assessment should determine the areas and the policy.

9. Emergency Action Plans

It is impossible to predict and plan for every eventuality in and around the swimming pool environment but there are a number of foreseeable emergencies for which one can pre-plan. Such pre-planned scenarios should be included in the facility's written NOP.

Examples of these are as follows:

- Structural failure e.g. lighting failure.
- Drowning.
- Spinal injury.
- Theft.
- All facilities should have a very specific evacuation plan.
- Allegation of Child/Vulnerable Adult Abuse.
- Water contamination.
- Missing person.
- First aid incidents - major and minor incidents.
- Disorderly behavior
- Overcrowding.
- Rescuing a casualty in the water.
- Incidents in other parts of a facility e.g. heart attack in the steam room.
- Breaches of the pool's admissions policies.

9.1 Faecal Fouling

This is a significant risk when one considers the high use of swimming pools by very young children. All swimming facilities must have clearly outlined procedures for dealing with fouling incidents. The clearly stated Emergency Action Plan must be known to all staff.

The following are some specific guidelines:

- Solid faeces must be removed from the pool as quickly as possible. No other follow up action is necessary as long as disinfection levels are within the range set for the pool and as long as it has been possible to remove all the material.
- Diarrheal fouling is likely to contain bacteria and viruses, thus posing a risk for users. It should be noted that it is unusual for this to be brought to the pool's attention, because the faeces are often too liquid to be seen. If a user reports signs of a stool that is liquid or runny, then it should be suspected that the faecal release could be more hazardous. One of the most prevalent causes of diarrhea is either cryptosporidium or giardia. Either of these protozoa will make their Victim quite ill.
- Unfortunately, cryptosporidium is resistant to chlorine and ozone and can only be dealt with through adequate filtration using flocculent or through a UV plant.
- Residual disinfection will remove these dangers in a well-run pool within minutes. However, diarrhea often contains an inter-gestural parasite, which can cause chronic diarrhea and vomiting when ingested. This will present extra, more serious dangers for immune compromised users.
- Pool chlorine does not kill this parasite (Cryptosporidium) quickly enough. Ozone or ultra violet light systems are as ineffective as anything else. Only medium pressure UV has any noticeable biocidal effect on cryptosporidium. Effective filtration will eventually remove all traces of the parasite.

Because of the associated risks with diarrheal fouling, the following action plan is recommended:

- Close the fouled pool and other pools whose water treatment systems are linked.
- Request users to leave the pool and to shower thoroughly. Ensure that you take note of the name and address of all pool users at the time of the incident.
- Maintain disinfectant levels at the top of the operating range. Reduce pH as low as possible – (7.0). Reduction in pH increases the effectiveness of chlorine.
- Vacuum and sweep the pool.
- Using a coagulant and filter for six turnover cycles. This will only work when medium rate filters are being used. In charge that use high rate filters may need to follow a more complex operation or empty the pool completely.
- Backwash the filters.
- Check the International standards chlorine residual and (ph) values of the pool water.
- The pool should only be reopened after the above actions have been taken.
- The above sequence of actions must be followed if the pool is identified as a potential source of Cryptosporidium.

The prevention of Cryptosporidium incidents can be enhanced by the following:

1. Discourage babies less than six months of age from using the swimming pool.
2. Encourage the wearing of nappies by babies and young children who may not be toilet trained as yet. A variety of nappies designed for use in swimming pools are now available on the market but it must be remembered that these may not provide complete protection.
3. Encourage all users to shower thoroughly before pool use.
4. Provide good hygienic nappy changing areas.
5. Discourage those who have been ill with diarrhea, within the previous 14 days from swimming.

10. Pool Features

There are recognized European Normal standards that cover many aspects of pool design and operation (including swimming-related equipment). In light of increased litigation QU HS recommend the review of these current European standards that are there for the protection of all staff and users. Some of the reference points for these documents are as follows:

- EN 15288-2:2008 Swimming Pools Safety Requirements for Operations
- EN 15288-1:2008 Swimming Pools Safety Requirements for Design

Modern facilities are now offering a wide range of other features as an added attraction to their users. It is an error to generalize the risks associated with such features. All have their own particularities and should therefore receive individual attention when completing the facility's risk assessment.

