

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

December 19, 2016

Current Owner Bristol Instrument Gears, Inc. P.O. Box 9248 Forestville, CT 06010

### SUBJECT: SESSIONS CLOCK COMPANY-2 – 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 164 Central Street, Bristol, Connecticut, is a site where radium-226 was previously used in the manufacturing of clocks with luminous radium dials. 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 understand that surveys were previously performed by other entities; however, we were unable to locate complete records for those surveys. 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 the historical manufacturing 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 manufacturing 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. Based on this information, your property located at 164 Central Street, Bristol, Connecticut appears to have been part of the original Sessions Clock Company Factory complex. 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 <a href="http://www.nrc.gov/reading-rm/adams.html">http://www.nrc.gov/reading-rm/adams.html</a>.

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. Theodore Smith, 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. David Misenhimer, Project Manager, at (301) 415-6590.

Sincerely,

### /RA A. Kock for/

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

Docket No.: 3039005

Enclosures:

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

**REGISTERED LETTER – RETURN RECEIPT REQUESTED** 

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NAME	RChang	CHolston	R. Powell*	OMikula	MMeyer	JTappert
	-					(A. Kock for)
DATE	11/08/2016	11/08/2016	11/16/2016	12/07/2016	12/09/2016	12/19/16

**OFFICIAL RECORD COPY** 

### Sessions Clock Company: Site Summary

The following information was extracted from public records and the "CT File.PDF" (CT-DEP, 2009).

### Address

61 East Main St., Bristol, CT

### Site Description/History

According to CT DPH (1998), the former Sessions Clock Factory used radium in their clock production. Radium was used in painting dials on clocks because it makes paint glow in the dark. It was believed to be used from the early 1900's through the 1940's in the production of clocks.

The former Sessions Clock Factory complex consists of the seven factory buildings still standing, the original two story office building, a boiler building, and a two bay truck garage. Construction of this complex was begun in 1899 and completed by April of 1890. In 1903, the Sessions Clock Company began operation and produced mantle and kitchen clocks. In 1958, the company was sold and the new company continued to produce clocks until 1968 (ATSDR, 1999).

In 1960, one of the buildings was sold to the Bristol Instrument Gears Company. In 1970, the remaining buildings were sold to Dabko Industries, a machine parts manufacturer. The following companies were housed in the Sessions Clock Company buildings in 1999: Bristol Instrument Gears, Dabko CO., NuTECH (first floor of Building A and second floor of Building B), CT Graphics (first floor of Building D), and C&R Printing (second floor of Building X). One floor in each of buildings 'A', 'B', 'D', and 'X' was rented to other businesses. In all seven factory buildings, the top floor was used for long term storage. The lower two or three floors in each building that were not rented out were mostly used as machine shops (see Figures 1-5).

Currently, Building J is occupied by two certified public accountants. While the other buildings appear vacant and many windows are boarded, there are several cars parked by some of the entrances. Also, there are many thriving plants on a porch at building A, indicating that some of the buildings may be occupied.



Figure 1. Sessions Clock Company-Buildings J and D (Google Earth, 2015) (Image from October 2012)



Figure 2. Sessions Clock Company-Building X (Google Earth, 2015) (Image from October 2012)



Figure 3. Sessions Clock Company-Buildings C and V (Google Earth, 2015) (Image from October 2012)



Figure 4. Sessions Clock Company-Buildings A and B (Google Earth, 2015) (Image from October 2012)

### 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)

In 1998, the US EPA contacted the Agency for Toxic Substances and Disease Registry (ATSDR) to assist in conducting a public health assessment of structures that once housed clock factories in four Connecticut municipalities. The purpose of the health assessment was to evaluate the radiological survey data previously collected by the Connecticut Department of Environmental Protection (CT-DEP) at structures that once housed clock factories and to determine whether a public health hazard exists at any of these sites from the radiological contamination. The CT DEP requested assistance from the US Department of

Energy (DOE) in conducting radiological surveys of the structures that once housed clock factories. The surveys were completed in April of 1998.

