

From: [Hearing](#)
To: [Hearing Forward](#)
Subject: FW: [EXTERNAL] My public comments for May 22 meeting on HEPA filters inability to contain plutonium
Date: Monday, April 29, 2019 4:59:20 PM

From: Peter Rickards
Sent: Monday, April 29, 2019 4:58:54 PM (UTC-05:00) Eastern Time (US & Canada)
To: Hearing
Subject: [EXTERNAL] My public comments for May 22 meeting on HEPA filters inability to contain plutonium

Hi DNFSB people,

I see you have announced a May 22 public meeting on the INL plutonium accident, that includes future work, too.

On April 5 I submitted the below DOE documents on HEPA filters inability to contain plutonium (pu), to the Inspector General hotline posted on the DNFSB website, for reporting safety problems. It also includes a DOE worker pu inhalation paper from the peer reviewed Radiation Protection Dosimetry journal by Dr Scott, who consults for the National Academy of Sciences. The dose from inhaling a small amount of pu-238 reported by Dr Scott profoundly dwarfs the public limit of exposure, and the workers, too.

I have not heard back, even though I called an Officer listed, who promised to follow through, but has not replied yet.

So I want to make sure this is addressed please.

I see you will allow oral public comment but will you allow SKYPE, since I am too busy to fly in?

Will you have an live telecast?

Please confirm you received these documented flaws.

Sincerely, Dr Peter Rickards, Twin Falls, Idaho

Below is what you submitted to the NRC Office of the Inspector General on Friday, April 05, 2019 at 06:57:13

Complaint: Dear Inspector General, I was trying to get this information to the DNFSB, concerning the INL and all DOE sites. Can you please forward it to them before their May public meeting on the April 2018 accident? I would also like you to address this serious threat to public safety & workers, too. The issue is on the safety threat of alpha recoil and the inability of HEPA filters to contain plutonium, especially pu-238, that we work with in Idaho, and other sites. Thank you, Dr Peter Rickards, Twin Falls. Here is the documentation:

To the DNFSB,

I see you are investigating the April 2018 accident at INL, where 4 tru waste containers unexpectedly blew their lids, with an upcoming public meeting in May.

I am a retired podiatrist in Twin Falls, Idaho, who has worked 30 years on nuclear issues here. I was on the CDC Citizen Advisory Panel and collected many problematic documents over the years, including HEPA filter flaws.

I am asking DNFSB to please address the issues below, to see if the State Air Permit's limit for public exposure has been violated by this accident, by the 2011 ZPPR plutonium accident, and actually by normal operations for current and proposed projects at INL and all DOE sites, like Savannah River Site. This seems well within your Mission Statement goal of "protection of public health and safety", as well as protecting workers.

The main problem is HEPA filters inability to contain alpha emitters, like plutonium 239, and especially hyperactive pu-238. According to obscured DOE documents, the phenomena called "alpha recoil" is "similar to the recoil of a gun" and knocks plutonium off filters, back into the exiting air stream, through even 6 filters in a row! This makes the important amount of pu-238 particles leaving the building, from the last filter, a factually unknown amount. This is not honest science, especially when Idaho is about to cluster nuclear work here, producing fuel rods and producing plutonium-238.

I will document below how the DOE covers up that fatal flaw, in the EIS for plutonium-238 production planned for Idaho, and how that relates to the many accidents at INL, as well as normal operations at every site.

The secondary problem that needs DNFSB's public scrutiny and documentation, is what is the actual dose to the public and workers, from the millions of actual pu-238 particles that leave the last filter, into Idaho's air.

The EIS for pu-238 production claims, using the present analysis methods, that normal operations filtering is so darn efficient the maximum public dose would be 0.00000026 mrem, well below the 10 mrem public limit. I will document below how inaccurate this dose estimate appears, citing a peer reviewed paper on Rocky Flats workers, from Radiation Protection Dosimetry, which reveals a much higher dose.

