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JANUARY 20, 2012 | KAREN CHARMAN

FUKUSHIMA UPDATE: WHY WE SHOULD (STILL) BE WORRIED

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After the catastrophic trifecta of the triple meltdowns at the Fukushima Daiichi nuclear power plant complex in Japan last March—what the Japanese government would be doing to handle the disaster. You would be wrong—dead wrong.

Instead of collecting, isolating, and guarding the contaminated water that resulted from the chain reaction of the 9.0 earthquake and tsunami of water that swamped the plant and disabled the cooling systems, the ensuing meltdowns, Japanese Environment M

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The tsunami left an **estimated 20 million tons of wreckage** on the land, much of which—now ten months after the start of the disaster—is **festering in stinking piles** throughout the stricken region. (Up to 20 million more tons of rubble from the disaster—estimated to cover an area approximately the size of California—is also **circulating in the Pacific**.) The enormous volume of waste is much more than the disaster areas can handle. So, in an apparent attempt to return this region to some semblance of normal life, the plan is to spread out the waste to as many communities across the country as will take it.

At the end of September, Tokyo signed an agreement to accept **500,000 metric tons of rubble from Iwate Prefecture**, one of eight prefectures designated for cleanup under a **new nuclear decontamination law** passed on January 1. The law allows for much of the radioactively contaminated rubble to be incinerated, a practice that has been underway at least since the **end of June**.

But the sheer amount of radioactive rubble is proving difficult to process. The municipal government of Kashiwa, in Chiba Prefecture **to the west and south of Tokyo**, recently shut down one of its main incinerators, because it can't store any more than the **200 metric tons of radioactive ash** it already has that is too contaminated to bury in a landfill.

According to the California-based Fukushima Fallout Awareness Network (FFAN), burning Fukushima's radioactive rubble is the worst possible way to deal with the problem. That's because incinerating it releases much more radioactivity into the air, not only magnifying the contamination all over Japan but also sending it up into the jet stream. Once in the jet stream, the radioactive particles travel across the Northern Hemisphere, coming back down to earth with rain, snow, or other precipitation. Five days after the Fukushima meltdowns began, radioactive fallout from the disaster **reached the West Coast of the United States**. Approximately a week later, Fukushima **fallout was measured as far away as France**.

In October, the journal *Nature* reported that the Japanese government's initial estimates of radiation from Fukushima were substantially less than what Scandinavian researchers calculated from a global network of radiation monitoring stations that the Vienna-based Comprehensive Nuclear-Test-Ban Treaty Organization uses to detect nuclear weapons tests.

Radiation used to be a word that evoked serious concern in a lot of people. However, the nuclear industry and its supporters have done a masterful job in allaying public fears about it. They do this in significant part by relying on outdated and highly questionable data collected on Japanese atom bomb survivors, while at the same time ignoring and dismissing

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recent article [here](#). In their attempt to win the public over to their viewpoint, nuclear proponents even trot out the dubious theory of [radiation hormesis](#), which says that low doses of radiation are actually good for you, because they stimulate an immune response. Well, so does something that causes an allergic reaction. But I digress...

What Radiation Is

A great help to nuclear proponents is the fact that nuclear physics is complicated, and most people don't understand even its most basic concepts. The blanket term "radiation" is used to describe all manner of radioactive contamination—as if it's just one thing—when, in fact, there are different kinds, some much more damaging than others. It also matters exactly what is being exposed to radiation—i.e., exposure outside the body or inside it—and how long the exposure goes on.

In a nutshell, radioactive elements, also known as radioisotopes or radionuclides, are unstable atoms. They seek stability by giving off particles and energy—ionizing radiation—until the radioisotope becomes stable. This process occurs within the nucleus of the radioisotope, and the shedding of these particles and energy is commonly referred to as "nuclear disintegration." Nuclear radiation expert Rosalie Bertell describes the release of energy in each disintegration as "[an explosion on the microscopic level](#)."

This process is known as the "decay chain," and during their decay, most radioactive elements morph into yet other radioactive elements on their journey to becoming lighter, stable atoms at the end of the chain. Some of the morphed-into elements are much more dangerous than the original radioisotope, and the decay chain can take a very long time. This is the reason that radioactive contamination can last so long.

To further complicate the issue, different radioisotopes give off different kinds of radiation—alpha, beta, gamma, X ray, or neutron emissions—all of which behave differently. Alpha emitters, such as plutonium and radon, are intensely ionizing but don't penetrate very far and generally can't get through the dead layers of cells covering skin. But when they are inhaled from the air or ingested from radiation-contaminated food or water, they emit high-energy particles that can do serious damage to the cells of sensitive internal soft tissues and organs. The lighter, faster-moving beta particles can penetrate far more deeply than alpha particles, though sheets of metal and heavy clothing can block them. Beta particles are also very dangerous when inhaled or ingested. Strontium-90 and tritium, a radioactive form of hydrogen, are both beta emitters. Gamma radiation is a form of electromagnetic energy like X rays, and it passes through clothing and skin straight into

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radionuclides of most concern in the Fukushima fallout. Aside from use in medical diagnostics, X rays are also produced in nuclear fission, and their effects are similar to gamma radiation. Neutron emissions are the most penetrating of all types of radiation and require a shield of several feet of water or concrete to contain them.

