

Non-Military Radium sites

And what do you do when you find one?

Progress Update: August, 2018

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Non-Military Radium

- ▶ The United States Nuclear Regulatory Commission (NRC) initiated a national investigation of sites where radium may have been used or stored in the past.
- ▶ The NRC identified 26 sites in New Jersey.
- ▶ NJDEP initial review indicated 12 were already remediated or part of a U.S. EPA Superfund site.
- ▶ Preliminary drive-by: Nothing found
- ▶ Contact by letter and request access to do a survey

Non-Military Radium

- ▶ Remaining 14 entries were expanded to include 19 cases/locations and a current total of 31 separate properties (parcels).
 - ▶ PA DEP referred a site which had been on their list, leading to 3 parcels.
 - ▶ Other location independently identified.

# Parcels	Status
2	Secondary scoping completed - Further Evaluation/Remediation Required
1	Survey Completed - GL items: Referred to Industrial Section
1	Survey Completed - SL items: Referred to Industrial Section
16	Completed - Survey did not detect residual radioactivity
2	No further action - Location could not be identified.
9	Survey needed, letter sent
0	Scheduled
0	survey needed (specific location not identified)
31	Total

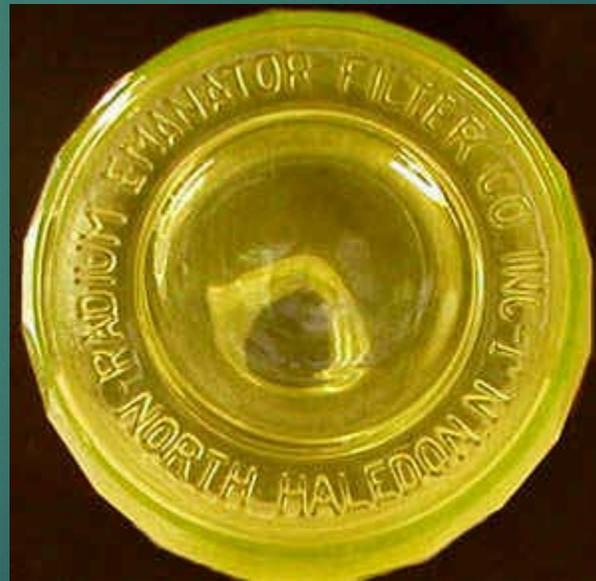


12/16/2016 survey of an aircraft instrument repair facility revealed several radioluminescent dials determined to be generally licensed.



Radium Emanator Filter Co.

- ▶ 12/14/2017 survey of location revealed no elevated measurements.
- ▶ Research revealed there was no factory here; Vaseline glass jar and radium/uranium ore insert (not shown) were both manufactured elsewhere.





Legend

◆ Sample Locations

Interpolated CPM

14,464.14941 - 26,226

26,226.00001 - 30,948

30,948.00001 - 43,008

43,008.00001 - 172,941.7813

172,941.7814 - 215,040

● Sensor locations

Sample Results (pCi/g)

Sample #	uR/h	Ra-226	Ra-228	Th-228	U-238
1	220	2080+100	10.30+0.46	6.23+0.24	ND
1-2*	1400	50,900+5100	317+36	ND	ND
2	70	3.33+0.18	0.42+0.002	0.42+0.002	0.332+0.51
3	15	61.0+3.0	0.92+0.05	0.85+0.05	75.2+3.4
3-1*	2225	3350+340	ND	ND	1090+94
4	7	0.811+0.042	0.873+0.044	0.908+0.034	1.32+0.088

* Did not match the shape and the matrix (geometry) for which the laboratory has a calibration in place. Therefore, an accurate activity determination was not possible. Results are qualified. (For radionuclide identification only.)

Now we were excited and hot on the trail of Wm J.A. Bailey's laboratory



William J. A. Bailey, PhD (bogus)
Inventor of the Adrenoray, Bioray,
Radithor, and numerous other
products containing radium and
thorium.



