

New materials invention for oil spill clean-up

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Beach cleanup after the Gulf oil spill.

The recent oil spill in the Gulf of Mexico was not the largest in history nor will it be the last, according to T.C. (Mike) Chung, professor of materials science and engineering at Penn State. But a recent patent-pending material developed by Chung could dramatically reduce the environmental damage if deployed on a wide scale.

Chung's material is a new polyolefin-based petroleum superabsorbent called Petro-SAP that not only absorbs floating [oil](#), but allows for the recovery and subsequent refining of the captured oil. When applied to an

oil spill, Petro-SAP immediately begins to absorb oil (but not water), and within 10 minutes will increase its weight by more than 10 times. Within 12 hours, Petro-SAP can absorb 40 times its own weight in oil. The resultant solid mass will continue to float on the surface and can be scooped up from the water or shore. Chung also speculates that the material could be applied directly to a leaking deep sea well head to create a gel that would mitigate damage to the deep marine environment.

Polyolefin products are inexpensive and widely produced polymeric materials. Chung estimates that the cost of commercially producing Petro-SAP could be below \$2 per pound, while the amount of oil recovered per pound of material - around 5 gallons - would be worth \$12, based on \$80 a barrel crude oil. In addition, Petro-SAP can be refined along with the absorbed oil to avoid the large amount of hazardous waste byproducts that result from the disposal of other clean-up materials that are burned or land-filled after use. Chung believes his new material far outperforms any of the current methods of oil cleanup, citing its high oil absorption capability, fast kinetics, easy recovery from the water surface, lack of water absorption, benign disposal, and cost effectiveness.

Two videos of Petro-SAP in action, created by Penn State's [Materials Science and Engineering Department](#), are posted below. You can also read the inventor's [more detailed description](#) of his Petro-SAP.

Provided by Pennsylvania State University

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