



## A new checklist for swimming pools evaluation: A pilot study<sup>☆,☆☆</sup>



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### ABSTRACT

The swimming pool legislation is extremely various and uneven. This diversity is related to the different approaches of individual health authorities, attributable to the different social, economic and cultural conditions of each country.

In Italy the regulation about sanitary aspects for the construction, maintenance and control of swimming pools refers to the Agreement of January 16, 2003 among the Ministry of Health, the Regions and the Autonomous Provinces of Trento and Bolzano. The Agreement is not a jurisprudential act, but has the character of a document approved by constitutional organs of the same level, aimed to promote the harmonization of respective legislations or the attainment of unitary positions.

The controls and the related samples will be collected by Local Health Authority in compliance with criteria established by each region on the basis of specific control plans and supervision and in a manner and frequency that take into account the type of existing facilities inside the specific territorial areas, with particular attention to the critical points highlighted in the protocols of management and the self-prepared safety plans.

In this regard, the working Group of Movement Sciences for the Health (GMSH) of the Italian Society of Preventive Medicine and Hygiene (SItI), proposes a checklist to complete during inspections routinely conducted by Local Health Authorities in swimming facilities. The aim is to have a single tool that can homogenize supervisory activities, procedures and types of controls in different realities, both locally and nationally.

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### 1. Introduction

Water recreational environments offer health and social benefits.

Studies of sport medicine attest that regular physical activity and sport practice increase the body's defences, limit the musculoskeletal and cardiovascular involution and stimulate the mental activities [1–4]. However, it is known that sports facilities can represent environments where microclimatic conditions, engineering structures, and intense physical activity can negatively affect users health conditions [5,6]. In particular, in swimming pools it is estimated that the frequency of accidents that cause trauma and injuries is higher than in other environments and probably underestimated [7–9]. Furthermore, the health risks assume a crucial importance considering that the safety of this environment is affected by numerous variables as the quality of water and surfaces, the number and health

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conditions of the users, the correct functioning of all technological installations used for water treatment [10–12].

The health hazards can be reduced with the adoption of internal safety plans and the application of informed risk management measures as suggested by the WHO Guidelines [13]. Nevertheless, at present the swimming pool legislation is extremely various and uneven. This diversity is related to the different approaches of local health authorities, attributable to the different social, economic and cultural conditions of each country.

Within the sanitary norm primary interest is health. The health risks arising from the use of a swimming pool can be classified in order of severity and incidence: a) risks from drowning; b) risks related to sports or recreational activities; c) risks from microbiological agents; d) risks from chemicals; e) risks from physical agents.

Over the course of the past decade, green chemistry has demonstrated how fundamental scientific methodologies can protect human health and the environment in an economically beneficial manner [14]. This new technological approach can also be exploited in the swimming pools where, if possible, it may be substituted obsolete compounds with others that are equally effective but less toxic (e.g. disinfectants).

Therefore, the aspects that a legislative norm should discuss are various and interdisciplinary, which explains the large differences in regulatory approach that exist in different countries [15].

Currently in Europe there are no directives dedicated to public health issues that can be applied to swimming pools and similar environments, and for this reason local regulations and guidelines vary considerably in the countries [16–19]. In the United Kingdom, the Pool Water Treatment Advisory Group (PWTAG) established guidelines that regulate the chemical and bacteriological swimming pool water quality and its monitoring [20]. In Germany, the technical standards and requirements for the operation of the swimming pools are defined in DIN19643, updated in November 2012 [21]. Even in Austria a new regulation was enacted in October 2012, in order to establish the

requirements on water quality of swimming pools, whirl pools, whirl tubs and small natural swimming ponds [22]. In the United States the regulations vary considerably among different states and local health departments. Efforts are underway to develop a single Model Aquatic Health Code (MAHC) which should be completed by the end of 2013 and could represent a national voluntary guideline for the design, construction, operation and maintenance of swimming pools [23–25].

In Italy, the Legislative Decree 81/2008 (transposition of several European directives in occupational health), and its subsequent amendments and additions, requires the manager of swimming pool to draw up the document of risk assessment, which must include: a) potential sanitary risks, b) points or phases which may occur risks, c) preventive measures, d) monitoring system, e) corrective actions, f) verification of the safety plan and emergency, and g) updating of procedures [26].

The regulation concerning sanitary aspects for the construction, maintenance and control of swimming pools refers to the Agreement of January 16, 2003 among the Ministry of Health, the Regions and the Autonomous Provinces of Trento and Bolzano. The Agreement has the character of a document approved by constitutional organs of the same level, aimed to promote the harmonization of respective legislations or the attainment of unitary positions. Therefore, this Agreement is only a political demonstration of intent and not a norm [27]. It was implemented within the Inter-regional discipline of swimming pools on December 16, 2004 and requires the legal approval of each Region to become operational [15]. Table 1 shows the current regulatory framework in the 20 Italian Regions and the Autonomous Provinces of Trento and Bolzano.

The Agreement is certainly a milestone in Public Health official documents, giving well defined suggestions on the most effective way to perform prevention in recreational water environments, defining minimum sanitary requirements, technical and management needs.

As reported in this Agreement, the controls and the related samples will be collected by Local Health Authority in compliance with

**Table 1**  
Regions and regulations.

Regions	Measures swimming pools	Regulations	Other documents
Valle d'Aosta	No		
Lombardia	Yes	Number 8/2552 Resolution Regional Council, May 17, 2006	Explanatory circulars
Veneto	Yes	Number 1173 Resolution Regional Council, April 18, 2003	Regional Project Swimming Pools. 09 Operating module—Regional Plan controls
Provincia di Trento	Yes	Number 19 Provincial Law, November 15, 2007; Provincial government decree, June 8, 2009	
Provincia di Bolzano	Yes	Number 2360 Provincial government decree, June 28, 2004	
Friuli Venezia Giulia	Yes		Regional Law, July 22, 1996
Liguria	Yes	Number 7 Resolution Regional Council, January 11, 2013	Number 175–176 Resolution Regional Council, February 22, 2013
Emilia Romagna	Yes	Resolution Regional Council, July 18, 2005	
Toscana	Yes	Number 8 Regional Law, March 9, 2006; Number 23 Decree of the President of the Regional Council, February 26, 2010	
Marche	Yes	Number 1307 Resolution Regional Council, August 3, 2009; Number 1136 Resolution Regional Council, July 27, 2012	
Lazio	No		
Umbria	Yes	Number 4 Regional Law, February 13, 2007; Number 2 Regional Regulation, April 1, 2008	
Abruzzo	No		
Molise	Yes	Number 33 Regional Law, November 21, 2008; Regulation October 30, 2009	
Campania	No		
Basilicata	No		
Puglia	Yes	Number 35 Regional Law, December 15, 2008	
Calabria	Yes	Number 770 Resolution Regional Council, December 12, 2007	
Sicilia	No		
Sardegna	No		
Piemonte	Yes		Circular prot. n. 14066/27.001, October 18, 2006. Guidelines for Monitoring of Facilities Swimming
State of San Marino	Yes	Number 50 Decree, March 02, 2006	

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