



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

October 6, 2016

Current Owner
Select Medical Property Ventures
PO Box 92129
Southlake, TX 76092

**SUBJECT: EVANSVILLE RADIUM INSTITUTE – REQUEST FOR INITIAL SITE VISIT AND
TO PERFORM RADIOLOGICAL SURVEYS**

Dear Current Owner:

I am writing to inform you that our records indicate that your property at 412 South East 4th Street, Evansville, Indiana, is a site where radium-226 was previously used. Specifically, a building that was previously on your property was used as a Sanitarium, wherein radium was used to treat patients. If you are not the current owner of the property, please let us know whom we should contact. Radium-226 is a radioactive isotope that, in certain quantities, may pose a risk to public health and safety. Radium-226 is regulated by the U.S. Nuclear Regulatory Commission (NRC). We do not know whether there is a current radiological issue at your property, and it is important that you contact us at your earliest convenience. We are requesting access to your property to perform radiological surveys and to collect samples to determine whether there is any residual contamination resulting from this historical use of radium on your property. This testing will not damage your property and these tests will be conducted at no cost to you. If residual contamination at your property has already been remediated, please provide us with records describing cleanup activities and the status of the remediation.

To successfully complete our tests, we need to schedule an initial visit. The initial site visit will serve two purposes: 1) to determine whether there is any readily detectable radium contamination; and 2) to allow us to start planning a scoping survey, if needed. During our initial site visit we will determine if a follow-up scoping survey is necessary. The scoping survey will involve a more detailed radiological survey to determine if there is any residual contamination. After each visit, we will share results with you as soon as they are available.

These tests will determine whether your site requires remediation to remove residual contamination. Should remediation be required, we will provide additional information on any actions that may be necessary to ensure protection of public health and safety. Please be aware that under the NRC's regulations, site owners are responsible for the costs associated with these remediation activities; as a regulatory agency, the NRC cannot provide funding. This does not, however, preclude site owners from using alternative legal options that may be available under State or Federal law to fund remediation activities. We recognize that you may not be aware of historical radium use at your site and we will continue to work with you to address and resolve this matter.

The enclosed Site Summary Report provides all of the information that the NRC has concerning historical radium storage at your property, which we found through a search of publicly available

information. The enclosed Backgrounder provides more detail on the history of radium use and its potential health effects. The enclosed brochure provides an overview of the NRC.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

We would like to work with you to schedule our initial site visit and answer any questions you might have. At your earliest convenience, please contact Mr. Matthew Meyer, Acting Chief, Materials Decommissioning Branch, Division of Decommissioning, Uranium Recovery and Waste Programs, Office of Nuclear Materials Safety and Safeguards, at (301) 415-6198, or Mr. Kenneth Kalman, Project Manager, at (301) 415-6664.

Sincerely,


John R. Tappert, Director
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 3038954

Enclosures:

1. Site Summary Report
2. Radium Backgrounder
3. U.S. Nuclear Regulatory Commission *Overview*

REGISTERED LETTER – RETURN RECEIPT REQUESTED

Evansville Radium Institute: Site Summary

The following information was extracted from public records.

Address

412 SE 4th Street, Evansville, IN (historic address for this location is 710-712 South/Upper Fourth Street)

Site Description/History

A 1921 advertisement states "For the treatment of malignant and benign growths, the post-operative prophylactic treatment of malignant conditions, and the treatment of certain skin condition. An adequate quantity of radium for the proper treatment of the conditions indicated is guaranteed" (Journal of Indiana State Medical Association, 1921).