The **behavior of radioisotopes** out in the environment also varies depending on what they encounter. They can combine with one another or with stable chemicals to form molecules that may or may not dissolve in water. They can combine with solids, liquids, or gases at ordinary temperature and pressure. They may be able to enter into biochemical reactions, or they may be biologically inert.

In her book *No Immediate Danger: Prognosis for a Radioactive Earth*, Bertell notes that if they enter the body either through air, food, water, or an open wound, “They may remain near the place of entry into the body or travel in the bloodstream or lymph fluid. They can be incorporated into the tissue or bone. They may remain in the body for minutes or hours or a lifetime.” To illustrate how different radioisotopes behave, she points out that: “Plutonium is biologically and chemically attracted to bone as is the naturally occurring radioactive chemical radium. However, plutonium clumps on the surface of bone, delivering a concentrated dose of alpha radiation to surrounding cells, whereas radium diffuses homogeneously in bone and thus has a lesser localized cell damage effect. This makes plutonium, because of the concentration, much more biologically toxic than a comparable amount of radium.”

Specific health effects from internal radiation exposure correlate with where radioisotopes land in the body. Bertell explains: “For example, radionuclides lodged in the bones can damage bone marrow and cause bone cancers or leukemia, while radionuclides lodged in the lungs can cause respiratory diseases. Generalized whole body exposure to radiation can be expressed as a stress related to a person’s hereditary medical weakness. Individual breakdown usually occurs at our weakest point.” In other words, the impact of radiation exposure also depends very much on each individual’s level of health and genetic make-up.

Fukushima’s Unending Fallout

Fetuses in utero, infants, and young children—all of whom have quickly dividing cells—as well as the elderly and people with compromised immune systems are most vulnerable to radiation exposure. “Official” sources like the Environmental Protection Agency and the **UC Berkeley Nuclear Engineering Air Monitoring Station** consistently **downplay** the health effects of the fallout. In fact, the EPA was so confident that Fukushima fallout would not be

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But neglecting to monitor the fallout will not make it go away. In fact, another enormous problem with radioactive contamination is that it **bioaccumulates** in the environment, which means it concentrates as it moves up the food chain. (Think of mercury in fish.) Because many radionuclides are so long-lived, this can be a problem for a very long time. For example, the U.K. is only now **considering lifting restrictions** on the remaining 334 sheep farms in Wales that are still prohibited from selling any meat because of contamination from the Chernobyl disaster in April 1986.

In this [video](#), FFAN member Kimberly Roberson points out that the first disaster at Fukushima Daiichi following the earthquake and tsunami was accidental: “However, by burning the millions of tons of radioactive rubble, it’s going to provide a brand new humanitarian crisis.” She observes that this crisis—“transgenerational DNA damage that’s passed well into the future”—is additional and intentional, and that everything possible must be done to stop it.

Roberson’s point is well taken. However, the desperate yearning among the Japanese to get past this disaster combined with the uncharted territory of dealing with a triple-whammy catastrophe of this magnitude—earthquake, tsunami, and three nuclear meltdowns—seems to be clouding their vision. The truth is, a nuclear disaster offers no easy or good choices. But some, like vaporizing the radionuclides throughout the atmosphere, will unnecessarily prolong the danger to the people and environment of Japan and spread the pain far and wide.

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GRAPHIC: <http://media.treehugger.com/assets/images/2011/10/japan-radiation-fukushima-nuclear-nukes-photo-001.jpg>

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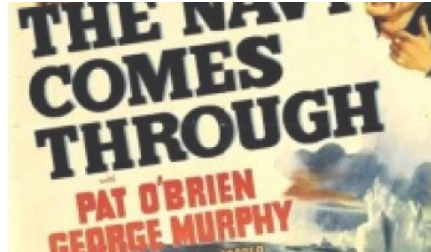
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0 responses to “Fukushima Update: Why We Should (Still) Be Worried”

— *dispose of computers* says:

May 18, 2017 at 8:38 pm

Title

[...]just beneath, are quite a few absolutely not related websites to ours, however, they may be surely really worth going over[...]



— *helene slavin* says:

February 25, 2016 at 10:25 pm

EPA needs to be monitoring instead of burying their heads in the sand, as they usually do! Governments that harm the Global community should be shamed and sanctioned severely! An international monitoring group needs to be established as well as regulations set by the world's nuclear experts.



— *Jim Tice* says:

February 24, 2016 at 7:47 pm

The poor great- or maybe even just the grandchildren. What do they have to look forward to?

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January 24, 2012 at 7:07 pm

We need to gather some backers and put a comprehensive, professional documentary together. I'm game. Is anyone else?



