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TranScript

Vol. 2 No. 9
September 1994

Oregon Department
of Transportation

Petroleum-eating critters clean up sites

You wouldn't think the bottom of a 2-mile-deep oil well would be a likely location to manufacture pollution control devices. Yet that's exactly where ODOT is getting one of its most powerful tools for cleaning up soil contaminated by petroleum products such as gasoline.

The tool is actually a tiny critter from deep beneath the earth with a voracious appetite for petroleum products — so voracious the company that produces it calls it "Oil Gator."

"Oil Gator is a natural occuring microbe," said Ted Dickerson of Product Services Co., Jackson, Miss. "It lives in oil wells and in oil-bearing natural fibers, and eats crude oil. We have developed a way to change the growth of the microbe so that it can be used to decontaminate polluted soil. It works on any hydrocarbon-based contaminate."

Oil Gator works by surrounding the pollutant.

"It is highly absorbent," said Dickerson. "In fact, it's so absorbent it actually draws hydrocarbons, out of the soil."

Dickerson said that once the pollutant is absorbed, Oil Gator biodegrades it into harmless carbon dioxide.

So, what has this deep-dwelling inhabitant of the hydrocarbon world to do with ODOT? Plenty, said Darris Larsen, an appraiser with Transportation Region 2 Right of Way in Salem.

Peter Zagar, of Cascade Pacific Engineering, Inc., takes a soil sample containing "Oil Gator." Oil Gator cleans soil contaminated with petroleum products.

"We have a number of commercial and industrial sites where we have to deal with contaminated soil. We can't build on those sites until the contamination level is

Continued on page 5

Oil Gator treatment saves time and money

Continued from page 1

acceptable to the Department of Environmental Quality. Oil Gator has been a big help in that process."

Cleaning a contaminated a site is the responsibility of whoever put the pollutants into the soil. Gas stations, which tend to spring up along highways and cluster around freeway interchanges, are sites that more often than not, contain contaminated soil. Larsen cited the example of the Market Street interchange on Interstate 5 in Salem.

"We purchased several gas stations at the interchange and all of them had some level of contamination," said Larsen. "Most of the oil companies cleaned up the sites themselves. Mobil Oil, however, allowed us to do it for them and asked us to bill them. That's how we discovered Oil Gator."

There are several methods of decontaminating soil. The three most common are: thermal treatment, "land farming" and hauling the material to an authorized disposal site. Oregon has authorized disposal sites in Hillsboro and Arlington.

Soil is thermally treated by feeding it into a furnace-like machine that burns off the pollutant. It is an extremely expensive and slow process and can cause air pollution.

Soil that is contaminated with gasoline, toluene and other pollutants that evaporate over time can be land farmed. The soil is removed and hauled to a storage site where it is allowed to sit until the contamination levels fall below DEQ standards. Land farmed soil can take up to 18 months to reach the point where it can be approved for reuse.

Heavily contaminated soil and soil containing heavy oils, such as motor oil, can never be reused. It must be hauled to a certified site and stored indefinitely.

"Essentially," said Larsen, "we own a pile of dirt sitting out in the sagebrush in Eastern Oregon and we'll never be able to use it."

Oil Gator treatment uses an accelerated version of the land farming method. It can decontaminate soil in as little as six months, even if the soil contains heavy oils.

"That can cut our costs of decontamination and the time by one-half," said Larsen. "We don't have to burn it, we don't have to haul it, we don't have to store it. We still have to remove it from the site, but we can simply move it to a nearby staging area, treat it, water it, rototill the ground to aerate it — and then reuse it." ▼

The Oil Gator story idea was submitted by Tami White, Right of Way section.