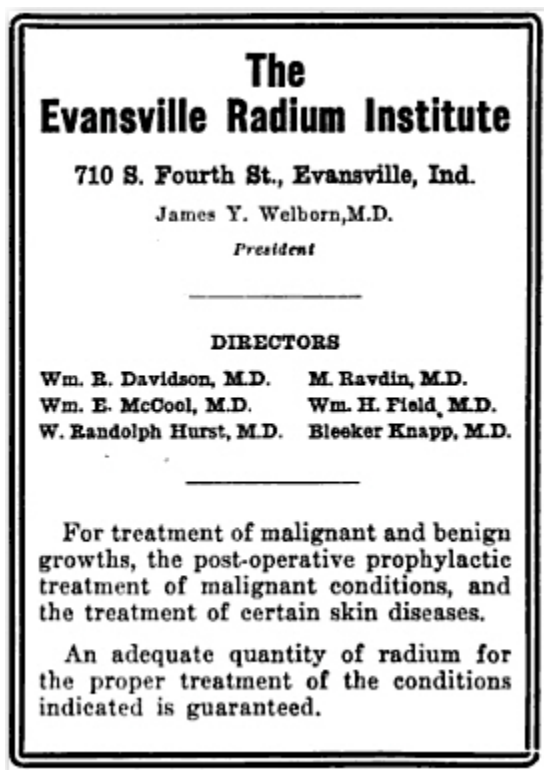


Figure 1. Advertisement from Journal of Indiana State Medical Association (1921)

It is assumed, in this site summary, that the Evansville Radium Institute was part of the Evansville Sanitarium, which was located at 712 Upper Fourth Street and advertised the same doctor, James Welborn practicing at both the Institute and Sanitarium.

According to Historic Evansville (2015), the Evansville Sanitarium was founded in 1894 by Edwin Walker. By 1917, Dr. Walker bought the entire block of Upper Fourth Street between Cherry and Oak and the Sanitarium was known as the Walker Hospital. Dr. James Welborn was an associate of Dr. Walker; therefore, in 1933, the facility was renamed the Walker-Welborn Hospital. The original 3-story sanitarium was torn down in 1957 for additions to the hospital. The Walker-Welborn Hospital closed in the 1990s and is today the Select Specialty Hospital.

According to Historic Evansville (2015), the streets in downtown Evansville were renumbered in 1925 due to rapid city growth. As a result, the former address of 710-712 South/Upper 4th is now 412 SE 4th Street.

Based on the advertisement in Figure 1, it is assumed that radium was present at the original facility. The original facility was demolished in 1957, but the soil may be contaminated with radium.

The amount/extent of radium contamination at these sites (including historical information and/or informed assumptions about the radium facilities' structures/areas, processes, and activities)

According to Dr. Paul Frame, a consultant retained to peer-review the results of this work, this facility almost certainly employed purified radium sources; however, these would have been sealed sources. The potential for contamination due to source leakage exists, but considering the source was sealed, the level of concern would be low to moderate (Frame, 2015).

Summary of Current Radium Levels:

As of November 2015, current levels of radium are unknown based on information reviewed for this report.

Location and population near the sites

In order to locate the exact location of the former facility, a 1910 Sanborn Fire Insurance map (Historic Evansville, 2015) was overlaid on a high resolution aerial photo from 2006. The resulting image is Figure 2. The map shows the location of the Evansville Sanitarium at 712 South (Upper) Fourth Street. (It is assumed in this site summary that the Evansville Radium Institute at 710 South Fourth Street was part of the Evansville Sanitarium based on the adjacent addresses and identical advertised doctor.)

When Evansville streets were renumbered in 1925 (Historic Evansville, 2015), 710-712 Upper Fourth Street became 412 SE 4th Street. This address is currently located in an industrial area of Evansville, IN; however, the location is only 1 block away from residences to the west and 2 blocks away from residences to the south (see Figure 4).

Evansville is the commercial, medical, and cultural hub of Southwestern Indiana and the Illinois-Indiana-Kentucky tristate area. It is the third-largest city in the state of Indiana and the largest city in Southern

Indiana. According to the 2010 U.S. census, the population of Evansville was 117,429; the 2014 population estimate for the city was 120,346 (United States Census Bureau, 2015).



