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Israel, US team: Cosmetics chemical is toxic to coral reefs

By Sharon Udasin
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Prevalent sunscreen chemical additive benzophenone-2 (BP-2) can bleach coral reefs and even kill them.

A team of researchers from several Israeli and American institutions has discovered that a sunscreen chemical prevalent in hundreds of beauty products is highly toxic to coral reefs.

On the campus of the Interuniversity Institute for Marine Sciences in Eilat, the scientists identified the detrimental effects of the chemical additive benzophenone-2 (BP-2), in their *Ecotoxicology* journal article to be published on Sunday, "Toxicological effects of the sunscreen UV filter, benzophenone-2, on planulae and in vitro cells of the coral, *Stylophora pistillata*."

The team of Israelis and Americans – from Tel Aviv University and Ben-Gurion University of the Negev, as well as the Virginia-based Haereticus Environmental Laboratory and the US National Oceanic and Atmospheric Administration – saw that BP-2 can cause colorful corals to bleach and can kill juvenile corals at very low concentrations.

Commonly used as a sunscreen additive, BP-2 is found in over 380 different product lines of soaps, laundry detergents, cosmetics and body fragrances, the researchers said. Municipal, residential and ship wastewater discharges commonly release the products' residues into nearby ocean environments, where the BP-2 can take its toll on corals.

In addition to bleaching them in general and killing young ones, BP-2 can also potentially be mutagenic to the corals by causing damage to their DNA, the researchers found. BP-2 acts similarly to oxybenzone, the active ingredient found in many over-the-counter sunscreen lotions, the study said.

"This is the first of a series of articles that we will publish on the subject of toxicity effects of various chemicals on the marine environment in general, and in particular on the lives of corals," said Omri Bronstein, one of the study's coauthors, and a graduate student in Tel Aviv University's Zoology Department.

While the highest concentrations of BP-2 are found in the Caribbean Sea, a disturbingly large presence is found in the Gulf of Eilat, Bronstein explained.

Because BP-2 has been widely used in the cosmetics industry since the 1960s and because human activity near the world's coastlines has increased, the chances of pollution from the chemical have risen significantly, the researchers warned. Increasing pollution of BP-2, they continued, is a real risk to coral reef preservation efforts globally.

Citing the US Commission on Ocean Policy, the researchers explained that the top three causes of coral reef

decline in the world are pollution, abnormally high sea temperatures and over-exploitation of coral reef resources.

Although pollution is a major cause of coral reef degradation and is the easiest factor to mitigate, this cause has largely been ignored, said C.A. Downs, executive director of the Haereticus Environmental Lab and the lead author of the study.

“Until we can address the problem of pollution, there is little hope in restoring vibrant communities of coral reefs,” Downs said.

“In the case of BP-2 pollution, there are a range of options that can be considered for reducing its impact to reefs – from working with the manufacturers and innovating more environmentally sustainable products to educating consumers regarding product selection and product disposal.”

It is Bronstein’s opinion that “the cosmetics industry will have to respond” to the group’s research, and he described how his American coauthors received great pressure not to publish the study.

“I believe that not far from today we will begin to see ‘BP-2 Free’ tags on cosmetic products,” Bronstein said. “Ultimately, our goal is to save the reefs from extinction.”

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