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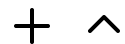


(/profile/01sQjzCnCCFY9LDms/?is=detail_author)

David Wood (/profile/0

10 Apr (/p/P47BzwZSk

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Final Rocky Flats posting: boffins vs. buffoons

Today come the science graphics. Readers might find it helpful to brush up on how to identify conspiracy theories and pseudo-science. The document <https://rockyflatsneighbors.org/wp-content/uploads/RevisedJul21SmellOMeter.pdf> (<https://rockyflatsneighbors.org/wp-content/uploads/RevisedJul21SmellOMeter.pdf>)

is a useful compendium most people agree on.

This posting has 4 attachments: 3 about measurements and science and 1 rebutting statements made by anti-Refuge, anti-nuclear reps at the March 11 Westminster city council meeting. If you've already downloaded the 4-page PDF you might still find comments below helpful. There's much more to be said than will fit in 4 pages. I'm posting these PNGs for those who have not, cannot, or are reluctant to download the PDF, and then I'll give it a rest. I am happy to respond to general questions from others, however.

Page A shows that measured background (gamma+cosmic rays) radiation around RF is normal for the area despite massive (and misplaced) public focus on plutonium. (The figure posted on April 7 shows that this is because americium and plutonium are trace contaminants.)

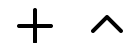
*There is nothing exotic about Pu, which is very similar to natural radioisotopes, except that it emits far fewer (very penetrating, whole-body-dose) gamma rays. It also shows measured histograms of Pu levels found in 2019 and those found earlier throughout the Refuge+COU by the DOE. (The Refuge was never part of the Superfund cleanup.) ^{239}Pu 's 24,100 half-life is peanuts.

*Hot particles (tiny respirable particles of very insoluble PuO_2) have long been known to exist in RF soil and were systematically measured by Ketterer in 2019. It's easy to include them in total soil Pu radioactivity, where they contribute less than 0.5 pCi/g (where they are present; none if not). See <https://rockyflatsneighbors.org/recent-measurements-within-the-refuge/> (<https://rockyflatsneighbors.org/recent-measurements-within-the-refuge/>) for more data and graphics.

There's just not enough Pu/Am around to give appreciable radiation doses--this is a physical constraint.



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Page B looks at how radiation dose and the corresponding risk of cancer is calculated using frequently updated data from the ICRP. For HIGH soil concentrations of Am/Pu (such that 90% of all samples have lower value) we show a pie chart that forces us to put the contribution from Pu and Am into context.

*We also look at RESRAD, software used by the DOE, the EPA, and many countries around the world, to give an integrated picture of soil contributions to dose. (We have switched off erosion and transport, leaving the dependence on half lives revealed.) In reality, doses per year due to specifically surface contaminants (Pu, Am from the RF plant) will drop as the surface soil blows away.

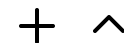
*The reason Broomfield gave for not honoring its commitment to the Jefferson Parkway—a single large hot particle with activity of 264 pCi—is found to be an anomaly. Such a particle is extremely unlikely, borderline respirable, and insignificant for dose. You'd need to inhale hundreds of thousands of more typical-size hot particles to raise your cancer risk by 1%

*Radioactivity and radiation can both be measured reliably. Calculating dose requires more work but is a geometry problem (routine in radiation therapy). Risk data is least precise, comes from epidemiology, and risk may be overestimated for doses comparable to and smaller than background.

Page C examines how Pu and Am are distributed in the soil and what's happening to it over time. It also shows that radiation-sensitive cancers looked for in the late 1970s (15 years or more after peak Pu releases from the Rocky Flats plant) appeared randomly distributed (after very non-uniform population density was corrected for). This is not compatible with the idea that Rocky Flats caused excess cancers downwind. (Even for plant workers no pattern of excess cancers was observed.) This is no surprise, since Pu contributions to annual dose are about 400 times smaller than background. It also means that any attempt to find excess cancers is probably doomed.

Page D reviews common misinformation used by anti-Refuge activists. No claim survives careful inspection. Cloaking their anti-nuclear stance with concern for public health has worked successfully with naive nearby municipalities, but actual health risks come from unmitigated radon and excess use of medical diagnostics

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(/profile/01yLPZqzxp8KB7Y9c/?is=feed_commenter)

Amanda L. (/profile/01yLPZqzxp8KB7Y9c/?is=detail_)

It seems like you're suggesting inhaling Pu isn't dangerous. Or are you suggesting inhaling up to 1400 particles is safe? Are you referring to molecules of plutonium or 1400 atoms of plutonium? That's unclear.

