

SUBSIDIARY LEGISLATION 465.02**SWIMMING POOLS REGULATIONS**

29th April, 2005

LEGAL NOTICE 129 of 2005, as amended by Legal Notice 135 of 2008.

1. The title of these regulations is the Swimming Pools Regulations. Citation.

2. In these regulations, unless the context otherwise requires: Interpretation.
Amended by:
L.N. 135 of 2008.
Cap. 465.

"Act" means the Public Health Act;

"authorised officer" means any duly qualified person authorised by the competent authority to carry out any functions under the Act and includes any nominated officer;

"competent authority" means the Superintendent of Public Health;

"responsible person" means the person responsible for swimming pool and includes, in his absence, such employee or other person, being the senior employee or person present, engaged in operating the swimming pool at the time; such senior employee or person shall be presumed to be acting on the authority of the person responsible unless the person responsible produces proof to the contrary;

"swimming pool" means a public or commercial swimming pool which shall include any artificial basin intended for recreational bathing, swimming, diving, or therapeutic purposes which is located either indoors or outdoors and is provided with controlled water supply and which is not used or intended to be used as a pool at a single family residence unless it is used or intended to be used for commercial or business purposes and shall also include wading pools, spas, whirlpools, hot tubs, diving pools and special purpose pools;

"swimming pools" includes conventional pools used or intended to be used for recreational bathing, swimming and water recreation activities;

"wading pools" includes pools principally used or intended to be used for wading and recreational bathing by small children;

"spas" includes whirlpools, hot tubs and pools used for recreational bathing which are used in conjunction with high velocity air systems, high velocity water circulation systems, hot water, cold water, mineral baths or any combination of these items;

"diving pools" includes pools used only for diving or training and practice of diving techniques; and

"special purpose pools" include pools used exclusively for a particular purpose, including but not limited to water flumes, pools for scuba diving instructions, therapeutic pools, hydrotherapy pools, floatation vessels and pools used in aquatic programmes for

handicapped persons.

3. (1)(a) The owner and the manager of any swimming pool shall not permit the use of any swimming pool in his premises without having previously registered in writing, on the appropriate form, the said pool with the competent authority.

(b) Particulars and other information given on the registration form shall not be misleading, inaccurate and incomplete.

(c) The competent authority shall keep a register of all swimming pools registered.

(2) Registration of swimming pools under this regulation shall not exempt the owner and or manager from any obligation to apply for and acquire the necessary licences or permits that may be required by any competent authority.

Amending the records.

4. It shall be the duty of the responsible person to inform the competent authority of any change in the information given on the registration form within twenty-eight days from such occurrence.

Pool safety operating procedure manual.

5. The responsible person shall:

(a) establish and make available to the competent authority a pool safety operating procedure manual, which should include normal procedures addressing injury and accident prevention strategies. It should also include the daily pool operation details, risks assessment, a plan of the pool outlining hazards, access points, information points and supervision requirements;

Water quality monitoring.

(b) provide evidence to the competent authority that the water quality of the swimming pool has always been kept within the recommended levels for the parameters listed in Schedule I and II;

(c) keep relevant records of all monitoring results which may be carried out;

(d) report to the competent authority any results which may indicate that the water quality has exceeded the recommended levels in Schedules I and II;

(e) report to the competent authority and register any cases of infections and, or accidents;

(f) comply with any conditions or guidelines, which the competent authority may issue from time to time.

Heated swimming pools.
Amended by:
L.N. 135 of 2008.

6. The responsible person of any heated swimming pool shall:

(a) keep the pool water temperature between 27°C and 30°C at all times:

Provided that in the case of pools used for hydrotherapy the temperature of the pool water shall be between 28°C to 35°C, whilst in the case of spa pools the water temperature shall not be higher than

40°C;

- (b) keep the pool hall ambient temperature always 1°C above the water temperature at all times; and
- (c) keep the relative humidity inside the pool hall at 55% to 65% RH at all times.

7. It shall be the duty of the responsible person to operate the pools within his premises at the recommended minimum turnover periods and maximum bathing loads as indicated in Schedules III and IV respectively.

Pool turnover periods and maximum bathing loads.