Figure 2. Location of the Evansville Radium Institute (710 Upper Fourth St, see red arrow) and the Evansville Sanitarium (712 Upper Fourth St). The current address is now 412 SE 4th Street. Image created by overlaying a Sanborn Fire Insurance map from 1910 (yellow and pink buildings) onto a 2006 aerial photo.



Figure 3. Enlargement of Figure 2, showing the location of Evansville Radium Institute (red arrow) and Evansville Sanitarium in 1910.

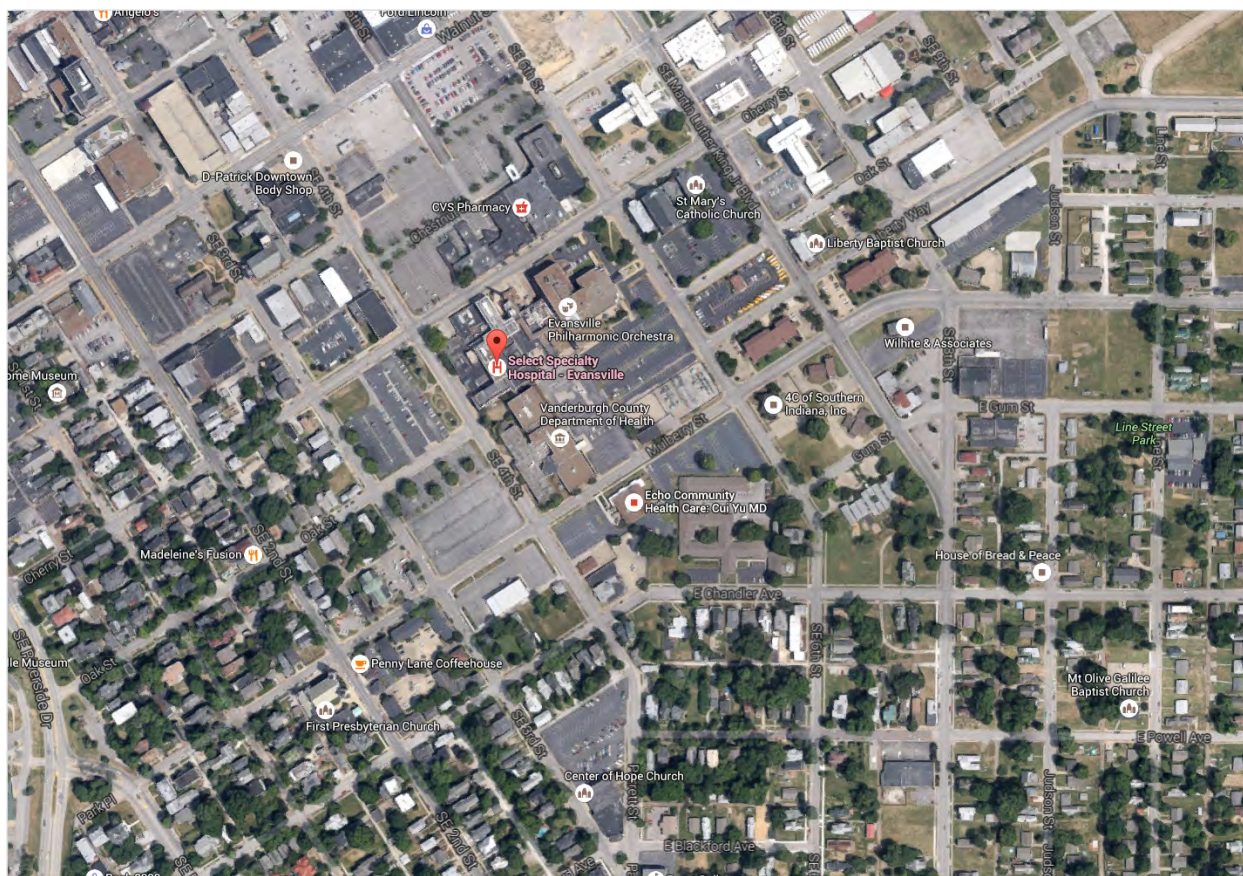


Figure 4. Location of former Evansville Radium Institute (710 Upper Fourth St) and Evansville Sanitarium (712 Upper Fourth Street), now location of Select Specialty Hospital (412 SE Fourth Street) (Google Earth, 2015)

Current State/other Federal involvement

As of November 2015, no information about radium contamination or radium cleanup was located in the public records.

