Jeff McMahon

THE INGENUITY OF THE COMMONS

TECH

Why Does FDA Tolerate More Radiation Than EPA?

Apr. 14 2011 - 5:11 am | *6,815 views* | *0 recommendations* | *106 comments*

UPDATED *4/19 with long-awaited comment from FDA, at bottom.*

Image via Wikipedia

Since the Environmental Protection Agency began detecting radiation in rainwater and milk at levels above its maximum contaminant level, government officials have been downplaying the importance of EPA's maximum contaminant level.

They would much prefer us to speak in terms of the Food and Drug Administration's "Derived Intervention Level."

The two levels could hardly be more different:

- EPA does not allow drinking water to contain more than 3 picoCuries per liter of radioactive istotopes like iodine-131 and cesium-137.
- FDA allows up to 4,700 picoCuries of iodine-131 in a liter of milk and up to 33,000 picoCuries of cesium-137.

Officials from both agencies—as well as many state governments—explain the difference in terms of time: EPA assumes long-term exposure over 70 years. FDA assumes you're encountering the radiation all at once.

But time isn't the only difference between these two standards:

FDA tolerates a higher mortality rate.

In Hawaii, where milk from Hilo contained the highest levels seen so far, Environmental Health administrator Lynn Nakasone suggested the EPA's standard is irrelevant to milk contamination.

"It's like drinking two liters of water for 70 years to get (the EPA's) limit," Nakasone told the Honolulu Star-Advertiser. "So if you extrapolated to milk, you'd have to drink two liters of milk for 70 years to get that limit."

Nakasone prefers the FDA's standard. But here's what Nakasone isn't telling Hawaiians:

- The EPA's level is calculated so that in a population of one million people, the radiation will result in no more than one additional cancer fatality.
- The FDA standard, on the other hand, accepts two extra cancer fatalities in a population of 10,000.

Why does the FDA tolerate more radiation, and more mortality, than the EPA? I posed a question Wednesday morning to FDA spokesman Siobhan Delancey, who said:

> Let me check with my experts and get back to you, okay?"

Okay. When she does get back to me, I'll add her answer to this post, so stay posted. Meanwhile, I'll give you the answers we found in documents from both agencies.

First, I have some people to credit and thank. I owe this post to some of the other participants on this page who have become diligent researchers on this topic. Chargirl in particular dug up pertinent documents from the FDA. Mothra, and rickcromack have been dogged in their pursuit of facts. And daviddelosangeles has chipped in too.

As Chargirl pointed out in a comment yesterday, FDA's Derived Intervention Limits are not radioactive exposure limits. In the FDA's own words:

> FDA has set Derived Intervention Levels for foods prepared for consumption. These levels do not define a safe or unsafe level of exposure, but instead a level at which protective measures would be recommended to ensure that no one receives a significant dose.
>
> via FDA Public Health Focus > Radiation Safety.

In other words, the FDA's DIL is set at the point at which a single liter of milk is so radioactive, you should take protective action.

The number itself is conservatively estimated, with children and the elderly and our most vulnerable citizens in mind—but in practice, the DIL is more a commercial level than an exposure-safety level: DILs are

recognized internationally as the level above which foods are unfit for sale or trade.

The EPA's MCL Goal, by contrast, is "the level of a contaminant in drinking water below which there is no known or expected risk to health."

And that's not just over a 70-year period. EPA's *annual* MCL for iodine-131 is equivalent to 700 picoCuries per liter, according to this EPA document.

That means FDA's 4,700 picoCurie limit for one liter of milk is almost seven times higher than EPA's exposure maximum for a year.

FDA's limit for Cesium-137 in a single liter of milk is 47 times higher than EPA's annual maximum for human exposure.

To arrive at that level of tolerance, FDA has to accept a higher mortality rate. But why would it?

I suspect it has something to do with the cost/benefit analysis that some regulatory agencies are required to conduct when they set standards.

EPA's mandate is to protect public health while avoiding a "significant economic impact" to industry. If EPA finds high levels of radionuclides in a municipal drinking water system, the water can be cleaned relatively cheaply. Depending on the specific contaminant, the water can be treated with reverse osmosis, activated carbon, ion exchange, or better: all three.

If FDA finds high levels of radionuclides in milk, that milk can't go to market. That cow can't be implemented with a treatment system. And that dairy farmer faces a significant economic impact.

So the FDA observes a much more tolerant standard, and the impact is transferred to those theoretical two people in 10,000.

If FDA has another explanation, as I said earlier, I'll add it to this post.

I should point out, once again, that the administrators of both agencies agree that the radiation contamination levels in the U.S. are far below levels of concern.

EPA Administrator Lisa P. Jackson, in testimony before a Senate committee yesterday:

> EPA has not seen and does not expect to see radiation in our air or water reaching harmful levels in the United States. While radiation levels are slightly elevated in some places, they are significantly below harmful levels.

From FDA's Radiation Safety FAQ:

> At this time, there is no public health threat in the U.S. related to radiation exposure. FDA, together with other agencies, is carefully monitoring any possibility for distribution of radiation to the United States. At this time, theoretical models do not indicate that significant amounts of radiation will reach the U.S. coast or affect U.S. fishing waters.

The EPA's MCL is due for review in 2015. There have already been allegations that EPA plans to relax radiation standards. In the wake of this conflict of agencies, expect someone to try to relax the MCL for radionuclides.

