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1. INTRODUCTION

The Emirate of Dubai has grown exponentially throughout the years specifically in the development of residential communities to cater the demand of the populace. Property developers of residential communities have included various amenities in their projects which includes swimming pool facilities for villas and buildings.

Due to the unprecedented increase of swimming pools, it has also amplified the risk of drowning due to the ease of accessibility of this amenity to the people in their own residential places. According to World Health Organization, drowning is one of the leading causes of unintentional deaths worldwide wherein children from ages 1 to 5 years old accounts for the majority of the deaths. This trend is also observed in Dubai during the accident investigations conducted by DM Health and Safety Department wherein the majority of drowning incidents involves children due to absence of adult supervision.

2. PURPOSE

Dubai Municipality, in line with its vision to have a happy and sustainable city has developed this guideline with the primary purpose of protecting the residents of Dubai specially the children from drowning fatalities as this kind of accidents are preventable.

This private swimming pool guideline can help prevent most submersion incidents involving young children. If followed properly, the safety requirements specified in this document will help in ensuring safer swimming pools and help in promoting pool safety awareness in order to save lives. Although the safety provisions indicated herein will make the pools safer, but the best way to safeguard children is through teaching them to swim and providing them with the necessary adult supervision.

3. SCOPE

This guideline is applicable to all owners, contractors/manufacturers and occupiers of swimming pools located in private residential areas in the Emirate of Dubai.

The guidance specified in this document are applicable to all types of water pools designed and constructed for swimming, bathing or some other human aquatic activity which can be filled to a depth of at least 300 mm of water (see Section 4 – definition of swimming pool).
Examples of water pools (fixed and portable) commonly used in private residences are:

- Swimming pools
- Hot tubs
- Spa pools
- Wading pools
- Prefabricated portable pools
- Inflatable portable pools

4. DEFINITION

Unless the context otherwise requires, the following terms shall be deemed to mean the definitions hereby assigned to them.

**Swimming Pool**

Any water pool designed and constructed for swimming, bathing or some other human aquatic activity. Portable pools, spa, hot tubs, whirlpool tubs, and any structure (designed and used for purposes previously mentioned) which can be filled to a depth of at least 300 mm of water is also included in this definition.

**Private Swimming Pool**

Swimming pool located in a single dwelling unit (private residential villa).

**Child/Children**

A young person less than five years of age.
**Competent Person**

Person having related educational qualifications, ability, training, and experience in swimming pool design, construction, installation, manufacturing, maintenance, etc. as applicable.

**Contractor/Manufacturer**

Company or business entity engaged in the construction of swimming pools; or manufacturing and/or installation of portable pools, enclosures, and safety devices

**Occupier/User**

Person who resides in the residential dwelling unit (villa) wherein the private swimming pool is situated

**Owner**

Registered owner of the residential dwelling unit (villa) wherein the swimming pool is situated

**People of Determination (person with special needs/disabled person)**

Person(s) suffering from a temporary or permanent, full or partial deficiency or infirmity in his physical, sensory, mental and communicational abilities to an extent, which limits his possibility of performing as ordinary requirements of people without special needs.

Note: Considering the convenience of the readers of this document, the term “disabled person” shall be referred as “people of determination/persons with special need” in accordance with UAE Federal Law No. 29/2006 and 2/2014.

**CPR**

Cardiopulmonary resuscitation

**Enclosure**

A protective structure which acts as a surrounding barrier preventing access to a swimming pool. Enclosure includes the wall or a fence (or both) including any door and gate along the perimeter of the pool

**Safety Device**

Any equipment, product or fitting designed to prevent unauthorized access to the swimming pool
Safety Cover
A safety device positioned and secured in place over the water surface of the swimming pool to prevent a child under the age of five from gaining access to the water and supports the child off the water.

Note: When properly used and maintained in accordance with manufacturer's instructions, the safety cover acts as a physical barrier which prevents access to the swimming pool and allowing for the removal of a hazardous level of accumulated surface water thereby reducing the risk of a child drowning. However, the safety cover should be completely removed before any person can use the swimming pool.

Safety Net
A safety device positioned and secured in place over the water surface of the swimming pool to prevent a child under the age of five from gaining access to the water.

Note: When properly used and maintained in accordance with manufacturer's instructions, the safety net acts as a physical barrier to inhibit access to the swimming pool thereby reducing the risk of a child drowning. However, the safety net also restrains movement and should be completely removed before any person can use the swimming pool.

5. GUIDELINES

All owners, contractors/manufacturers and occupiers of private swimming pools shall ensure that the following requirements are adequately in place.