Radithor Guarantee

- We Guarantee** that every bottle of Radithor contains genuine Radium and Mesothorium elements in triple-distilled water.
- We Guarantee** the strength of each bottle of Radithor.
- We Guarantee** that Radithor is produced under strictly sanitary conditions in thoroughly sterilized bottles.
- We Guarantee** that Radithor does not depend upon any drugs whatever for its efficacy and that any physiological results ascribed to Radithor are due entirely to the action of the rays produced by the radioactive elements contained therein.
- We Guarantee** that Radithor is harmless in every respect.
- We Guarantee** to pay the sum of One Thousand Dollars to anyone who can prove that each and every bottle of Radithor when it leaves our Laboratories does not contain a definite amount of both Radium and Mesothorium elements.

BAILEY RADIUM LABORATORIES



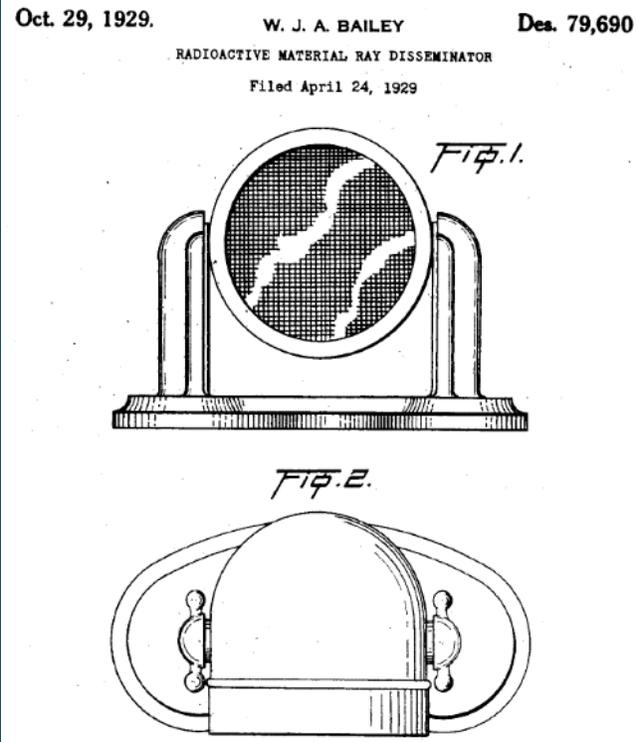
Eben M. Byers: Wealthy
industrialist, athlete
and Radiothor
consumer

If he was not so well
known, his death
would probably have
gone unnoticed.

The Lost Laboratory

- ▶ Construction of Interstate 280 obliterated all remains of the laboratory where “Dr.” Bailey’s laboratory original stood.
- ▶ In 1925 Baily moved from NY to East Orange, N.J. and opened the Bailey Radium Laboratories.
- ▶ It was here that he created and bottled his promotional masterpiece, Radithor.





William J. A. Bailey's Laboratory

- ▶ After closing his main laboratory, it appears he operated from his home, as evidenced by Trademark/Patent documentation.
- ▶ Contamination found! Paul Frame was happy to hear his research was useful.



