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THE LEGISLATIVE ASSEMBLY FOR THE AUSTRALIAN CAPITAL TERRITORY

ACT SWIMMING AND SPA POOL CODE OF PRACTICE

EXPLANATORY MEMORANDUM

Circulated by authority of the Minister for Health and Community Care

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Swimming and Spa Pool Code of Practice

1. Introduction

Section 1 : provides an introduction to the Code and outlines the reasoning behind it. It explains simply some of the ways in which the use of public swimming pools and spas can transfer disease from one person to another. The provision explains why good water quality and treatment are important to the safe operation of public swimming pools and spas, highlighting the fact that the water quality criteria outlined in the Code is the minimum standard required to reduce risk to public health.

2 Health Risks

Section 2 : provides a guide to the types of microorganisms which may cause infections in humans.

Section 2.1 describes the risks posed by the bacterial agents *Pseudomonas aeruginosa, Legionella spp., Coagulase positive staphylococci* and *Mycobacterium marinum.*

Section 2.2 describes the risks posed by the protozoan pathogens *Cryptosporidum, Giardia* and *Naegleria fowleri.*

Section 2.3 describes the risks posed by viral pathogens, including entroviruses, adendoviruses, herpes simplex viruses and papovavirus.

Section 2.4 describes the risks posed by yeast and fungal pathogens, including *Trichophyton mentagrophytes* which causes Athlete's foot or tinea.

3. Disinfectants - General Properties

Section 3 : Outlines the ideal general properties of a swimming pool and spa disinfectant and then suggests the elements that should be considered when selecting a chemical disinfectant for use in either a swimming pool or spa.

Section 3.1 details the characteristics of the disinfectant form of chlorine and the optimum conditions for its effective use. The section also describes the different forms of chlorine (i.e. powered, granular, liquid and gaseous) and some of the conditions under which the use of one form may be inappropriate and another more appropriate.

Section 3.2 details the characteristics of the disinfectant form of bromine and draws a comparison with chlorine, explaining that higher concentrations of bromine are required to attain the same disinfection levels as chlorine. The section also details the methods of bromine use in swimming pools and spas,

as well as the conditions under which bromine may be an ineffective disinfectant.

Section 3.3 details the characteristics of a salt water chlorination system (electrolysis), highlighting the importance of salinity levels in the process. The short comings of the disinfection system are outlined, these include its inability to cope with high loadings and the need for backup continuous dosing systems.

Section 3.4 details the characteristics of isocyanuranted chlorine compounds (stabiliser); describing their ability to protect chlorine against the effects of ultra violet light and assist in the provision of free chlorine (the disinfecting component of chlorine). The section prohibits the use of these agents in indoor pools and spas as they are ineffective in such environments and will reduce the effectiveness of chlorine disinfection.

Section 3.5 details the characteristics of ozone as a disinfection agent, highlighting the highly unstable nature of the gas and the occupational health and safety risks associated with its use. The section also outlines that the major advantage in using ozone as a disinfecting agent in swimming pools and spas is that its very effective, however, it is stated that ozone has no residual effect and requires another disinfecting agent to provide residual protection (agents such as chlorine or bromine).

Section 3.6 details the characteristics of ultraviolet (UV) light as a disinfection method in swimming pools and spas, highlighting the need for a further residual agent if UV is to be used. The section;

1. prohibits the use of a UV disinfection system in outdoor pools (swim or spa) and indoor pools with a capacity greater than 500,000 litres
2. requires that the UV light dose be equal to or above 30,000 $\mu W.s/cm^2$,
3. requires that each UV light cabinet must have a meter to measure the number of hours each light tube has been in operation; and
4. requires that each light tube be replaced before a maximum of 7500 hours;
5. requires that the light intensity be measured while in use and that a display meter be installed to check that intensity;
6. requires that the system have an automatic shut-down feature in the event of a malfunction and that an audible and visible alarm activate in the event of a shut down;
7. requires the use of an additional disinfection agent, which provide residual protection, in conjunction with the UV system;
8. requires that a pH range of 7.2 to 7.6 be maintained when using a UV system; and
9. requires that the total alkalinity range of 60mg/L to 200mg/L be maintained when using a UV system.

