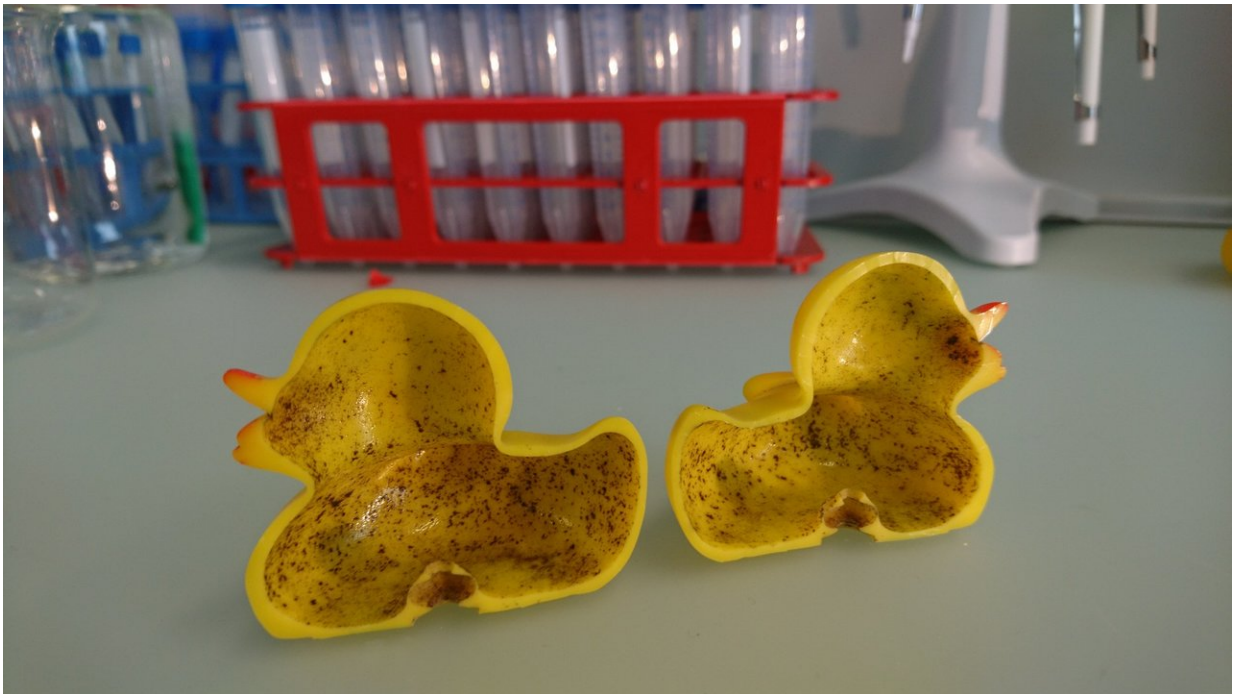


# Ugly ducklings: should rubber ducks be banned from the bath?

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Dark side of bath toys. Credit: Andri Bryner, Eawag

Scientific curiosity knows no bounds: a group of Swiss and US researchers have delved into "the dark side" of inviting rubber ducks and other flexible plastic toys into our tubs.

Any plastic materials dunked in bathwater provide ideal conditions for bacterial and fungal growth, according to the conclusions of the joint

study, published Tuesday by the Swiss government.

"Dense growths of bacteria and fungi are found on the inner surface of these flexible toys, and a murky liquid will often be released when they are squeezed by a child," the Swiss government statement said.

The researchers from the Swiss Federal Institute of Aquatic Science and Technology EAWAG, the Swiss Federal Polytechnic School and the University of Illinois found that "diverse microbial growth is promoted not only by the plastic materials but by bath users themselves."

For their study, they carried out experiments with real bath toys and controls using new bath toys under conditions simulating household use.

Over a period of 11 weeks, they exposed some of the toys to clean and others to dirty bath water, containing things like soap and body fluids.

When they cut open the toys, "the findings sound unappetising: between five million and 75 million cells per square centimetre were observed on the inner surfaces," according to the summary of the report.

The researchers stressed though that there was a big difference between the plastic toys exposed to different types of water.

"Fungal species were detected in almost 60 percent of the real bath toys and in all the dirty-water control toys," the statement said.

"Potentially pathogenic bacteria were identified in 80 percent of all the toys studied, including *Legionella* and *Pseudomonas aeruginosa*," which is often the culprit in hospital-acquired infections, it added.

The main problem is that warm water gathers inside the toy, often made of low-quality polymers, which release organic carbon compounds that

serve as nutrients to growing bacteria colonies.

"During bathing, other key nutrients such as nitrogen and phosphorus, as well as additional bacteria, are contributed by the human body (body fluids such as urine and sweat), external contaminants and personal care products," according to the study.

This allows bacteria and fungi to multiply inside of a toy children often enjoy using to squirt water into their faces.

"This could strengthen the immune system, which would be positive, but it can also result in eye, ear, or even gastrointestinal infections," microbiologist Frederik Hammes pointed out in Tuesday's statement.

So should we toss the ducks out with the bathwater? Or as some suggest on Internet comment forums, simply plug their holes to avoid the accumulation in their cavity?

Hammes suggests a more scientific approach: tighter regulations on the polymeric materials used to produce bath toys.

**More information:** Lisa Neu et al. Ugly ducklings—the dark side of plastic materials in contact with potable water, *npj Biofilms and Microbiomes* (2018). [DOI: 10.1038/s41522-018-0050-9](https://doi.org/10.1038/s41522-018-0050-9)

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