There are, however, a number of requirements, which apply to all such features as follows:

- At the design stage, great attention must be paid to the positioning of bends, steps and rails on all pool features.
- Features should be adequately protected against corrosion. The effects of chlorine on structures should receive additional attention.
- They must be staffed by an adequate number of lifeguards. This will be dictated by the risk assessment. Lifeguard cover for such features shall not compromise the supervision of other parts of the pool.
- Lifeguards should be aware of the potential dangers, their causes and prevention. All operatives must be trained in the specific use and supervision of any features.
- Lifeguards should be aware of the anticipation caused by these features, which may lead to unpredictable behavior by the users.
- Lifeguards should be constantly aware of the water clarity surrounding such features.
- Adequate signage giving user advice, dangers and restrictions.
- Rules for safe use must be strictly enforced.
- In charge and those supervising must know how to turn off the equipment if necessary.
- Regular checks must be carried out on all feature fittings e.g. water slides and flumes.
- Regular checks should be conducted for all ladders, handrails and steps.
- Manufacturer's guidelines must be strictly adhered to.
- Access to all such features should be prevented when not in use.
- These features should be referred to in the facilities' NOP and EAP.

In addition to the above, the more commonly available features also have their own specific safety guidelines. These are outlined in the following paragraphs.

Wave Machines:

A common factor associated with this particular feature is the presence of high surrounds necessary to contain the water. This will have an effect on people leaving and entering the water. It is hoped that the design of the wave machine will minimize the risk of people being thrown together or against fixed objects such as walls, rails or ladders. The strength and height of waves will create a number of associated hazards as will the varying water depths often found in and around these features. Lifeguards and other in charge should be aware of these.

- Along with recommended signage, an audible signal, which signals the start of the machine, should be in place.
- Weak and non-swimmers should be requested to move to the side prior to the machine being switched on.
- Lifeguards should be positioned so that they are able to supervise between the waves, supervise the "beach" areas (attending to those being knocked over by the water) and have an overall view of the area.
- Diving under the waves should be prohibited.
- Entry should be from the shallow end only.
- A system should be in place to ensure users are aware of changing wave patterns and strength.

Rapids or Jet Streams:

These are often designed with dips, bends and varying speed of water flow. These design features can combine to give whirlpool effects. There are many potential hazards and dangers associated with their use especially for the weak or non-swimmer. Proper control and supervision will ensure safe and enjoyable use of these features. In addition to the above general guidelines, the following feature specific guidelines should be adhered to:

- Lifeguards should be placed at the entrance and exit to assist users in and out.
- The positioning of lifeguards should allow for the rescue of panicking, injured or unconscious users while constant supervision is maintained. The facilities EAP shall detail actions, which will ensure constant supervision.
- The flow of users should be controlled to prevent congestion during the ride.
- If such features are fully or partially outdoors, measures should be in place to ensure adequate protection of lifeguards from the prevailing weather conditions.

Inner Tube Rides:

These may be combined with other features. Some dangers associated with such features include overturning, falling off, hitting the sides, getting trapped underwater or stopping, leading to impact injuries from other users.

- In addition to the above general guidelines, the following should also be enforced:
- Lifeguards should be placed at the entrance and exits to help users in and out.
- User rules should be strictly enforced to prevent horseplay that could give rise to some of the feature specific dangers.
- The stacking of tubes should not be allowed.
- Allow one person per tube only.

Slow and Fast Rivers:

These are usually shallow, level and may be circular or twisting streams of water. Booster pumps are used to maintain a steady current. Users swim or float along with the current. Tubes are often used. In addition to the general guidelines above, the following specific requirements should also be implemented:

- Lifeguards should be placed at the entrance and exit to help users in and out of the river.
- Jumping and diving into the river should be prevented.
- A system shall be in place to ensure that maximum user capacity is not exceeded at any time.

Waterfalls;

Water Canons; Geysers; Rain Sprays and Mushrooms; these are some of the other features common to many modern facilities. Although they are relatively basic features, all have possible associated dangers. Water patterns may interfere with supervision. Also, fumes may build up within water screens.

In addition to the general guidelines for swimming pool features, additional attention is required to the following aspects:

- The operation times of these features shall be regulated to prevent the buildup of gases and fumes.
- Water pressure on such features should be checked regularly.
- Super chlorinate regularly and check for Legionella bacteria.
- A slow, low-pressure startup will assist with safety.
- Geysers should only be used in water depths greater than 0.7 m.
- Many safety features should be included at the construction stage

Water Slides and Flumes:

These can vary from being fixed in place to being inflatable and removable. Each type has its own associated dangers. The necessity for regular checks and risk assessments on all features has already been stated in the general guidelines at the start of this section. Air pressure will be an additional concern if the inflatable type is in use.

