Updates on independent environmental monitoring near the Portsmouth DOE reservation

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Summary

- **Who I am; previous work on PORTS and surroundings**
- **Updates on three groups of residential dust samples from June 2023**
- **Working toward your own community environmental monitoring**
- **Working towards including affected southern Ohio in the Radiation Exposure and Compensation Act, as proposed for extension/expansion**

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Contamination is forever: radioistopes near PORTS

June 10, 2023

Michael E. Ketterer, Professor Emeritus,
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GSC-8746

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April 27, 2019

TO: Elizabeth D. Lamerson and citizens of Pike County, Ohio

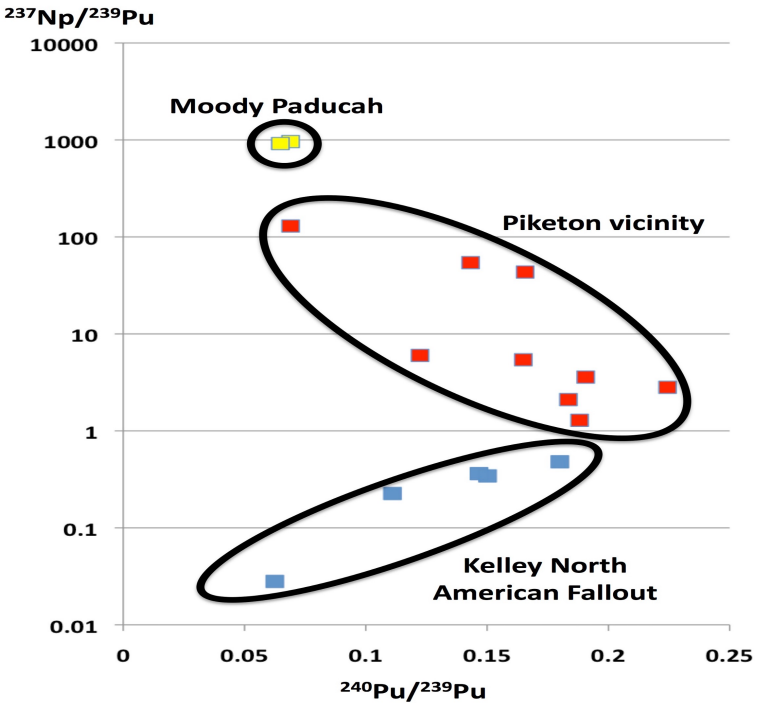
FROM: Michael E. Ketterer, Ph.D., Professor Emeritus, Chemistry and Biochemistry[a]

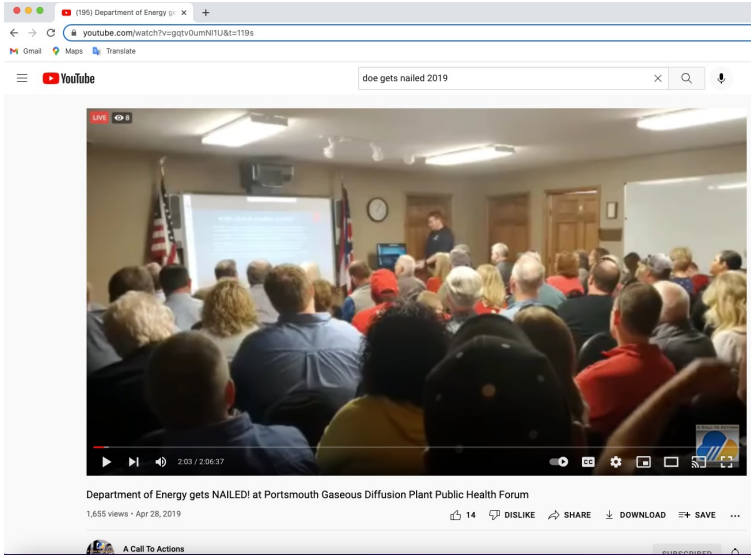
IN COLLABORATION WITH: Scott C. Szechenyi, M.S., Independent Consultant[b], BS '97, MS '01, Northern Arizona University

SUBJECT: Investigation of anthropogenic uranium, neptunium, and plutonium in environmental samples near Piketon, Ohio

[a]Michael.Ketterer@nau.edu [b]Scott@isotopesignatures.com

SUBMITTED BY: Michael E Ketterer





https://www.youtube.com/watch?v=gqtv0umNI1U&t=119s

^{237}Np at Zahn's Corner: most definitely from PORTS and not from global fallout (nuclear weapons testing), as was falsely alleged by Jeremy Davis (DOE) on April 27, 2019.