Current access, activities, and uses at the site

The original facility, at 710/712 Upper Fourth Street (which became 412 SE 4th Street in 1925) was demolished in 1957. Currently, the site is occupied by the Select Specialty Hospital, known for providing specialty inpatient acute care.

Existing Engineering Controls

There are no engineering controls in place.

Prioritization Ranking

Radium is confirmed to have been present at the site based on historical documentation that radium was used at the facility. The original building has been demolished. The site consists of soil that is potentially contaminated by radium. The site is occupied or frequented by visitors. Therefore, the site is classified as Tier 1.

References

Frame, Paul. 2015. Types of Radium Sources Used in Medicine. May 14, 2015.

Google Earth. 2012. Accessed June 4, 2015. <https://www.google.com/maps/>.

Historic Evansville. 2015. Accessed October 2015. 1910 Sanborn Map, Volume II.
http://historicevansville.com/sanborn_detail.php?yr=1910&vol=2&id=163

Journal of the Indiana State Medical Association. 1921. Advertisement for Evansville Radium Institute. Vol 14, p. xviii.

Propertyshark.com. Accessed June 4, 2015.
http://www.propertyshark.com/mason/Lookup/resolve4.html?location=evansville%20in&search_token=800%20southeast%20fourth%20st.

United States Census Bureau. Accessed October 2015.
<http://quickfacts.census.gov/qfd/states/18/1822000.html>.

Radium

Radium was one of the first radioactive elements ever discovered. Marie and Pierre Curie unlocked the atom's secrets in 1898, opening the door for important innovations using radioactivity in medicine and industry. Radiation quickly became a consumer and medical sensation and radium was the posterchild. Experts concluded radiation was a lifesaver after finding it reduced tumor growth and was present in the waters at some health spas. Soon there were many radium products on the market that purported to improve health and vitality. But tragic stories began to emerge of the health impacts. Perhaps the most well-known is the "radium girls," who painted watch faces with glow-in-the-dark radium paint and developed infections and jaw cancer from licking their brushes into fine points.

Early regulation

When evidence of harm began to emerge in the early 1900s, the states each made their own decisions about how to regulate. Courts also took varying approaches on victim compensation. The federal government took action to guard against false advertising and regulate mail shipments, conducted studies, and organized some voluntary protections.

As radioactive materials became more widely available following World War II, they remained largely under state control. Radium use declined in medical and consumer products in favor of other safer materials.

Regulation today

Work on securing radioactive materials took on new urgency following the terrorist attacks on the United States in September 2001. Those attacks prompted the International Atomic Energy Agency to develop a code of conduct in 2004 to limit the potential for malicious acts. That code places one form of radium, known as radium-226, and other radioactive materials into categories based on their quantity and potential hazard.

The NRC has specific security requirements tied to these categories. As support for the IAEA code grew, Congress passed the Energy Policy Act in 2005, giving the NRC authority over radium-226. This law marked the first time the federal government had a comprehensive role in ensuring the safe use of radium-226.

Many states had developed strong programs for regulating radium and other naturally-occurring radioactive materials and it took time to transition authority. The NRC had regulations in place and fully assumed oversight in 2009. Initially, NRC staff worked exclusively with the military to identify sites

where radium might be present. These discussions made clear that the NRC's role would include ensuring that sites where radium was used are maintained in a way that protects public health and safety.