The facility's NOP and EAP shall outline the necessary actions for safe use and emergency procedures. In addition to the general checks, lifeguards/supervisors shall be aware of the extra dangers associated with the wearing of potentially dangerous items of jewelry. It is also essential that other users keep the landing area clear. Acoustic signals can be used to regulate the use of slides. In addition to the general guidelines made in relation to all pool features, the following requirements should also be followed:

- There should be an entry point and exit point lifeguard on duty during all periods of use.
- Ensure good communication between the supervising lifeguards.

The 'entry' point lifeguard shall ensure the following:

- Queuing remains orderly.
- Dangerous jewelry is not worn and removed when necessary.
- Swimsuits with metal rivets, buttons or fasteners should not be allowed.
- A feet first sitting position is taken for flume rides.
- Legs are crossed at the ankles with the arms folded across the chest for free falls and speed rides.
- Safe spacing.
- Users going in chains or groups are prevented.
- Running starts are not used as a means of gaining extra speed.

The 'exit' point lifeguard shall ensure the following:

- The landing area is cleared immediately after landing.
- Users do not cross in front of other slides.
- Disoriented users are assisted to exit immediately.
- Children, weak/non-swimmers or those with disabilities may require assistance from turbulent splashdown areas.
- Diving into splashdown areas is prohibited.

- EAPs shall be in place to ensure that injuries and other emergencies are dealt with immediately, while other users are under continuous supervision.
- All supervising lifeguards have a joint responsibility to ensure that users do not slow down or stop while in the flume.

A full Risk Assessment may indicate that one lifeguard at the entry point operating with CCTV, covering the exit area may be acceptable.

Moveable Floors and Bulkheads:

These are features being included in the design of many modern swimming pool facilities and particularly in 50m facilities. Their purpose is to give variety to pool length and depth. They greatly increase the potential uses of the pool. Disability access, swimming, water polo and diving competitions, teaching and aqua aerobics classes are examples of benefit from these features.

In addition to the general requirements made for all features, the following are also required:

- There should be clear depth indication where there are moveable floors.
- Audible warning signals shall be used when adjustments are being made.
- Adjustments should be made with the pool empty and with users away from the immediate poolside.
- Correct and regular maintenance, in line with the manufacturer's guidelines, shall be carried out by properly qualified personnel.
- Swimmers should not be allowed under bulkheads.
- Lifeguards should be able to scan both sides of the bulkhead. Their positioning will be guided by risk assessments.

Pool Hoists:

These decrease the necessity for manual handling of disabled users. They can vary in style from being hydraulic, electric or mechanical.

Again, the general guidelines, outlined at the start of this section, also apply to hoists. In addition the following requirements should be followed:

- Ensure all operatives are trained in the correct operating procedures.
- The differing abilities of users must be taken into consideration.
- Snap shackles should be used to prevent slings floating free from the supporting arm.
- Along with the recommended regular safety checks, special consideration shall be given to ensure the hoist can be lifted up to its specified safe working load.
- Manufacturer and Insurance Company guidelines must be adhered to.

Spas:

These are popular in many swimming pools, and may be located adjacent to the pool or in a separate health suite. It must be noted that Legionella is the greatest danger associated with spas and has led to fatalities. In charge/lifeguards also need to be very conscious of the fact that hot water may be a cause of passive Drowning particularly if alcohol has been consumed water temperature greater than the maximum recommended 38 C ° is also a particular danger.

In addition, the following extra requirements shall be followed:

- Constant supervision may not be required, but regular checks are necessary.
- An alarm button to summon help in an emergency should be provided. This button shall be in a prominent and publicly accessible position.
- Using the spa after intense physical exercise or after using the sauna is not recommended.
- Entry and exit from the spa should be done carefully, to avoid falling or slipping. Lifeguards shall promote such safe practices.
- Spa use is not recommended for those who are pregnant or who suffer from cardiovascular or respiratory problems.
- Use by children under 16 years of age shall not be allowed.
- Spa running time should be set to help limit use to a maximum of 15 minutes, with rest intervals of at least five minutes between uses.
- Users should be prevented from jumping or diving into the spa.
- Submerging under the water in the spa should also be discouraged.
- Food, drink, body lotions or oils should not be allowed into the Spa.
- Where the spa is part of a separate health suite, shower facilities should be provided for use before using the spa.
- Qualified personnel should carry out correct and regular maintenance.

10.1 Swimming Pool Covers

These are now a commonplace feature of most swimming pools. They serve economic and minimal safety purposes. Covers vary in type from hand operated roller systems to automatically operated wall mounted systems.

Economically, they help to conserve water temperatures with resulting savings in fuel costs. They also benefit by reducing the relative humidity in the atmosphere, enabling a reduction in air temperature and ventilation rates.