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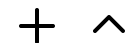


(/profile/01sQjzCnCCFY9LDms/?is=feed_commenter)

David Wood (/profile/01sQjzCnCCFY9LDms/?is=detail_)

As I pointed out, there's nothing magical about plutonium. Any alpha particle emitting radioisotope in soil would produce similar effects when inhaled. But 99.4% of soil alpha particle emitters in RF soil is natural. Hot particles (NOT atoms, NOT molecules) are quite radioactive but are almost too big to be respirable--they end up being pushed back out the nose and swallowed. Small ones are MUCH less radioactive and may remain embedded in the lung. Old concerns about cancer from inhaling a single hot particle were put to rest by the mid 1970s: see <https://rockyflatsneighbors.org/wp-content/uploads/HotParticlesV1.2.pdf> (<https://rockyflatsneighbors.org/wp-content/uploads/HotParticlesV1.2.pdf>). I didn't say ANYTHING was SAFE. I estimated how many you'd need to inhale to raise your cancer risk by 1%. Inhaling one the same size as the Jefferson

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Parkway one, IF it made it into your lungs and stayed there, would thus be estimated to raise your lifetime cancer risk by 1 in 135,000. 25 workers at Los Alamos inhaled about 100,000 hot particles about 1 micron in size. 25 years after the accident, no health effects had been found. The 1965 Rocky Flats fire caused ingestion of 10,000 to 100,000 plutonium particles. After 15 years of followup there were still no lung diseases. Only YOU can decide if an excess risk of 1 in 135,000 is "safe". Please follow the link above if you're specifically worried about hot particles (a favorite of anti-Refuge groups).

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Jane Meier (/profile/01Bm_kGYLKLj9k24X/?is=detail_...)

I'm convinced.

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(/profile/01KwMrpyxC4SkqPQm/?is=feed_commenter)

David Carpenter (/profile/01KwMrpyxC4SkqPQm/?i...)

Thank you for speaking the truth against the anti-highway, anti-trail people masquerading as environmental activists.

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(/profile/01sQjzCnCCFY9LDms/?is=feed_commenter)

David Wood (/profile/01sQjzCnCCFY9LDms/?is=det...)

I'm not sure the anti-Refuge activists care at all about trails or highways. They are interested in portraying anything nuclear in the worst possible light by preying on public ignorance.

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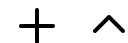


(/profile/019FM3DYPmMHW-dKX/?is=feed_commenter)

Brian Bitz (/profile/019FM3DYPmMHW-dKX/?is=detail_...)

David, Thanks for providing actual in-depth research and facts to show the truth about Rocky Flats. My

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father-in-law is a nuclear engineer and fully agrees.

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(/profile/01gF35YQ3kbW4p-4n/?is=feed_commenter)

Donna Colao (/profile/01gF35YQ3kbW4p-4n/?is=detail_

Omg looks confusing. Maybe a meeting place for an info session.

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(/profile/01sQjzCnCCFY9LDms/?is=feed_commenter)

David Wood (/profile/01sQjzCnCCFY9LDms/?is=det:

Donna: As mentioned on rockyflatsneighbors.org (<http://rockyflatsneighbors.org>), I am happy to give a presentation for groups of 20 or more. (One from 2018 is already on the website, but there is MUCH more to be said now.)

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David Wood (/profile/01sQjzCnCCFY9LDms/?is=det:

Glad I included a bibliography--people can track down anything I say to the original peer-reviewed literature. The main point of the graphics was that you don't need to be a nuc to understand them (sez me). Oh noooo! Banned from Nextdoor!?

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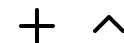


(/profile/01RCzrKG8x-sHZW6T/?is=feed_commenter)

Bruce Evans (/profile/01RCzrKG8x-sHZW6T/?is=detail_comme

I can't believe that ANYONE would even consider rolling the dice on the remaining contamination potentials ANYWHERE near the old arsenal and Candelas. I am sure the representative realtors selling to thousands of uninformed buyers made sure they were informed of ANY problems accordingly here. RIGHT? I would not touch ANYTHING there. Potential buyers need to do their due diligence

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researching ANYTHING offered there. I did happen to see a three-eyed trout pulled out of Standley Lake 10 years ago.
NICE!

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