Radium Girls Graves



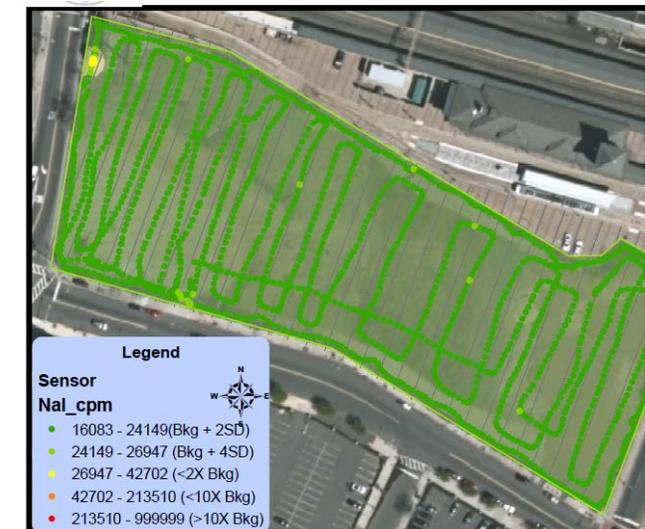
Watch Factory

- ▶ Watchmaking began at this factory in 1886.
- ▶ In 1908, purchased by Robt. H. Ingersoll & Bro., who also later acquired Waterbury, CT factories.
- ▶ Operations included timeframe of "Ingersoll Radiolite" production.
- ▶ Renovated into apartments that were occupied, presenting a difficult scenario.
- ▶ Surveyed building, grounds and apartments; Nothing found.



Weston

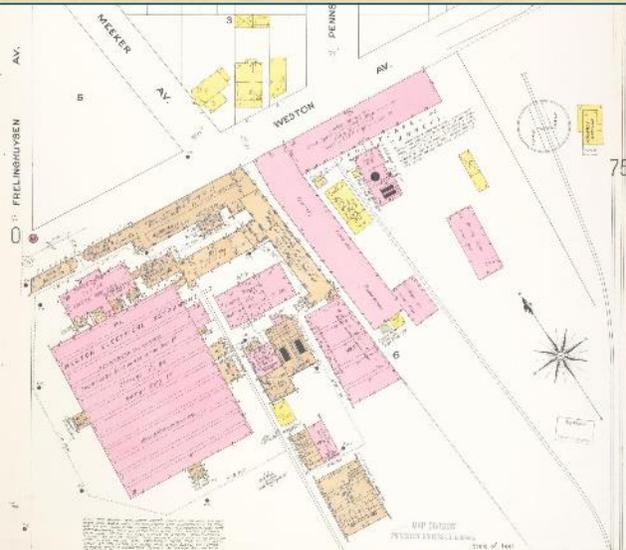
► One item in the collection of the Smithsonian National Air and Space Museum was documented as containing radium paint and being produced by Weston in Newark.





Speaking of Weston

- ▶ This property is now 6 parcels with an unknown number of businesses
- ▶ Two original buildings remain
- ▶ Suspected gauge manufacturing
- ▶ Communications with one business prompted discussions with DAG





State of New Jersey

IN THE MATTER OF : ORDER OF ENTRY
Owner Name :
Mailing Address :
City, NJ ZIP :

Property

1. Pursuant to the Radiation Protection Act, N.J.S.A. 26:2D-1 et seq. (the "Act"), specifically, N.J.S.A. 26:2D-9, the New Jersey Department of Environmental Protection (hereinafter the "Department") has the authority to enter and inspect any building or place for the purpose of investigating an actual or suspected source of radiation and ascertaining compliance with the Act or any rule, regulation or order promulgated or issued pursuant thereto and inspecting radiation sources, their shielding and immediate surroundings and records concerning their operation for the determination of any possible radiation hazard.
2. For the purposes set forth in the preceding paragraph, the Department has determined that it is necessary to conduct an inspection at the premises described above and such inspection shall be conducted on this date of <DATE>.
3. Pursuant to N.J.S.A. 26:2D-23, no person shall obstruct, hinder, delay or interfere with, by force or otherwise, the performance by the Department, its personnel or any of its authorized agents of any duty under the provisions of the Act or refuse to permit the personnel or authorized agents to perform their duties by refusing them, upon proper presentation of a written order of the Department, entrances to any premises at reasonable hours.
4. Upon presentation of this Administrative Order, <BUSINESS> shall permit the Department's personnel or authorized agents serving this Administrative Order, entrance to these premises for the purposes of conducting an inspection pursuant to the Radiation Protection Act, N.J.S.A. 26:2D-1 et seq.
5. NOTICE IS GIVEN THAT pursuant to N.J.S.A. 26:2D-12, any person who violates the provisions of this Act or any rule, regulation or order promulgated or issued hereto shall be liable to a penalty of up to \$2,500.00. If the violation is of a continuing nature, each day during which it continues shall constitute an additional, separate and distinct offense.

