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## Saline waste water found perfect for algae

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Every day, the oil and gas industries produce millions of barrels of process water during the refining process. This stream, which usually ends up being injected back underneath the ground, is considered waste. [The Center of Excellence for Hazardous Materials Management \(CEHMM\)](#) in Carlsbad, N.M., however, has found that the characteristics of this "produce" water are excellent for the cultivation of oil-making algae. "This is a nearly inexhaustible resource that nobody wants," said Douglas Lynn, executive director for CEHMM.

While the price drop for crude has discouraged the interest of the oil industry in this research, the rest of the world seems to continue waiting intently for the "next generation" of biodiesel manufacturers which can make fuel out of non-food-resources. "We saw some interest in our work from the oil companies when the price of oil was over \$100 per barrel, but since it fell below \$40 per barrel, the inquiries seemed to vaporize," Lynn said.

CEHMM told *Biodiesel Magazine* that it has indentified a wild, salt-water strain of algae suited for growth in the extremely "brine-laden" subterranean waters found in southeastern New Mexico. "We've discovered that we can mimic the characteristics of these waters in our ponds where we are growing algae," he said. CEHMM has nevertheless been able to manipulate the water to create prime cultivation conditions, and, without using genetic technologies, enhanced the oil-making performance of the algae shortly before the material is harvested. Lynn, however, could not divulge the technique being developed as a trade secret and said only that it involves indentifying the "triggers" which are conducive to increased oil expression in the algae strain. These oils "show incredible purity and viability" for biodiesel refining, CEHMM stated.

Of course, using waste water from either the oil and gas industries or the unutilized sources from underground reservoirs put no pressure on domestic water supplies. This allows the process to avoid the criticisms which claim that biofuels add pressure to natural resources instead of alleviating it. "The intrinsic assets of the desert southwest I believe are going to lead to tremendous interest in the energy potential of this area and a lot of development," Lynn says.

The development of the current project has involved growing the algae in open "raceway" ponds and protecting the specific strain from competition and predators. "Our cultures show incredible purity, meaning their composition has not been compromised or invaded by other strains," Lynn says. "Some of the problems associated with growing algae are not much different than traditional crops...like than blackbirds flying into fields to eat grain. We've been able to avoid this, and in a matter of hours we can detect an invader in our ponds and eliminate it."

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