Comment from Siobhan DeLancey of FDA Office of Public Affairs, sent 4/19/2011:

The EPA MCLs are based on consumption of water every day for a period of 70 years under "normal" circumstances where little to no radioactivity is expected. The FDA DILs are conceived for emergency conditions only and provide a level of contamination where protective actions should be considered to avert further dose from accidental (or terrorist) contamination of food. This averted dose is referred to as the PAG or Protective Action Guide and for food is defined as 500 mrem (5 mSv) whole body (CEDE) or 5 rem (50 mSv) to a single organ (CDE). It is not intended, under the FDA paradigm, that an individual would continually consume contaminated food for a full year. However, for risk estimation purposes only, we have determined that, if someone were to consume contaminated food for a year, he/she would receive a dose estimated at 500 mrem (5 mSv) committed effective dose equivalent (CEDE), which corresponds to an excess risk of cancer mortality of approximately 1 in 4400 above the baseline of 1 in 5 for all people before any excess radiation exposure.

The terminology "mortality tolerance" is not used in practice and should not be used to imply that FDA is willing to allow consumption of radioactive food based on an "acceptable" level of mortality in the population. Risk coefficients (one in a million, two in ten thousand) are statistically based population estimates of risk. As such they cannot be used to predict individual risk and there is likely to be variation around those numbers. Thus we cannot say precisely that "one in a million people will die of cancer from drinking water at the EPA MCL" or that "two in ten thousand people will die of cancer from consuming food at the level of an FDA DIL." These are estimates only and apply to populations as a whole. Our protective action guides and derived intervention levels are designed to avoid excessive dose and limit the risk to individuals from contaminated food. Further, our values have such a degree of conservatism that even if one were to consume food at the DIL, it is not conceivable that he/she would actually receive the PAG of 500 mrem/5 mSv. FDA would implement and recommend protective actions/interdiction long before anyone received a significant dose.

Related Stories:

New Radiation Highs in Milk From Little Rock and Hilo, Hawaii

Radiation in Drinking Water in 13 More Cities, Cesium-137 in Vermont Milk

Previous Post:
Senators Accuse NRC Chair Of Unnecessarily Invoking Emergency Powers

Next Post:
EPA Greenhouse Gas Inventory Shows 6 Percent Drop In CO2

More on Forbes Right Now

Related Posts

EPA: New Radiation Highs in Little Rock Milk, Philadelphia Drinking Water

First U.S. Drinking Water Samples Show Radiation from Japan: Boise, Richland Wa.

Radiation Detected In Rain In More States

Radiation Detected In Drinking Water In 13 More US Cities, Cesium-137 In Vermont Milk

EPA: Expect More Radiation in Rainwater

Comments

DISPLAY

Called-Out Comments | All comments

Active Conversation

29 Called-out Comments, 106 Total Comments

Post your comment »

12:35 pm on 04/14/11

mothra

This is from Lawrence Livermore Labs. It's an evaluation study from April 2010 regarding the FDA's DIL and PAG calculations from ingestion of radionuclide contaminants (with noted exception for infants). It's worth a read on point, if only for additional documents cited:
https://e-reports-ext.llnl.gov/pdf/393663.pdf

Log in to Reply Flag for abuse

1:06 pm on 04/14/11

rickcromack

Thanks, mothra, I'll be reading that shortly.

Jeff: The UC/Berkeley Radiological Air and Water Monitoring team has just posted a MAJOR CORRECTION to its previous, preliminary milk testing results, and it's not good. Here's the link:

http://www.nuc.berkeley.edu/node/2174

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

1:36 pm on 04/14/11

mothra

My DIL/PAG limit concerns:
1.) Not set for infants. (Discounts children's low dose phenomena risk).
2.) Not including multiple pathway exposures including tap water, rain outs and air- intervention is set in isolation to other exposures.
3.) Dose limit thresholds are too high in conflict with shrewd safety precautions and multiple other agencies both domestic and global.
4.) Lack of testing for known contaminates and their accumulation across pathways (ongoing). * You have to find it before you can act.
5.) Assume a one size fits all consumption rate.
6.) Based on outdated data and models from 30 plus years ago. Frankly, we know more now.

Therefore, I find FDA limits unacceptable. I go so personally far as to ask if this is some cruel joke? Sincerest appreciation to Jeff McMahon!

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

2:24 pm on 04/14/11

JEFF MCMAHON
The Ingenuity of the Commons

Mothra, the DIL is expressed in becquerels per kilogram, so more conversion is necessary, but I believe FDA did set the DIL at the level for the most vulnerable age group—one-year olds, according to FDA. The data is in Table 6 here; see what you think:

http://www.fda.gov/Food/FoodSafety/FoodContaminantsAdulteration/ChemicalContaminants/Radionuclides/UCM078341

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

4:29 pm on 04/14/11

mothra

"Other methods of extrapolation to the low-dose region could yield higher or lower numerical estimates of cancer deaths. Studies of human populations exposed at low doses are inadequate to demonstrate the actual magnitude of risk. There is scientific uncertainty about cancer risk in the low-dose region below the range of epidemiological observation, and the possibility of no risk cannot be excluded (CIRRPC 1992)."

"The five groups are: Strontium-90; Iodine-131; Cesium-134 + Cesium-137; Ruthenium-103 + Ruthenium-106; and Plutonium-238 + Plutonium-239 + Americium-241. An accident could involve more than one of the five groups. A single DIL for each radionuclide group was chosen based on the most limiting PAG and age group for the radionuclide group (i.e., the most limiting PAG and age group result in the lowest DIL). These five DILs are the ones incorporated into the new CPG."