^{237}Np in "recycled uranium" was introduced into PORTS starting in the 1950's; is present in water, ambient air, soil, and dust near PORTS

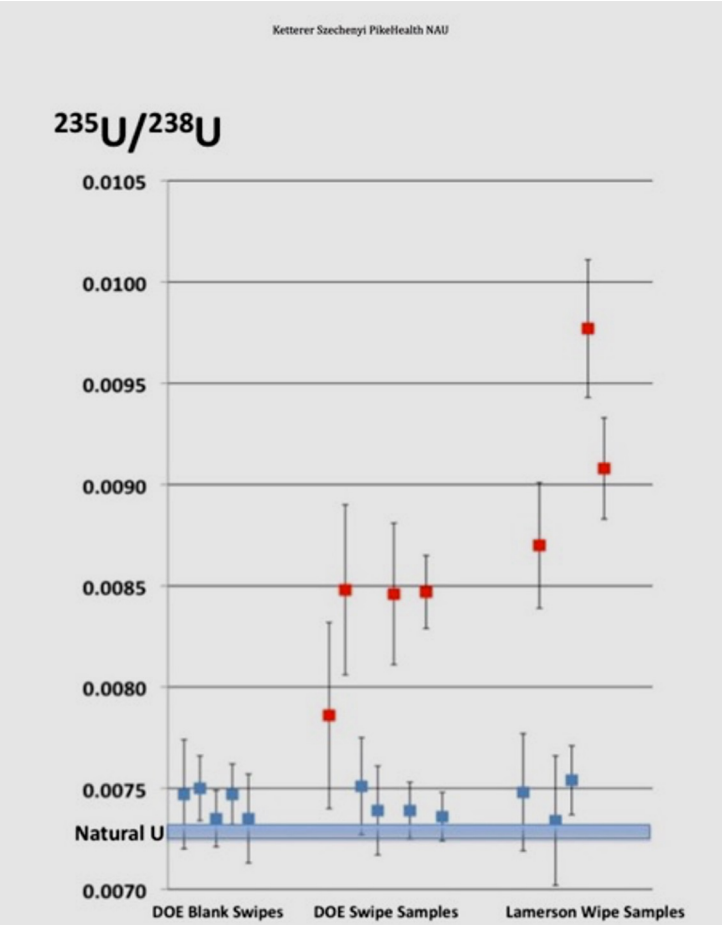
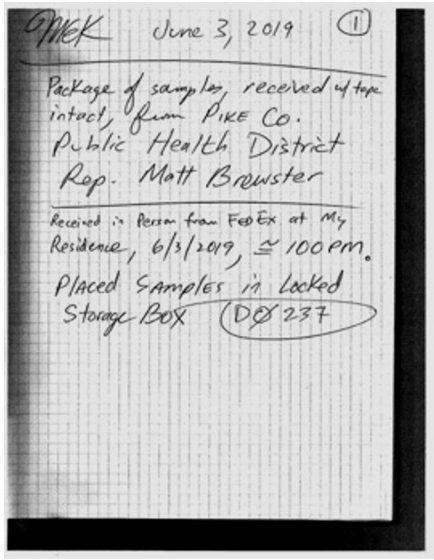


Figure 1. Graphical display of the Table 1 results from this study; error bars are the (k=2) total propagated uncertainties for each data point, as discussed in the text. Red points are significantly different from the naturally occurring $^{235}U/^{238}U$ (blue stripe) at $p < 0.05$.


MEK June 3, 2019 (1)

