

Biologists use the Aeroschup to clean plastic from water

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The Aeroschup technology created by TSU biologists to clean petroleum products from the bottom of reservoirs will be used to solve the problem of plastic contamination. The project team has already completed laboratory tests that confirmed the ability of the Aeroschup to extract plastic particles from bottom sediments. The team plans to conduct field tests of the technology in the summer of 2020.

"Plastic is present everywhere a person's foot has stepped," says Danil Vorobyev, director of the TSU Biological Institute. "Moreover, the results of the large transarctic expedition made by Russian scientists under the guidance of TSU professor Alexey Orlov showed that macroplastic is also found where there are no people, for example, in the Kara and Chukchi seas, carried by rivers that are now heavily polluted.

As Danil Vorobyov notes, the synthetic material located on the global water surfaces is not very difficult to clean and it can be easily collected. Otherwise, [plastic](#) fouling and the inclusion of mineral particles occur over time, and the plastic acquires negative buoyancy and settles to the bottom, where it becomes microplastic and decomposes, releasing toxic substances.

Microplastic enters food chains because all animals eat it, from zooplankton to fish and birds. Synthetic material with toxic impurities (dyes, flame retardants and others) can accumulate in the tissues of living organisms. Once in the digestive systems of animals, toxic compounds can cause organ damage and other undesirable effects. Also,

the microparticles of the plastic easily absorb other [toxic substances](#) such as pesticides and dioxins, and just as easily expel them into organisms that consume them.

TSU biologists plan to solve the problem of plastic pollution with the help of the Aeroschup, which has proved its effectiveness in cleaning oil from the bottom sediments of water bodies.

"The technology is based on the principle of flotation—the device collects oil from the bottom due to molecular adhesion of petroleum hydrocarbons to the boundary of two phases: air and liquid. It means that air bubbles separate it from the bottom and raise it to the surface," explains Danil Vorobyov. "Laboratory tests on microplastics (particles up to 5 millimeters) showed that the Aeroschup works well with this material. Under hydropneumatic action, mineral particles are separated from the plastic, buoyancy becomes positive, and polluting components rise to the surface of the water, after which they can be mechanically collected."

More information: aeroprobe.ru/tech/science/

Provided by Tomsk State University

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