I am asking DNFSB to check when, or if, INL changes the HEPA filters on the buildings for this accident, and the 2011 ZPPR plutonium accident. If not exchanged for new filters, it is possible that INL is still emitting plutonium-238 & pu-238.

All DOE calculations claim HEPA filters are 99.97% efficient and claim 4 filters in a row even magnitudes more efficient. However, the McDowell studies from DOE proved "alpha recoil" allows plutonium to creep through 4 filters, into the air we breath. Here is another DOE document on alpha recoil I pulled from the OSTI archives, and share to deaf DOE ears & averted eyes, at official scoping hearing for new plutonium-238 production plans' EIS.

http://www.osti.gov/energycitations/product.biblio.jsp?query_id=0&page=0&osti_id=969795

Snippet: **Operational experience at PuFF indicates that the Pu-238 contamination was observed to move along surfaces and through High Efficiency Particulate Air (HEPA) filters over time.** Recent research into the phenomenon known as alpha recoil offers a potential explanation for this observed behavior. Momentum is conserved when an alpha particle is ejected from a Pu-238 atom due to radioactive decay. Consequently, the entire particle of which that Pu-238 atom is a constituent experiences a movement similar to the recoil of a gun when a bullet is ejected. Furthermore, the particle often fractures in response to Pu-238 atom disintegration (yielding an alpha particle), with a small particle fragment also being ejected in order to conserve momentum. **This process results in the continuous size reduction and transport of particles containing Pu-238 atoms, thus explaining movement of contamination along surfaces and through HEPA filters.**

Here is the url I found for a 2005 paper on alpha recoil from Oak Ridge Natl Lab that is beyond alarming, but never addressed in any EIS.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.544.9833&rep=rep1&type=pdf>

I paste key quotes with the web page to verify them:

web page 9/27

These studies have been motivated by concerns about the containment of radioactive material and the increased potential for uptake of material by humans.

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Fleischer (1975), and Fleischer and Raabe (1977) examined the solubility of PuO₂ in simulated lung fluid. Here solubility refers to the "conversion of plutonium in the extremely insoluble particles of PuO₂ to more dispersed forms." These authors observed that ²³⁸PuO₂ dissolves at a rate that is about 200 times faster than ²³⁹PuO₂, which has a much lower specific activity (17 Ci/g for ²³⁸Pu versus 0.062 Ci/g for ²³⁹Pu)

webpage 13/27

Clinard and Rohr (1981) studied fragmentation of PuO₂ from the perspective of the potential for the release and leaching of plutonium from waste forms. They observed that ²³⁸PuO₂ undergoes spontaneous fragmentation and that the relatively short-lived ²³⁸PuO₂ is more prone to fragmentation than is ²³⁹PuO₂. For their experiments, Clinard and Rohr prepared samples by hot pressing at 1530°C and then firing in an oxidizing atmosphere at 1440°C. They measured the fragmentation rate of ²³⁸Pu samples, which was defined as the rate at which -420 mesh (<34-µm) fines were produced. From the data presented, this rate is about 0.001%/day. Fragmentation was found to continue into submicroscopic particles (i.e., 10-µm particles continued to break up). Clinard and Rohr determined by calculation that thermal stresses were not responsible for the fragmentation. They concluded that lattice damage by recoil nuclei and alpha particles, as well as radiolytic effects (e.g., the production of species that attack the lattice) may play a role in fragmentation.