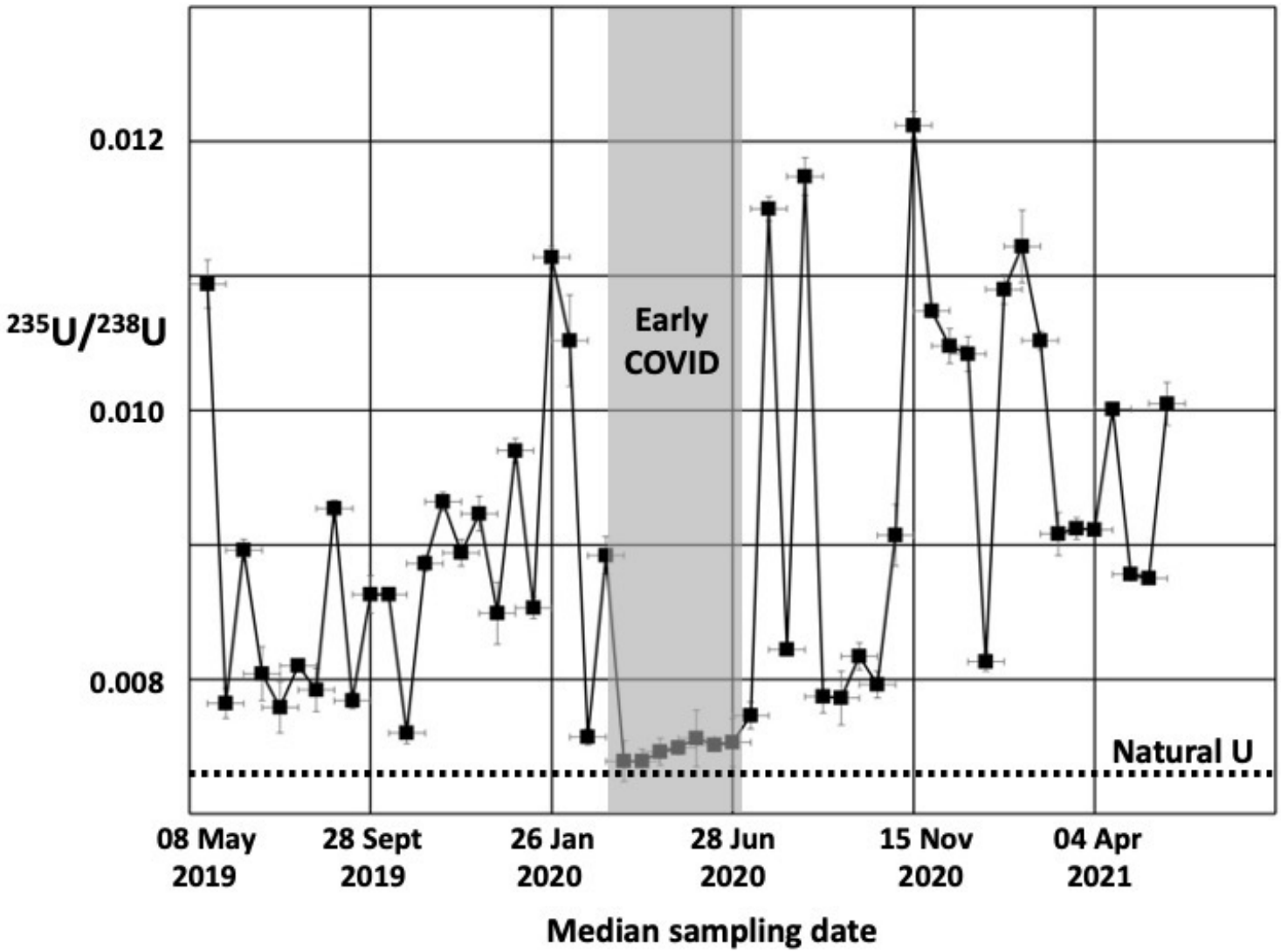
Package of samples, received w/ tape intact, from Pike Co. Public Health District Rep. Matt Brewster

Received in Person from FedEx at My Residence, 6/3/2019, ≅ 100 PM.

Placed Samples in Locked Storage Box (DOE 237

U Isotopes Measurements
NAU Elan DRC-e
Swipe Blanks, Swipe Samples, MEK Reagent Blanks, MEK Controls
(DOE SWIPES)

Analyzed 6/14/2019
Printed 6/15/2019
MEK


0.012
$^{235}U/^{238}U$
0.010
0.008
Early
COVID
Natural U
08 May
2019
28 Sept
2019
26 Jan
2020
28 Jun
2020
15 Nov
2020
04 Apr
2021
Median sampling date

LOCAL 12 NEWS WEATHER LOCAL 12 INVESTIGATES SPORTS GAME CENTER WATCH

Local 12 investigation uncovers family's home is riddled with radioactive contamination

by DUANE POHLMAN WKRC | Thu, November 3rd 2022, 1:56 PM EDT

Local 12 investigation uncovers home riddled with radioactive contamination (WKRC)

/local12.com/news/nation-world/remains-68-people-discovered-during-sewer-work-indiana-deceased-1800s-historic-church-development-cemetery-e

