



January 17, 2022

Todd Conley  
Environmental Restoration, LLC  
1666 Fabick Drive  
Fenton, MO 63026  
Submitted via [t.conley@erllc.com](mailto:t.conley@erllc.com)

**Subject:** Summary of Field Operations

Perma-Fix Environmental Services Inc. (Perma-Fix) is pleased to provide this letter as summary of radiological activities performed on January 12<sup>th</sup> and 13<sup>th</sup>, 2022.

A Perma-Fix health physicist and a health physics technician were deployed to the former Peck Iron and Metal facility located at 3850 Elm Avenue, Portsmouth, VA. The objective was to retrieve and dispose of a number of discrete objects containing radium-226 (Ra-226).

Perma-Fix used a 2-inch by 2-inch sodium iodide detector and hand tools to locate and retrieve objects. The objects were then sealed in individual plastic bags and a dose rate measurement was collected from each object using a Thermo Scientific RadEye-PRD. In total, twelve (12) objects were retrieved. Full survey results are presented in **Attachment 1**, Perma-Fix Radiological Survey *PF-ER-2022-001*.

Bionomics, Inc. packaged, shipped, and disposed of the objects. All objects were placed into a Type-A package and labeled with a Yellow II radioactive label. A signed copy of the waste manifest and notice of receipt are included as **Attachment 2**. Additional pictures of the labeled waste drum are included as **Attachment 3**.

Thank you again for the opportunity to work with Environmental Restoration. If you have any questions or comments, please do not hesitate to contact me at (724) 728-3960 or cell (412) 932-8090.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Weddermann".

Christopher Weddermann  
Health Physicist  
Perma-Fix Environmental Services Inc.  
[cwedderrmann@perma-fix.com](mailto:cwedderrmann@perma-fix.com)

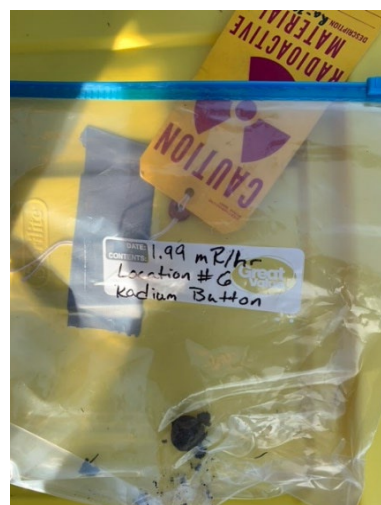
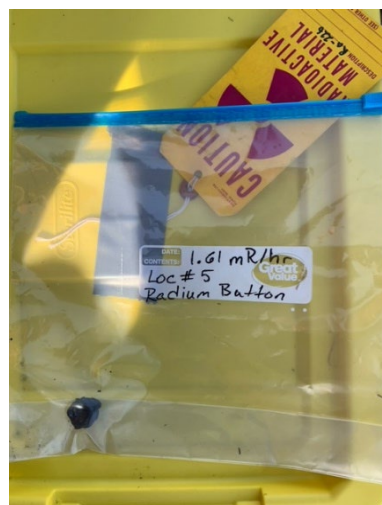
Attachments (1)

- 1) Perma-Fix Radiological Survey *PF-ER-2022-001*
- 2) Waste Manifest and Notice of Receipt, Bionomics Inc.
- 3) Waste Drum Pictures