A. Owner, Contractor/Manufacturer and Occupier/User Duties and Responsibilities

Owner
The owner shall ensure the following:

- Swimming pool is properly designed in accordance with the applicable requirements and standards (see Section 5C);
- Registered with Dubai Municipality;
- Provided/equipped with the necessary safety requirements; and
- Properly maintained and operated as specified in this guideline document.
## Contractor/Manufacturer

The contractor/manufacturer shall ensure the following as applicable:

- Design and construct the swimming pool in accordance with the prescribed requirements of the Emirate of Dubai as specified in applicable regulations, design standards and DM health and safety technical guidelines;
- Products shall be manufactured in acceptable conditions and procedures and shall have a system to allow for the products' traceability;
- All materials and components used in the manufacture and installation of enclosures and safety devices shall not cause adverse health effects to people; and used appropriately for its intended application; and suitably resistant to the prevailing conditions of the surroundings;
- All safety devices and enclosure is installed in accordance with manufacturer's specifications;
- Operations and Maintenance (O&M) manual shall be provided for the supplied/installed safety device or enclosure;
- Manufacturers of portable swimming pools shall provide a safety label warning included in their supplied product to buyers. The label shall contain warning of the potential of drowning, responsibility on constant supervision of adult while child is in pool, and the need to empty and store the pool safely after use. If the depth of portable swimming pool is 300 mm or more, safety label warning shall include advice on DM pool registration and enclosure requirements;
- Safety label warning (as stated above) for spas, hot tubs or whirlpool tubs having a depth of 300 mm or more shall be provided by manufacturers;
- Any safety device is clearly labeled in accordance with ASTM F1346-91 which includes information such as, manufacturer's name, date of installation and instructions for inspecting the safety device for wear and damage;
- Safety device supplied and installed shall be free of any signs of damage or defects which will impair the intended performance of the device.

## Occupier/User

An occupier/user, whether or not he/she is the owner of the private swimming pool shall ensure the following at all times:

- Not allow the swimming pool to be used without the necessary safety requirements are in place;
- Enclosure and safety net/cover (as an additional protection) as specified in this document and manufacturer’s specification are adequately in place when swimming pool is not in use;
• As practicable as possible, it is recommended that portable swimming pool shall be emptied and stored safely after use. Ensure that the storage area is equipped with a locking device and key, combination code, or password shall be properly kept or secured from children;
• Water quality and hygiene requirements are maintained at all times;
• Competent adult supervision is present while swimming pool is in use specially by children, people of determination or elderly people;
• Non-resident persons are not allowed to use the swimming pool during the occupiers’ absence, unless assurance is given by the non-resident persons to ensure presence of a competent adult supervision while using the pool;
• Pool brush pole or leaf scoop shall be easily accessible from the pool, to allow a person under distress in the water to be assisted;
• Remove and prohibit the use of objects that can be used to climb, remove or damage the swimming pool enclosure or safety devices;
• Locking mechanism or latch of the enclosure gate/door are in good condition and the gate or door is locked when the pool is not used or vacated;
• Safety net, safety cover or any safety device is entirely removed from the pool before any person can use the swimming pool;
• Regular inspection/checks shall be conducted to all safety devices and enclosures to determine that the requirements are in place and are in good working condition;
• Pool water level shall be maintained at the recommended level below the safety net or safety cover.

B. Swimming Pool Registration Requirements

All swimming pools located in a single dwelling unit (private residential villa) shall be registered to Dubai Municipality prior start of construction/installation.

In addition, swimming pool shall not be altered or modified (e.g. installation of diving board, slides, etc.) without the necessary approval from Dubai Municipality.
C. General Swimming Pool Requirements

Swimming pools shall be designed and constructed in accordance with the specified requirements of Dubai Municipality (Local Order 11/2003, Local Order 61/1991, Administrative Order 211 of 1991), Dubai Universal Design Code (considering people of determination, children, pregnant women, elderly people, etc.) and acceptable swimming pool design standards. The design aspects shall include at least the following:

- Pool deck and shell design;
- Pavement/walkway design and specifications (including slip resistance);
- Piping and fittings including inlets and outlets;
- Filtration system and water recirculation;
- Disinfection of pool water;
- Pool appurtenances (ladders, recessed threads, stairs, steps, lighting, depth markings, etc.);
- Control measures for safety and hygiene; etc.

All private swimming pools shall be equipped with an enclosure to restrict access of unauthorized persons specially children. The use of safety device (safety cover or safety net) is also recommended for additional layer of protection.

Enclosure provided shall be permanent in nature (cannot be removed without use of tools) and effectively surround the swimming pool in accordance to the requirements specified in this document (see Section 5D).