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June 2023 residential dust wipe samples

- **Group I: three houses all located less than 6 miles from PORTS**

- **Group II: northern Scioto County, between 10 and 15 miles from PORTS**

- **Group III: Highland County and Brown County,**

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January 28, 2024

TO: Community participants in June 2023 sample collection from southern Ohio residences

SUBJECT: Presence of PORTS-originating enriched uranium and ^{236}U in environmental samples

Overview. The purpose of this study is to determine, on a case-by-case basis, whether the participants' properties have been impacted by past/present emissions of enriched uranium (U) and/or ^{236}U from the former Portsmouth Gaseous Diffusion Plant (PORTS). To address this question, attic dust wipes (n=6), a moss sample, and a sample of present-day atmospheric particulate matter were collected and analyzed as part of a June 2023 visit to the community. The results are interpreted in the report by comparison of the measured uranium isotope ratios vs. a control sample known to contain naturally occurring U.

The findings underscore the widespread presence of enriched uranium and ^{236}U from PORTS in environmental samples, even at locations in excess of 10 miles from the facility.

- ***Sample 5***, attic dust wipe sample; collected by wiping dust surfaces within an attic, accessed from the residence's garage. Sample 5 was obtained at a residence located between 10 and 15 miles from PORTS.

- ***Sample 7***, attic dust wipe sample; collected by wiping dust surfaces within an attic accessed from the main floor of the residence. Sample 7 was obtained at a residence located between 10 and 15 miles from PORTS.

- ***Sample 8***, dust wipes collected from the surfaces of structural beams, and from atop dust-laden sheet metal stored below the roof of an open-air garden shed on the resident's property. Sample 8 was obtained from a property located less than 6 miles from PORTS.

- ***Sample 10***, attic dust wipe sample; collected by wiping dust surfaces within a large walk-in attic located on the upper floor of the residence; the attic is being used by the resident as storage. Sample 10 was obtained from a location less than 6 miles from PORTS.

- ***Sample 13***, attic dust wipe sample; collected by wiping dust surfaces within an attic accessed from the upper floor of the residence. Sample 13 was obtained from a residence located between 10 and 15 miles from PORTS.

- ***Sample 15***, dust wipes collected from the dust-laden horizontal surfaces inside a large open-air barn. The location of Sample 15 is less than 6 miles from PORTS.

- ***Sample 17*****,** airborne particulate matter collected using a home-constructed high-volume sampler; the blower was purchased locally; see Harbor Freight, 2024. The airborne particles were collected on polypropylene fiber media by drawing air with the cylindrical blower at ~ 1500 cubic feet per minute through a double thickness of cut/sealed MERV-13 furnace filter material. Ambient air was sampled over a two-week period of continuous operation in Summer 2023, at a residence located between 10 and 15 miles from PORTS; the resident mailed the sample to the author for subsequent analysis at NAU.