**Attachment 1:**  
**Perma-Fix Radiological Survey *PF-ER-2022-001***

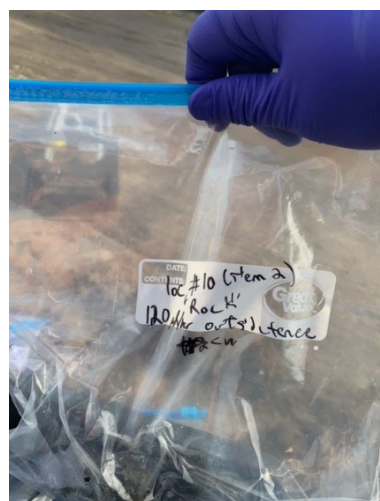
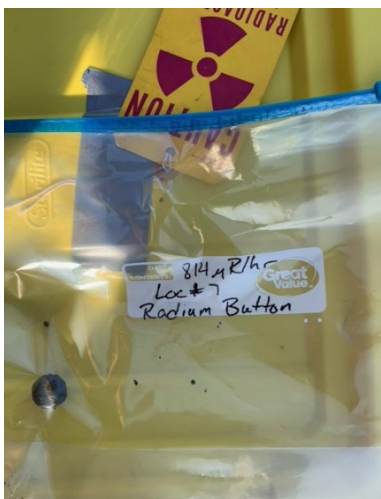
<b>Survey No</b>	PF-ER-2022-001	<b>Item Surveyed</b>	Radium-226 commodities collected from 3850 Elm Ave, Portsmouth, VA. Peck Iron and Metal facility, USEPA region 3											
<b>Date</b>	1/12/2022	<b>Comments</b>	12 radioactive commodities containing Ra-226 were collected from the site and packaged for shipping and disposal. Commodities were located using a Ludlum Model 2221/44-10 instrument (SN: 172035/PR242819). Once exhumed and bagged, dose rates from each commodity were collected at 1 cm using the instrument listed below. The ground was also measured post removal. All locations were observed to be at background levels with the exceptions of Locations 3 and 10, as listed below. All workers hands, feet, and equipment were periodically frisked using a Ludlum Model 12/44-9 (SN: 186776/PR193576) to ensure no personnel left the site with contamination.											
<b>Survey Tech</b>	C. Weddermann/M. Pinion	<b>Parameters</b>	<b>Gamma</b>			<b>Total Activity</b>				<b>Removable Activity</b>				
<b>Count Room Tech</b>	N/A		CPM	µR/hr	µRem/hr	Alpha	Beta-Gamma	Alpha	Beta-Gamma	Alpha	Beta-Gamma	Alpha	Beta-Gamma	
<b>Date Counted</b>	N/A	<b>Instrument Model</b>	RadEye PRD											
<b>Survey Type</b>	Support	<b>Instrument SN</b>	30976											
<b>Level of Posting</b>	N/A	<b>Cal. Due Date</b>	2/2/2022											
<b>Notes</b>	<b>Total Activity</b> dpm = (cpm - Bcpm)/(eff * PCF)	<b>Efficiency</b>												
PCF = Probe Correction Factor		<b>Background Counts</b>	6											
T <sub>b</sub> = Background count time		<b>PCF</b>												
T <sub>s</sub> = Sample count time		<b>T<sub>b</sub></b>												
R <sub>b</sub> = Background count rate		<b>T<sub>s</sub></b>												
Bcpm = Background cpm		<b>MDCR</b>												
MDCR = Minimum Detectable Count Rate (net cpm)		<b>MDC</b>												
MDC = Minimum Detectable Concentration (dpm per 100cm <sup>2</sup> )														
<b>No.</b>	<b>Descriptions</b>	<b>cpm</b>	<b>µR/hr</b>	<b>µRem/hr</b>	<b>gross counts</b>	<b>*dpm</b>	<b>gross counts</b>	<b>*dpm</b>	<b>gross counts</b>	<b>*dpm</b>	<b>gross counts</b>	<b>*dpm</b>	<b>gross counts</b>	<b>*dpm</b>
1	Location 1: Radium rope		2008											
2	Location 2: Electrical box		1520											
3	Location 3: Radium object		77700											
4	Location 3: Dose rate on ground, after object removal		106											
5	Location 4: Radium object		3610											
6	Location 5: Radium button		1610											
7	Location 6: Radium button		1990											
8	Location 7: Radium button		814											
9	Location 8: Pressure guage		2220											
10	Location 9: Radium rope in bag		1600											
11	Location 10: Radium object		88000											
12	Location 10: Rock with elevated gamma readings		120											
13	Location 10: Dose rate on ground, after object removal		484											
14	Location 11: Radium button in bag labeled "SU 208-RT"		2380											