From a safety point of view they could be used as a method of preventing unauthorized entry into the pool, provided they are of a type that meets the following minimum requirements:

- Can be secured continuously around the edge.
- Will support an adult's weight, as a precaution to a person walking or falling onto them.
- Will be resistant to vandalism (as far as is reasonable).

The above guidelines are particularly important when covers are being used in an outdoor pool, where entry may not be as controlled as an indoor facility.

It is essential that all in charge ensure staff is familiar with the safe operating procedures relating to

the use of such covers and that safe handling techniques have been taught and practiced under the supervision of a suitably qualified person.

10.2 Lane Ropes

There are European Standards that pertain to the design, fixings, storage, and maintenance of lane ropes. We would recommend that you review these and implement the standard accordingly.

10.3 Lane Swimming

A majority of swimming facilities now operate a multi-use policy for their swimming pools. The demand on pool in charge to provide lanes is currently on the increase. Facilities differ in the number of lanes they are able to provide at any one time. Lanes are now being used for a variety of reasons, including:

- Fitness swimming.
- Swimming lessons.
- Triathlon training.
- Social swimming by the elderly, in particular.
- Competitive training.
- Sub aqua training.
- Lifesaving training.

Swimming pool in charge may decide to allocate times exclusively for lane swimming, when a number of activities are taking place consecutively.

The use of lanes demands a number of management considerations, to ensure the ongoing satisfaction and safety of users. These will include:

- Allocation of swimmers of varying abilities and speeds to lanes so that requirements met.
- Describing lanes as 'fast' and 'slow' is subjective and dependent on swimmer interpretation. Defining use in objective terms such as time or distance bands preferable.
- Ensuring a well-defined policy of 'lane etiquette' is outlined and known to users. This policy will include procedures for overtaking, use of equipment (fins, paddles etc.) and direction of travel in adjoining lanes.
- Defining who gets use of side lanes will also help with good management. Priority should be given to weak swimmers who may require the security of being near the side wall. The elderly often fit into this category. Groups who may require the use of ladders for entry and exit should also be given side lane priority.
- Swimming lessons and technique development and lifesaving sessions are more effective if Coaches can observe swimmers' movements directly.
- If diving from starting blocks or the pool side is allowed, consideration must be given to the supervision of this activity, the competence levels of the users and the effects of resulting waves on those in adjoining sections of the pool.
- The number of swimmers allowed in any lane must also be considered. This will depend on many factors such as the activity, the ability level, the speed, equipment, etc.

The lane ropes require special attention to ensure ongoing Pool users safety and satisfaction. The ropes should be of good quality and their condition must be checked regularly, in line with the manufacturer's guidelines and the facilities operations plan.

Problems that which require immediate attention include:

- Missing discs and rope-floats can expose areas of wire or rope, which can result in skin burns and cuts when contacted strongly.
- Missing discs and rope-floats can also result in swimmers miscalculating their distance from pool ends.
- Broken discs and rope-floats will also result in bad cuts and bruises when rubbed against.
- The cable ends of steel ropes can become frayed with the potential for minor and serious injuries as a result of incisions.
- Lane rope attachments can loosen, leading to lanes narrowing and/or widening. This can lead to impact injuries for users.

The storage of ropes must ensure they do not impede access points or create obstructions for users

and lifeguards. Safe procedures for taking up and putting down lanes must be in place to ensure staff welfare and safety. This can form part of staff training programs.

Lifeguards have a crucial role to play in the management of lanes allocated for sole use. They must be proactive ensuring that lane etiquette is adhered to and that lanes remain in good repair. Good management will be furthered if Pool users are aware that lanes are being used at particular times during the facilities operating hours. Clubs and other sole users must also be informed of the conditions of hire and associated facility procedures.

11. Pool Users' Equipment

11.1 Swimming Goggles

Swimming goggles are now an almost essential piece of equipment used by the majority of visitors to swimming pools. They are primarily for swimmer comfort in that they protect from the negative effects of chlorine in the eyes and improve visibility in the water. They come in many styles, from prescription to regular, and come in a wide variety of colors as with all pieces of equipment, they also have some associated dangers like:

- Putting goggles on in an improper fashion may lead to injuries around the eye area. Lifeguards should be prepared to advise regarding safe use.
- Swimmers engaging in 'horse play' or robust activities such as ball-playing games may injure others with whom they come into contact.
- Poorly fitting goggles can lead to impeded user view, with possible impact injuries as a result.
- The controlled use of goggles during some activities is advised, for example, diving or life-saving.