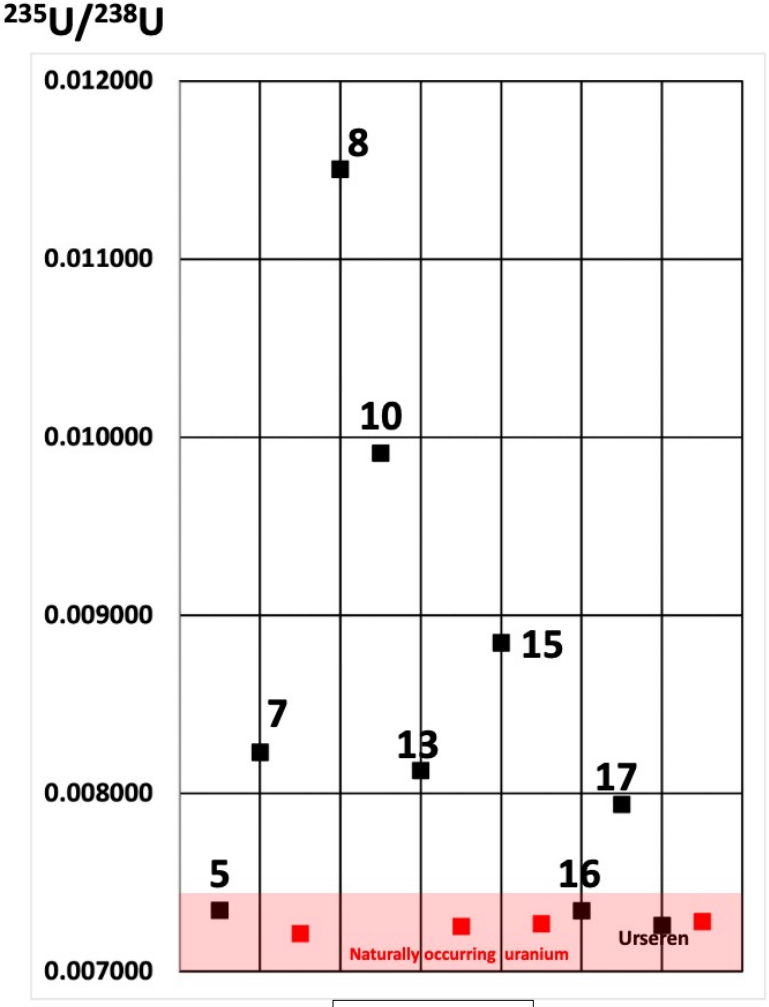

Figure 1.

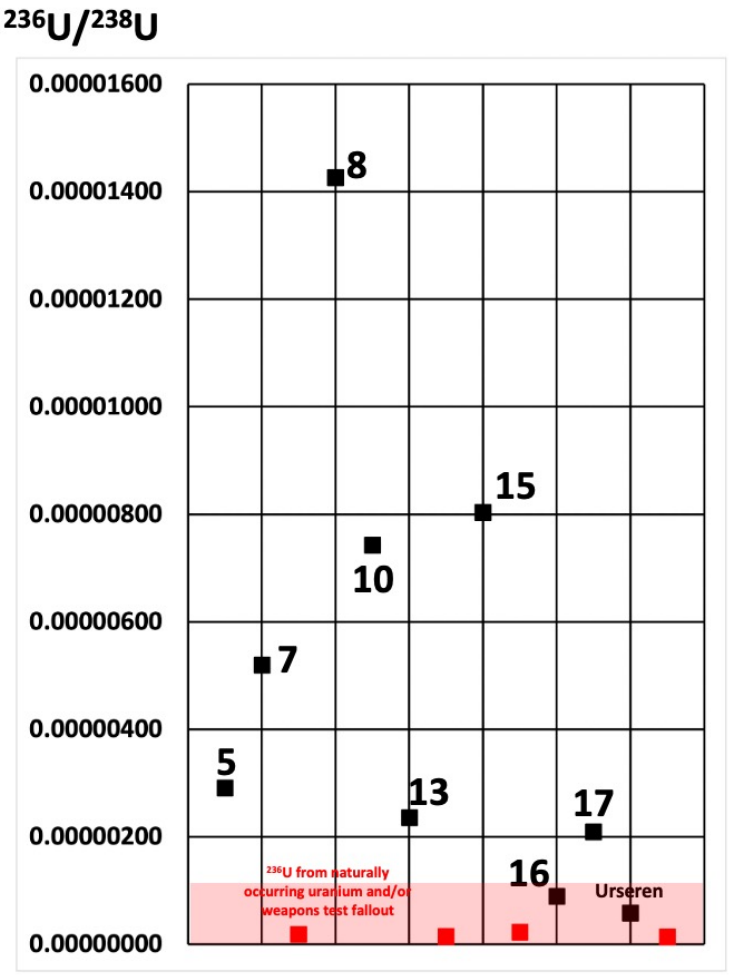

Figure 2.