If provided, safety cover or safety net shall completely cover the entire water surface of the pool and shall comply with the specifications, test methods and requirements of ASTM F1346-91 (see Section 5F). The enclosure and safety device shall be designed and installed to:

- Prevent the child from getting through the openings within its structure and design;
- Prevent the child from climbing up its sides;
- Prevent the child from crawling beneath its base;
- Prevent the child from scaling its crest;
- Ensure that the access to the swimming pool is very hard for the child (but easy for an adult) to open;
- Be free of any sharp edges or protrusions that can injure the child; and
- Be robust and durable.
Area around the swimming pool shall be kept clear of any natural or artificial features wherein a child can use to climb and access the swimming pool.

Be effectively isolated from all areas of the home and the unauthorized/unsupervised access of any child shall be restricted.

Inaccessible from any door of the residential villa unless that door provides the degree of protection as specified in Section 5E.

Well clear of any window that opens to the swimming pool area unless such window is effectively provided with the necessary protection to restrict the child from going through it (see Section 5E).

D. Enclosure Requirements

Solid Walls and Fences

Solid walls and fences shall have a minimum effective height of 1.20 meters from the finished ground level to the top of the enclosure measured on the side of the enclosure facing away from the swimming pool (See Figure 1).

Where fences has horizontal members, the highest of the low members shall have at least a distance of 1.10 meters from the top of the upper horizontal member and at least 900 mm for the lowest of the upper horizontal member (See Figure 1).

Solid walls and fences shall be provided with adequate footing designed to carry intended lateral and vertical loads.

Enclosures must be designed to be vertical and should not lean towards the swimming pool by more than 15° to the vertical.

If the enclosure are located on the sloping land, the required specifications in this document shall be maintained by taking measurements perpendicular to the ground.
For fence that has been designed so that the horizontal members brace the vertical members, the horizontal members of the fence shall be positioned facing toward the swimming pool and shall not be less than 900 mm. apart measured from the top of the upper horizontal member to the lowest of the upper horizontal member (See Figure 2).

Objects or materials (e.g. plants, boxes, boulders, furniture, steps, etc.) that can facilitate climbing shall be at least 1.20 meters away from the enclosure when measured from the outside and 300 mm from the inside (See Figure 3).

Decks, sills and any other structure shall be not be mounted close to the enclosure which may reduce the minimum effective height of 1.20 meters. Minimum set back of 1.20 meters away from the enclosure on the outside and 300 mm from the inside shall be observed (See Figure 3).
For cases wherein the minimum 1.20 meters set back requirements from the outside is not possible, then the enclosure height shall be raised at a minimum of 1.80 meters with a 900 mm set back requirement from the outside and 300 mm from the inside (See Figure 4).

![Figure 3](image3.png)  ![Figure 4](image4.png)

**Figure 3**  **Figure 4**

Maximum allowable gap from finished ground level to the bottom of any enclosure is 100 mm. measured on the side of the enclosure which faces away from the swimming pool. In case of a non-solid surface (e.g. grass, pebbles, gravel, soil), the distance should be reduced to 50 mm. and 25 mm. for removable mesh fences (See Figure 1 and 5).

![Figure 5](image5.png)

**Figure 5**

For fences made of rigid materials (e.g. steel bars), gaps between vertical members/opening of the enclosure shall not exceed 100 mm (See Figure 1 and 6).

![Figure 6](image6.png)

**Figure 6**
For fences made of chain links, the maximum mesh size shall not exceed 30 mm square unless the fence is provided with slats secured at the top or the bottom which reduce the openings to no more than 40 mm (See Figure 7 and 8).

![Figure 7](image)
![Figure 8](image)

For fences made up of diagonal member or latticework, the maximum opening in the lattice shall not exceed 40 mm (See Figure 9).

![Figure 9](image)

Solid walls (e.g. masonry or stone wall) shall be built in accordance with the standard requirements; and should not have openings; and shall be free of any indentations or protrusions other than the normal construction tolerances and masonry joints (See Figure 10).

![Figure 10](image)
Access Gates

Enclosure gates for swimming pools shall only open in the outward direction, away from the pool (See Figure 11).

![Figure 11](image)

All gates for swimming pools shall be self-closing and self-latching from any position. Self-closing function shall not allow the gate to inadvertently open.

Access gate shall be equipped with a locking device. Key, combination code, or password shall be properly kept or secured from children;

Gate clearance from the finished ground level shall not exceed 100 mm measured on the side of the enclosure which faces away from the swimming pool. Clearance requirements from ground level for fences is also applicable for enclosure gates (See Figure 5).