• — sheilah shakti says:

June 13, 2013 at 4:54 am

onearth4u@gmail.com :: i would b delighted to put together a comprehensive documentary tho there have been COUNTLESS one's as well as U-TUBE x
And this article is one year *old* Consider matters are NO LESS HEINOUS than they were then or now & likely in thee future ;(((



— Maura says:

January 24, 2012 at 2:08 pm

Good piece, Karen Charman. This is a chilling scenario. If the UK is considering lifting restrictions on sheep farms in Wales because of contamination from the Chernobyl nuclear disaster 26 years ago, it's probably too soon, even. But just think of the effects on our food supplies, not to mention air and water, should such a catastrophe befall one of the numerous 38+-year-old nuke power plants in the USA . . .



— Kimroberson says:

January 24, 2012 at 11:08 am

Curtis makes a very good point. I'm sorry to hear of the situation in your community, it does seem like a struggle for survival all around. The issue that Ms. Charman so eloquently outlined brings something sinister very close to home. The radioisotopes she wrote about cause DNA damage not only to us but to our children's children..I've been talking endlessly about this since the end of March.

Cesium 137 with a half life of 30 years and a hazardous life for thousands more has been found in our food supply in CA (the major grower for much of US produce and dairy). This is well documented by Univ. of Ca. Berkeley School of Nuclear Engineering (UCBSNE) on their website. Which essentially proves that radioisotope by products of nuclear power are now in US kitchens ..recent early Jan. sample tested positive for cesium again..YOUNG CHILDREN ARE UNSUSPECTEDLY DRINKING MILK WITH CESIUM AND STRONTIUM>>WHICH CAUSE CANCER. Strontium is attracted to the bones and absorbed much like calcium.

I'm w/FFAN, quoted in the Ms. Charman's piece and also in the video linked to it.

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and sent several links to both reporters, and several others..working this non stop with a group of dedicated experts and parents since Spring (shortly after when I started the petition posted earlier).. we did get a cameraman out to the event (a friend of a friend situation) so there was a 30 second blurb that night on one Bay Area news channel about the incineration and also that cesium 137 has been detected consistently now in CA topsoil, but that is mostly it for TV, and nothing of the event in print media until now unless I'm forgetting something..safe to say nothing in the mainstream media. Steve Hoffman and a few others have been blogging about it, thankfully.

FFAN has had several meetings w/US Senators Barbara Boxer and Dianne Feinstein's staff in SF and DC..at one point telling Feinstein face to face of the UCBSNE findings, followed by a footnoted letter sent as requested by her to her 'personal and confidential' fax ...there is a STORY here!~ Ms. Charman told a huge piece of it which has restored a bit of my faith in journalism in this country. FFAN is comprised of Nuclear Information and Resource Service, Beyond Nuclear, Ecological Options Network, Citizens for Health, and more. We have a virtual clearinghouse of information and resources on the issue.



— *Curtis* says:

January 24, 2012 at 2:44 am

The folks that I talk with seem numb. Fukushima gets a “yeah” and a nod. Maybe a “it’s bad.”

I live thirty miles from Plant Hatch in South GA. Tritium was found leaking into a well under the facility. The five sentence announcement of that fact in the local paper didn't generate so much as a yawn. When officials were asked if the Tritium might leek into the underground water supply the probably not response stood.

But, then Vinod Khosla's Range Fuels defunct ethanol plant, now owned by LanzaTech, didn't generate even an article in the local paper.

The plant that was supposed to be the clean and wonderful bright future for GA, by way of burned trees to ethanol, spent three years and well over \$150 million, to include \$6 million in Ga. tax money, on its way to being purchased on the courthouse steps by LanzaTech for \$5 million.

Talk about a sweet deal. Local response. Zip.

Where did the \$5 million go you ask. To help defray the \$40 million lost by the AgDept's \$80 million dollar loan guarantee.

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Range Fuels. ” No one has figured out how to do it commercially yet.” Naw.

I think folks are worn out with this. Every day brings a new trauma of some kind. They are in survival mode. It won't work. We gotta stay in the game.

“They” aren't going to take care of it. “They” will take advantage of it.



— *Edward Rynearson* says:

January 22, 2012 at 12:43 pm

the tsunami had nothing to do with the meltdown > that's part of the spin (not accusing the author of spinning and am glad to see coverage here) > old plants pipes become brittle > a good shake ruptures them > after that power is a moot point > tepco is limiting their liability by claiming event was so big they couldn't prepare for it > and it could happen 50 miles miles from where I sit thousands of miles from an ocean > i have already heard this rationalization, “well we don't have to worry about tsunamis”



— *Kimroberson* says:

January 21, 2012 at 11:45 pm

It is so good to know that true investigative journalism is still alive. Thank you Ms. Charman for a very informative and comprehensive piece. This petition asks for food safety measures to be taken immediately for readers who want to take action now <http://www.change.org/petitions/urgent-fukushima-radioactive-fallout-food-safety-petition>



— *Vic Anderson* says:

January 21, 2012 at 1:46 pm

Think of Minamata!



— *Oso Xiong McBear* says:

January 20, 2012 at 3:11 pm

Why do they call it “fall-out”? because nobody cares about it until their hair and teeth start falling out...

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