8. (1) At all times when the pool is in use the water shall be sufficiently clear to permit a sacchi disc or a black disc 15 centimeters in diameter on a white field, placed on the bottom of the pool at the deepest point, to be clearly visible from the pool deck.

General requirements for public pools pool water clarity.
Amended by: L.N. 135 of 2008.

- (2) (a) A sign indicating the maximum bathing load shall be conspicuously posted at the pool.
- (b) The maximum bathing load should not be exceed at any time when the pool is in use.

Bathing load.

(3) Pool water shall be disinfected by any method normally used for pool disinfection and by the use of any chemical listed in Schedule V.

Pool water disinfection.

- (4) (a) The dressing rooms, hallways, toilet rooms, shower rooms or other rooms to which patrons of pools have access shall be kept clean, in good repair, and well ventilated at all times.
- (b) The floors of the pool deck and all shower rooms and locker rooms shall be daily treated with a 0.5% chlorine solution, or an equivalent fungicide.
- (c) All persons shall bathe with warm water and soap before entering the pool. Warm water at a temperature of 50°C (achieved within 1 minute of running the water at outlets), shall be provided at showers convenient to the pool for this purpose.
- (d) Toilet, wash hand basin and shower fixtures shall be maintained in proper repair and shall be of such a number as to cater for the maximum bathing load.
- (e) Equipment rooms and all equipment shall be kept in good repair and in a clean and hygienic condition (f) Any persons known or suspected of having a communicable disease shall not use the pool.

Decks, dressing rooms, toilet rooms, shower requirements.

Equipment rooms and equipment.

- 9. (a) A sign shall be conspicuously posted at the pool entrances indicating the hours of use.
- (b) When the pool is not in use a CLOSED sign is to be fixed next or over the hours of use sign.

Hours of use.

Responsibility of
the competent
authority.
Amended by:
L.N. 135 of 2008.

10. (1) When any pool is found not to meet the requirements set by these regulations, or when a condition is found which may constitute a public health risk or a health nuisance to bathers or pool patrons, the competent authority shall order such pool to be closed.

(2) The competent authority shall also order such closure when there is significant evidence of communicable disease being transmitted through use of the pool, when the public pool is being operated in such a manner as to constitute a significant health nuisance, or when imminent public health hazards exist.

Non-applicability
of regulations 3 to
9.
Added by:
L.N. 135 of 2008.

11. (1) The provisions of regulations 3 to 9 shall not be applicable to swimming pools which are neither public nor commercial.

(2) It shall be the duty of the responsible person to:

- (a) prove to the satisfaction of the competent authority that the pool is neither public nor commercial;
- (b) ensure that the swimming pool is kept in such a state as not to pose a risk to public health.

Offences.
Re-numbered by:
L.N. 135 of 2008.

12. Any person who fails to comply with any of the provisions of these regulations shall be guilty of an offence under the Act.

SCHEDULE I
MINIMUM LEVELS FOR MICROBIOLOGICAL PARAMETERS

PARAMETER	LIMITS	REMARKS
Heterotrophic plate count (HPC)	<=10 cfu per 100 ml following incubation at 37°C for 24 h	If higher colony counts are occasionally found, this is acceptable as long as no faecal coliforms are present and the operating conditions of the pool are satisfactory. Teaching and hydrotherapy pools
Faecal coliform and/or <i>E. coli</i>	<1 cfu per 100 ml	For disinfected pools Non-disinfected pools, hot tubs, whirlpools, spas, teaching and hydrotherapy pools
Faecal streptococci	<1 cfu per 100 ml	For disinfected pools Non-disinfected pools, hot tubs, whirlpools, spas, teaching and hydrotherapy pools
<i>Pseudomonas aeruginosa</i>	<1 cfu per 100ml ¹ <10 cfu per 100ml ¹	For disinfected pools, teaching and hydrotherapy pools. Non-disinfected pools, hot tubs, whirlpools and spas.
<i>Staphylococcus aureus</i>	<1 cfu per 100 ml ¹	All types of swimming pools
<i>Legionella</i>	<1000 cfu per litre ²	For whirlpools, spas and any other type of pools as per regulation 4(1)(c)

1 If high counts are found (>100 cfu per 100 ml), pool operators should check water clarity, disinfectant residuals and pH, resample, backwash thoroughly, wait one turnover and resample. If high levels of *P. aeruginosa* and/or *Staphylococcus aureus* remain, the pool should be closed and thorough cleaning and disinfection programme initiated.