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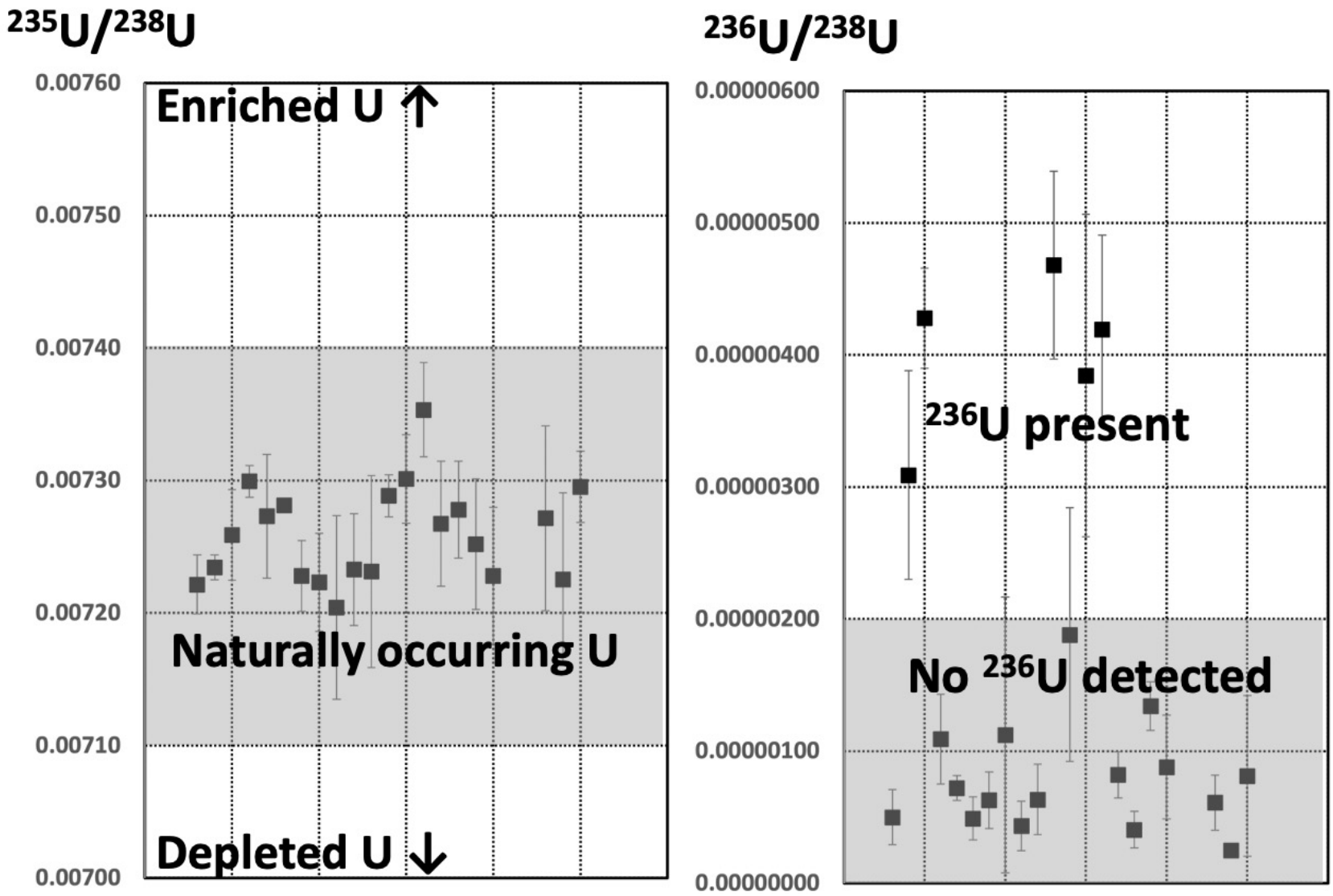
February 27, 2024

TO: Community participants in June 2023 sample collection by local citizen/volunteer Haley Karnes from residences in Highland and Brown Counties, Ohio

SUBJECT: No clear evidence has been found for PORTS-originating uranium in dust wipes from Haley Karnes' sampled locations of Highland and Brown County, Ohio

Executive summary. The purpose of this study is to determine, on a collective/community basis, whether the sampled areas in neighboring southern Ohio counties have been impacted by past/present emissions of uranium (U) of "enriched" (i.e., containing excess ^{235}U) composition and/or ^{236}U from the former Portsmouth Gaseous Diffusion Plant (PORTS).

The mass spectrometric results ***do not*** indicate deviations in $^{235}U/^{238}U$ from the natural value (0.0072527) among ***any*** of the Highland or Brown County samples (Figure 1). None of the dust ash samples exhibited elevated U concentrations which could reflect non-background U sources, and accordingly, no PORTS influence appears to be present. Three of the dust wipe samples from Highland County, however, ***did exhibit detectable ^{236}U*** (Figure 2). The detected ^{236}U is not an instrumental artifact, and the $^{236}U/^{238}U$ are orders of magnitude above the range of naturally occurring (geogenic) ^{236}U. It cannot be ascertained from this set of results whether the ^{236}U is from PORTS, another anthropogenic source(s), or from weapons-test fallout.