In 2016, the NRC and Department of Defense signed a [Memorandum of Understanding \(MOU\)](#) describing roles in the cleanup of radium and other unlicensed radioactive materials at military sites. The MOU and a [Regulatory Issue Summary](#) clarify NRC's jurisdiction over military radium. In late 2016, the NRC began monitoring two sites under the MOU: Treasure Island Naval Station in San Francisco and Dugway Proving Ground in Utah.

In 2013, the agency learned of two commercial sites where radium-226 had been found and other federal agencies had gotten involved. The Environmental Protection Agency was overseeing portions of the Waterbury Clock Company in Connecticut. The National Park Service was overseeing Great Kills Park in New York.

NRC staff is working with the current owner of the Waterbury Clock Company site. Contaminated areas of the site are under EPA oversight through its Brownfields Program, which provides assistance to clean up contaminated properties. NRC staff is working with EPA to clarify oversight roles and responsibilities under that program.

In 2016, NRC staff began developing an MOU with the National Park Service that will also clarify the NRC's jurisdiction over radium at Great Kills Park. The NRC is monitoring cleanup activities that the Park Service is implementing under Superfund, more formally known as the Comprehensive Environmental Response, Compensation and Liability Act.

Those projects prompted a search to identify sites in NRC's jurisdiction where radium was used, and to find out how much, if any, cleanup was done. This search was not a result of any known health and safety issues. Rather, because of its mandate to protect public health and safety, the NRC wanted to be sure there were no additional sites that might pose a risk.

With the help of the Oak Ridge National Laboratory, the NRC began to develop a fuller picture of commercial radium use. The lab produced a [catalog](#) of the various products developed and sold to the public in the early 20th century. By reviewing publicly available records, Oak Ridge identified sites where radium may have been used to make consumer goods. Then the lab looked for any cleanup records. Oak Ridge transmitted the results to the NRC in November 2015. Since that time, the agency has been working on plans to gather more information about those sites.

The NRC is working with state and local governments to identify any additional records that may help clarify whether any site cleanup has taken place. The goal is to ensure that public health and safety is adequately protected at these sites.

October 2016

OTHER KEY OFFICES

- ◆ The **Office of Enforcement** develops policies and programs to enforce NRC requirements. Enforcement action is used as a deterrent to emphasize the importance of compliance with regulatory requirements and to encourage prompt identification and prompt, comprehensive correction of violations. The office manages major enforcement actions against licensees, and assesses the effectiveness and uniformity of enforcement actions taken by NRC regional offices. Enforcement powers include notices of violations, fines, and orders to modify, suspend or revoke a license. Two separate offices are responsible for investigations.
- ◆ The **Office of Investigations** conducts investigations of licensees, applicants, contractors and vendors. The office investigates all allegations of wrongdoing by individuals or organizations other than NRC employees and NRC contractors. In addition, the office keeps abreast of inquiries and inspections and advises on the need for formal investigations. It also keeps other components of the agency informed of matters under investigation as they affect safety.
- ◆ The **Office of the Inspector General** is a statutory post mandated by the Inspector General Amendments Act of 1988. The office conducts independent reviews and appraisals of internal NRC programs and conducts investigations of alleged wrongdoing by NRC employees and contractors.

Office of Public Affairs

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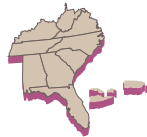
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Regional Public Affairs Offices



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NUREG/BR-0099, Rev. 14
June 2016

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U.S. Nuclear Regulatory Commission Overview



NRC MISSION

The NRC licenses and regulates the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment. Specifically, the NRC regulates commercial nuclear power plants; research, test and training reactors; nuclear fuel cycle facilities; and the use of radioactive materials in medical, academic and industrial settings.

The agency also regulates the transport, storage, and disposal of radioactive materials and waste, and licenses the import and export of radioactive materials. While the NRC only regulates industries within the United States, the agency works with agencies around the world to enhance global nuclear safety and security.

STATUTORY AUTHORITY

The Energy Reorganization Act of 1974 created the NRC from the Atomic Energy Commission. The new agency was to oversee — but not promote — the commercial nuclear industry. The agency began operations on January 18, 1975. The NRC's regulations can be found in Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR).