Survey No	PF-ER-2022-001
Date	1/12/2022
Survey Tech	C. Weddermann/M. Pinion
Count Room Tech	N/A
Date Counted	N/A
Survey Type	Support
Level of Posting	N/A
Comments	

--



Survey No	PF-ER-2022-001
Date	1/12/2022
Survey Tech	C. Weddermann/M. Pinion
Count Room Tech	N/A
Date Counted	N/A
Survey Type	Support
Level of Posting	N/A
Comments	

--

**Attachment 2:**  
**Waste Manifest and Notice of Receipt, Bionomics Inc.**





P.O. Box 817 – Kingston, TN 37763 – (865) 220-8501

JANUARY 17, 2022

CHRIS WEDDERMANN

USEPA REGION 3 – PECK IRON AND METAL SITE  
3850 ELM AVE  
PORTSMOUTH, VA 23704

Chris,

As required by 10 CFR Part 20 (Appendix G), this letter is notification that Bionomics, Inc. has received the shipment recently picked up at your facility on **January 13, 2022**.

Attached you will find a copy of your NRC Form 540, the only change from the original is in Item No.9 "signature" which identifies that Bionomics, Inc. is acknowledging receipt of waste from your facility.

Please keep this with your original, as well as future disposal certifications.

If you have any questions please feel free to contact me at (865) 220-8501.

Sincerely,



Jerry Noll  
QA Manager

Cc: File BIO-01-22

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST SHIPPING PAPER					
1. EMERGENCY TELEPHONE NUMBER (Include Area Code)  (800) 424-8300		ORGANIZATION ChemTrec CCN # 825454		2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST  1 - 30 gal. Type A		EPA MANIFEST NUMBER  N/A		4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If "Yes" provide Manifest Number =====>	
11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)					
UN2815, Radioactive Material, Type A Package, 7 (Sealed Sources - Metal Drum)					
12. DOT LABEL "RADIOACTIVE"  Yellow II					
13. TRANSPORT INDEX  0.4					
14. PHYSICAL AND CHEMICAL FORM  Solid / Oxides					
15. INDIVIDUAL RADIONUCLIDES  Ra226					
16. TOTAL PACKAGE ACTIVITY IN SI UNITS  3.7000 MBq					
17. LSA/SCO CLASS  N/A					
18. TOTAL WEIGHT OR VOLUME (Use appropriate units)  0.12 m3					
19. IDENTIFICATION NUMBER OF PACKAGE  EPA3-01					
FOR CONSIGNEE USE ONLY					
Generator Certification Statement A) Certification is hereby made to Bionomics that this shipment of low-level radioactive materials has been prepared in accordance with a radioactive waste management program approved by the Nuclear Regulatory Commission or an Agreement State regulatory Agency. B) Data. Generator hereby represents and warrants that all data set forth in this Manifest are true and correct in all respects and in accordance with all applicable governmental laws, rules and regulations.					
SIGNATURE DATE Christine Wagner on Christine Wagner 1/13/2022					



