

Bureau of Radiation Protection Field Survey Summary

[REDACTED] Milton, PA

Background:

On September 10, 2025, a team of four health physicists from the Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection (BRP), returned to a private residence in Milton, Pennsylvania to conduct additional radiological surveys. This is further action following a notification that radiation alarms had been triggered at local landfills. The source of the radiological material was traced back to waste originating from the private residence.

The goal of this round of radiological surveys was to attempt to release furniture and other materials from the back office room. This area was known to have stored a number of radiological materials and was believed to have a higher potential for contamination.

Surveys

During the visit, BRP staff used a Ludlum model 2360 paired with a 43-93 alpha beta scintillator to survey the contents of the back office (labeled as Back Office Room 2 in the floorplan sketch). The isotopes of concern were expected to be Americium-241 and Radium-226 based on previous survey results and the presence of numerous americium sources taken from smoke detectors and various radium painted items found throughout the residence. Previous surveys in the room focused mainly on detectable gamma radiation. But with the recognition that there may have been a significant number of Americium-241 sources compromised in the room, it was necessary to utilize instrumentation with adequate alpha and beta radiation detection.

The goal of the surveys was to characterize the contamination within the room and to segregate items deemed the most radiologically impacted. Approximately 80% of the room was surveyed with the alpha beta scintillator. Static measurements were then taken at areas measuring at least 2x above background levels. Additionally, wipes were taken to test for removable contamination in areas registering the highest counts per minute (cpm). The wipes were analyzed onsite using a Ludlum model 2929. Photographs were taken of all items of concern. The items were documented, logged, and moved to the front bedroom (labeled Bedroom 1 on the floorplan sketch) to await further action.

Results:

A complete list of the items moved to Bedroom 1, along with the corresponding results of the static measurements, is provided in Table 1. Results were as high as 390,000 dpm/100cm² alpha and 104,000 dpm/100cm² beta for the most contaminated items. These measurements are approximate due to an estimated surface efficiency. The detector was intentionally not placed in direct contact with the surfaces to avoid potential cross contamination with the instrument. Interestingly, none of the items contained a detectable gamma component, which further suggests Americium-241 as a significant isotope of concern moving forward.

Results of the smear wipes of 6 items are presented in Table 1. A detectable amount of removable contamination was found in 5 of the 6 items surveyed, with the highest level located inside the metal cabinet at 1,717dpm/100cm² alpha and 1,492 dpm/100cm² beta. All photographs are available in BRP files upon request

Conclusion:

The surveys identified more widespread contamination in the room than initially discovered in the previous surveys using gamma only detectors. Additionally, some removable contamination was identified as well. A quick attempt to decontaminate the outside lid of the freezer had some success. However, it is not known how easy to decontaminate any of these items will be. It will likely be the most cost effective to include many of these items in the radioactive waste shipment. However, consideration may be given to attempt to decontaminate some of the bulkier items depending on waste disposal costs.

Table 1

PADEP Bureau of Radiation Protection
Surface Activity Survey Data

Location: Milton House			
Surveyor(s):		Date:	9/10/2025
		Time:	
Instrumentation:	Ludlum 2360 #2	Probe Area:	100 cm ²
Ser. #'s Instrument	234833	Probe	244533
Efficiency: Alpha	0.13	x 0.25 Surface Eff	0.03
Beta	0.22	x 0.5 Surface Eff	0.11
Cal Date:	3/25/2025	Cal Due Date:	3/26/2026

Milton House			
		Date:	9/10/2025
		Time:	
Ludlum 2360 #2		Probe Area:	
Instrument	234833	Probe	244533
Alpha	0.41	x 0.25 Surface Eff	
Beta	0.33	x 0.5 Surface Eff	
3/25/2025		Cal Due Date:	3/26/2026

Alpha Bkg.	17	counts
Bkg count time	10	min.
Alpha Bkg cpm	1.70	
Beta Bkg	1720	counts
Bkg count time	10	min.
Beta Bkg cpm	172	

Alpha Bkg.	3
Bkg count time	10
Alpha Bkg cpm	0.30
Beta Bkg	481
Bkg count time	10
Beta Bkg cpm	48

Static Results:				Alpha			Beta			
Meas. #	Room/Item	Method	Picture #	Count Time (minutes)	Gross Counts	Net CPM	Activity (dpm/100cm ²)	Gross Counts	Net CPM	Activity (dpm/100cm ²)
1	White Chair	Static	1	1	637	637	19,591	1,712	1,664	15,126
2	Shield	Static	2	1	144	142	4,378	624	452	4,109
3	Shield - broken	Static	3	1	67	65	2,009	331	159	1,445
4	Shield - small	Static	4	1	110	108	3,332	591	419	3,809
5	Yellow Drip Tray	Static	5	1	7,577	7,575	233,086	2,779	2,607	23,700
6	Paper Log	Static	6	1	352	350	10,778	1,475	1,303	11,845
7	Cutting Board	Static	7	1	12,607	12,605	387,855	2,792	2,620	23,818
8	Static on Cabinet	Static	8	1	71	69	2,132	376	204	1,855
9	Desk	Static	9	1	12,714	12,714	391,191	2,211	2,039	18,536
10	Spot on Floor	Static	10	1	742	740	22,778	6,754	6,582	59,836
11	Living Room Floor	Static	11	1	51	49	1,517	1,301	1,129	10,264
12	Computer Floor	Static	NA	1	40	38	1,178	1,186	1,014	9,218
13	Metal Cabinet	Static	NA	1	887	885	27,240	11,721	11,549	104,991
14	Top of Freezer	Static	12	1	1,279	1,277	39,302	517	345	3,136
15	Desk	Removable	NA	1	112	112	338	199	151	368
16	Cabinet	Removable	NA	1	30	30	90	66	18	44
17	Inside of Metal Cabinet	Removable	13	1	567	567	1,717	660	612	1,492
18	Top of Metal Cabinet	Removable	NA	1	14	14	42	54	6	14
19	Top of Freezer	Removable	NA	1	26	26	78	56	8	19
20	Top of Freezer - After	Removable	NA	1	7	7	20	52	4	10
21	Floor	Removable	NA	1	8	8	23	59	11	27

* Static not taken on contact due to possibility of cross contamination



White Chair #1

Shield #2





Shield Broken #3



Small Shield #4



Yellow Drip Tray #5

Paper Log #6



 Model: AS-43
 Serial: 10257
 Made in: PHILADELPHIA

1000-40-60: 17.70%
 1000-40-60: 30.81%
 1000-40-60: 2.10%

2

No. F. 111
 No. F. 111
 No. F. 111

Americium-241 18ugradus min.

2 45ml 2/20 = 24 hours
 4 43ml 2/21 = 72 hours
 4 35 39ml 2/24 = 72 hours
 4 35 5ml 2/27 = 72 hours

(10.5ml) transferred to 2nd 3rd 5th
 25ml 2/28
 23.5ml 2/28
 20.5ml 2/28
 19.0ml 2/28

F35A Pedestal 38 (38)
 Cohl 131 (17) 124

900 uCi
 241 Am

168 hours
 56 hours

the ground
 on surface
 1/2/09

444
 241 Am

Cutting Board #7



Static on Cabinet #8



Desk #9



Spot on Floor #10





**Living Room Floor
#11**

Top of Freezer #12



Inside Metal Cabinet #13