Gate hinges shall be installed at least 900 mm. apart and the hinges shall be affixed with a non-climbable safety cap.

Latching device provided to the gate shall be fitted to ensure that the gate will not re-open without the proper use of the latch.

Latch release shall be located at least 1.50 meters above from the finished ground level measured on the side of the gate which faces away from the swimming pool and at least 1.40 meters above the top of the highest lower horizontal member (See Figure 12).
Where the latch release is not as stated above, the latch device shall be positioned inside the gate so that releasing the latch would require the child to reach over or through the gate at a height of at least 1.20 meters above from the finished ground level measured on the side of the gate which faces away from the swimming pool and 1.10 meters above the top of the highest lower horizontal member (See Figure 13). Latches provided inside the gate shall be shielded by a material that has effective radius of 450 mm. when measured from the latch release and at least 150 mm below the top of the gate (see Figure 13).

Gap between the gate and the fence shall not be more than 10 mm (see Figure 13).

For above ground pools, access ladder or steps shall be provided with an enclosure that complies with the stipulated requirements of this document; or the access ladder or steps is designed to be secured, locked and removed to restrict access.
Note: Use of locking device as the only way of securing the pool access gate is not acceptable. However, this type of device can be used as an additional to the stipulated access gate requirements in this guideline.

E. Doors, Windows and Balcony Requirements

Doors

The use of doors as direct access or part of enclosure for outdoor swimming pools is prohibited. Doors are only permitted to be a part of enclosure for indoor swimming pools upon meeting the requirements as specified below:

- Be fitted with a self-closing device that will automatically close the door;
- Be fitted with a self-latching device that will prevent in opening the door without the application of manual force on the latch release mechanism;
- Be provided with a locking device. Key, combination code, or password shall be properly kept or secured from children;
- Be equipped with a door alarm which produces a distinct audible warning that can be heard in all areas of the residential villa when the door is opened (at least 85 dBA when measured 3 meters away from the alarm mechanism);
- Latch release mechanism must not be less than 1.50 meters above the floor level;
- Does not contain any openings, indentations, or protrusions;
- Does not open towards the pool area. Doors are only opening sideways or away from the pool area.

Automated garage doors and perimeter gates as direct access to swimming pools is prohibited and is not to be considered as a part of swimming pool enclosure.

Note: Children are resourceful and likes to explore, adult persons must be aware of this and must ensure that all objects that can be used to reach up and release the latching mechanism of the door are removed, kept and secured.

Use of locking device as the only way of securing the door as part of enclosure for indoor swimming pool is not acceptable. This type of device shall be used together with the above requirements of this guideline.
Windows

Windows opening onto the swimming pool area are required to be provided with a permanently fixed stopping device that will limit the opening of the window by less than 100 mm; or be provided with security screens or bars that are fixed in position by fasteners.

Note: Locking devices are not acceptable in securing the window. Protective devices as specified in this document shall be installed to restrict the child in using the window as a means of access to the swimming pool.

Balcony

Balcony located over or within 900 mm. of the swimming pool enclosure are required to be provided with a balustrade that is in accordance with the enclosure requirements of this document and in accordance with the building design balustrade specifications of Dubai Municipality (see Figure 14).

F. Safety Device Requirements

If provided, safety cover or safety net that will be installed in swimming pool shall comply with ASTM F1346-91 and the following requirements:
Static Load and Load Bearing Weight

For swimming pools having a width or diameter of more than 2.4 meters, the safety device shall be capable to hold a weight of 220 kilograms (approx. 2 adults and 1 child).

For swimming pools having a width or diameter of less than 2.4 meters, the safety device shall be capable to hold a weight of 125 kilograms (approx. 1 adult and 1 child).

Perimeter Deflection, Gaps and Openings

Safety device shall be designed that should a child fall on the safety cover or safety net, the child who has fallen or another child are prevented to slip beneath any opening between the safety cover or safety net and the side of the pool; or gain access to the pool.

Surface Drainage and Water Removal

Safety device is capable of substantially draining accumulated water on top of the safety cover/net within five minutes after cessation of normal rainfall or sprinkler water.

Opening in the Safety Device

Any opening in the safety cover/net shall be sufficiently small and strong to prevent the opening from being forced to a size that will allow an object of 114 mm diameter to pass through (as described in ASTM F1346-91).

Safety Device Installation and Fixing

Safety cover or safety net shall be manually or mechanically positioned to completely cover the pools' water surface and secured in place by a locking system or a central tensioning system that will prevent a child from removing the safety device.

