Israeli team eyes jellyfish for super-absorbent material

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Drifters-in-the-sea: salps bloom off the coast of New Zealand. Credit: Seacology

(Phys.org) —If diapers choke landfills and sea creatures plague tourism and invade power stations, an Israeli startup seeks to promote a single answer to both problems, according to *The Times of Israel* report filed earlier this month. The company is developing technology that makes use of jellyfish to construct super-absorbing material that can be used

for diapers and applications such as medical sponges.

Hydromash is the name given to the flexible, strong material being developed by the startup, Cine'al. Ofer Du-Nour is chairman and president of Cine'al ; the product is based on research by Tel Aviv University's Dr. Shachar Richter.

The material, said *The Times of Israel,* is highly absorbent: "Highly absorbent products are made of synthetic materials such as super-absorbing polymers (SAP). The challenge was to find a biodegradable material that was at least as absorbent."

The Israeli researchers turned to jellyfish, with bodies that can absorb and hold high volumes of liquids without disintegrating or dissolving. They have a processing technique that results in a material called Hydromash, capable of absorbing high volumes of water and blood in seconds. The Tel Aviv University researchers added nanoparticles for antibacterial properties. This can compete with conventional products for absorbency, and biodegrades in less than 30 days. The report said it could also compete with SAPs on price. (SAPs stand for super-absorbent polymers, which are materials with the ability to absorb and retain large volumes of water and aqueous solutions. They are made from lightly cross-linked polyacrylic acid; they are key ingredients in disposable diapers, feminine hygiene and adult incontinence products.)

As important, jellyfish could serve, not threaten, the economy, becoming commodities rather than headaches. Jellyfish inhabit every major ocean. Infestations trouble the tourist industry and scientists alike, with swarms finding beach environments hospitable, driving swimmers away, but also gathering near intake pipes and clogging them up.

An article in *Der Spiegel* last year noted an international research project funded by the EU was out to gather data on the spread of jellyfish in the

Mediterranean region, as well as develop a coastal management strategy. Jellyfish, causing power outages and equipment damage when entering water systems of power plants and desalination plants, had become a topic at world conferences.

With the financial costs of keeping jellyfish out of tourist and harbor areas and environmental problems of diapers in landfills, the Cine'al team could attract interest before long. According to *Green Prophet*, Capital Nano, a nano tech investor in Israel, is raising funds to scale up Cine'al.

The *Green Prophet* report said Cine'al is in discussions with partners in Korea and South Carolina, regarding establishing manufacturing plants near jellyfish collection sites.

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