11.2 Play Equipment

Along with the pool features now available in many facilities, there is also a wide variety of play equipment available. Such equipment may be provided by the facility or privately owned by the Pool users and may range from being small to large in size. Uses can vary from being fun to helping with the development of aquatic skills. Regardless of the purpose, all have a certain degree of associated risk. Pool staff and lifeguards should have an understanding of these in order to prevent accidents.

Some general safety guidelines for the use of such equipment include:

- Never allow the use of glass equipment.
- Provide adequate signage to indicate when and where equipment may/may not be used.
- Check equipment for safety on a regular basis. Some types of equipment such as inflatable arm bands should be examined before each use.
- Small toys, balls etc. should not be less than 7mm in diameter to avoid choking.
- Safety checks shall ensure conformity to minimum safety standards.
- Ensure equipment being used is appropriate to the age of those using it.
- Equipment should only be used under proper supervision.

The following are some of the more common types of play equipment used in modern swimming pool facilities and their associated risks:

Snorkels:

These are normal in the teaching of sub aqua and snorkeling but today, they are used in the teaching of swimming.

- Lifeguards should be alert to the possible dangers associated with 'horse play' by users e.g. the airway being blocked by others.
- Improper use can result in water inhalation.
- Use should be limited to scheduled sessions e.g. sub aqua or to users with a perceived competence in use.

Face Masks:

These vary in appearance and quality.

- In charge should be familiar with the risks associated with masks breaking, in particular those with glass faces.
- Masks that are too tight fitting can lead to facial or eye injuries.
- Badly fitted or poorly sealed masks can result in water getting under the mask, with possible inhalation of water through the nose or disorientation due to blurred vision.
- Limiting the use of this type of equipment to scheduled times will greatly decrease the possibility of accidents occurring.

Fins:

Fins are used during a wide range of activities, from general recreation to competitive swimming etc. Their use is no longer limited to the traditional uses of snorkeling and sub aqua. Fins are manufactured with a wide variety of lengths and with differing strengths.

Lifeguards and facility in charge should be aware of the following:

- The use of fins can cause cramp for new and untrained users.
- Some fins can be particularly stiff and can cause injury to others.
- They may lead to impact injuries with other users or walls.
- Due to the size of some types of fin, space for other users can be limited.

In general, it will be best to limit the use of fins to scheduled sessions, where use is under the supervision of suitably qualified personnel. Alternatively, define a specific area for fin use.

Floats / Woggles:

These are now common items of equipment in most swimming facilities. Generally, the Pool staff provides them but recently they have become a popular piece of personal equipment. Floats, Like so many other pieces of equipment, have very positive uses in the teaching and development of swimming and are a great aid to aquatic fitness. They come in many shapes and sizes. Pool in charge and lifeguards should be aware of the following with regard to floats:

- Users sometimes bite the floats, with a resultant danger of choking.
- Abusing floats can result in pieces blocking inlets and outlets. This can lead to problems for the water treatment system. The use of polystyrene floats shall be discouraged
- The use of floats can give rise to a false sense of confidence which may encourage users into deep water.
- Floats should be securely stored. This will help to control use and ensure the pool deck is free from obstructions.
- Limiting the use of floats to scheduled sessions or defined areas is recommended.

Rubber Rings:

These are very popular in swimming pools and vary in size and style. Dangers associated with the use of rubber rings include:

- May give rise to a false sense of security which may encourage users to enter deep water.
- Small children may slip out of the ring.
- Users may overturn when using these rubber rings.
- Rings may deflate, thus highlighting the need for a safety check before each use.
- Some rings have air valves or stoppers protruding, which may result in injuries or to unexpected deflation.
- Diving through or jumping on top of such rings should be discouraged due to the dangers of impact with the pool bottom/sides.

Lifeguards must be especially watchful when this type of equipment is in use.

Play Balls:

There are a large variety of these available. They are used during water confidence exercises for the very young. As with all equipment used in water, there are some possible associated dangers.

- Ball throwing games in the swimming pool may lead to robust behavior, posing particular danger for poor/weak or non-swimmers.
- Timid swimmers may panic when trying to avoid being hit by a ball.
- Swimming after a ball into deep water may be particularly hazardous for poor swimmers.
- The excitement of getting to the ball may have a negative effect when assessing dangers.
- Small balls in use in the swimming pool shall be no less than 7 mm in diameter, to prevent any risk of swallowing by children.
- Balls shall be suitable for the age group for which they are being used.
- The use of balls should be encouraged in structured sessions under the guidance of appropriately qualified personnel (e.g. Water polo Coaches)
- Weighted Rings/Blocks: These are common pieces of equipment used for the development of water confidence, surface diving and early diving practices. Safety guidelines include the following:
 - Water depths should be appropriate and suitable to the ability level.
 - When in use, clear visibility of the bottom is necessary.
 - Ensure the area in use for practice session with this type of equipment is clear from other users.
 - Safe spacing shall apply between users, if in a learning group.