No citation for "information received:"
"FDA's decision to reduce the assumption for dietary intake contamination from 100 percent to thirty percent is the main reason that the guidance levels established in the 1998 FDA document and adopted in the CPG are higher than the guidance levels contained in CPG 7119.14.'

Beyond FDA disclaimers above (among others), I should explain the following integrated
considerations I take into account for infants that others widely do not;
1.) Radionuclide activity: length in the body, environmental release date ongoing assumption, behavior tissue/bone/glandular/hormonal not stationary to exhibited system, accumulation/concentration, compounded or cascading immune response between all pathways and exposures including air & water.
2.) Density (cold or warm)
3.) Risk/benefit nutrition
4.) Low dose threshold phenomena
5.) Percentage of diet realistic – not 10% x 3
6.) Length of introduction – suddeness of exposure not priorly introduced
7.) Baseline background already in epidemic
8.) Lack of regional testing
9.) Exclusion of expected, known or reported radionuclides (re: MOX) in concert (now uncontained uranium, strontium, plutonium recently) – pending
9.) Mental development
10.) Long term reproductive
11.) Proir dietary deficiencies known
*I use the "my baby" standard, not the 1989 ICRP computed to age 70 years from people who've neither met us nor are incentivized by us.

I feel 20 Bq/kg is a conservative, fair expectation (as set for uranium) to promote acceptable prevention in absence of data or integrative approach in what I'd call a "sitting duck" scenario. I really wonder how the guideline debate ever moved so far in this upward direction. It forces me to cherry pick in a downward direction to combat it. *Not that I'd expect pureness sans all convention, but these are unreasonably high limits based on very little – outmoded to current lifestyles and environmental realities.

Thanks again! You do rock .

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

4:30 pm on 04/14/11

chargirl

Thank you for pursuing this Jeff, and everyone.

I fear that we could also lose the forest for the trees. The EPA has already clearly stated that the only "safe" level of radionuclides in drinking water is *zero*.
http://water.epa.gov/drink/contaminants/basicinformation/radionuclides.cfm. That is its MCGL standard. Its MCL standard is not purely based on human health; it takes into account a "cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies," while, however, attempting to get "as close to the health goals (the MCLG) as possible." The "safe" level is zero. Zero times 70 years is still zero.

Jeff's post is technically correct when it states that "The EPA's MCL Goal, by contrast, is 'the level of a contaminant in drinking water below which there is no known or expected risk to health.' " But I'm not sure it comes across that there are two standards, and that the MCL Goal is a different standard from the 3pCi/L or 700 pCi/year MCL. The difference is explained below, using language from the EPA document linked above.

The 1974 Safe Drinking Water Act requires EPA to determine 2 different standards for contaminants (including radiological substances). The first, called the MCGL ("maximum contaminant level goals"), is "the level of contaminants in drinking water at which no adverse health effects are likely to occur." This health goal is "based solely on possible health risks and exposure over a lifetime with an adequate margin of safety." It is non-enforceable.

Then, EPA sets an enforceable regulation, called a maximum contaminant level (MCL), "as close to the health goals (the MCLG) as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies." That's the MCL – in this case, the gross MCL for beta particles. The standard is 4 millirems/year

(or 700 pCi). This would be 49,000 pCi in a lifetime. 1 1/2 Liters of contaminated milk under the FDA DIL would exceed the EPA's lifetime limit.

The real question here is: why is EPA publicly issuing statements that flatly contradict its public health-based determination that the only safe level is zero? Why are they instead reassuring people based on an administrative standard from another federal agency (which does NOT have the same mandate EPA does) that would exceed even EPA's lifetime MCL allowance, and kills 1 out of 4400 people? (This is actually a significant mortality rate.)

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

10:58 pm on 04/14/11

mothra

That is THE question! It's very big news. I also want to know in a timely way: what's in it, how much and when. The blanket assurances are moot otherwise.

In response to another comment. *See in context »*

Flag for abuse

1:01 pm on 04/14/11

rickcromack

Thanks for the article, Mr. McMahon. It's a chilling assessment of how this nation's so-called "security" — and the individual safety of its residents — is inherently undermined, even completely nullified, by a variety of political, public relations, and commercial considerations and interests. It makes me wonder: If, God forbid, a radiological device were exploded near the stadium on Super Bowl weekend, would the federal Government underplay its , so as to ensure the financial efficacy of the NFL, team owners, local businesses, etc.? Would the continuing viability of that city as a tourism, convention, and retail / manufacturing concern be of far greater importance than the continuing safety of its citizens and workers? Would tweeting radiological monitors be dismissed as "not really all that much of a concern" for the sake of avoidng uncomfortable questions and heading off a public panic?

...Based on the actions, or lack thereof, of this Government during the first month-plus of this continuing nuclear event, I would have to say: That's EXACTLY how I believe it would all play out.

Log in to Reply Flag for abuse

1:30 pm on 04/14/11

liberationangel

Thank you,Mr. McMahon, for what seems like the only intelligent and insightful and honest reporting on these issues.

The revised UC Berkeley numbers for milk are scary, as it had seemed as if their results were trending downwards. Now it seems the bioaccumulation of the various cancer-causing radionuclides in cows grass, milk, farm produce, is increasing so that when you add all of these radionuclides together, as you have pointed out in your coments to previous articles, the overal dosing is substantial and above what the EPA or anyone else (except you and perhaps UC Berkeley and a few other sources) are telling us officially.