For the former Sessions Clock Company buildings (occupied by Bristol Instrument Gears, Dabko CO., NuTECH, CT Graphics, and C&R Printing at the time of the 1998 survey), the 1999 ATSDR Public Health Assessment reported radiation in two locations above the EPA risk-based cleanup level in two buildings (Table 1). The locations included: a storage area on the fourth floor of building A (Dabko) and an area designated as an old storage area on the third floor of building D (Dabko). One area of the first floor of the Bristol Instrument Gears building had radiation levels at the EPA risk level (ATSDR, 1999).

Current Occupant	Location	Floor	Direct Contact (µR/hr)	Highest Exposure (µR/hr)	Waist Level (µR/hr)	Background Level (μR/hr)	EPA Cleanup Level
Bristol Instrument Gears	n/a	1	15		12	5	15
Dabko	Building A	2		0		NR	15
Dabko	Building D	2		0		NR	NR
Dabko	Building A	3		0		NR	15
Dabko	Building D	3		40		NR	NR
Dabko	Building A	4		120		NR	15

Table 1. 1998 Radiological Survey Results at former Sessions Clock Company Buildings (ATSDR, 1999)

The ATSDR (1999) Public Health Assessment (PHA) concluded that radiological contamination was detected at levels that may pose a public health hazard to occupants of the former Sessions Clock Company buildings; however, ATSDR stated that none of the radiation levels detected pose an immediate health problem. The Connecticut Department of Public Health recommended that individuals be disassociated from areas with radiation at levels exceeding 15 mrem/year.

In 2003, the Valley Council of Governments (in Derby CT) contracted with Scientech Inc. to provide radiological surveys in former clock factory buildings in the townships of Waterbury, Bristol and Thomaston as part of the Connecticut Radium Decontamination and Decommissioning Project. Surveys in the former Sessions Clock buildings conducted by Scientech identified radiological contaminated areas in the fourth floor of Building A, the fourth floor of Building B, and on the third floor of Building D. Dabko was identified as the occupant of the buildings at the time of the 2003 radiological survey. Radiological survey data consisted of background counts per minute and maximum gross contact counts per minute and are presented in Table 2. (Note: Additional details of the 2003 Scientech radiological surveys are not known. Only data for the fourth floor of building D, Dabko, was provided in a tabular format.)

### Table 2. 2003 Radiological Survey Results for the former Sessions Clock Building (Scientech, 2003)

Photo Page	Town	Building	Location	Contamination Area	Surface	Approximate Area Size	Background Counts	Maximum Gross Counts (on contact)	Estimated 18" Count
1000	Bristol	Dabko, Building B	Fourth Floor	Chicken coop- U-shaped area around cage and into cage	Carpet over lay subflooring	69 ft x 5 ft, 35 ft x 10 ft, 57 ft x 5 ft	8,000	30,000	

### 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

The location of the former Sessions Clock Company is seen in Figure 6. While the facility is located in an industrial area, there are residential areas (Figure 6) within close proximity to the former clock company.

Bristol is a suburban city located in Hartford County, Connecticut, 20 miles southwest of Hartford. According to the 2010 U.S. Census, the population of Bristol was 60,477; the 2014 population estimate for the city was 60,570 (United States Census Bureau, 2015).

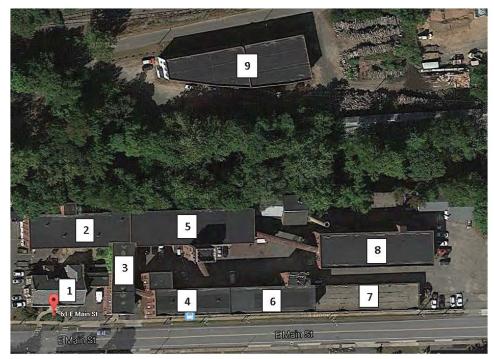


Figure 5. Location of Sessions Clock Company Buildings (1 – Building J; 2 – Building X; 3 – Building D; 4 – Building A; 5 – Building W; 6 – Building B; 7 – Building C; 8 – Building V; 9 – Bristol Instrument Gears) (Google Earth, 2015)



Figure 6. Location of Sessions Clock Company and the surrounding population (Google Earth, 2015)

### Current State/other Federal involvement

In 2001, the CT State Bond Commission approved \$750,000 to support cleanup of radioactive material found at old clock factory sites in Bristol, New Haven, Thomaston and Waterbury. It is unknown if any of these clean-up funds were allocated to the former Sessions Clock Company site.

