

Queensland Department of Health Guidelines on Chemical Sunscreens in Swimming Pools

- The potential for chemical sunscreens to break down in swimming pools is high, guidelines are in place to ensure that the use of these products do not negatively impact water quality or public health. By following these guidelines, swimmers can help to minimise their impact on the environment and ensure a safe and enjoyable swimming experience for all.
- Apply Sunscreen at least 20 minutes before entering the pool to allow the product to fully absorb into the skin.
- Use water-resistant sunscreens that are less likely to wash off in the pool.
- Reapply sunscreen after swimming or sweating to maintain its effectiveness.
- Choose sunscreens labeled as “reef-safe” or “reef-friendly” to minimise any negative impact on the environment.

Great Barrier Reef Marine Park Authority Responsible Reef Practices

Chemicals:

- > Always know what chemicals you have onboard and in what quantities
- > Use environmentally friendly, biodegradable alternatives wherever possible - avoid using environmentally damaging chemicals
- > Limit the amounts of chemicals you use
- > Never release chemicals into the environment
- > Regularly clean all areas of your boat, plant equipment and engine rooms to avoid the need for heavy cleaning and the use of strong chemicals.
- > Maintain paintwork through polish rather than through chemicals
- > Keep only small quantities on your vessel - store bulk chemicals on the mainland
- > Keep well-maintained spill kits on your vessel and other work areas, and update them regularly
- > Clean up any spills through dry methods only - that is, you should 'contain, collect and dispose of
- > Always look into suitable alternatives and advances in technology.

Source: Great Barrier Reef Marine Park Authority – Responsible Reef Practices - <https://www2.gbrmpa.gov.au/access/responsible-reef-practices>

References:

1. https://www.health.qld.gov.au/_data/assets/pdf_file/0021/444612/water-quality-guidelines.pdf
2. Downs, C.A., Kramarsky-Winter, E., Segal, R. et al. Toxicopathological Effects of the Sunscreen UV Filter, Oxybenzone (Benzophenone-3), on Coral Planulae and Cultured Primary Cells and Its Environmental Contamination in Hawaii and the U.S. Virgin Islands. Arch Environ Contam Toxicol 70, 265–288 (2016). <https://doi.org/10.1007/s00244-015-0227-7>
3. Alexandros G. Asimakopoulou, Madhavan Elangovan, and Kurunthachalam Kannan Migration of Parabens, Bisphenols, Benzophenone-Type UV Filters, Triclosan, and Triclocarban from Teethers and Its Implications for Infant Exposure. Environmental Science & Technology 2016 50 (24), 13539–13547. DOI: 10.1021/acs.est.6b04128
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UV Chemical Sunscreens and Chlorine in Swimming Pools is a Dangerous Combination

Chlorine in swimming pools can react with certain chemicals found in sunscreens particularly those that contain organic compounds such as avobenzone, octocrylene, and oxybenzone. These reactions can lead to the degradation of the sunscreen, reducing its effectiveness in protecting the skin from the sun's harmful UV rays.

The breakdown of chemical sunscreens in swimming pools can potentially affect children in several ways.

- **Skin Irritation:** When chemical sunscreens break down in chlorine, they can produce new compounds that may irritate the skin. This can be particularly problematic for children, who may have more sensitive skin than adults. Skin irritation can cause discomfort, itching, redness and in some cases, may lead to skin rashes or allergic reactions.
- **Respiratory problems:** Some studies have suggested that the use of chemical sunscreens in combination with chlorinated water may increase the risk of respiratory problems in swimmers. This is thought to be due to the production of volatile organic compounds (VOCs) when chemical sunscreens break down in chlorine. These VOCs can irritate the respiratory system and may cause symptoms such as coughing, wheezing, and shortness of breath. For example, oxybenzone, a common ingredient in chemical sunscreen.

References:

1. "Chlorine and Sunscreen: A Complicated Relationship," American Academy of Dermatology Association,
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3. Gonzalez H, Farhat N, Stojakovic N, et al. Chlorinated Swimming Pool Water: A Source of Exposure to the Phthalate Esters and Oxybenzone. *Environmental Science & Technology*. 2017;51(1):308-314.