What REALLY bothers me, though, is that our government finds it ACCEPTABLE that levels of radiation in our food and water and air may kill a certain percentage of us.

It is well known and the standard scientific model (no threshold below which there is potential risk of harm from exposure to radionuclides) that ANY increase in carcinogenic and mutagenic radionuclide exposure, primarily internally, will result in additional cancers and illness and deaths.

So how in God's name can they say that the levels are "no risk" or safe or not enough to be worried about or for us to take some reasonable precautions? This is a crime in my opinion. NO deaths are an acceptable risk so that Nuclear power plants can risk polluting the entire earth with cancer causing radionuclides for profit and greed.

Thank you for your hard work and thanks also to those who add info here and to the UC Berkeley BRAWM team for there test results. The EPA and FDA and NRC have failed us here.

Log in to Reply Flag for abuse

2:15 pm on 04/14/11

dianalees

Jeff, mothra, chargirl and rickcromack, I've been following this conversation since the previous thread and want to express my appreciation to each of you for intelligent, thoughtful research and commentary.

Regarding the differences between EPA and FDA levels: they are apples and oranges because EPA is about PROTECTION and FDA is about ADMINISTRATION. Protection, functionally, seems to run in both directions, meaning that EPA seeks to protect the environment from human excesses, and humanity from certain kinds environmental threats. EPA focuses on the long term, too.

Administration, on the other hand, assumes there's something to administer. FDA has such a strong focus on reviewing and approving novel drugs and treatments that I wonder whether they haven't lost the forest for the trees – even without the business/political agenda that rickcromack mentions above.

Epidemiologically, is 1 additional cancer per 4400 people and 1 additional death per 2200 people a lot? Probably not, but I'd bet that those numbers are just whistling in the dark. As was mentioned by someone on the previous thread, I doubt there are solid cause-and-effect data from which we can forecast outcomes.

This is for several reasons. 1) There just haven't been that many nuclear disasters (thank God). 2) To find an effect, you have to be looking for it. My grandfather died of liver cancer in the 1950's after having been on the US military's inspection team following the Nagasaki bombing. Is his death counted in the epidemiological followup?

3) Because of what has happened to the American food supply in the past 2-3 decades, the average American is actually much less healthy now than at the time of Three Mile Island or Chernobyl. So even if comprehensive data were available globally from those incidents, it seems likely they wouldn't be directly predictive.

Here's why:

As I understand the biochemistry, cancer – with thyroid cancer a possible exception – isn't caused so much by the radiation itself as by toxicity that, through a biochemical cascade, creates a change in gene expression. Even when exposed to fairly high levels of radiation, if the body has the ability to corral and excrete the toxicity, then those otherwise quiescent cancer genes will not be turned on. (This is a highly simplified summary.)

Being under stress of any kind activates the fight-or-flight response and changes how the immune and excretory systems function. For example, energy that would otherwise be used for deep liver detox is diverted into having more white blood cells in the skin to protect the body from infection – think wounds from animal teeth and claws. This is fundamental survival biochemistry at work in our human animal bodies.

That's why, in the last thread, I mentioned finding ways to de-stress. It feels good and really helps your body deal with ANY toxicity (which we all have lots of), not just radiation.

The other thing everyone can do is stop (as much as possible) eating refined sugar and especially high-fructose corn syrup. They are toxic to the liver and compromise the immune system. Removing that load will free up resources in the liver and other aspects of the immune system to deal with other toxins.

My personal perspective is: our government has multiple agendas, but I'll bet its primary one is keeping us from panicking right now. They don't know what's going to happen any more than we do. But rather than educating us on the real implications, they choose to divert our attention in an attempt to keep us calm. So the DIL levels get cited instead of the MCL levels because that way the actual, measured numbers don't seem so scary.

Again, I deeply appreciate this conversation. Thank you, Jeff, for providing this focal point, and to everyone else for contributing.

Log in to Reply Flag for abuse

10:51 am on 04/20/11

JEFF MCMAHON
The Ingenuity of the Commons

Hi commenterguy. You can find a clear, recent expression of that maximum contaminant level here:

http://www.epa.gov/radiation/japan-faqs.html#rainwater

There are a couple of reasons why you may have had trouble finding the number. 3 pCi/L is the maximum contaminant level for all beta and gamma emitting radionuclides combined, so it's often not expressed solely in association with iodine-131. And 3 pCi/L is a compliance standard EPA uses in pursuit of its true, hard limit for radiation exposure from those radionuclides, which is 4 millirem per year. So the same standard is sometimes expressed with different labels and different numbers.

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

3:23 pm on 04/14/11

macamadamia

Mr. McMahon, there is an important error in your article. The EPA MCL is set so that if 1 million people were exposed to that dose, with the typical assumptions of the model, there would likely one additional cancer occurrance, NOT fatality. Additionally, you fail to differentiate between the MCL and the MCL Goal. While it is true that the MCL Goal is set at a level at which no adverse impact to human health would be expected, the MCL is set at a level that is both protective of human health (typically at or below the 1 in 1 million cancer risk level) and achievable with current treatment technologies. Finally, though it may be sobering, it is worth noting that the lifetime cancer risk is 1 in 2 for males (44%) and 1 in 3 for females (38%). I realize the purpose of the article is to imply a government conspiracy, but I do not see any evidence of it, if all the facts are taken into consideration.