$^{235}U/^{238}U$
0.00760
0.00750
0.00740
0.00730
0.00720
0.00710
0.00700
Enriched U ↑
Naturally occurring U
Depleted U ↓
$^{236}U/^{238}U$
0.00000600
0.00000500
0.00000400
0.00000300
0.00000200
0.00000100
0.00000000
^{236}U present
No ^{236}U detected

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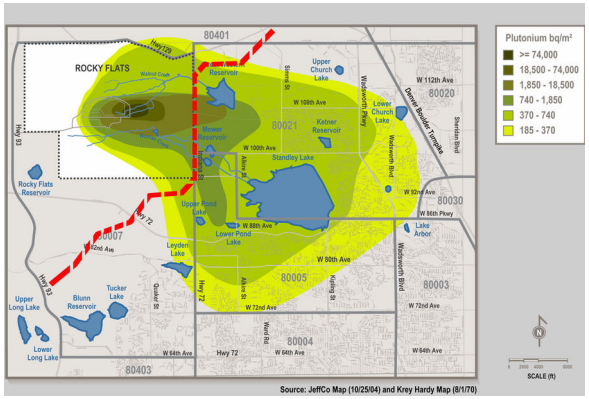
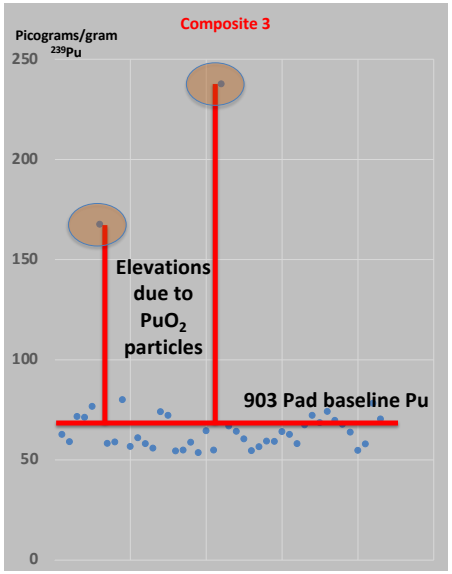
HDX
Particle
N95 Respirator Mask
Advanced filter material for low breathing resistance
30 pack
NIOSH
HDX
HOME DEPOT H950
TC-84A-5411
NIOSH N95
24V MAX
EXTENDED RUN
KOBALT
BRUSHLESS

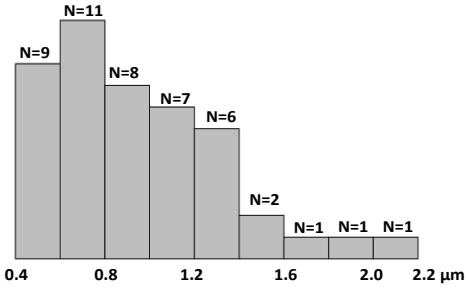
A 1590 cfm, 8' diameter cylindrical high-velocity blower fan is obtained from Harbor Freight Tools

https://www.harborfreight.com/8-in-portable-ventilator-59156.html



0 - 5 cm soil composite
↓ Dry, Sieve
< 75 micron fraction
↓ 200 mg sub-samples (n=30 to 50 per soil) + 2.0 g KOH, 20 pg ^{242}Pu, Fuse 600° C, one hour + 10 mL H_2O
Retained Precipitate
↓ + 10 mL 4 M HNO_3 + Fe(II), NO_2^- (aq) + 100 mg TEVA, Rinses 2 M HNO_3, 9 M HCl, 2 M HNO_3, Elute H_2O, 0.05 M ammonium oxalate
Separated Pu fraction
↓ ICPMS
^{239}Pu, picograms/gram
↓ Test for outliers, Calculate excess pg ^{239}Pu
PuO_2 particle sizes





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Supplies list: i) blower fan; ii) 8” to 6” sheet metal reducer duct crimped as shown to fit inside inlet end; double thickness of MERV-12 furnace filter material; 7” diameter kitchen sieve strainer with handle cut off; duct tape

Assembly: a 10” x 10” section of two thicknesses of MERV-12 filter is cut to fit over inlet opening. Sheet metal reducer duct is taped to the inlet end of the blower (note direction of arrow); two thicknesses of filter are placed over the inlet, sandwiched with the sieve strainer (red ring); tape is applied to seal the strainer and filter material to the sheet metal reducer duct

The author at left with Vina Colley (lives near Portsmouth Gaseous Diffusion Plant) and a portable air monitor shown ready for installation at Ms. Colley's residence

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