Installation shall only be installed by the manufacturer or competent persons.
Fastening Mechanism or Devices

Ties, anchors, anchorage/attachment points, operation controls, and other mechanical means of fastening safety covers/nets shall be properly secured and kept (by use of keys, combination locks, devices, special tools, or inaccessible locations) to prevent children from removing or opening the safety cover or safety net.

Note: The safety cover or safety net should be completely removed and properly kept before any person can use the swimming pool.

G. Water Quality Requirements

Swimming pool shall be clear and free of floating debris, suspended solids, turbidity, algae, or any such undesirable matter which may affect the health of swimming pool users.

Retention time for swimming pool water shall not exceed 4 hours.

Water quality as specified in Table 1 and 2 below shall be maintained at all times.

Water quality shall be tested daily (before use) for pH, chlorine and temperature levels. Pool water shall also be tested for calcium hardness, alkalinity, saturation index and cyanuric acid for every 15 days. All readings shall be recorded in a logbook.

Pool water shall be tested for microbiological parameters for every two months.

Table 1: Pool Water Standard Quality Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Acceptable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Chlorine</td>
<td>1 to 2 mg/liter</td>
</tr>
<tr>
<td>Bromine</td>
<td>2 to 4 mg/liter</td>
</tr>
<tr>
<td>pH</td>
<td>7.4 to 7.6</td>
</tr>
<tr>
<td>Total Alkalinity</td>
<td>70 to 100 ppm</td>
</tr>
<tr>
<td>Calcium Hardness</td>
<td>100 to 500 ppm</td>
</tr>
<tr>
<td>Saturation Index</td>
<td>-0.5 to 0.5</td>
</tr>
<tr>
<td>Cyanuric Acid</td>
<td>20 to 60 mg/liter</td>
</tr>
</tbody>
</table>
Table 2: Maximum Allowable Microbiological Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Acceptable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coliforms</td>
<td>0 mpn/100 ml</td>
</tr>
<tr>
<td>Fecal Coliforms</td>
<td>0 mpn/100 ml</td>
</tr>
<tr>
<td>Heterotrophic Plate Count</td>
<td>1000 cfu/ml</td>
</tr>
<tr>
<td>Ps. Aeruginosa</td>
<td>0 cfu/100 ml</td>
</tr>
<tr>
<td>Fecal Streptococci</td>
<td>0 cfu/100 ml</td>
</tr>
</tbody>
</table>

H. Emergency Response Requirements

First aid box with adequate medicines and equipment shall be readily available. CPR signage shall be displayed near the swimming pool or attached to the enclosure so that the signage is easily visible to the people who are near or using the pool (See Annex A).

Safety signage and Dubai Government Emergency Contact Numbers as shown below shall be displayed near the swimming pool or attached to the enclosure so that the signage are easily visible to the people who are near or using the pool.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Police</td>
<td>999</td>
</tr>
<tr>
<td>Civil Defense</td>
<td>997</td>
</tr>
<tr>
<td>Ambulance</td>
<td>998</td>
</tr>
<tr>
<td>Dubai Municipality</td>
<td>800900</td>
</tr>
</tbody>
</table>

Pool brush pole or leaf scoop shall be easily accessible from the pool, to allow a person under distress in the water to be assisted.

I. Maintenance Requirements

The owner or occupier of the private swimming pool shall ensure the following:
Competent person is carrying out the proper maintenance of the swimming pool and its filtration and disinfection system.
Swimming pool shall be regularly cleaned. Strainers, filters, pool walls, etc. shall be cleaned regularly to remove debris and dirt.
Damaged parts of the pool shall be immediately repaired or replaced.

All swimming pool equipment shall be serviced in accordance with manufacturer's instructions. Pipes, filters and motors shall be in good working condition at all times.

Store, handle and use pool chemicals in accordance with manufacturer's instructions and Safety Data Sheet.

Chemicals shall be stored in a dedicated storage area with a locking device. Key, combination code, or password shall be properly kept or secured from children.

6. REFERENCES

- Government of Western Australia - Rules for Pools and Spas
- Queensland Government, Australia - Guidelines for pool owners and property agents
- Dubai Municipality - Local Order No. 61 of 1991
- Dubai Municipality - Administrative Order 211 of 1991
- Dubai Municipality - Local Order No. 11 of 2003
- Government of Dubai - Dubai Universal Design Code
- Ministry of Social Affairs - UAE Federal Law No. 29 of 2006 Concerning the Rights of People with Special Needs
ANNEX A: SAMPLE OF CARDIOPULMONARY RESUSCITATION (CPR) SIGNAGE

For further Information, Please contact:
Health & Safety Department
Dubai Municipality
Tel: 800900
Safety@dm.gov.ae