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Japan Contamination Maps: Radiation is Spreading….

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Global Research, October 14, 2011
enformable.com/ 14 October 2011

Region: Asia
Theme: Environment

> **Seven months after a triple meltdown at the coastal nuclear plant, as Japan is still trying to get a sense of the radioactive fallout, regulators, operators, and investors in the nuclear industry face the toughest daily battle in 30 years. Numerous hot spots well outside the 20 km exclusion zone keep popping up.**
>
> **Elevated levels of radioactive cesium have been recently found more than 240 kilometers from the plant. Concerned residents who doubt the accuracy of the government's monitoring now perform their own tests.**

Japans Citizen/Patriots Show Contamination Problems Accumulating

Recently updated contamination maps provided to Japanese citizens have shown that the contamination is spreading, but the government and TEPCO are still not releasing analysis of all of the data required to ensure public safety, most notably a full analysis of radioactive isotopes released from the 4 crippled reactor buildings at Fukushima Daiichi.

A recent soil sample in Yokohama, analyzed earlier this week near Tokyo, was found to contain strontium-90, an isotope that can accumulate in bones and cause cancer.

> According to a TBS report, the level of radioactive strontium was 195 becquerels, which is 95 becquerels per kilogram above the government standard.
>
> The strontium was found atop an apartment building in a measurement made by a private agency at the request of a resident, and was not recorded in the regular monitoring done by the ward. Yokohama is about 250 kilometers from the Fukushima nuclear plant.

This was the second finding in the area in the last month, following the announcement from the Yokohama government last month that it detected 40,200 becquerels of radioactive cesium per kilogram of sediment collected from one part of a roadside ditch, easily exceeding the 5,000 bq government benchmark.

In the city of Funabashi in Chiba Prefecture, just north of Tokyo, officials said Thursday that a small part of a park in the city recorded elevated levels of radiation, about five times the highest levels previously detected in the city since the nuclear accident.

> In both cases, local authorities confirmed elevated contamination after being informed by local citizens' groups that had measured levels with their own measuring devices, and did not explain why the elevated readings were not present on official surveys, one can only hope that the recent public findings have a positive effect on the accuracy of the official surveys across Japan.

Soil in the Watari District, of Fukushima has been found with contamination over 500% the normal levels of radiation, and the entire district is very highly contaminated. Officials had apparently also missed these hot spots in earlier surveys.

These average Japenese patriots carrying radiation-monitoring equipment have found unreported hot-spots in an alarmingly large number of areas around the nation, typically before municipalities and other official monitoring officials. This not only fuels the belief that the government is willingly turning their eye on a situation that is continually leaving them gasping for any sense of clarity, but also has an impact on the citizens daily stress and belief in their government .

> "I know quite a few people around here who have bought radiation counters," said Yoshinori Oda, a 71-year-old retired Setagaya resident who lives just a few hundred meters from the sidewalk in question. "There are many families with young kids around here, and the worried parents are rich enough to buy expensive measuring devices.

These findings have been even worse for the image of the government, as it has already publicly embarrassed Japanese officials into promising even MORE detailed government monitoring of radiation levels in the country's most populous region.

Digging into the story in Setagaya

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  Citizens in Setagaya Ward near Tokyo detected radiation of 2.707 microsieverts per hour at the fence, which is in the Tsurumaki district, on Oct. 6, and reported it to the government who later measured the radiation.

- For days, images of the sidewalk outside the house were repeatedly shown on national TV, while experts have tried to explain why the detected levels were so high, assuming that the contamination was linked to the nuclear accident some 150 miles away.
- Researchers found radiation levels of 3.35 microsieverts per hour in tree leaves at a height of one meter by the fence of the unoccupied house along the street in Tsurumaki — much higher than previously reported levels.
- The experts found that the most recently detected radiation is highly limited, as levels fall by almost half about 1 meter from the fence.
- Once the hotspot was identified and cordoned off, local residents were told the radiation was no threat to health.
- Other sections of the pavement – which is regularly used by children at a nearby school and nursery – were unaffected, said the Kyodo news agency.
- There were later suggestions that contaminated rainwater could have collected on a rooftop before dripping on to the pavement.

- Officials said radiation tests would be carried out in 258 parks in the ward.
- Setagaya Mayor Nobuto Hosaka said washing the pavement with water had not dispersed the radiation, Reuters reported.
- But Officials later on Thursday again changed their proposed source when it was said they were almost certain that the radiation had not come from Fukushima, after a mysterious finding of unknown material which was being stored in old bottles in a wooden box.

The officials in Setagaya Ward confirmed a contaminated area on a patch of sidewalk that read of 2.707 microsieverts per hour on October 6th, and covered a 1-by-10-meter area. The contamination was first identified by the concerned parents who reported the readings to the local government, who was admittedly unbelieving of their claims despite findings that cesium contamination had spread over 240 km from the plant, well within their proximity to the crippled plant.