Inflatable Play Equipment: This type of equipment can vary from the small self-inflated items e.g. rings as referred to above, to the large anchored type. The latter are usually anchored and kept inflated by the use of electric blowers.

Lifeguards must be ever vigilant when large inflatables are in use, as these items can obstruct vision of areas surrounding and under the structure. Poor visibility can greatly increase associated dangers.

The facilities' risk assessments will provide guidelines regarding the appropriate number of lifeguards required to ensure best supervision.

- As a minimum safety guideline, it is recommended that no more than one square meter of the pool bottom is obscured to the lifeguard. Correct zoning of lifeguards will greatly decrease this area.
- Lifeguards should also have to be vigilant towards overcrowding, robust play and smaller and younger users who may be knocked over by others.
- Prohibit diving from the structure.
- Prohibit jumping from the poolside onto such structures.
- Other guidelines are as follows:
 - Structures must be firmly anchored, in accordance with the manufacturer's guidelines. This shall be stated in the facility's NOP.
 - At least 2 meters should be permitted between the structure and the poolside wall and/or other obstructions. The starting point of large structures should be between one and 1.5m from the poolside.
 - There should be at least 3-4 m of clearway between the end of the structure and the poolside.
 - The depth of water around the structure must be considered. Falls into shallow water can lead to serious injury. High structures should have a minimum depth of 1.5m of water.
 - Use of the structure by weak and non-swimmers should also have to receive special attention.

- In addition to the risks referred to above, falling off the structure may lead to submersion and possible panic.
- Overcrowding on the structure may weaken the anchors.

Rafts and Rigid Play Equipment:

These present dangers similar to those associated with the use of other types of inflatable play equipment, such as:

- Floating into deep water with poor or non- swimmers on top.
- Falling off can lead to disorientation.
- Jumping on to the raft from the poolside can lead to a range of possible injuries.
- Falling or jumping from such rafts close to the pool walls can lead to injury.
- Impact injuries to users or others if the structure is a solid type.

The following requirements will enforce the safe and enjoyable use of this type of equipment:

- Specify suitable times for its use.
- Check for damage and replace if necessary.
- Ensure adequate qualified supervision.
- Prevent dangerous and over-robust behavior.

12. Use of Electrical Equipment at Swimming Pools

The danger of using electricity when in close proximity to water is well known and documented. Safety and Health legislation contains guidelines for safe working practices when electricity is used adjacent to water.

As mentioned in the previous sections, many extra features are now available in swimming pool facilities. Some require the use of electricity. Examples include: CD/Tape recorders for aqua aerobics; electronic timing systems; some communication systems and electric blowers used to keep some structure inflated to the proper level. Some general cleaning equipment is also powered by electricity. Electric hair and hand dryers are readily available in facility washing and changing areas.

Regular checks on all electrical equipment are essential for the following reasons:

- The acknowledged dangers associated with its use in or near water.
- The corrosive effects of many chemicals used in and around swimming facilities.
- The dangers associated with possible panic if there is a power cut.

Some general guidelines are as follows:

- A qualified electrical engineer must make frequent checks on all electrical installations and equipment. This includes wires and plugs. The facility's NOP shall provide an outline for all such checks.
- Using equipment designed for use while immersed in water is recommended. This equipment can be designed for use with a 12-volt battery.
- Using and testing residual current breakers should be carried out regularly.
- Avoid the use of 220-volt equipment.
- Use a safety-isolating transformer that is suitably earthed and which conforms to QU standards.
- Prevent non- authorized access to all electrical equipment and wires.

13. Diving

The provision of diving varies from separate custom built diving pits in large complexes to diving at the deep end of some swimming pools. While diving has long been a popular aquatic activity, facilities for its provision have decreased due to the modern practice of building pools which are too shallow for diving. While there are many dangers associated with the practice of diving, the number of recorded injuries remains low. Injuries, if they occur, may vary from head and facial injuries to spinal injury, or even death. Negligence, where diving is concerned, may range from inadequate supervision to a lack of appropriate signage. Pool users can themselves be a principle factor in diving accidents.

