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From: Pat Fierro[SMTP:fierro%lanl.gov@internet.al.gov]
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Subject: 10/24/00 - TRITIUM FOUND IN DRINKING-WATER-SUPPLY WELL

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TRITIUM FOUND IN DRINKING-WATER-SUPPLY WELL

LOS ALAMOS, N.M., Oct. 24, 2000 -- Hydrologists at the U.S. Department of Energy's Los Alamos National Laboratory have detected traces of tritium in a well that supplies drinking water to the county of Los Alamos, confirming an earlier reported detection of the radioactive element this year by state regulators.

The tritium was found in concentrations that are 500 times lower than the federal drinking water standard, but are above background concentrations that can be found in groundwater around the Laboratory.

All wells that supply drinking water to Los Alamos meet standards established by the federal Safe Drinking Water Act and by the New Mexico Environment Department. Laboratory hydrologists regularly monitor, and will continue to monitor, wells to ensure that water produced from them meets drinking water standards. In addition, the



Laboratory is drilling a number of wells throughout the Los Alamos area to investigate whether any threats to drinking water quality exist, and to ensure the future safety of the water supply.

Tritium is an isotope of hydrogen that is produced naturally in the atmosphere when cosmic rays strike atoms and molecules. Man-made tritium is used for some Laboratory activities. Chemically, tritium's behavior is identical to hydrogen and it moves easily with water. Tritium is used in self-illuminating exit signs, gun sights, watch dials and other consumer products. The half life of tritium is about 12.5 years.

Hydrologists with the Laboratory's Water Quality and Hydrology Group took samples from the water-supply well - called Otowi-1, located in lower Pueblo Canyon several miles east-northeast of the Laboratory's main technical area - in late June as part of the Laboratory's on-going drinking water monitoring and surveillance program. Although Otowi-1 was constructed in 1990, it did not become operational until 1997. Major water production from the well began last spring.

The Laboratory's drinking water monitoring and surveillance program looks for the presence of Laboratory-derived chemicals in the aquifer that supplies Los Alamos with drinking water and in other underground water sources.

The Otowi-1 well-water sample was analyzed by an independent laboratory.

The sample showed tritium at a concentration of 38.5 picocuries per liter. Federal drinking water standards say water is safe to drink if it

contains tritium in concentrations lower than 20,000 picocuries per liter. Concentrations of tritium in the regional aquifer in other parts of the Laboratory can be found ranging between one and three picocuries per liter; tritium concentrations in Northern New Mexico surface water and rainwater range from 30 to 40 picocuries per liter. A curie is a measure of radioactivity; pico means one-trillionth of a unit.

Hydrologists with the New Mexico Environment Department in January reported that samples taken in June 1999 from the Otowi-1 supply well contained tritium in concentrations of 39.9 picocuries per liter.

"Our data match up pretty well with data obtained earlier by state of New Mexico hydrologists and it verifies their previous finding," said Bob Beers of the Laboratory's Water Quality and Hydrology Group. "We have detected tritium in the regional aquifer before in Test Well-1 in Lower Pueblo Canyon, but we haven't previously detected it in these concentrations in a community water-supply well. We will continue to monitor Otowi-1 to determine whether tritium concentrations are increasing or decreasing over time, and we will continue to monitor other drinking-water-supply wells to determine whether any other contaminants are making their way into the aquifer. That is part of the Laboratory's commitment to helping verify that the water is safe to drink - and it is safe to drink."

In earlier times at the Laboratory, contaminants were discharged into Acid Canyon. Those discharges ceased in the early 1960s. Acid Canyon drains into Pueblo Canyon, so the former Acid Canyon waste treatment plant could be a source of the tritium contamination. Laboratory hydrologists have known since the 1950s that surface

water in Pueblo Canyon slowly seeps into deeper underground water bodies over time, although this seeping surface water has little effect on the chemistry of the deeper water. Higher tritium concentrations are regularly found farther upstream in Pueblo Canyon; in shallow water bodies some 100 feet below ground but well above the regional aquifer, tritium concentrations are about 2,200 picocuries per liter of water.

Tritium also has been seen in the deep aquifer in a test well several hundred yards downstream from the Otowi-1 supply well. The concentration of tritium in Test Well-1 was 360 picocuries per liter in 1993. The test well just penetrates the top of the regional aquifer about 600 feet beneath the canyon floor. In contrast, the area within the aquifer from which Otowi-1 draws its water begins at just about 1,000 feet below the canyon floor (and about 400 feet lower than the top of the aquifer and Test Well-1) and continues down an additional 1,460 feet.

Otowi-1 was in the news earlier this year when hydrologists detected trace concentrations of the chemical perchlorate. The non-radioactive chemical also was used in earlier nuclear-weapons-related activities, but was not found in concentrations that could present an increased risk to the safety and health of the public.