15/27 Peter: This seems to actually calculate how fast it leaves the filter and say 5% to 0.1% by weight of pu-238 is released PER MONTH. It was 0.02% for pu-239 via Table 1. Back to the paper quotes:

The recoil energy resulting from alpha decay is sufficient to resuspend nanometer-sized particles from a filter fiber. Particles with densities of 10 g/cm³ and up to 20 nm in diameter can be dislodged. While alpha-recoil energy is not sufficient to resuspend micron or submicron particles, fragmentation can lead to the production of even smaller particles that can be resuspended. Bierman, da Roza, and Chang (1991) provide a formulation for the mass percentage release per unit time (M %) that results from alpha recoil:

17/27 Peter: WOW pu-238 is reported as "lifelike" that can "walk" and "flys"! This is key when a later 2011 denial paper later only looks at pu-239, NOT pu-238, and only certain sizes. Back to quotes:

Congdon (1996) described significant evidence of high ²³⁸Pu mobility. The number of contamination incidents involving ²³⁸Pu was 3.5 times those for ²³⁹Pu. However, more than 100 times the quantity of ²³⁹Pu was processed. The incident rate is close to the ratio of the specific activities and the amount of material processed [i.e., (17 Ci/g) × 1 g / (0.062 Ci/g) × 100 g = 2.7]. Clearly, the ²³⁸Pu was more difficult to control and contain than the ²³⁹Pu. Personnel involved with processing ²³⁸Pu indicated that it had "lifelike" characteristics, as the fines appeared to "fly" through the air or "walk" along pipes. Congdon states that "in some cases, the fine particles appear to behave more like a gas than a solid." Additionally, "alpha decay and heat cause numerous failures of 35 mil thick rubber gloves," even in a matter of days. When ²³⁸Pu particles got outside of containment, they sometimes traveled for hundreds of feet, rather than directly settling. According to Congdon, "other types of radioactive materials do not appear to be nearly as mobile as ²³⁸Pu and are usually spread by physically spreading the material from one surface to another." Such surfaces were difficult to decontaminate. Fine particles of ²³⁸Pu were easily dispersed (resuspended) into the air, and previously decontaminated surfaces were found to be recontaminated after several hours or days. Because of self-heating, ²³⁸Pu oxide does not tend to absorb water. Furthermore, ²³⁸Pu tends to remain as individual particles rather than forming agglomerates. (Note that one cause of agglomeration would be adsorption of water, thereby causing the particles to stick together.) Additionally, alpha emissions and the concomitant recoil may act to break up agglomerates. Such small particles are then easily dispersed, especially since the dry ²³⁸Pu particles do not adhere to surfaces. A recent assessment of the contamination problem and the mobility of ²³⁸Pu particles is also provided by Reichel (2004).

19/27 Peter: This says Oak Ridge has studies planned. The ORNL website list 4 alpha recoil papers but denies me access as unauthorized! Will DNFSB please demand them (and share so I can critique for flaws). I have to guess that IF the forbidden reports had found fantastic efficiency, they would have shared and bragged... But Quotes and their conclusion:

To further quantify the movement and dispersion of initial deposits of high-specific-activity alpha materials, experiments have been designed at ORNL to measure such movement.

Conclusion-

Alpha decay can result in the fragmentation of particles into smaller respirable fractions. Additionally, recoil nuclei can cause the movement or resuspension of radioactive material. Such movement must be considered when modeling the release of such material. Studies, especially with filtration media, have shown that the effects of aggregate recoil transport should be considered in response to and cleanup of release events. Aggregate recoil increases the penetration of filtration media, thereby lowering its effectiveness.

This brings us to the issue of calculating the dose to the public, the workers even with HEPA masks, the dose to other onsite workers. Please remember school kids and pregnant women are taken on tours of the site, and they are even more sensitive to radiation exposure, from the particles emitting from HEPA filters. Rt 20 also runs right by the site, possibly with women truck drivers on daily routes, possibly pregnant.

From the above paper, is also contradicting problems on the wind resuspension rates usually used in dose calculations of leaked particles. I would need to double check, but memory says a rate of 1 in 1,000,000 is used for windy days, since pu is known as a heavy metal. This does not incorporate the ability of pu, especially pu-238, to fragment into smaller particles, which easily move with wind. Here is the quote::

16/27

Johnston et al. (1993) studied the resuspension of plutonium and americium particles in an Australian desert. They quantified the resuspension in terms of a "resuspension factor," which is defined as the airborne activity concentration divided by the surface activity density (i.e., activity per unit area). The studies were performed over a 1-year period, and an average resuspension factor of 4 × 10⁻¹⁰ m⁻¹ was measured. The resuspension can increase by up to 3 orders of magnitude for winds greater than 10 m/s. The authors did not assess the effects of alpha recoil on resuspension. However, they do assume that only particles less than 75 µm can be resuspended. Therefore, fragmentation by alpha recoil can increase the amount of material available for resuspension.