NRC FORM 541		BIONOMICS, INC.		1. MANIFEST TOTALS										2. MANIFEST NUMBER					
<b>UNIFORM LOW-LEVEL RADIOACTIVE MANIFEST</b> <b>WASTE MANIFEST</b> <b>CONTAINER AND WASTE DESCRIPTION</b> Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste				NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET VOLUME (m3)	NET WEIGHT (kg)	SPECIAL NUCLEAR MATERIAL (grams)				TOTAL		11322-EPA						
				1	0.12	1.0	U-233	U-235	Pu										
				ALL NUCLIDES			TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)								
				3.7000			NP	NP	NP	NP	NP								
3. MANIFEST TOTALS ACTIVITY (MBq)														4. SHIPPER NAME Bionomics on Behalf of: USEPA Region 3					
5. MANIFEST TOTALS SOURCE (kg)														6. SHIPPER ID NUMBER					
DISPOSAL CONTAINER DESCRIPTION										WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER									
5. CONTAINER IDENTIFICATION NUMBER / GENERATOR ID NUMBER	6. CONTAINER DESCRIPTION (See Note 1)	7. VOLUME (m3)	8. WASTE AND CONTAINER WEIGHT (kg)	9. SURFACE RADIATION LEVEL (mSv/hr)	10. SURFACE CONTAMINATION MBq/100 cm²	11. PHYSICAL DESCRIPTION		12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3)		13. CHEMICAL DESCRIPTION		14. RADIOLOGICAL DESCRIPTION		15. WASTE CLASSIFICATION AS-Class A Stable AU-Class A Unstable B-Class B C-Class C					
					ALPHA	BETA-GAMMA	WASTE DESCRIPTOR (See Note 2)					INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT							
EPA3-01	4. Metal Drum	0.12	56.7	0.040	<3.34E-7	<1.67E-6	38. Sealed Sources	0.02	100	Oxides	N/A	N/A	Ra226 3.7000	N/A					

NOTE 1: Container Description Codes: For containers/ waste requiring disposal in approved structural overpacks, the numerical code must be followed by "OP."

1. Wooden Box or Crate	9. Demineralizer
2. Metal Box	10. Gas Cylinder
3. Plastic Drum or Pail	11. Bulk, Unpackaged Waste
4. Metal Drum or Pail	12. Unpackaged Components
5. Metal Tank or Liner	13. High Integrity Container
6. Concrete Tank or Liner	14. Other, Describe in Item 6, or additional page.
7. Polyethylene Tank or Liner	
8. Fiberglass Tank or Liner	

NOTE 1A: Process Type Codes Are Specific To Bionomics and Only Apply To How The Waste Will Be Processed / Handled By The Shipper. Use up to two process codes and one disposal site.

1A. Supercompact	11A. Burnwell
2A. Incineration	12A. Retention
3A. Transship	13A. Enclosure
4A. Solidify	14A. Return
5A. Encapsulate	20A. Other, Specify in the block or on an attached page.
6A. Metal Melt	
7A. Sort	
8A	
10A. Other, Specify in the block or on attached page.	

NOTE 2: Waste Descriptor Codes: (Choose up to three predominate by volume.)

20. Charcoal	29. Demolition Rubble	38. Evaporator Bottoms / Sludges / Concentrates
21. Incinerator Ash	30. Cation Ion-exchange Media	39. Compactable Trash
22. Soil	31. Anion Ion-exchange Media	40. Noncompactable Trash
23. Gas	32. Mixed Bed Ion-exchange Media	41. Animal Carcasses
24. Oil	33. Contaminated Equipment	42. Biological Material (except animal carcasses)
25. Aqueous Liquid	34. Organic Liquid	43. Activated Material
26. Filter Media	35. Glassware or Labware	69. Other, Describe in Item 11, or additional page.
27. Mechanical Filter	36. Sealed Source / Device	
28. EPA or State Hazardous	37. Paint or Plating	

NOTE 3: For solidification media that meet disposal site structural stability requirements, the numerical code must be followed by "S". For all solidification media, the vendor (manufacturer) and brand name must also be identified in Item 13. Code 100-NONE REQUIRED.

50. Speedi-Dri	58. Solid A Sorb	77. Aqueasil II	91. Concrete (encapsulation)
51. Celstary	59. Chemill 30	78. Other	92. Bitumen
52. Floor Dry	60. Chemill 50	Describe in Item 13, or additional page.	93. Vinyl Chloride
53. Superfilm	71. Chemill 3030		94. Other, Describe in Item 13, or additional page.
54. H4 Dri	72. Dicapril HP200		
55. Safe T Sorb	73. Dicapril HP500		
56. Safe H Dri	74. Pelcoast		
57. Floro	75. Pelcoast II	SOLIDIFICATION	100. None Required
58. Floro X	76. Aqueasil	90. Cement	

**Attachment 3:**  
**Waste Drum Pictures**

