



Veterans
Administration

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June 12, 1981



Mr. Larry W. Camper
Material Licensing Branch
Division of Fuel Cycle and
Material Safety
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Camper:

Additional documentation of groundwater testing for radionuclide contamination in the vicinity of VA Wadsworth Medical Center is submitted for your information. It appears that there is no radioactive contamination of water in this area.

Very truly yours,

A handwritten signature in cursive script that reads 'L. W. Wetterau'.

L. W. WETTERAU
Radiation Safety Officer
Nuclear Medicine Ultrasound Service

Enclosure

cc: Mr. Herb Book
USNRC, Region V
Walnut Creek, CA

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INSPECTION AND ENFORCEMENT

MEMORANDUM

1197

SANITARY ENGINEERING DIVISION

MEMO BY R. Kurimoto TO L. McReynolds DATE June 5, 1981
FILE TITLE Radioactivity in Groundwater near Veterans Administration Hospital

In a memo from R. Kurimoto to L. McReynolds dated May 28, 1981, results from the testing of several groundwater sources near the Wadsworth Veterans Administration Hospital were presented. These samples were collected by the City of Santa Monica, Water Division and are labeled Santa Monica Well #3, Arcadia Well #4, Charnock Well #12, Charnock Well #15 and Veterans Administration Hospital Well. In an attempt to put these results into perspective, we will compare those groundwater sources with representative waters of our own system.

Gross Alpha Radioactivity: Samples to be tested for gross Alpha activity are to be collected for four consecutive quarters, and the results are to be averaged. The maximum contamination limit (MCL) for gross Alpha activity has been set at 15 pCi/litre by the Safe Drinking Water Act. However, should the activity exceed 5 pCi/l, further testing for radium isotopes is required.

All five groundwater samples provided by the Santa Monica Water Division were found to be less than 15 pCi/l, although the Charnock Well #12 exceeded 5 pCi/l. This one high result is not immediately significant, as it was only based upon a single grab sample. For comparison purposed, none of the domestic wells in our own system average more than 5 pCi/l and some range down to less than 0.5 pCi/l.

In comparing the Santa Monica Wells with surface water, we have chosen water collected at the Upper Van Norman Inlet as representative of our system. This sample site is comprised entirely of water from the Owens Valley and is transported via aqueduct through a series of open reservoirs until entering the

San Fernando Valley for delivery to our distribution system. Upper Van Norman Inlet is monitored monthly, and gross Alpha results from the past 12-month period range from 1.1 to 2.9 pCi/l, with an average of 2.3 pCi/l.

Based upon comparison with limits set by the Safe Drinking Water Act and with our own system, the data from the five Santa Monica samples do not indicate Alpha contamination.

Gross Beta Radioactivity: Gross Beta radioactivity is not normally required of groundwater sources, although it is required of surface sources which are served to more than 100,000 persons (30,000 service connections). Nevertheless, we do have considerable gross Beta data available from our well system for comparison purposes with the Santa Monica samples.

The Santa Monica samples range from 2.4 to 6.8 pCi/l, and this is not very different from the historical data of our own well systems which tend to run from 2 to 8 pCi/l. If we select Upper Van Norman Inlet as representative of surface water served to our distribution lines, the past 12 months range of 3.3 to 5.6 pCi/l, with an average of 4.5 pCi/l.

The limit imposed for gross Beta activity by the Safe Drinking Water Act is 50 pCi/l, and we observe that the Santa Monica samples are considerably below this limit. Thus, the Santa Monica samples show no evidence of contamination from Beta radioactivity.

Tritium: Tritium is not tested routinely on samples of our own groundwater, so direct comparisons among the Santa Monica wells and our own groundwater are not possible. It is not known whether any other water utilities have such data either, because current Federal and State environmental regulations do not require such testing. Any tritium testing of groundwater would be conducted on a voluntary basis only, and such data may not be forwarded to authorities even if available.

We have not been concerned with tritium, because there is no reason to suspect high H^3 radioactivity levels in groundwater. The three primary sources of tritium in the environment are 1) nuclear interactions in the atmosphere by the effects of cosmic rays; 2) residue from atmospheric testing of nuclear devices (fallout), although such testing has greatly reduced in recent years; and 3) small amounts of waste discharge from nuclear-powered facilities, both as gaseous and liquid forms. In all of these cases, it is not likely that tritium would contaminate groundwater supplies, unless it were injected intentionally into wells or large amounts of tritiated water were allowed to percolate into the ground.

However, tritium may be expected to affect surface water supplies, and we have been monitoring our major surface sources for approximately one year. The data from Upper Van Norman Inlet does not exceed 1550 pCi/l. For comparison purposes, the MCL prescribed by the Safe Drinking Water Act is 20,000 pCi/l.

In comparing the tritium results from the Santa Monica wells, we observe that these waters were below our detection limit. It is apparent that all waters were found to be considerable below the MCL for tritium. Thus, we observe no evidence of tritium contamination.

Carbon-14: Carbon¹⁴ is not monitored in our groundwater nor surface waters.

The Safe Drinking Water Act does not specifically identify C^{14} as a contaminant of major concern in water. However, Part 141.16(b) of that Act refers to some data in a 1963 monograph published by the U.S. Department of Commerce pertaining to permissible occupational exposure. Based upon the data from that monograph setting a lifetime dose of 300 microcuries with body fat as the critical organ, and assuming a daily water consumption of

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2 liters per day over a life span of 75 years, we calculate that the C^{14} MCL should be less than 5500 pCi/l.

All of the Santa Monica samples were found to contain less than 120 pCi/l. Therefore, we observe no evidence of unsatisfactory levels of radioactive carbon.

RK:js

cc: Jack Hogland
Skip Wetterau ✓
Joe Karbus
Mel Blevins
Tom Gibson (2)
Rod Kurimoto