### Current access, activities, and uses at the site

Building J is occupied by two certified public accountants and therefore will have regular employees and visitors in the building.

As of 2015, it is unclear whether Dabko Industries and Bristol Instrument Gears still own the other buildings. The three businesses (CT Graphics, NuTECH, and C & R Printing) that were renting office space in 1999 at Buildings 'A', 'B', 'D', and 'X', however, appear to no longer be present. While it is assumed that these buildings are now vacant, there are several cars and plants in the photo that may indicate otherwise.

### **Existing Engineering Controls**

Images from Google Earth (October 2012) indicate that there no existing controls, such as signs, fences, and/or restrictions, at the site (Figures 1-4).

### **Prioritization Ranking**

Radium is confirmed to have been present at the site based on historical documentation and radiological surveys. The site consists of buildings that are potentially contaminated by radium. The buildings are occupied or occupancy is unknown. Site access is not controlled. Therefore, the site is classified as Tier 1.

### References

ATSDR. Public Health Assessment, Public Health Implications of Radiations Contamination at Former Clock Factories Located in Bristol (Hartford County), New Haven (New Haven County), Thomaston (Litchfield County), and Waterbury (New Haven County) Connecticut. January 29, 1999. Available at: <a href="http://www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=959&pg=0">http://www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=959&pg=0</a>.

CT-Department of Environmental Protection (DEP). 2009. Correspondence from CT-DEP to NRC NMSS. Collection of pdf documents about Connecticut Clock Companies. Document dates range from 1998-2004. CT File.pdf, 1806 pages.

CT Department of Public Health (DPH). 1998. Former Clock Factory Sites in Bristol: Q & A About Radium. October 1998.

http://www.ct.gov/dph/lib/dph/environmental health/eoha/atsdr/bristolradiumfactsheet.pdf.

Google Earth. Accessed February 2015. https://www.google.com/maps/.

Scientech 2003. Connecticut Radium Sites Verification Survey for the Valley Council of Governments, Connecticut Radium Decontamination and Decommissioning Project. Scientech, Inc. 143 West Street, New Milford, CT 06776. October 24, 2003.

United States Census Bureau. Accessed October 2015. http://quickfacts.census.gov/qfd/states/09/0908420.html.

Site_Name	Source_date	Title	Pages
Sessions Clock Company	unknown	C&R Printing information	238
Sessions Clock Company	unknown	Clock Factory Contacts	
Sessions Clock Company	unknown	Dabko Co.	235
Sessions Clock Company	1999	Document number 82A9499	511-514
Sessions Clock Company	January 29, 1999	PUBLIC HEALTH ASSESSMENT; PUBLIC HEALTH IMPLICATIONS OF RADIATION CONTAMINATION AT FORMER CLOCK FACTORIES LOCATED IN BRISTOL (HARTFORD COUNTY), NEW HAVEN (NEW HAVEN COUNTY), THOMASTON (LITCHFIELD COUNTY), AND WATERBURY (NEW HAVEN COUNTY) CONNECTICUT	1578-1619
Sessions Clock Company	unknown	Session information	236-237; 1378

Summary of Sessions Clock Company Information in "CTfile.pdf" (CT-DEP, 2009).



### BACKGROUNDER Office of Public Affairs

301.415.8200 www.nrc.gov opa.resource@nrc.gov

### 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 <u>Memorandum of Understanding (MOU)</u> describing roles in the cleanup of radium and other unlicensed radioactive materials at military sites. The MOU and a <u>Regulatory Issue Summary</u> 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 <u>catalog</u> of the various products developed and sold to the public in the early 20<sup>th</sup> 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**

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

# Office of Public Affairs

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# **Regional Public Affairs Offices**



### Region II

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### Region III

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## Region IV

Arlington, TX 76011-4511 1600 E. Lamar Blvd (817) 200-1128



## STAY CONNECTED



## **U.S. Nuclear Regulatory** Commission

Dverview



### 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. Stanate for 5-year terms. The President designates one member to serve as Chairman acts as the principal executive officer and spokesperson of the principal executive officer and spokesperson of the gency. 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, sitting, 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 finel 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 finel. 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 Safegnards, 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 adequasy of safety standards. This includes uprate 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 facilites producing or using nuclear materials may submit a request to participate in a hearing before these independent judges.