The DOE speech teams claim inhaling plutonium is less of a dose than eating a banana. I understand natural potassium-40 decay has a high energy, but it seems the less pu one inhales, the less chance the repair mechanism has of malfunctioning. The CDC doctors told me, "Sure, the alpha particle is more destructive to lung tissue than gamma. But it kills the cells, and dead cells don't cause cancer". That did not make me breath easier so I looked further for the science.

What I found was a peer reviewed paper from the very pro-nuclear Dr's Scott below. He analyzed inhalation of PuO₂ by Rocky Flats workers and reported the minority pu-238 gave the majority dose, and a much higher dose than what the DOE pu-238 EIS claims.

Dr Scott consults for the NAS and is even published on hormesis. I called Dr Scott to confirm I understood his papers' wording. Indeed, he looked at the dose when actual particles were inhaled and agreed he meant just 3 particles of pu-238 would exceed the workers 100 mrem limit. Dr Scott agreed that just one lone pu-238 particle would exceed the publics 10 mrem limit, with about a 30 mrem dose. Here is the key quote and source:

<http://rpd.oxfordjournals.org/content/83/3/221.abstract>

The alpha-emitting isotopes ²³⁸Pu, ²³⁹Pu, ²⁴⁰Pu and ²⁴²Pu are found at Rocky Flats. Although ²³⁸Pu is thought to be present in relatively small amounts there, intake

via inhalation of only a few ²³⁸PuO₂ particles could greatly exceed the ALI.

Variability in PuO₂ Intake by Inhalation: Implications for Worker Protection at the US Department of Energy

B.R. Scott A.F. Fencil

Radiation Protection Dosimetry, Volume 83, Issue 3, 1 July 1999, Pages 221–232, <https://doi.org/10.1093/oxfordjournals.rpd.a032676>

Published: 01 July 1999

So how can the DOE claim the maximum dose to the public from normal pu-238 production, or any effluent, is a tiny 0.00000026 mrem, when Dr Scott finds one lone particle would be about 30 mrem?

The DOE impact statements appear to unrealistically break their analysis into single ATOMS of pu-238, while Dr Scott models actual Rocky Flats particles, with thousands of atoms.

These pu fragments are the exact fragmenting particles dumped at INL, that were involved in the April 2018 accident.

They are not single atoms, with mathematically no consequences. Pu-238 particles in your lungs are perpetual points of direct DNA damage, that shred DNA 275 times faster than pu-239. That is extra important for pu-238 production, where it is the main element.

DOE admits in the EIS that about 0.0000000001% release through the 4th filter. DOE then takes that total weight and divides it into single atoms, like radon gas is. DOE actually then spreads that release amount around the 50 mile circle required, divides by the population, then divides by the chances it will fall elsewhere than a human, then divides by the chance you will exhale it, if comes into your airspace! This ignores the reality of the actual multi-atom pu-238 particles that resuspend every windy day in windy Idaho!

So this leaves DNFSB with the questions:

- 1) "Even though pu-238 is a minority element", how fast dose it REALLY move through HEPA filters at the 2 INL accidents?
- 2) How often does INL change filters? Are the same filters at the ZPPR building, still emitting pu-238 & 239 from the 2011 ZPPR accident? Since pu-238 has an hourly progression through HEPA filters, have those filters from the April 2018 barrels already released hundreds or thousands of multi-atom pu-238 particles?