In the process
of gaining
access to
properties

Now What?

- ▶ Ken Research Property

- ▶ Some hot material found, unsure of lateral and vertical extent

- ▶ Bailey Property

- ▶ Surface contamination

- ▶ “Let’s Send it over to EPA”

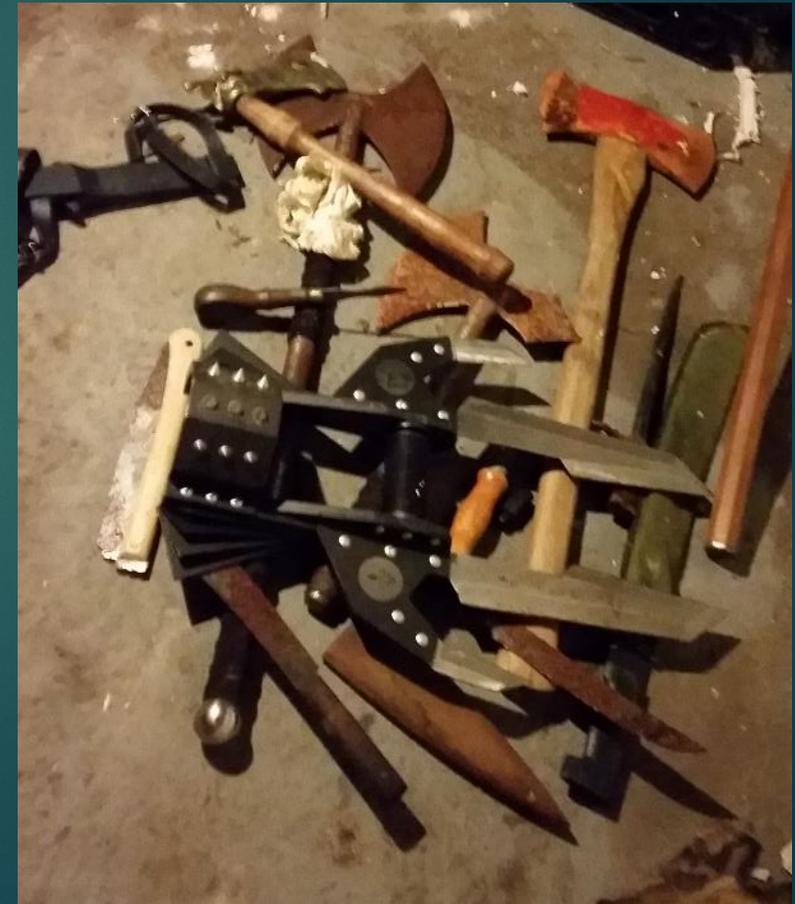
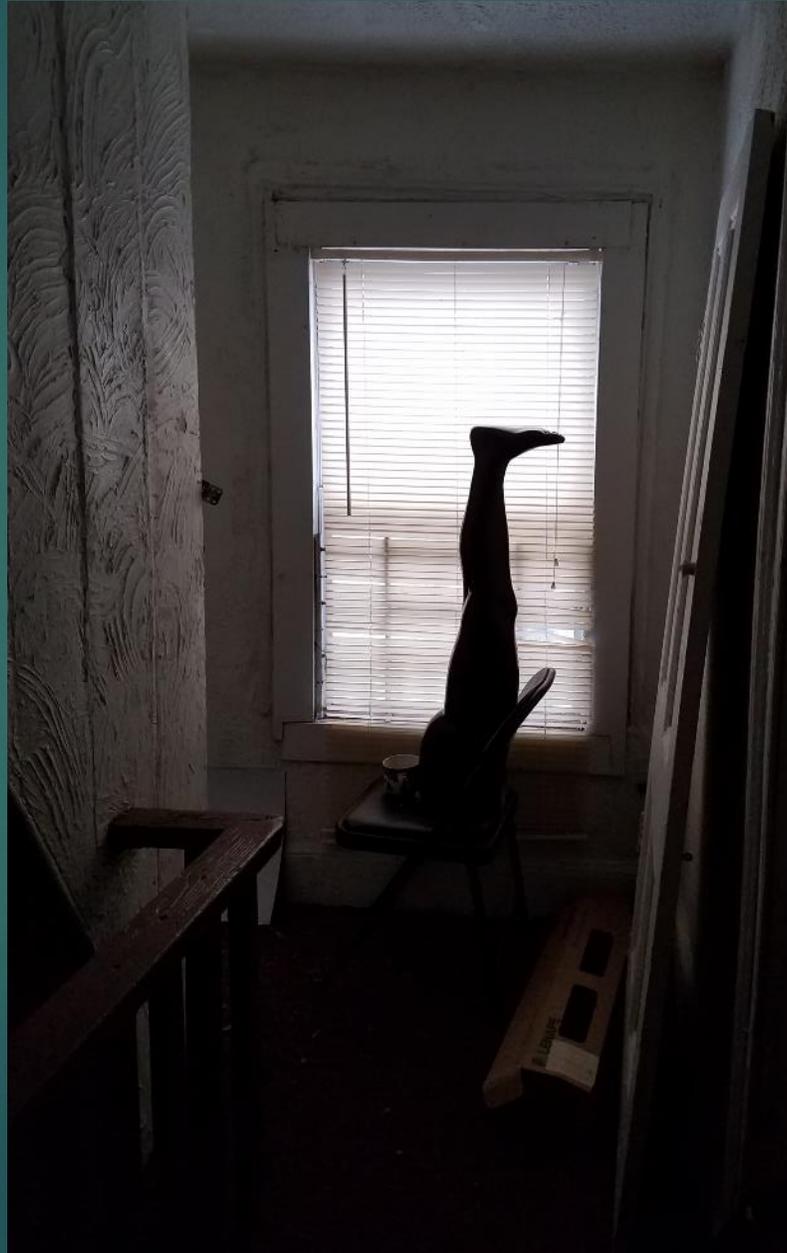
- ▶ Removal Action

