

40-2051 (?)

MAY 7 1965

Mr. John T. Conway
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Conway:

Your letter of April 22, 1965, requested our comments on a communication from Mr. Earl F. Peterson of the Department of Radiological Health, University of Utah, to Senator Wallace F. Bennett, with an accompanying paper entitled "Radium Contamination at the Jordan River Delta of the Great Salt Lake" by Robert C. Pendleton, University of Utah, et al.

The Vitro Corporation of America uranium mill in Salt Lake City, Utah, which is the subject of Mr. Peterson's communication, is authorized under an AEC license to process uranium ore, and is currently operating. The solid tailings are located at the mill on property which is controlled by the licensee. As you know, licensees are required to maintain control of the tailings in accordance with their licenses and applicable AEC regulations, particularly 10 CFR, Part 20, "Standards For Protection Against Radiation." Information available to us from radiological surveys conducted by Vitro and the Commission indicates that concentrations of radioactivity in the Jordan River below the mill have been well within the radioactivity standards of 10 CFR, Part 20.

There are two misconceptions created by the paper which accompanied Mr. Peterson's letter. The first is that there is a radiation problem created by the Vitro mill. In fact, though the data presented are limited, they do not support any cause for concern from a radiation safety standpoint. For example, samples of carp bone from the Utah Lake at the mouth of the Provo River (34 miles upstream from the Vitro mill), showed equal or higher radium contents than did similar samples from the Jordan River in the vicinity of the Vitro mill.

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Mr. John T. Conway

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These results suggest that the levels of radium detected are in all probability largely attributable to natural background radioactivity. This point is fully reinforced by the results of analyses of water samples taken by Vitro on a regularly scheduled basis from the Jordan River upstream and downstream from the Vitro plant. These analytical results show an average radium content of 8×10^{-10} microcuries per milliliter (uc/ml) upstream vs an average value of 9×10^{-10} uc/ml found in samples taken downstream. The appropriate Part 20 limit is 300×10^{-10} uc/ml.

The second misconception arises from the author's statement that the wastes in storage at the uranium mill, presumably the Vitro mill, are estimated to contain more than 1000 curies of radium-226 and the implication that at some time in the future all or a substantial portion of this radium will be released to the Jordan River. It should be noted not only that this estimated quantity of radium is distributed throughout approximately 1,500,000 tons of solid tailings, resulting in a low concentration of radium-226 because of the large volume of tailings, but also that only about 2 percent of this radium is leachable by ground water. Furthermore, the tailings storage is located nearly a mile from the Jordan River; in an area where the average annual rainfall is approximately 15 inches, there is very little surface water available to wash the tailings to the river. It is our considered opinion, based on the evaluation of these data, that no radiation hazard is created by the tailings piles at the Vitro mill.

Mr. Peterson recommends that uranium mill tailings be incorporated in some of the large earth fills for construction of roads. We concur with Mr. Peterson's judgment that use of these tailings for fill in road construction would not cause radiation safety problems.

If Mr. Peterson would like to discuss these matters with us, we would be happy to meet with him.

If you desire further information on these matters, please let us know.

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Sincerely yours,

(signed) Harold L. Price

Harold L. Price
Director of Regulation

Enclosure:

10 CPK, Part 20

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Dear Mr. Conway:

In your letter of April 22, 1965, you requested our comments on a letter from Mr. Earl F. Peterson of the Department of Radiological Health, University of Utah, to Senator Wallace F. Bennett, with an accompanying paper entitled "Radium Contamination at the Jordan River Delta of the Great Salt Lake" by Robert C. Pendleton, University of Utah, et al.

In my letter to you of October 24, 1963, copy enclosed, we described the general situation regarding uranium mill tailings at closed mills. We discussed the survey programs and studies we had undertaken to determine whether solid tailings at closed mills should, from the radiological safety standpoint, be the subject of Commission control and whether the Commission had legal authority to regulate the tailings. These studies are nearing completion. We also provided similar information to the State Health Departments of the States in which uranium mills are located.

The Vitro Corporation of America uranium mill in Salt Lake City, Utah, in which Mr. Peterson has expressed interest, is authorized under an AEC license to process uranium ore. This mill has not been closed. The solid tailings are located at the mill on property which is controlled by the licensee. As you know, licensees are required to maintain control of the tailings in accordance with their licensees and applicable AEC regulations, particularly 10 CFR, Part 20, "Standards For Protection Against Radiation." Information available to us from radiological surveys conducted by Vitro and the Commission indicates that concentrations of radioactivity in the Jordan River below the mill have been well within the radioactivity standards of 10 CFR, Part 20.

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We have reviewed the paper which accompanied Mr. Peterson's letter and believe there are two principal comments which should be made regarding the information presented in the paper. The first is that even though the data presented are quite limited, they do not appear to indicate any cause for concern from a radiation safety standpoint. For example, samples of carp bone from the Provo River which is indicated as being 34 miles upstream from the Vitro mill showed higher radium results than similar samples from the Jordan River in the vicinity of the Vitro mill. These results suggest that the levels of radium detected are in all probability attributable to natural background radioactivity. It is noted that information on natural background radioactivity levels is lacking for the other type samples reported on in the paper.

The second comment concerns the author's statement that the wastes in storage at the uranium mill, presumably Vitro, are estimated to contain more than 1000 curies of radium-226. It should be noted that this estimated quantity of radium is distributed throughout approximately 1,500,000 tons of solid tailings, resulting in a low concentration of radium-226 because of the large volume of tailings. By comparison, the oceans are estimated to contain about 420,000,000 curies of radium but the concentration of radium in the oceans is also quite low because of the large volume of water.

If you desire further information on these matters, please let us know.

Sincerely yours,

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~~Harold L. Price~~
Harold L. Price
Director of Regulation

Enclosure:

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