So the DOE impact statements ignore the particle size problem, despite me raising the issues at every EIS scoping hearing since 1988. Like the FL Horn experiment, from DOE's PNL, available on microfiche, and I have a paper copy, it is so old. INL gave me the paper to prove particles were so big and chunky, the filters worked great. They claim 0.3 um are the hardest to filter, and smaller ones are supposedly filtered better than the 99.97% of the 0.3 um. I was amazed when I read the paper because it said the opposite. Dr Horn tried to imitate a criticality in a closed, windless chamber. Most the particles actually were under 0.3 um and were actually SO light, they were floating on the Brownian Motion of the air molecules days later, in this windless chamber!

In searching for obscured updates, I located a 2011 ORNL HEPA experiment with interesting but questionable information at <https://www.tandfonline.com/doi/full/10.1080/02786826.2011.584331>

Direct Determination of Ultra-trace Plutonium Nanoparticles in Downstream of a Six-Stage HEPA Filter by Inductively-Coupled-Plasma Mass Spectrometry: A Field Application

CONCLUSION

Through on-line monitoring of particle number concentration above 10 nm by CPC and off-line monitoring of ²³⁹Pu activity concentration by ²⁴²Pu ID-ICP-MS, it is confirmed that HEPA filter works properly during field operation. Direct introduction and rapid determination of ultra-trace plutonium aerosol in downstream of the HEPA filter have been conducted using ELEMENT ICP-MS and Nu MC-ICP-MS. The results show that the DLs of ELEMENT and Nu for plutonium are 5.0×10^{-3} Bq/m³ and 5.5×10^{-4} Bq/m³, respectively. Concentrations in the filtered gas are of the order of 10⁻² Bq/m³ while the blank value is 5.7×10^{-3} Bq/m³. Some plutonium nanoparticles have penetrated the six-stage HEPA filter and the plutonium concentrations after filtration are nearly stable at different sampling periods. These phenomena could not be observed by traditional on-line and off-line monitoring methods. The size of penetrated plutonium nanoparticles was investigated with single particle detection method using ELEMENT. Preliminary results indicate that the plutonium nanoparticle would be below 10 nm assuming the form of ²³⁹PuO₂.

The red flag to me is this was done for only one week and only used slow pu-239 & 242! This seems typical of what I call Intentional Tunnel-Vision. When they KNOW pu-238 "flies" through the filters, why avoid the KNOWN Beast Of Another Nature, pu-238?

Why only test for one week, when filters are sometimes left for decades, not changed weekly? Then, when they are surprised by the pu nano particles escaping from the (never implemented in real life) 6th filter, they dare declare they successfully "confirmed that HEPA filter works properly during field operation.!"

NO, it did NOT confirm the the filters worked at the expected efficiency in normal field use. It actually confirmed the DOE has no idea how many millions of pu- 238 or 239 is being released, nor resuspended in wind. That is not Fairy Dust nor banana powder they are sprinkling on our families.

So let me share NIOSH 's view of how nano particles are are greater problem , weight for weight.

This is a quote from NIOSH but I found it on the Canadian Health Dept url at

https://www.ccohs.ca/oshanswers/chemicals/how_do.html

Do nanoparticles behave the same way as regular sized particles?

Nanoparticles are those particles that range in size from 1 to 100 nanometres (nm). As stated by NIOSH (the National Institute for Occupational Safety and Health):

At this size, materials begin to exhibit unique properties that affect physical, chemical, and biological behavior. ... Studies have indicated that low solubility nanoparticles are more toxic than larger particles on a mass for mass basis. There are

strong indications that particle surface area and surface chemistry are responsible for observed responses in cell cultures and animals. Studies suggests that some nanoparticles can move from the respiratory system to other organs. Research is continuing to understand how these unique properties may lead to specific health effects.

And

Nanomaterials that can be inhaled, ingested or can penetrate skin indicate a potential for exposure and present the possibility of potential health effects. Processes that lead to airborne nanometer-diameter particles, respirable nanostructured particles (typically smaller than 4 micrometers) and respirable droplets of nanomaterial suspensions, solutions and slurries are of particular concern for potential inhalation exposures.