Along with being a very enjoyable activity, diving is also an important survival skill. In general, the teaching of diving, while following strict safety guidelines should be encouraged.

Some of the main points are summarized with regards to operating the activity of diving in a facility:

13.1 General Diving Recommendations

- The activity of diving into swimming pools should be risk assessed at all times...
- Diving should be limited to specific areas only, if a purpose built facility is unavailable.
- Lifeguards must be constantly alert for unsafe diving practices.
- Clearly visible and legible signs must indicate where and when diving can take place.
- It is essential that all divers are aware of the pool depths.
- Competitive diving boards and starting blocks must comply with International design standards.
- Ensure diver competence is assessed before progression to diving from starting blocks.
- Hire agreements/contracts should indicate conditions of use for diving equipment.
- Only fully trained personnel should undertake the setting up of diving equipment e.g. starting blocks.
- All diving equipment should be safely stored to prevent use outside of scheduled hours.
- The use of goggles by learner divers should be discouraged because of the dangers of injury to the eyes.
- Diving boards and platforms must be of proven strength and sound construction.
- The use of non-abrasive and Anti-slip surfaces on all diving equipment recommended.

13.2 General Public

- A flat racing dive is the only recommended form of dive into shallow water (**1.8m**) and this must be performed under qualified supervision and by users with a certified competence.
- Diving into water from heights greater than **0.38m** shall not be permitted. For heights greater than this, international standards requirements for one-meter platform (firm board) must be adhered to.
- Diving shall only take place in water with a vertical depth exceeding 1.8m. Additional caution must be exercised when this minimum depth is used.
- Forward clearance for diving should be a minimum of **7.6m**. Research in the USA has shown that this is the distance required to ensure divers do not hit the opposite side. This distance also helps to prevent swimmers taking too steep an entry. The supervising person must assess the height, weight and skill levels of divers on an individual basis, even when this distance criterion applies.
- Dives requiring a steeper entry shall only take place into pools specifically designed for the activity. Their design should follow international standards.
- No running dives or jumps should be permitted.

13.3 Structured and Programmed Swimming Teaching Diving

- Where the recommended vertical depth of 1.5m does not prevail for the full clearance of 7.5m, a comprehensive risk assessment will be necessary.
- The teaching of diving should not start in water less than 1.8m deep.
- Diving into water from heights greater than 0.38m shall not be permitted. For heights greater than this, international standards requirements for one meter platform (firm board) must be adhered to. The clearance forward may vary depending on the height.
- There are also various regulations in both learn to swim programs and competition environments. The regulations relating to the environment and workforce eligible to teach/Coaches diving techniques will fall under international standards guidelines.

13.4 Diving Boards and Platforms

Diving Boards can vary in type from being rigid to spring boards. Due to their height and spring, great care must be exercised to ensure correct use. The placing of such boards in a separate diving pit/pool is recommended. Defining a segregated area, if a separate diving pit/ pool is not available, is an alternative. Such an area must be marked off with lane rope or a floating boom to ensure it is clearly identifiable.

Where diving boards are available, the following requirements and user guidelines shall apply:

- A recommended minimum water depth for a one-meter high board is **3m**. This should be combined with a forward clearance of **7.34m**.
- Scheduled times of use should be outlined.
- Strict supervision must apply at all times.
- Assess the competence of users before use.
- Do not allow queuing on the ladders.
- Where steps to the diving boards exist, lifeguards should ensure that orderly queues prevail at all times.
- Do not permit sitting on the platform guardrails.
- Allow one diver on the board at a time.
- Ensure divers on higher boards have the right of way.
- A second diver must not follow until the previous diver has re-surfaced and swam clear.
- Allow one bounce only before diving on springboards.
- Allow dives from the front of the board only.
- Prohibit hanging from the boards.
- Hand first entries shall be required.
- Request users to swim to the side of the diving area, immediately after resurfacing.
- Supervising lifeguards shall ensure this practice is adhered to.
- Prohibit swimming across the diving area.
- Pay particular attention to divers using or attempting to use goggles, due to the dangers of injuries to the eye.
- Users suffering from colds and/or ear infections should be discouraged from diving.
- Lifeguards must be mindful of disorientation that may result from deep dives. Panic and running out of breath might also result from such dives.
- Lifeguards need to be conscious of the possibility of impact injuries occurring when users high dive or hit the water at an awkward angle. Such incidents should be catered for in the facilities' EAP.
- Failure to achieve appropriate forward clearance can result in injuries caused by impact with the boards themselves.