In the case for non-chlorinated spa pools, draining, cleaning and refilling the pools or, alternatively, heating water to 70°C and cooling to normal operating temperature during non-use periods might be sufficient to control *P. aeruginosa* (as well as *Legionella* and *Mycobacterium*). These measures could be used when levels of *P. aeruginosa* exceed 10 per 100 ml.

2 If cfu for *Legionella* is more than 1,000 and up to 10,000, the sample should be confirmed by immediate re-sampling. If similar count is found again, a review of the control measures and risk assessment should be carried out to identify any remedial actions.

If cfu for *Legionella* is more than 10,000, the system should immediately be re-samples. It should then be 'shot dosed' with an appropriate biocide, as a precaution. The risk assessment and control measures should be reviewed to identify remedial actions. The pool is to be immediately closed.

SCHEDULE II

MINIMUM WATER LEVELS FOR PHYSICO-CHEMICAL PARAMETERS

PARAMETER	LIMITS	REMARKS
pH	7.2 - 7.6 pH	PH value adjustment will generally depend on whether the disinfectant used is itself alkaline or acidic. ¹
Turbidity	0.5 NTU	Exceedance of turbidity standard suggests both a significant deterioration in water quality and a significant health hazard.
Free chlorine	1 - 3 ppm (mg/l) ²	Free chlorine residuals above 5 ppm (mg/l) in swimming pool water may present a health-based hazard to users.
Combined Chlorine	Normal max. 0.5 ppm (mg/l) or less Absolute max. 1.0 ppm (mg/l)	High levels indicate that there is too much ammonia coming from sweat and urine of bathers, indicating that bathing loads or pollution from bathers may be too high or that dilution is too low.
Cyanuric acid ³	30 ppm (mg/l) - max. approx. 60 ppm (mg/l)	If levels higher than 100 ppm (mg/l), microbiological conditions may become unsatisfactory. If levels higher than 200 ppm (mg/l), this may pose a significant health hazard.
Bromine-based residuals	1 - 6 ppm (mg/l)	When bromine-based disinfectants are used with ozone, the concentration of bromine ion should be monitored and maintained at 15 - 20 ppm (mg/l) at all times.
Nitrites	Absent ⁴	
Ammonia	Absent ⁴	
Total Dissolved Solids	<3,000 ppm (mg/l) - ideally 1,500 ppm (mg/l)	

1 Alkaline disinfectants - sodium and calcium hypochlorite normally require only the addition of an acid for pH correction, usually a solution of sodium bisulfate, carbon dioxide or hydrochloric acid.

Acidic disinfectants - chlorine gas and trichloroisocyanuric acid will normally require the addition of an alkali, usually a solution of sodium carbonate (soda ash), to raise pH

2 It is recommended that operators aim for a free chlorine residual of 1 ppm (mg/l) throughout the pool. In a well operated pool it is possible to maintain good water quality with a maximum level at any single point always below 2 ppm (mg/l).

Lower free chlorine residuals (0.5 ppm (mg/l) or less) will be required with the additional use of ozone. Higher levels (2-3 ppm (mg/l) may be required for spa and hydrotherapy pools, because of higher bathing loads, higher temperatures, which lead to more rapid loss of disinfectant residual and growth of microorganisms.

3 Cyanuric acid is found in pools if the chlorine source is chlorinated isocyanurate compounds. Cyanuric acid is also used as a chlorine stabilizer.

4 If present, pool water is to be diluted with fresh water and one should check the filtration system and carry out backwash. This should be repeated until the presence of nitrites and ammonia are eliminated from the pool water. If excess levels are found it is recommended that pool will be closed until the necessary maintenance is completed.