And

Results from experimental animal studies with engineered nanomaterials have provided evidence that some nanoparticle exposures can result in serious health effects involving pulmonary and cardiovascular systems and possibly other organ systems.

From: NIOSH (2017) [Nanotechnology](#)

I will share the DOE's awesome Dr Soderholm's work on plutonium nanoclusters discovery, on why pu moves easily with water, defying the expectation it will bind to clay and never move. This adds to the discovery of mobile plutonium colloids by DOE's Dr Kersting. Dr Kersting found plutonium had already migrated one mile, in the Nevada sluggish slow aquifer, like we have here in Idaho, under the dumped Rocky Flats waste, in a flood zone that feeds southern Idaho's aquifer.

Here is the abstract for Dr Soderholm:

<https://www.anl.gov/article/scientists-discover-how-the-structure-of-plutonium-nanocluster-contaminants-increases-risk-of>

Scientists discover how the structure of plutonium nanocluster contaminants increases risk of spreading

ARGONNE, Ill. — For almost half a century, scientists have struggled with plutonium contamination spreading further in groundwater than expected, increasing the risk of sickness in humans and animals. It was known nanometer-sized clusters of plutonium oxide were the culprit, but no one had been able to study its structure or find a way to separate it from the groundwater.

Scientists at the U.S. Department of Energy's Argonne National Laboratory, in collaboration with researchers from the [University of Notre Dame](#), were able to use high-energy X-rays from the [Advanced Photon Source](#) (APS) at Argonne to finally discover and study the structure of plutonium nanoclusters.

When plutonium forms into the clusters, its chemistry is completely different, and no one has really been able to assess what it is, how to model it or how to separate it," said Argonne senior chemist Lynda Soderholm. "People have known about and tried to understand the nanoclusters, but it was the modern analytical techniques and the APS that allowed us understand what it is."

In conclusion, I hope DNFSB will flush out these issues. Please consider joining my call for a full EIS on HEPA filters, especially their inability to actually contain plutonium. It is important information that should have been revealed long ago.

Sincerely...Peter Rickards, Twin Falls, Idaho

From: Peter Rickards [REDACTED]

Sent: Friday, May 31, 2019 3:29 PM

To: Joseph Gilman [REDACTED] Ian Fennell

Subject: Re: [EXTERNAL] My public comments for May 22 meeting on HEPA filters inability to contain plutonium

Hi Joe,

Thank you for clarifying the procedure. I will add 4 further public comments below, and you may post them. First, the Natl Academy of Sciences appeared to agree with me when I shared the alpha recoil problem, and second, the elevated brain cancer rate around INL, and third, evidence of the probable link of radiation exposure and autoimmune diseases. Fourth is directly on whether the INL workers exposed last April.

1) I shared my original alpha recoil documents with the National Academy of Sciences panel on alternatives for plutonium incineration, and they indeed recommended research into "emission-free treatment."

NAS also recommended my approach to reduce airborne plutonium from plutonium retrieval of "stabilizing buried waste prior to or in the early stages of excavation".

I share that NAS quote url, in context. See <https://www.nap.edu/download/10513> in the Executive Summary, page 7, webpage 8/10.

I did share their recommendation with INL and Idaho officials, the Governor and his LINE Commission,, but I can see no evidence the advice was followed.

ATSDR actually advised INL NOT to use a backhoe at Pit 9 because of the potential to break bottles of liquid solvent, but they were ignored.