Log in to Reply Flag for abuse

2:33 am on 04/15/11

JEFF MCMAHON
The Ingenuity of the Commons

Mr. Macamadamia, thank you so much for your comment, for your challenge, and for your pursuit of important detail! All are welcome here.

You're quite right that the EPA considers both mortality (fatal cancer) and morbidity (cancer whether fatal or not) when it calculates an MCL, and the MCL's goal obviously is to reduce both. This makes the MCL an even safer standard in comparison to the FDA's tolerance of two fatalities per 10,000 people.

(Also, the post is not exactly in error, because a non-fatal illness is still not more than one death. But perhaps I did oversimplify.)

Next, it's good of you to create space here for discussion of the difference between the MCL and the MCL Goal. These matters are filled with nuance, as I think you know, and it's always difficult to determine what to include and what to omit in what must necessarily be a brief blog post. The posts shouldn't read like EPA regulations, after all. One beauty of comments is the ability to explore nuances further.

The MCL differs from the MCL Goal not only because of what is achievable with technologies, as you say, but also in response to cost-benefit analysis, as I mention above.

Regarding your final comment, I can't imagine where you got the idea that the purpose of this post is to imply a government conspiracy. You didn't get it from me, because I don't believe there is a government conspiracy at work here. A discrepancy between FDA and EPA? Yes. A conspiracy? No. If you do see a government conspiracy in the backward masking of this post or anywhere else, I would be most appreciative if you would not attribute it to me.

Please do continue to contribute your detailed, informed, and challenging perspective to this forum.

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

4:04 pm on 04/14/11

liberationangel

Jeff

Would you care to comment on the comparison of ingested radionuclide risks to things like flying cross country, which many authorities (and even US Berkeley BRAWM team) uses? I think it would make a worthy blog entry.

The difference between ingesting radioiodine or radio-cesium or strontium 90 (which bioaccumulate and are the toxic deadly "gifts" that keep on giving) and getting external exposure by flying or even an xray is huge.

Log in to Reply Flag for abuse

6:49 pm on 04/14/11

pathl

First of all, excellent investigative work again, Mr. McMahon. You're doing exceptional old-fashioned gumshoe journalism.

I'm personally tired of being a potential statistic that's coldly tossed onto the cancer pile.

I'm also concerned with the potentiality of Fukushima occurring closer to home:

1. In 2010 alone, there have been 14 “near-miss problems” in nuclear power plants in the United States:

http://www.huffingtonpost.com/2011/03/17/us-nuclear-power-near-misses-2010_n_837176.html#s254851&title=HB_Robinson_

2. Three nuclear power plants rate a 3 out of 5 in safety (Fort Calhoun in Nebraska, H.R. Robinson in South Carolina, and Wolfe Creek in Kansas) and there are even cracks in the Crystal River nuclear power plant in Florida http://www.tampabay.com/news/business/energy/crack-at-crystal-river-nuclear-power-plant-explained/1119240

3. Outside of the U.S., there have been problems in nuclear power plants to the north of us in Canada:

http://www.globalpost.com/dispatch/canada/100628/nuclear-power

and to the south of us, in Mexico:

http://www.globalissues.org/news/2011/03/30/9088

and globally:

http://www.guardian.co.uk/news/datablog/2011/mar/14/nuclear-power-plant-accidents-list-rank#data

And therefore it makes this even more concerning:

According to this article, the United States health care system is unprepared for a nuclear incident and even stopped purchasing iodine for stockpiles 2 years ago.

http://www.propublica.org/article/us-health-care-system-unprepared-for-major-nuclear-emergency/single

This is completely unacceptable and unbelievable.

I hope, perhaps naively so, that our gov’t immediately prioritizes readiness and safety.

Log in to Reply Flag for abuse

1:15 am on 04/15/11

alexanderhiggins

Some simple math that doesn’t add up
EPA annual MCL for iodine-131 is equivalent to 700 pCi/l
EPA MCL for iodine-131 is 3 pCi/l

2 Liters per day = 6 pCi * 365 = 1095 pCi per year.

Questions:
1) What am I missing here?
2) 700 pCi/l = 4 millirem dose… so you could only drink a total of ~1.91 pCi TOTAL of drinking water and milk combined to hit the dose.
3) What about combined dosages exposure to from multiple sources including water, milk, and food?
4) Water is used to produce other drinks as well, what about radiation in those sources?

Obviously radiation dosages will be received from milk, water contaminated by radiation and/or urine from cancer patients depending on whether or not you believe the official explanation of where radiation in drinking water is coming from and radiation doses from multiple sources of food which is currently being sold to unknowing consumers.

Radiation doses will also be recieved from iodine, c-134,c-137, and the array of other isotopes being tested and/or not being tested for (for example it appears the EPA is testing for i-131 in the drinking water as if the other isotopes don’t matter). And while we see UCB monitoring certain food stuffs, there will radiation in other sources of food. For example the cow that made the milk for will have a healthy dose of radiation. UCB shows cesium accumulating in grass by a factor of 5 compared to the surrounding topsoil.

So even we were talking about multiple doses from multiples sources under federal guidelines, those multiple sources give a combined dose of radiation which can quickly surpass federal limits.

And clearly we are already seeing contamination at multiples of certain federal guidelines and Japan is talking about spending the next 3 months just trying to keep the amount of radiation being released from increasing, no talk of any plans of taking any steps to stop it until then.

