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Israeli tech turns jellyfish into paper towels

Diapers choke landfills, and the icky sea creatures choke beaches and waterways. Cine'al has one solution for both problems

BY DAVID SHAMAH | April 8, 2014, 7:22 pm |

Cine'al Ltd., an Israeli nanotechnology start-up, is developing technology to turn jellyfish into "super-absorbers," making the much-disdained sea creature suitable for use in diapers, tampons, medical sponges, even paper towels.

Jellyfish have been the bane of Israeli beaches in recent years, as warmer ocean temperatures have made coastal waters more hospitable for the creatures. During spring and early summer, millions of them appear near beaches, shoot their poison into the water and make swimming next to impossible. Where jellyfish abound, the water is likely to be empty.

Unlike most sea creatures, jellyfish are mostly useless. Some species are eaten in the Far East and mucin, a chemical extracted from the creatures, is used in drug delivery systems. For the most part, they're useless, even dangerous, pests, as jellyfish swarm not only near beaches, but near intake pipes as well, often clogging them up. This happened last November in Sweden, when jellyfish got into the pipes and clogged up the water intake systems of a nuclear power generator in Sweden, forcing it to shut down.

Cine'al sees a potential use for the scourge. Hydromash, the dry, flexible, strong material Cine'al is developing, is made from jellyfish and is allegedly several times more absorbent than the "quicker picker-upper" paper towels from the popular TV commercials.

"Right now, these items are made of synthetics, which take hundreds and thousands of years to break down," said Ofer Du-Nour, chairman and president of Cine'al and head of investment firm Capital Nano. The latter invests in early-stage nanotechnology companies that are based on research emerging from Israeli universities.

"The technologies we chose [in the medical and environmental fields] are proven technologies. The only issue is the engineering to bring the products to market," Du-Nour said. "We cherry-picked through thousands of companies to find these."

Du-Nour's product is based on research done by Tel Aviv University's Dr. Shachar Richter. "One third of disposable waste in dumps consists of diapers," Du-Nour said. "In its first year, a newborn baby generates, on average, 70 kilos of diapers a year, maybe more."

Highly absorbent products are made of synthetic materials such as super-absorbing polymers (SAP). The challenge was to find a bio-degradable material that was at least as absorbent. TAU

researchers found the solution in jellyfish, composed of 90 percent water, living constantly in water and with bodies that can absorb and hold high volume of liquids without disintegrating or dissolving.

Using nano-materials, the researchers' process converts the jellyfish into Hydromash, which absorbs high volumes of water and blood in seconds. The process also adds nano-particles which allow for the addition of anti-bacterial and tissue-healing attributes, flexibility, colors, scents and more.

The result is a product that absorbs several times its volume, bio-degrades in less than 30 days and can compete with SAP on price, Du-Nour said. It's perfectly safe, he added, and offers a potential to clear up landfills and clear the oceans of the endless swarms of jellyfish, which can now be seen as commodities worth harvesting instead of pests.

But will people go for it? Will mothers agree to put a "jellyfish diaper" on their baby's behind or use a jellyfish-based sanitary napkin on themselves? Du-Nour thinks so. "I'm not worried about this, and in many products it's likely that the consumer won't even know about it, similar to many other products with ingredients that are derived from animals and plants.

"In fact, I think the use of this could eventually be required by governments that are spending millions of dollars to keep jellyfish out of tourist and harbor areas," Du-Nour said. "There are too many jellyfish in the sea, and too many Pampers in landfills. Cine'al may have the ultimate answer to both those issues."