Where a Pool staff offers diving facilities, it is essential that the lifeguards who supervise this activity be trained to recover a casualty from the deepest part of the pool.

14. Safeguarding the Welfare and Protection of Children

Generally a child is legally defined as being under the age of **18**. The need to ensure the welfare of children is now an accepted principle of best practice for all organizations which have a corporate responsibility to safeguard children.

Swimming pools provide an outlet for many children from a social, physical and sporting point of view.

Visits to nearby swimming facilities are popular for schools and families alike.

Each facility should ensure the following:

- Safe and clearly defined methods of selecting staff are in place including the use of vetting.
- All staff knows clearly defined and effective procedures for the reporting and management of child protection concerns.
- A suitable person, normally the facility supervisor/manager, shall be identified and trained. Their role will include liaison with outside agencies, including the Gardai and Health Boards. They will be responsible for reporting allegations and will act as a resource person for other members of staff who may have child protection concerns.

14.1 Child Admission Policy

The aim of such a policy is to protect those who, historically, are most at risk of drowning in swimming pools. This policy should be implemented in partnership with parents and it should ensure the ongoing enjoyment of the facility by children. It should balance the level of risk for children using swimming pools and the benefits to be gained by such use.

Lifeguards cannot and should not be expected to replace the care and supervision of a parent.

Lifeguards should, however, be trained to identify when adult / child ratios in the water may be a cause for concern and the appropriate follow up, as defined in the facility's NOP.

A child is legally defined as being under the age of **18**. However children under 8 years of age have been identified as being most at risk from drowning. This could be due to the fact that their judgement of dangerous situations may be poor. For this reason the following restrictions are recommended to be implemented across pools as being best practice which will clearly define how particular age groups should be catered for in the aquatic environment:

14.2 Minimum recommendation for Non-Programmed Activities

- Children aged **1-5** must be accompanied by a responsible adult in the pool.
- Children aged **6-10** must be accompanied by a responsible adult who must remain in view of the child in the pool.
- Children aged **11** and upwards may be unaccompanied.

14.3 Minimum recommendation for Programmed Activities

Age needs to be considered, depending upon the nature of the activity and obtaining parent / guardian permission.

The following will steer facility in charge to look at the factors which will help to control risks. Some general guidelines are as follows:

- All children, as defined for the purposes of these guidelines, should be under constant staff or parental supervision within the facility.
- In charge may outline specific rules for younger children and those with special needs.
- For example, a policy for children aged eight and under, should be enforced during open leisure swimming times. This should state that children under eight may only enter the pool under the parent's supervision. The minder must supervise the child from a safe distance i.e. be able to maintain visual contact with the child at all times. This policy may not apply during structured swimming sessions e.g. lessons, schools.
- Buoyancy aids should carry an approved standards emblem. In charge should advise Pool users of this fact where appropriate.
- Designated Non Swimmer Areas must meet the following criteria:
 - a) Suitable and sufficient area of shallow water.
 - b) Restricted access to deep water.
 - c) Clear line of view for the supervising lifeguard.
 - d) No water features e.g. slides.
 - e) No steep gradients.
- In programmed activities: The aquatic skills and safety awareness of children should be tested and certified by QU HS.
- Any changes to the facility's recommended ratios should be explained and justified in the pool's written operating procedures.
- Children's use of changing rooms: Issues sometimes arise for other users when a child of the opposite sex has to share the dressing room with the person minding them. This is best eliminated by the provision of family or group changing rooms. Other guidelines in this respect are as follows:
- Pool in charge should train their staff to be aware of people behaving in an inappropriate and suspicious manner. Once trained, staff should be able to intervene directly for the protection of the child.
- All swimming facilities should have appropriate reporting and intervention strategies in place to ensure protection of children from suspicious persons.
- The overwhelming consideration in all circumstances has to be the safety of the child.
- The Child Admissions Policy shall be implemented on completion of a thorough risk assessment and after consultation with users. It should then be displayed at the main points of public access to the facility.
- The admission policy should cater separately for specific groups of children, such as schools, children's parties and club groups. Special consideration must also be made for those with special needs and their care. Factors, which might be altered for such groups are as follows:
 - Ratio of care to children.
 - Numbers of lifeguards on duty.
 - Limiting use of the pool to designated areas.
 - Age requirements may also be altered.
- Training for the disabled: Training for the disabled is available from various agencies. Individual members should refer to their member organizations to ensure that they meet the requirements. These requirements should also include a Code of ethics and good practice, when dealing with vulnerable children and adults. Where disabled persons need personal care when using pool facilities, care should be taken that the disabled person's dignity and privacy be maintained