Log in to Reply Flag for abuse

10:45 am on 04/20/11

JEFF MCMAHON
The Ingenuity of the Commons

Alexander, Sorry about the delay. I just found your comment in the spam trap. Regarding your question about numbers not adding up, I think you already have the answer: that the numbers don't add up.

The two MCLs we've seen 3 pCi/L for drinking water and 700 pCi/L for the annual dose, are agency approximations of the EPA's true maximum for radiation exposure, which is 4 millirem per year.

3 pCi/L is the MCL EPA uses when regulating municipal drinking water systems. It assumes people are drinking two liters of water per day. It's not clear whether 700 pCi/L assumes the same level of consumption on its way to that annual limit.

They are two efforts by EPA to keep people below 4 mrem per year, two unique expressions of an agency saying, "this much is too much."

Both MCLs are decades old. The 3 pCi/L limit seems to derive from the National Book of Standards, published in 1959, which set occupational exposure limits. The 700 pCi/L limit is a calculation from a 1986 proposed rule published by EPA.

EPA plans to revisit and possibly revise the MCL for radionuclides in 2015. Stay tuned!

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

5:24 pm on 04/15/11

majia

Government conspiracies to suppress information?

The Guardian is reporting today on how both the US White House and BP sought to control research on, and media exposure about, the scope and severity of the BP Gulf oil Spill.

Story Title: "Emails expose BP's attempts to control research into impact of Gulf oil spill: Documents obtained under the Freedom of Information Act show BP officials discussing how to influence the work of scientists"

Here is the link to the memos that the Guardian is posted. They were obtained using the U.S. Freedom of Information Act http://www.guardian.co.uk/environment/interactive/2011/apr/15/bp-internal-meeting-notes

Here is the Guardian's story http://www.guardian.co.uk/environment/2011/apr/15/bp-control-science-gulf-oil-spill?intcmp=239

Detail from story:
"Other documents obtained by Greenpeace suggest that the politics of oil spill science was not confined to BP. The White House clashed with officials from the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) last summer when drafting the administration's account of what has happened to the spilled oil. On 4 August, Jane Lubchenco, the NOAA administrator, demanded that the White House issue a correction after it claimed that the "vast majority" of BP oil was gone from the Gulf. A few days earlier, Lisa Jackson, the head of the EPA, and her deputy, Bob Perciasepe, had also objected to the White House estimates of the amount of oil dispersed in the gulf...."

Log in to Reply Flag for abuse

6:06 pm on 04/15/11

liberationangel

Excellent points Majia!

Thanks for that.

The use of the term CT for "conspiracy theory" as a disparaging term or even a meme has its roots in disinformation and propaganda to ridicule even the possibility that corporate or military or government entities want to "spin" the truth or even distort it when they do improper, bad or even evil things.

Spinning is a fine art, but if you allude to it when the data is outright false or dangerous you get labelled a "conspiracy theorist" and so in one quick retort ALL of what you may say is ridiculed or denigrated.

If there is ANY doubt that TEPCO and international agencies set up to support nuclear power (where they make all their profits and need to cut their losses here on global nuclear power business ventures) are spinning the info, THAT would be hard to fathom.

Corporate influence at the EPA and FDA is HUGE, even in this administration, and those corporate entities profitting immensely from nuclear energy policies and regulations have been at this for years to maximize their profits at the expense of the human race.

GREAT point you make here. Call it “conspiracy theory” if you want to demean those who speak truth to power, but only a fool would think that it is not greed and profit and power that determine how we are fed the information like stupid sheep so that those who profit from our ignorance and peril can keep their power and profits.

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

2:50 pm on 04/16/11

mothra

The term “conspiracy” can be as simple as two or more people agreeing to mislead others. I don’t feel asking questions, sharing information or seeking data on matters of public health and concern apply. In fact it’s the opposite.

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

5:41 am on 04/16/11

helenis

Does anyone know why UC Berkeley Radiological Air and Water Monitoring Team has not given us any new readings on Tap Water since March 31??

Log in to Reply Flag for abuse

12:33 pm on 04/16/11

liberationangel

Two things:

They have not had a lot of rain out there and they expect their readings to be below measureable amounts. They have sort of explained that on their forums but if you post there – there is a thread in which they say they MIGHT do more if the public wants them to – so post there and encoruage them to.

They have instead been focusing more recently on milk, produce, and those things where the radiation is or may be accumulating – so you can see pretty recent results for milk, spinach, topsoil, mushrooms and a few other things.

Apparently due to little rain (they hadn’t posted rainwater results as of last night in over week) they are not expecting to see measureable amounts BUT the last results they posted for milk did show some troubling increases – meaning the radiation that rained down is spreading into the food chain.

Finally, when I asked about the rain results they said new ones were coming soon, and that the delay was because the levels are so low it takes longer for the tests to detect them (which I take as a relatively good sign) BUT the results will tell.

But a good question and I envourage people to support their efforts, post there, encourage them and ask them to keep doing it. Given the failure of the private sector (industry) and the government (EPA, etc) to give recent comprehensive updates, the UC Berkeley BRAWM team is exceptionally helpful and will continue to be EXTREMELY important in the epidemiological studies and assessments of risk and harm to come from these socalled low dose events (which are still above that which seems to be likley to kill a certain percentage of US citizens with cancer and other illnesses such as metabolic disorders, hypothyroidism, heart ailments, birth defects, infant mortality, etc etc etc.