Section 3.7 details the characteristics of hydrogen peroxide as a disinfection agent when used in conjunction with ultraviolet light (UV). The section outlines the disinfection presses which are generated from the use of

hydrogen peroxide and the chemicals interaction with UV light. A description of the differing concentration effects is also provided.

Table 1 : provides a summary of the disinfection agents/systems which are permitted by the Code of Practice.

4. Chemicals

Section 4: Provides a description of the various types of chemicals, other than disinfectants, that may be used in the treatment of swimming pool water. The chemicals are soda ash, dry acid, muriatic acid, carbon dioxide, bicarb and various algaecides. A brief outline is provided on the effectiveness of algaecides and the conditions under which they are best used.

5. Hygiene

Section 5.1: Requires the preparation of an emergency management plan which outlines actions that may be taken to prevent faecal contamination and respond to events involving such contamination.

Section 5.2: Outlines the clean-up procedures that must be carried out in the event of blood or vomit contaminating a pool. The section also outlines the clean-up procedure that must be carried out in the event of a pool side blood spill. Further reference is made to the information on emergency situations contained in the information attachment to the Code.

6. Testing

Section 6.1 and Table 2: provide a summary of the water quality testing the Code requires and the frequency of that required testing.

Section 6.2 requires the collection of water samples for the purpose of section 6.1 be carried out immediately before carrying out the required test. Various locations within the pool are nominated as points appropriate for sample collection. Bacteriological test sample are required to be collected in sterile sample containers.

Section 6.3: Outlines the testing equipment and reagents that are required to be used in the water quality testing required in 6.1. The use of fresh reagents is required by this provision; fresh reagents being reagents which are not more than twelve months old. All glassware and containers used in the testing procedure are required to be washed thoroughly in between each test. The provision also requires that water clarity be maintained at a level which allows for the bottom of the pool to be clearly visible from the side of the pool.

7. Record Keeping

Section 7: Outlines the requirements for the keeping of test records in a log or register. The record must include the date and time the test was carried

out, the test result and the type of test undertaken. Numerous other parameters are suggested as possible entries in the log/register, but not required. The provision places the responsibility of testing and maintaining the log/register on the operator or manager of the pool.

8. Total Dissolved Solids

Section 8: Outlines what total dissolved solids are and how the addition of chemicals to the pool/spa increase the level of total dissolved solids. The provision sets out the maximum permitted level of total dissolved solids (no more than 1000 mg/L greater than the mains water level and no higher than 3000 mg/L at any time).

9. Bacteriological Standard for Treated Water Public Pool

Section 9: Requires the bacteriological testing of swimming pools and spas in accordance with the tests outlined in table 3 of Annexure A. The required test method is also outlined in this table. The provision requires the submission of at least one test sample per month to a registered analyst for bacteriological testing.

10. Chemical Standard for Treated Water Public Swimming and Spa Pools.

Section 10: Requires that pools be maintained in accordance with a number of minimum standards outlined in the Annexures B, C and D of the Code. Section 10.1: Requires swimming pools to be maintained in accordance with those standards outlined in Annexure B. Section 10.2: Requires spa pools to be maintained in accordance with those standards outlined in Annexure C. Section 10.3: Requires that the water balance in swimming and spa pools to be maintained in accordance with those standards outline in Annexure D.

Annexure A

Table 3: Provides a summary of the test methods required for each type of bacteriological test required to be carried out under section 9.

Table 4: Outlines the maximum allowable bacteriological levels in pool water.

Annexure B1

Table 5: Outlines the permitted range or level of chemicals for a public pool using chlorination as its principal disinfection method.

Annexure B2

Table 6: Outlines the permitted range or level of chemicals for a public pool using bromination as its principal disinfection method

Annexure B3

Table 7: Outlines the permitted range or level of chemicals for a public pool using slipstream ozonation and chlorination as its principal disinfection method.

Table 8: Outlines the permitted range or level of chemicals for a public pool using mainstream ozonation and chlorination as its principal disinfection method.

Part B: INFORMATION ON THE CONTROL OF CRYPTOSPORIDIUM AND GIARDIA

This section is not part of the Code of Practice and is not directly enforceable. The purpose of the section is to provide specialist information to pool operators/owners in relation to steps which may be taken to minimise the risks associated with cryptosporidium and giardia.