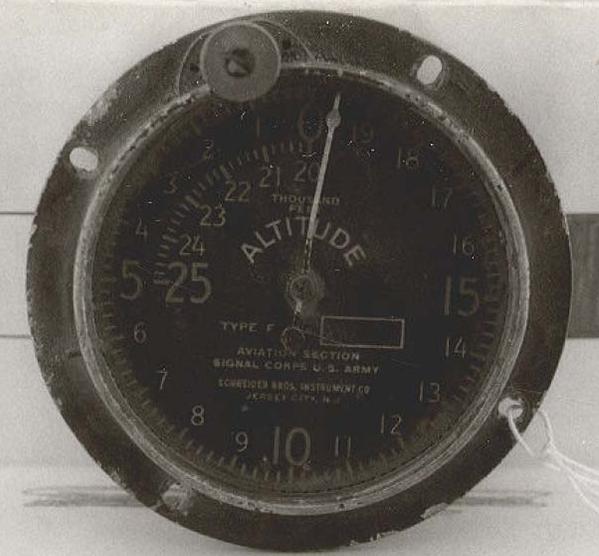
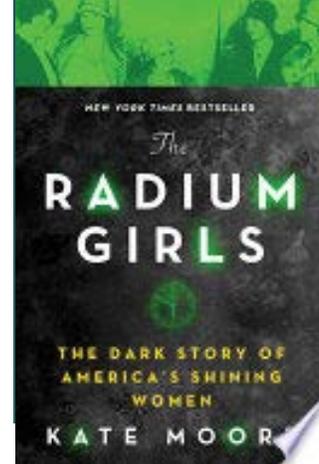
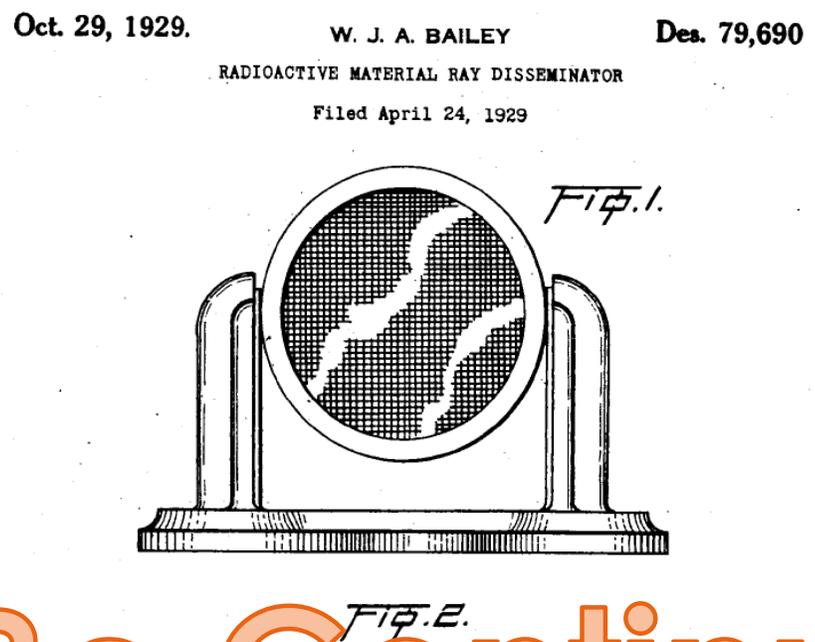
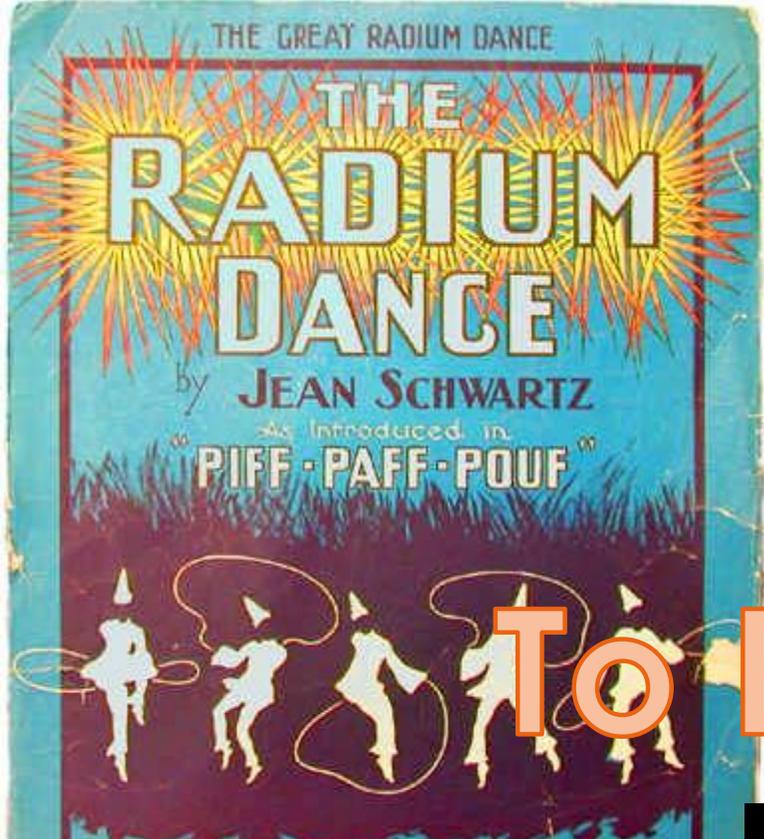
- ▶ EPA may say no

- ▶ NJ Spill Fund will support further characterization and remediation



Other observations





To Be Continued . . .

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