Hydrologists at the Laboratory will continue to regularly monitor area drinking-water-supply wells for the presence of perchlorate, tritium and other contaminants.

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Albuquerque Journal

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Tritium Confirmed In Water

Drinking Well Fouled; Levels Below EPA Limit

BY JENNIFER MCKEE
Journal Staff Writer

Radioactive waste — likely coming from an old nuclear dump — has seeped into Los Alamos town drinking water, scientists at Los Alamos National Lab confirmed Monday.

Both lab and state scientists said the contamination — 500 times below levels considered dangerous by the Environmental Protection Agency — is not a threat to people who drink the water.

Tim Glasco, deputy utilities manager for Los Alamos County, said he has no plans to shut down the contaminated well. Its water is perfectly safe, he said.

Lab studies conducted in June detected tritium, a component of hydrogen bombs, in a deep, high-production well called Otowi-1, one of 12 wells providing Los Alamos' drinking water, said David Rogers, a lab hydrologist. Los Alamos scientists took the samples in June and sent them to a special tritium lab in Miami. The results came back this month.

The lab's studies came in response to earlier state findings of tritium and another radioactive contaminant, strontium-90, in another Los Alamos town well. In those tests, conducted in June of 1999, state scientists detected small amounts of tritium in the Otowi-1 well and similarly small amounts of strontium-90 in the well known as Pajarito Mesa-1.

The findings raised eyebrows, said Steve Yanicak, manager of the White Rock-based state environmental office that oversees the lab, because they suggest that water deep underground is not immune to Los Alamos' historical pollution, as many once believed. Yanicak said Monday that neither the pollution his office detected last year nor that found more recently is dangerous.

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Nuke Waste Found in Town Drinking Water

"It's not a health concern right now," he said. "We're concerned because we're finding (tritium) where we don't want it to be."

Specifically, the tritium found in the lab's test was concentrated at roughly 40 picocuries per liter, said Rogers. The EPA considers anything less than 20,000 picocuries per liter safe, he said.

The normal background level for tritium in rainwater in northern New Mexico is between 30 and 40 picocuries per liter, Rogers said.

That's because tritium is normally found in the envi-

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ronment, he said, both as the byproduct of cosmic rays colliding with rain droplets and as fall-out remnants from above-ground nuclear testing. However, other wells tested at the same time showed tritium levels far below those in Otowi-1, Rogers said, with most measuring between one and three picocuries per liter.

Rogers said he doesn't believe the contamination found at Otowi-1 is naturally occurring. He believes it's seeping from a place called Acid Canyon, roughly behind Los Alamos High School, where lab workers in the Manhattan Project days

dumped any variety of radioactive wastes, from tritium to plutonium.

Such dumping ended in the early 1960s, he said. As part of a federal clean-up project, crews excavated and trucked away loads of the contaminated soil in the 1970s.

Particularly vexing for lab scientists, Rogers said, is exactly how the tritium is ending up in the well and what other leftover contaminants might show up later.

The national lab launched a water-quality monitoring program in the mid-1990s, he said. Part of the project involves digging deep monitoring wells in and around the lab. But the project isn't complete, and many wells haven't been dug.

Rogers said he suspects that

somewhere under the soil, there's higher concentrations of tritium, but without more accurate testing he couldn't say where or in what quantities.

One thing the tritium tests confirm, however, is a "contaminant pathway" into the ground water, Rogers said.

Three other water wells lie down slope from the contaminated Otowi-1, according to Rogers. Those three private house wells have also shown evidence of tritium contamination, in some cases higher than that in Otowi-1 but still far below the EPA safety limit.

The lab also routinely tests the wells feeding San Ildefonso Pueblo. Scientists have never found danger-

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DAVID ROGERS, LAB HYDROLOGIST

ous tritium levels in that water, either.

At the same time scientists drew water from Otowi-1, they also tested the Pajarito Mesa-1 well for strontium-90. A series of tests failed to find conclusive evidence of contaminant.

Because the levels are so low and no state or federal laws are broken, the weapons laboratory doesn't

have to clean up the site, Yanicak said. Still, both he and Rogers said they want to study both the well and the ground water around it. Both state and lab scientists have repeatedly sampled the lab since the state found tritium last year, Yanicak said.

In addition, the lab will probably drill at least three new monitoring wells between Acid Canyon and

Otowi-1, Rogers said.

Leftover contamination isn't the only tritium at the lab. Tritium is a natural byproduct of the lab's particle accelerator. Its levels in accelerator waste water is 25 to 50 times higher than the EPA's safety limit, said Bob Beers, a lab water quality specialist.

But no one's drinking that water. Instead, it's collected in two enormous cooling lagoons and allowed to evaporate into the atmosphere.

The Northern New Mexico Citizen's Advisory Board will discuss the tritium contamination at a public meeting Wednesday evening in Española. The meeting will run from 6 p.m. to 9 p.m. at the Johnson Controls Building.