The goal of waste management is simply "containment". Because WIPP would be overfilled with past waste, DOE re-wrote regulations to leave it in Idaho. See Feasibility study <http://ar.inel.gov/images/pdf/200706/2007061400254TUA.pdf>

Here is one key reason DOE does not want to remove all the acres of plutonium waste at INL, because it would overflow the New Mexico WIPP facility! From page 4-67 or webpage 278/285 "Currently, WIPP is the only facility that can receive transuranic waste for disposal. Total capacity of WIPP as currently designed is 175,600 m³ (229,676 yd³); **WIPP may not have sufficient capacity to receive 242,000 drums or 50,000 m³ (66,000 yd³) of potentially acceptable waste from the SDA,**

necessitating that Congress modify the WIPP Land Withdrawal Act. In addition, WIPP is expected to be filled to capacity by the year 2034. **The retrieval component of this alternative would last until the year 2037, which could pose a problem if WIPP is filled to capacity by the year 2034."**

2) Let's look at the elevated brain cancer rate, in the 6 counties surrounding INL radioactive releases. This, of course, has been declared as unrelated to inhaling and absorbing INL radioactive releases. To be clear, I am not stating the elevated brain cancer rate is 100% INL's fault. It may all be a coincidence of misfortune, but most folks would choose a geothermal plant, solar panels, and windmills, if they were told the "whole truth and nothing but the truth" about INL.

I have to share how this brain cancer rate got revealed. I got a call from an Elaine McNair, from Moreland, in the early 90's. She had seen me in media speaking out about INL and asked for my help. She had reported her Moreland cancer concerns to the state health dep't, and their

study declared no problem detected. I drive to Moreland to meet with them. They had 4 rare glioblastoma brain tumors in this tiny town. I researched the expected rate was 1 per 100,000 people. They also had 6 astrocytoma brain cancers. So I went to bat, and publicly pushed to re-open the whitewashed study.

That was done and the truth was quietly reported.

,In full at <https://www.idcancer.org/ContentFiles/special/moreland/moredata.html> Snippet below:

RESULTS: Persons in the Moreland analysis area experienced significantly more cases of brain cancer than would be expected based upon Bingham County or state rates

Further study actually found all 6 counties around INL had an elevated brain cancer rate! I suggested they do autopsy studies like I found at Los Alamos Lab, where citizens had elevated pu-238 body burdens. I asked we sample their gardens for plutonium levels. That was refused, and the State instead sent out a survey, asking survivors or deceased folks families, what they "thought" gave them brain cancer, where they worked, and hobbies etc. Since only 10% worked at INL, the State dared declare they could find no common cause for this brain cancer elevation. Hmm... what could they have in common???? Sgt Schultz at work with our taxes :-)

Here is the whitewash of the 6 county elevated brain cancer rate <https://www.idcancer.org/ContentFiles/special/brain/braindata.html>

Background

Citizen requests led to the evaluation of brain cancer rates in eastern Idaho. Results of the evaluation revealed an elevated rate of brain cancer in the six-county area of Bingham, Bonneville, Butte, Clark, Jefferson, and Madison Counties compared to the rest of the state for the period 1985 through 1994. In response to the elevated rate in the six-county area, an investigation by the Cluster Analysis Work Group (CAWG) was undertaken in May 1997.

3) I had 2 well published autoimmune PhD's from Stanford review my paper correcting the CDC Hanford downwinders study, back in 2008.

CDC and NAS ignored me but their approach of looking for a linear dose response is beyond myopic, if you see Dr Sakaguchi's work irradiating the thymus. Yet they continue to dismiss their own evidence. I even pulled studies from unclassified studies where dog's got Addison's Disease from radiation, etc. This all calls for further study, and I even detail a fast way to analyze downwinders via vouchers. I suggest potential cures. This appears related to Gulf War Veterans as well as DOE downwinders.. I believe if this is researched, autoimmunity will be a worse effect from radiation than cancer. Please have your medical experts review the paper at https://www.peterforidaho.com/autoimmunity_full.html

4) File under hmm, not facts... An insider told me the dose estimated for the exposed workers seemed wrong, since the excretions were reflecting a much higher dose. So have you

looked backwards at the excretion assays to see if they match the expected excretions from the dose estimate?

Sincerely...Peter