The NRC, its licensees (those licensed by the NRC to use radioactive materials), and the Agreement States (States that assume regulatory authority over use of certain nuclear materials) share a responsibility to protect public health and safety and the environment. Federal regulations and the NRC's regulatory program are key, but the primary responsibility for safely handling and using these materials lies with the licensees.



ORGANIZATIONS AND FUNCTIONS

The NRC's Commission is made up of five members nominated by the President and confirmed by the U.S. Senate for 5-year terms. The President designates one member to serve as Chairman. The Chairman acts as the principal executive officer and spokesperson of the agency. The members' terms are staggered so that one Commissioner's term expires on June 30 every year. No more than three Commissioners can belong to the same political party.

The Commission formulates policies and regulations governing nuclear reactor and materials safety, issues orders to licensees, and adjudicates legal matters. The Executive Director for Operations carries out the policies and decisions of the Commission, and directs the activities of the program and regional offices. The NRC has about 3,600 employees and an annual budget of about \$1 billion.

The NRC is headquartered in Rockville, Md., and has four regional offices. The **Regional Offices** conduct inspection, enforcement (in conjunction with the Office of Enforcement), investigation, licensing, and emergency response programs. At least two NRC employees, called Resident Inspectors, are assigned to, and work out of, each nuclear power plant. The NRC also has a Technical Training Center in Tennessee.

The major program offices within the NRC include:

- ◆ **The Office of Nuclear Reactor Regulation.** Handles all licensing and inspection activities for existing nuclear power reactors and research and test reactors.
- ◆ **The Office of New Reactors.** Oversees the design, siting, licensing, and construction of new commercial nuclear power reactors.
- ◆ **The Office of Nuclear Security and Incident Response.** Oversees agency security policy for nuclear facilities and users of radioactive materials. It provides a safeguards and security interface with other Federal agencies and maintains the agency's emergency preparedness and incident response program.



- ◆ **The Office of Nuclear Material Safety and Safeguards.** Regulates activities and oversees the regulatory framework for the safe and secure production of commercial nuclear fuel and the use of nuclear material in medical, industrial, academic and commercial applications; uranium recovery activities; and the decommissioning of previously operating nuclear facilities. It regulates safe storage, transportation, and disposal of high- and low-level radioactive waste and spent nuclear fuel. The office also works with Federal agencies, States, and Tribal and local governments on regulatory matters.
- ◆ **The Office of Nuclear Regulatory Research.** Provides independent expertise and information for making timely regulatory judgments, anticipating problems of potential safety significance, and resolving safety issues. It helps develop technical regulations and standards and collects, analyzes, and disseminates information about the safety of commercial nuclear power plants and certain nuclear materials.

Three independent groups serve the Commission:

- ◆ **Advisory Committee on Reactor Safeguards,** mandated by statute, is a committee of scientists and engineers independent of NRC staff. They review and make recommendations to the Commission on all applications to build and operate nuclear power reactors, the safety aspects of nuclear facilities and the adequacy of safety standards. This includes update license amendments and license renewals.
- ◆ **Advisory Committee on the Medical Uses of Isotopes** is made up of physicians and scientists who consider medical questions and, when asked, give expert opinions to the NRC on the medical uses of radioactive materials.
- ◆ **Atomic Safety and Licensing Board Panel** provides a way for the public to get a full and fair hearing on civilian nuclear matters. Individuals who are directly affected by licensing action involving certain facilities producing or using nuclear materials may submit a request to participate in a hearing before these independent judges.

information. The enclosed Backgrounder provides more detail on the history of radium use and its potential health effects. The enclosed brochure provides an overview of the NRC.

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Sincerely,

/RA/

John R. Tappert, Director
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 3038954

Enclosures:

1. Site Summary Report
2. Radium Backgrounder
3. U.S. Nuclear Regulatory Commission *Overview*

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