

'Smart water' may help boost production from oil wells by 60 percent

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"Smart water," a type of seawater, could help meet energy demands by boosting oil extraction by as much as 60 percent, scientists say. Credit: Trevor MacInnis

Researchers in Norway report that injecting a special type of seawater called "smart water" into certain low-yield oil wells may help boost oil extraction by as much as 60 percent. The study could help meet rising energy demands and provide consumers with some financial relief at the gas pump in the future, the scientists suggest. Their findings are scheduled for the Sept. 10 issue of ACS' *Energy & Fuels*.

In the new study, Tor Austad and colleagues note that more than 50 percent of the world's oil reserves — billions of gallons of oil — are trapped in oil reservoirs composed of calcium carbonate, rocks that include chalk and limestone.

Scientists now inject seawater into chalk-based oil wells to boost oil extraction, but researchers do not know if the method will work for oil wells composed of limestone, a tough material known for its low oil-recovery rates — usually less than 30 percent, but in some cases less than 5 percent.

To find out, the scientists collected core samples from Middle East oil reservoirs composed of

limestone and soaked them in crude oil for several weeks. They then prepared batches of so-called "smart water," seawater formulated with sulfate and other substances to improve seawater's ability to penetrate limestone. In laboratory studies, they showed that irrigating the limestone samples with "smart water" led to the same fundamental chemical reactions that occur in chalk. Upcoming experiments will verify if the efficiency in oil recovery is comparable to the observations in chalk, the scientists note.

Article: "Smart Water" for Oil Recovery from Fractured Limestone: A Preliminary Study"; [dx.doi.org/10.1021/ef800062n](https://doi.org/10.1021/ef800062n)

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