A Common Waterpark Standard?

- **Utopia:** would be to have one internationally applied standard
- **Reality:** is a multitude of standards, codes and guidelines - which can differ and even contradict! Some are more proven and recognised than others.
- **Additional consideration** of local codes and the cross reference of other related buildings standards
1846
First Amusement park Opened
(Lake Compounce AP, Bristol CT)

1955
First Theme Park Opened
(Disneyland - $17m)

1970’s
First Waterparks Opened
(Wet N Wild FL ’77 – George Millay “Father of the Waterpark Industry”)

Waterpark Hybrids
Waterparks

- In terms of The Attraction Industry, Waterparks are relatively new
- They have been (and are) a developing science
- Legislation has been (and is) “catch up”
What is a……?

• Waterpark…..as opposed to a
• Leisure Pool (Indoor Waterpark)……as opposed to a
• Swimming Pool?
What is a Waterpark?

A Definition
Waterpark “a facility with a minimum of 1,000m2 of water space, with amenities such as slides, tubes and play features”

A Question when considering all related “wet” codes/standards
A Swimming Pool or a Waterpark?
A Waterpark Standard?

Answer

Many were derived & developed from Pools, and have/are been tailored for Waterpark demands – then cross referenced and applied with other related standards in the theme park and attraction park industries – and also to any local legislation.
## Waterpark Components

<table>
<thead>
<tr>
<th>Specialist Discipline</th>
<th>Design</th>
<th>Construction</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rides &amp; Attractions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Water Treatment &amp; Chemicals</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Air Treatment (Indoors)</td>
<td>✓</td>
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<tr>
<td>Lighting</td>
<td>✓</td>
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<tr>
<td>Stairways &amp; Towers</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Decks &amp; Public Spaces</td>
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<td>✓</td>
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<tr>
<td>Finishes – Tiling - Handrails</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Regular Building Practice/ Codes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Project Phase**

Waterpark Safety Standards

Waterpark Safety Standards

Waterslides and interactive play equipment

  Part 2 – Waterslides. Instructions
Waterpark Safety Standards

Waterslides and interactive play equipment

- EN 1176:2008 (10 parts) – Playground Equipment & Surfacing Safety Requirements

Waterpark Safety Standards

Waterslides and interactive play equipment

- ASTM F2461-09  Standard Practice for Manufacture, Construction, Operation & Maintenance of Aquatic Play Equipment
- Some American States defer to ANSI NSP 1 2003
- China – GB/T 18168-2008
Waterpark Safety Standards

Equipment and Water Quality

- BS EN 13451:2014 (Multiple parts) : Swimming pool equipment. General safety requirements and test methods
- Local/national bathing codes
- Pool Water Treatment Advisory Group/DIN
Waterpark Safety Standards

Equipment and Water Quality

- DIN 19643 (Swimming Pools)
- DIN EN 15362 (Sodium carbonate)
- DIN EN 15363 (Chlorine)
- DIN EN 15514 (Hydrochloric Acid)
- DIN EN 15513 (Carbon Dioxide)
- BS EN 155074 (Ozone)
- NZS4441 (Swimming Pools)
Waterpark Safety Standards

Equipment and Water Quality

• So many Codes/Standards – what to do?
• Refer, Consider and Apply (in context)
• Examples (of context):
  • ozone
  • water dilution
Waterpark Safety Standards

*Design, Construction and Maintenance*

- Jurisdiction specific Building Codes/Regulations
- National Electrical Codes, BSEN 7671, VDE etc. - Electrical Zoning
- Disability Access – ADA, UK Equalities Act etc.
Waterpark Safety Standards

Design, Construction and Maintenance

• Infectious Disease Control e.g. Legionella, Cryptosporidium etc.

• Fire Safety

• Wastewater disposal
Waterpark Safety Standards

Design, Construction and Maintenance

- EN13814 Fairground and amusement park machinery and structures — Safety

- Water Disinfection/Treatment Plant
A design analysis shall be carried out and certified by a qualified structural engineer, in accordance with this standard and other relevant standards. If a component test is necessary, the testing laboratory should define in advance the testing protocols and reports.
6.2.4 Design analysis and examinations

NOTE In some European countries, a certificate on the correct construction of the water slide by an inspection body can be required to certify that the entire construction of the water slide and the way it is erected complies with all relevant standards and laws.
Waterpark Safety Standards

Operational

Health & Safety Executive
HS(G)179

World Waterpark Association
Considerations for Operating Safety (1991)

Waterpark Safety Standards

**Operational**

- Lifeguarding

- Slide Management

Waterpark Safety Standards

**Operational**

- Pool Safe Operating Procedures (NOP/EAP)
- Confined Spaces
- Water testing/pool plant operation
- Bather load/capacity management
- Child protection
- First-aid/Incident Records
- Delivery, storage and handling of pool chemicals
Waterpark Safety Standards

New US Standard in Final Consultation

CDC has been working with public health, academia, and aquatics industry representatives across the United States on guidance to prevent drowning, injuries, and the spread of recreational water illnesses at public swimming pools and spas.
The Model Aquatic Health Code (MAHC) is a guidance document that can help local and state authorities make swimming and other water activities healthier and safer. The MAHC serves as a model and guide for local and state agencies needing to update or implement swimming pool and spa code, rules, regulations, guidance, law, or standards governing the design, construction, operation, and maintenance of public swimming pools, spas, hot tubs, and other disinfected aquatic facilities.
Approach? Act Local Think Global

- Use experience of what is proven – 40 years
- Code consolidation of international with local regulation
- Development of merged codes (e.g. DIN EN / BS EN). Long process (water codes example)!
- Cross reference with related Building Standards

The key is for the right APPLICATION of these in CONTEXT of the project requirements
Summary

- **Compared** with other Attraction mediums Waterparks are comparatively “new” - codes continue to evolve
- **Meantime:** Utilise the more commonly applied and proven standards; cross referenced with related building codes; and local legislation – In CONTEXT of each situation (e.g. 1\textsuperscript{st} world / 3\textsuperscript{rd} world)
- **Going forward:** Development of the main proven codes (EU/UK/USA), expanded globally and applied/adapted for each local requirement
THANK YOU!