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

12:39 pm on 04/16/11

liberationangel

Link to UC Berkeley Physics Forum. The folks there do respond to some wuestions and comments and they are testing rainwater, milk, produce, topsoil, air, etc.

EXCEPTIONAL work keeping the public posted and responsive personnel(with a few pro and anti-nuke posters skirmishing, but mostly just honest discussion of the halth risks, what the samples results mean etc plus lots of worthwhile info in FAQ’s etc).

http://www.nuc.berkeley.edu/forum/218

In response to another comment. *See in context »*

Log in to Reply Flag for abuse

12:49 pm on 04/16/11

mothra

I am so grateful to the UCB BRAWN team for testing under pressure, and in the near absence of it elsewhere from agencies we fund. You have to find it, or verifiably eliminate the presence of it before you can act or issue opinions and assurances. The possibility of finding unwelcomed results shouldn't be an impediment to looking for or reporting on an ongoing situation that affects us all.

In response to another comment. See in context »

Log in to Reply Flag for abuse

2:12 am on 04/17/11

majia

The assumption of continuous consumption for 70 years holds for water NOT for milk.

I've spent hours trying to find the milk models but they are not available online at any of the EPA connected sites or alternative sites I searched.

The FDA's DIL is very high for milk.

I spent a lot of time searching research on radiation exposure using Science Direct, an academic science index (i'm an academic), and the effects of radiation on embryos and fetuses are scary.

There is a lot of research on this subject and the "hormetic" benefits of radiation on embryos seem to be that low levels cause defects or cancer while slightly higher levels cause death, thereby masking the damaging effects of those doses on expectant mothers who end up having spontaneous abortions

There is a reason pregnant women don't get x-rayed….

In response to another comment. See in context »

Log in to Reply Flag for abuse

3:31 pm on 04/17/11

mothra

Aye, and thank you!
And I'll add "low dose phenomena" is real, well known and signifigant:
"Regardless of the explanation, the phenomena of supra-linearity at low dose irradiation are well demonstrated and present counter-evidence to the DDRF assumption."

It's not just fatal cancer:
"The Adult Health Study (AHS) has greatly increased in importance in recent years as a result of the accumulation of an enormous body of data from serial medical examinations, with and without superimposed radiation aspects. Particularly noteworthy is the accumulating evidence of the radiation dose related increase in non-cancer disease morbidity, such as cardiovascular disease, hyperparathyroidism, thyroid diseases, uterine myoma, chronic liver disease, and cataract … Another unexpected finding is the retrospective evidence that radiation is associated with premature menopause, and this in turn, may result in earlier onset of other conditions, such as an increase in cholesterol levels and cardiovascular disease. In addition, most recent findings suggest that diabetes mellitus increases with radiation dose among young survivors of Hiroshima."

Therefore:
"Consequently both ICRP's choice of a biological endpoint as fatal cancer, and its current exclusiveness, are now in question, as well as the effective dose estimates for internal radiation emitters. In such a situation the Precautionary Principle should prevail. The choice of fatal cancer as the exclusive biological endpoint after ionizing radiation exposure is not scientifically acceptable. Equally unacceptable are estimates of equivalent effectiveness made without adequate backing by scientific research."

These are general excerpts on internal and external ionizing radiation used in this article to address only tritium risks, but the points are applicable to our situation:
http://iicph.org/health-effects-of-tritium-appendix-2

In response to another comment. See in context »

Log in to Reply Flag for abuse

5:11 pm on 04/17/11

mothra

They aren't testing and the "refer to other agency" dance has begun for the ocean. BC, Canada found radionuclides in seaweed weeks ago from rain outs and land run-off, so the Pacific contaminate-free claim is just entirely false.

Tuna and salmon migrate. Radioactive debris and oceanic currents are expected within the year. This is just in the agency Twilight Zone now.

Log in to Reply Flag for abuse

5:15 pm on 04/17/11

mothra

http://www.adn.com/2011/04/16/1813982/fda-claims-no-need-to-test-pacific.html
Source article – Pacific EPA, FDA and NOAA.

In response to another comment. See in context »

Log in to Reply Flag for abuse

7:01 pm on 04/17/11

dianalees

This is an unbelievably educational discussion thread, and once again, my gratitude and respect to all of you for such thorough and diligent tracking down of facts. Trying to keep track of all the details, my head, is, frankly, spinning.

With that said, I still want to weigh in again.

I worked in life science research for 23 years, and had occasion to work directly with a number of radioactive isotopes, including tritium, Phosphorous-32, Iodine-125, and even once in a while strontium-90 and technetium-whatever. Disclaimer: I am not a radiation biologist. However, from looking directly at the biological data from countless experiments, I know a few things. Sorry, no articles or websites to link to. This is in my head.

1. Regardless of what the officially approved levels are, radiation is potentially dangerous at any dose.

2. Rapidly-forming tissues – such as fetal tissues – are very vulnerable to direct damage because DNA repair may not be fast enough and damaged stretches may be replicated, turning on disease genes or causing other unplanned effects. There's a reason why we use radiation to treat cancer. Cancer reproduces faster than other adult human tissues and is therefore more susceptible.

3. Another very vulnerable population is the elderly, for a different reason. Their systems are slowly deteriorating and their ability to detoxify and rejuvenate the body is impaired. So toxicity builds up, disease genes are turned on, and then the fun begins.

4. Even so, the human body has an extraordinary ability to heal itself, so odd bits of DNA damage don't necessarily lead to long-term disease.

