

From: <gary.hoover@srs.gov>
To: "Mark Notich" <mdn@nrc.gov>
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Subject: FYI: Tritium Reaches Nuclear Plant's Groundwater

Mark,

FYI.

Gary Hoover
DOE-SR EQMD

LATimes.com

Radioactive Leak Reaches Nuclear Plant's Groundwater

At San Onofre, the cancer-causing tritium isn't known to infect drinking water, but experts are checking.

By Seema Mehta and Dave McKibben, Times Staff Writer
August 18, 2006

Radioactive, cancer-causing tritium has leaked into the groundwater beneath the San Onofre nuclear power plant, prompting the closure of one drinking-water well in southern Orange County, authorities said.

Officials have not found evidence that the leak from the San Onofre Nuclear Generating Station, California's largest, has contaminated the drinking water supply.

As a precaution, San Clemente officials shut down and are testing a city well near the contaminated area.

"We owe it to our residents and business folks to properly test the water," said Dave Lund, San Clemente's public works director.

In recent years, tritium leaks have been found at more than a dozen nuclear plants across the nation, prompting the Nuclear Regulatory Commission to form a task force this year to study the cause of the contamination. The findings are scheduled to be released this month.

Sandwiched between Camp Pendleton and the Pacific Ocean in northwestern San Diego County, the San Onofre power plant has had a controversial presence on the coast since its construction in the 1960s.

In the years since, sea lions and endangered sea turtles have been killed when caught in the plant's seawater intake pipes for its cooling system. Since Sept. 11, 2001, nearby residents also have grown wary of the plant as a potential terrorist target that stores highly radioactive spent nuclear fuel.

One of two nuclear power plants in California, San Onofre provides 2,150 megawatts of power, enough for 2.2 million homes throughout Southern California.

The plant is operated by Southern California Edison and houses two working reactors. A third, 450-megawatt reactor was shut down in 1992 and is being dismantled.

While workers were taking apart the containment dome that housed the inactive reactor, they discovered that groundwater beneath the reactor complex was tainted with tritium, said Ray Golden, spokesman for the power plant. The source of the leak has not been determined, he said.

Tritium occurs naturally in the environment but is also a byproduct of nuclear fission, said Victor Bricks, spokesman for the NRC's regional office in Arlington, Texas. It has a half-life of 12 years, meaning its radioactivity is reduced by half every 12 years.

Tritium, an isotope of hydrogen that can cause not only cancer but also miscarriages and birth defects, is increasingly stoking fears in communities near nuclear plants across the country.

A tritium leak that contaminated millions of gallons of groundwater near the Braidwood Nuclear Generating Station in northeast Illinois led that state to sue the owner of the plant in March.

"So far, the spills ... haven't resulted in people off-site being exposed to excessive amounts of radiation," said David Lochbaum, director of the nuclear safety project for the Union of Concerned Scientists in Washington, D.C., a nonprofit advocacy group that focuses on environmental problems. "But the law is supposed to be that nothing radioactive leaves the site, either in water or in air, unless it's monitored or controlled. They have had a series of failures."

Samples of the groundwater beneath San Onofre's decommissioned unit contained 50,000 to 330,000 picocuries per liter, Bricks said.

In drinking water, the U.S. Environmental Protection Agency's safety limit for tritium is 20,000 picocuries per liter, a measurement of radioactivity based on one-trillionth of a unit. The state of California has recommended

a "public health goal" of no more than 400 picocuries per liter, a level the agency determined could still cause one cancer case per million people exposed.

San Onofre has extracted more than 10,000 gallons of the contaminated groundwater and piped it into the Pacific about 8,600 feet offshore, where it is instantly diluted in seawater, Golden said.

Since groundwater will continue to seep into the contaminated area, plant officials will continue removing contaminated water and discharging it into the ocean until they can remove all traces of the contamination.

It's unknown how much tritium has seeped into the ground, where it came from, or when the leak occurred, Golden said. It's likely that it leaked from the reactor, the spent-fuel pool, various water storage tanks or pipes. The leak probably occurred sometime between 1968 and 2004, Golden said.

Edison officials have tested nearby soil, water and sand all around the plant over nearly four decades and have never seen unusual radiation levels, so there is nothing to indicate that the contaminated groundwater has left the site, he added.

John Robertus, executive officer of the San Diego Regional Water Quality Control Board, which governs the area, also said that because of the area's hydrology, it's unlikely that local groundwater sources were contaminated. Groundwater is likely to migrate toward the ocean and away from drinking water wells, he said.

There are two drinking water wells about two miles from the site, one on Camp Pendleton and one in San Clemente.

A Camp Pendleton spokeswoman said the base draws its water from 20 on-base wells regularly checked for pollutants, including radioactive ones.

In San Clemente, Lund said, the city gets 3% of its drinking water from the well two miles north of the plant. Much of that is used to irrigate San Clemente's city golf course, but some serves homes in the southernmost part of town, he said.

The city gets the rest of its water supply from the Colorado River and Northern California.

"There's concern, but I don't think it should be heightened concern," said Mayor Wayne Eggleston. "We just have to wait for the results."

Some residents and visitors were worried Thursday evening.

"I have a lot of concerns. It's radioactive, isn't it?" Craig Ervin, a San Clemente resident playing golf at the municipal course. "I don't know why they put that plant next to a city."

Lucio Tiberio, a San Diego resident who had just finished surfing at nearby Trestles, was more concerned about the tritium's effect on the ocean.

"There's pollution everywhere, but this is scary because there's no way you can see it," he said.

The regional water board regulates all discharges from the plant but has no jurisdiction over nuclear waste, which is handled by the federal government.

Robertus, the board's chief, said he was unhappy to learn of San Onofre's disposal methods for the contaminated water.

"My hands are tied; we don't regulate radioactive waste," he said. "I'm not particularly pleased with hearing ... that they're dumping nuclear radioactive waste" into the ocean.

NRC spokesman Bricks said the ocean dumping meets his agency's standards.

But Daniel Hirsch, director of the nuclear watchdog group Committee to Bridge the Gap in Los Angeles and former director of the Adlai Stevenson program on nuclear policy at UC Santa Cruz, said it was foolhardy to make the ocean the dumping ground.

"It's extremely hard to clean up water that's contaminated with tritium," he said. "There's this incredible illusion that you can dump radioactive waste in the ocean and it won't come back to you in the fish you eat. That's troubling. Dilution is irrelevant."

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