SCHEDULE III

MINIMUM POOL WATER TURNOVER PERIODS¹

The purpose of giving close attention to the turnover periods is to ensure that the whole water is adequately served. Treated water must get to all parts of the pool, and polluted water must be removed, especially from areas most used and most polluted by bathers. If not, even good water treatments may not give good pool water quality.

RECOMMENDED POOL TURNOVER PERIODS

TYPE OF POOL	TURNOVER PERIOD
Competition pools 50 m long	3 - 4 h
Conventional pools up to 25 m long with 1 m shallow end	2.5 - 3 h
Diving pools	4 - 8 h
Hydrotherapy pools	0.5 - 1 h
Leisure water bubble pools	5 - 20 min
Leisure waters up to 0.5 m deep	10 - 45 min
Leisure waters 0.5 - 1 m deep	0.5 - 1.25 h
Leisure waters 1 - 1.5 m deep	1 - 2 h
Leisure waters over 1.5 m deep	2 - 2.5 h
Spas	5 - 15 min
Teaching/learning/training pools	0.5 - 1.5 h
Water slide splash pools	0.5 - 1 h

1 This is the theoretical time taken for the total pool water volume to pass through the filtration system once. It has been proven that at least 7 complete turnover periods are needed before 99% of the pool water has actually passed through the filters.

SCHEDULE IV

MAXIMUM BATHING LOAD¹

The maximum bathing load is sometimes defined as 1 bather per 3 m². This gives a maximum bathing load for the whole pool, regardless of depth, etc., and must in any case be modified in the light of type of pool.

RECOMMENDED BATHING LOADS

TYPE OF POOL	MAXIMUM BATHING LOAD FORMULAE
Shallow water (under 1 m)	1 bather per 2.2 m ²
Standing depth water (1 - 1.5 m)	1 bather per 2.7 m ²
Deep water (over 1.5 m)	1 bather per 4 m ²

The bathing load obtained using these formulae is the maximum bathing load of the pool at any one time, should not be exceeded. If the maximum bathing load is exceeded, it is considered that there will be an unacceptable risk of accidents due to bather collisions, or drowning, etc., and would have a impact on the system to maintain good water quality.

During the design stage of a new pool the following formula is to be used for the calculation of the Maximum Design Bathing Load²:

$$\text{The Maximum Design Bather Load} = \frac{\text{Pool Circulation Rate (in cubic meters per hour)}}{1.7}$$

1 Bathing load is a measure of the number of people in the pool. All pools should identify and maintain a realistic relationship between bathing numbers and pool and treatment plant capacity.

2 The Maximum Design Bathing Load is the number of bathers per Turnover Period that the circulation and filtration equipment can successfully support without losing water quality. This means that the pool water will not begin to get cloudy through excessive dirt and debris, and the Free Chlorine level and pH value will remain within acceptable limits throughout the entire pool.

SCHEDULE V
DISINFECTANTS AND DISINFECTING SYSTEM FOR SWIMMING POOLS

DISINFECTANTS USED MOST FREQUENTLY IN LARGE, HEAVILY USED POOLS ¹	DISINFECTANTS USED LESS FREQUENTLY	DISINFECTANTS USED INFREQUENTLY, MAINLY FOR SMALL-SCALE POOLS
Chlorine • Gas • Calcium/sodium hypochlorite • Sodium dichloroisocyanurate • Electrolytic generation Ozone/chlorine in combination Chlorine dioxide Chlorine dioxide/chlorine in combination	Bromine • Liquid bromine • Bromochlorodimethylhydantoin (BCDMH) • Sodium bromide hypochlorite	Bromine chloride UV UV - ozone Iodine Hydrogen peroxide Silver/copper Biguanide

1 A variety of disinfectants are used for pool water treatment. Those listed in the first column represent the major usage, especially in public and semi-public pools that are large and heavily used. With the exception of chlorine gas and ozone, these disinfectants are also routinely used in many small and semi-public pools. Some of these are residual disinfectants i.e. they persist in water and are present in the water to which pool users are exposed. These provide increased protection against contamination with infectious agents susceptible to disinfection and leads to human exposure to the disinfectant itself. Some others (notable ozone and UV) are effective at the point of treatment only. Non-residual disinfectants are often used in combination with residual disinfectants.