5. The ionizing radiation from radionuclides is dangerous, but as liberationangel (and I think someone else) mentioned above, there are abundant other sources of hazardous radiation, and most people just live with them and assume it's OK.

6. Diseases express in people who are unable to detox, chelate, and – ALL IMPORTANT – de-stress. Waiting for the other shoe to drop is stressful. So is worrying about the potential dangers. Stress is arguably more dangerous than Cs and Te in the food supply. You can chelate Cs and Te, and your body can and does automatically repair damaged DNA. But if your body is in adrenal exhaustion, and flooded with cortisol, those disease genes will turn on regardless of whether toxins are present.

Regardless of what is being said by government agencies, we have a responsibility to ourselves and our fellow humans. It's clear that radiation is here it seems inevitable that it will continue to arrive. So our most intelligent approach is to treat our food supply and our bodies with that in mind.

Jeff, would you consider posting – or finding a guest blogger who can – on ways to deal with radiation in the food supply, rainwater, and air? Not out of fear, but out of commonsense. If it's here, we may as well deal with it.

Log in to Reply Flag for abuse

10:58 am on 04/18/11

ajweishar

Jeff, Thanks for showing how well we are not protected by the safety regulators. What the Feds and media ignore is the cumulative damage from radiation. It's the same as a boxer and brain damage; each hit takes us closer to a lethal buildup.

The biggest scam related to the FDA contaminant level is tobacco. When they determined cigarettes caused cancer, they ignored radiation and chemical contamination. Most US commercial tobacco is grown near nuclear processing sites. The cancer is actually caused by a small, FDA legal, amount of radiation going directly to the lungs. In addition you have weed killer and

insecticide going directly to the lungs. The FDA never tested organic, low/no radiation tobacco. Native Americans should have been wiped out by cancer long before Europe invaded.

Log in to Reply Flag for abuse

1:34 pm on 04/18/11

mothra

Aye, Jeff McMahon rocks! Who knew about this? I really didn't before. Thank you everyone for the discussion that didn't exist elsewhere in this way. It's important. I learned things. Info is a hammer.

In response to another comment. See in context »

Log in to Reply Flag for abuse

3:20 pm on 04/19/11

JEFF MCMAHON
The Ingenuity of the Commons

The thanks rightfully should go to you Mothra, and to all of you on this thread for your diligence and dedication and research.

Please note that Siobhan Delancey of FDA has gotten back to me this afternoon with comment for this post, and I've added it at the bottom of the post. I don't think the statement tells us anything we didn't already know or expect to hear, but I know you'll all want to read it.

In response to another comment. See in context »

Log in to Reply Flag for abuse

10:13 pm on 04/19/11

mothra

Gosh, I'd really prefer FDA Siobhan Delancey's "Precautionary Principle" stance on anti-biotics in animal products in regard to ingested beta radionuclide contamination:
"Using too many antibiotics is resulting in more antibiotic-resistant bacteria in animals, says a 2008 review in The Annual Review of Public Health. "Antibiotic-resistant pathogens in food-producing animals can be transferred to people who handle or eat contaminated meat or milk," says Siobhan DeLancey of the FDA. This means if someone is infected by an antibiotic-resistant pathogen, drug treatment will be less effective. Antibiotics can also get into soil and water, increasing our exposure and compromising their effectiveness."

Or, perhaps Four Loko:
"FDA spokeswoman Siobhan Delancey would not confirm any upcoming rule, according to National Public Radio, but she did tell the news organization that the agency recognizes that the debate over the drinks is a "very important public health issue."

Or, cloned animal consumption:
"It is theoretically possible" offspring from clones are in the food supply, said Siobhan DeLancey, an FDA spokeswoman."

Or, tainted animal feed:
http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm172768.htm

Or, even hair straightener:
"However manufacturers do bear responsibility for making sure their products are safe to use," says Siobhan DeLancey, a spokesperson at the FDA Office of Public Relations.

In the meantime, my heart goes out to the US and I suppose I'll have what Ms. Delancey is having Harry Met Sally deli style? Her first, then within 2 to 20 years. We're talking about ingested beta radionuclide contamination in the food chain and not Four Loko and silky tresses after all. Thank you.

In response to another comment. See in context »

Log in to Reply Flag for abuse

3:18 pm on 04/19/11

brentf

I am a nuclear physicist who studies radiation safety issues. The FDA certainly doesn't have the best track record in the world with relation to pharmaceuticals, but I can assure you the limits they have set with respect to radioactive contamination are orders of magnitude on the safe side. The EPA limits are ridiculous. 131-I has a relatively short half life and any contamination of the food or water supply after a release would be mostly gone in 60 days (down to 1% initial level). Drinking 2 liters of water a day for 60 days which was contaminated with 3 pCi of 131-I would give you the same radiation dose as standing outside for 30 minutes! Drinking the same water at the FDA limit of roughly 170 Bq/kg gives you a dose of about 1

month natural background. Aka. That water's no more likely to give you cancer than simply being alive for a single month. The EPA Cesium limits at the max allowance 1200 Bq/kg (134-Cs + 137-Cs) would give you a annual dose of 14 mSv (roughly 2 chest-CT scans worth). Now, it's important to remember these contaminants would not be naturally occurring, but only if there was a nuclear accident. The limits are safe. There is no reason to worry.

Log in to Reply Flag for abuse

DISPLAY

Called-Out Comments All comments

Log in for notification options

Comments RSS