

Radioactive waste remains under Lot 10

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J. M. LE MOINE
STAFF WRITER

Throughout the late 1950s and 1960s Tech students took the Radiochemistry class offered by Dr. Royal Makens of the Chemistry and Chemical Engineering Department. The laboratory for this class was in the chemical engineering annex of Koenig Hall. The hall no longer exists, but the building once stood behind the ME-EM building. In this facility the students performed experiments and observed demonstrations to learn about the properties of radioactive elements. When the experiments were completed, a whole host of radioactive wastes remained. Makens' solution for these wastes: bury them in the parking lot out back.

The parking lot was adjacent to Engineers' Field, where the football team practiced. This field was behind the Sherman Gymnasium which once stood near where the Walker Arts and Humanities Center stands today. According to a 1972 memo, from "May 1958 through May 1962 burials of radioactive waste were made six feet deep" at the very easternmost edge of the parking lot.

Leo Archambeau, former Superintendent of Buildings and Grounds, recorded three of the burials in his field notes. Burials occurred on July 25, 1961; October 6, 1961, and July 6, 1962. At least six other burials are believed to have occurred in the general area. Former Landscape Supervisor Bill Bennetts recalled burials as recent as 1965, but no records exist to substantiate this.

Since the burials, the Sherman Gymnasium has been torn down, Engineers' Field has been made into a parking lot, and the existing parking lot has expanded. The location of the buried radioactive waste is now in the center of student Parking Lot 10.

Memos by University Radiation Safety Officer Donald Daavettila indicate that the buried radioactive wastes consist of carbon-14, cobalt-60, iron-55, radium-226, and tritium, radioactive hydrogen-3. A mixture of these materials was buried in various sized glass containers of up to one gallon. The containers had glass stoppers, and to prevent breakage, some containers were placed in six inch by 12 inch by 12 inch concrete blocks.

Daavettila calculated that by natural de-

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cay, the iron and cobalt are essentially non radioactive, the tritium has decayed by 80 percent, and the carbon and radium remain virtually unchanged.

Makens' disposal method would not be acceptable by modern standards. However, unmarked burial of this amount of radioactive material was within the Michigan Department of Public Health regulations for 1958 to 1965. These regulations state that the burials must be "at a minimum depth of 4 feet, and successive burials are separated by distances of at least 6 feet and not more than 12 burials are made in any year."

Modern standards, as stated by the Nuclear Regulatory Commission allow different forms of disposal for the radioactive materials. The carbon-14, in solution, would be disposed of in the ordinary sewer system. The cobalt-60, iron-55 and radium-226 would all be shipped to a licensed land disposal facility. Tritium, in the amount buried, is not regulated by the NRC.

Today, researchers at the University are using radioactive

materials as labels for experiments in the Biological Sciences and Forestry Departments, and in equipment used in Chemistry and Civil/Environmental Engineering. Labeling materials include phosphorus-32, phosphorus-33 and sulfur-35. These materials have half-lives less than 90 days, and by NRC regulations can be kept on site until they are no longer detectable as radioactive.

Other labeling materials include carbon-14 and tritium; these are used in amounts that are sewerable as permitted by the NRC. The total amount of radioactive materials that the University is licensed to possess each year is one-fifth the maximum amount of radioactivity that the NRC would allow to be disposed of in the ordinary sewer. For perspective, the amount of radioactive material presently buried under Lot 10 is one-fifth of the amount that the University is licensed to possess each year.

In January 1980, the State of Michigan Department of Public Health made radium-226 disposal a top priority. According to Daavettila, it was their "mission

to collect the radium sources from everywhere and have them properly disposed of."

Radium is a decay product uranium, and has a half life of 1620 years. It is responsible for forming radon gas.

Until the 1970's radium was used commonly in glow-in-the-dark paint, for watches, instruments and medical treatment. It is still used to treat some forms of cancer. The radium for these uses was casually stored until the 1980 State survey.

At that time, the State reviewed the history of radioactive waste burial at the University and agreed that the amount of radium buried beneath parking lot 10 was not sufficient to pose significant health risks. As such the State did not deem it necessary to warrant marking the site nor to exhume the wastes.