

UC SANTA BARBARA

# THE *Current*

November 18, 1999

Gail Brown

## **OIL AND GAS SEEPAGE FROM OCEAN FLOOR \_x000B\_ REDUCED BY OIL PRODUCTION**

Next time you step on a glob of tar on a beach in Santa Barbara County, you can thank the oil companies that it isn't a bigger glob.

The same is true around the world, on other beaches where off-shore oil drilling occurs, say scientists, although Santa Barbara's oil seeps are thought to be among the leakiest.

Natural seepage of hydrocarbons from the ocean floor in the northern Santa Barbara Channel has been significantly reduced by oil production, according to two recently published peer-reviewed articles, one in November's *Geology Magazine*, the other in the *Journal of Geophysical Research - Oceans*.

The Santa Barbara Channel provides an excellent natural laboratory, as it is among the areas with the highest levels of seepage in the world, said co-author Bruce P. Luyendyk, professor and chair of the Department of Geological Sciences at the University of California, Santa Barbara.

The studies were not funded by oil companies, but rather by the University of California Energy Institute and the U.S. Minerals Management Service, states Luyendyk, responding to the fact that the results favor off-shore oil production and

are opposed by some environmentalists.

"We've done a good piece of science," said Luyendyk. "We've developed a good understanding of a natural process. It's all public data; it's all straightforward. If I thought the study was compromised I wouldn't be involved in it."

Most of the seepage is methane, a potent greenhouse gas which escapes into the atmosphere, said Luyendyk. About 10 percent of the seepage is composed of "higher hydrocarbons," or reactive organic gases which interact with tailpipe emissions and sunlight, creating air pollution.

The researchers state that the production rate of these naturally-occurring reactive organic gases is equal to twice the emission rate from all the on-road vehicle traffic in Santa Barbara County in 1990.

According to the articles, studies of the area around Platform Holly showed a 50 percent decrease in natural seepage over 22 years. The researchers show that as the oil was pumped out the reservoir, pressure that drives the seepage dropped.

"If the decrease in natural seepage found near Platform Holly is representative of the effect of oil production on seepage worldwide, then this has the potential to significantly alter global oil and gas seepage in the future," state the researchers in the article "The World's Most Spectacular Marine Hydrocarbon Seeps: Quantification of Emissions " in the Sept. 14 issue of the Journal of Geological Research - Oceans.

They continue, "For example if the 50 percent reduction in natural seepage rate that occurred around Platform Holly also occurred due to future oil production from the oil field beneath the La Goleta seep, this would result in a reduction in nonmethane hydrocarbon emission rates equivalent to removing half of the on-road vehicle traffic from Santa Barbara County. In addition, a 50 percent reduction in seepage from the La Goleta seep would remove about 25 barrels of oil per day from the sea surface, which in turn would result in a 15 percent reduction in the amount of tar found on Santa Barbara beaches."

They conclude by saying that the rate of increase of global methane atmospheric concentrations has been declining for the past 20 years, and that a "worldwide decrease in natural hydrocarbon seepage related to onshore and offshore oil production may be causing a global reduction in natural methane emission rates."

---

## **About UC Santa Barbara**

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.