TOKYO, Japan – Photo taken on Oct. 13, 2011, shows part of a sidewalk in a residential area of Tsurumaki in Setagaya Ward, Tokyo, where airborne radiation of up to 3.35 microsieverts per hour, exceeding readings in some evacuation zones around the crippled Fukushima Daiichi nuclear plant, was detected the same day. Road cones have been placed around the site by the ward office, as the sidewalk is used as a route to a nearby elementary school. (Kyodo)

> Even the Mayor of Setagaya Nobuto Hosaka admitted his tentativeness to accept the reported quantities during an interview with TBS Reporters: "I thought the reading must be a mistake when I first heard…" and the mayor refused to take further steps until the readings were confirmed by ministry officials.

The contamination is below the government level meriting an evacuation order, but parents have expressed concern about a link between thyroid abnormalities and radiation, citing reports of a rise after Chernobyl in 1986. Many parents were concerned because the fence is located along a route children take to school, prompting Setagaya Ward to set up traffic cones and encourage kids to steer clear of it.

The experts and officials initially tried to brush it off as an isolated event and not a reason for alarm, postulating the contamination accumulated when the source had dripped from a roof where radioactive materials had accumulated. Despite the fact that radiation levels in the area had not fallen since the ward's efforts to decontaminate it over the last 7 days, the authorities casually advised parents to permit the children to avoid the walkway as they go to school.

Questions yet to be answered

> What readings were taken on the roof that led to initial statements that radioactive materials had collected there and fallen onto the contaminated area on the street?

The inconsistencies with the offices description of the radiation on the street changed in the hours leading up to the finding of the bottles in the house

Despite Decontamination of Ground, Strong Radiation From The Ground

The ward office initially believed the relatively strong radiation came from the ground and decided to commence decontamination operations and scrubbed the walkway near the fence after Oct. 6, but the radiation level “barely dropped,” said Setagaya official Ken Hatanaka.

Reuters reported Setagaya Mayor Nobuto Hosaka said washing the pavement had also failed to lower the radiation levels.
During the course of the next week Researchers found radiation levels of 3.35 microsieverts per hour in tree leaves at a height of one meter by the fence of the unoccupied house along the street in Tsurumaki — much higher than previously reported levels.

Officials Change Stance On Status of Radiation

The experts later completely ignored the previous statements and stated that the most recently detected radiation is limited, as highest levels are found withing 1 meter from the fence. The area was cordoned off as a precaution and checks carried out while nuclear experts tried to establish why such a small area was affected.

Fukushi of Tokyo Metropolitan University was the researcher who checked the site and tracked the radiation to a spot on the fence about 1 meter from the ground. Fukushi said he checked the radiation a few centimeters above the ground and the level had dropped to less than 1.0 microsievert. The announcement by Setagaya puzzled some experts because the wooden fence was apparently emitting the radiation.

> Trees nearby also have about a half or one-third of the radiation level, Fukushi said.
>
> There is yet to be an complete disclosure of findings from areas closest to the fence published, but if this is referring to the tree leaves that were found to be over 3 uSv/hr, and indicating they are 1/2 to 1/2 the levels of the radiation near the fence, it should be carefully reviewed to see that the level had dropped from 6-8 uSv/hr 1 meter from the ground, and less than 1 uSv/hr a few inches above the ground. This would also make the migration of contamination more complicated than a simple leak theory as there were multiple protection barriers and no clear transmission path identified.

It is clear even if the Setagaya case is indeed unrelated to Fukushima, questions remain for the ward to research and provide answers for to the citizens, like investigating how long was it unattended in the house, and how did the contamination spread without an apparent direct path to where the readings were taken?.

While the initial reporting of the finds by the citizens didn’t make international news, after official attempts to decontaminate the spot only to find the radiation levels increasing incited the national response in Japan enough to attract international attention.

Initially a spokeswoman for Setagaya Ward would not immediately confirm the new readings to the media. The spokesperson did note that the high readings have been shown only in a two-meter long area and below 1.5 meters from the ground. "We don't know the cause (of the high radiation levels) yet…We are asking experts to find it urgently and decontaminate the area," she said.

It is unclear the sequence of events that lead to the discovery, but a house in the area was selected for testing. The traditional Japanese house that officials tested stoodout in a neighborhood described by Mr. Oda as "posh." The old wooden house looks humble and almost abandoned, drawing a stark contrast with a large Western-style house just across the street with multiple cars in its spacious garage, what led the officials to search the premises unknown.
The ward announced they would work with residents to gauge radiation levels inside the fence and collect and analyze leaves at the site. After obtaining permission from the house's owner, the experts measured radiation levels on the premises.

Questions yet to be answered

Why did officials delay to secure a potential dirty weapon source identified in an abandoned house?

It may not be a coincidence that nearly every report includes a statement about how consent was received to enter the house, considering it was perceived to be abandoned, implying officials claim to have waited until identifying the readings were coming from the house, and instead of entering it to locate a public health hazard, instead focused on identifying and locating the landowner for explicit information.

An isolated source contained within multiple forms of containment is an unexpected element for the contamination found on the street, if it was detected externally it would be reasonable to assume that especially post-911 and after Fukushima, authorities could have easily entered the residence and immediately secured a source which is considered a hazardous and potentially can be used for dirty weapons
The bottles were in a wooden crate and 'covered with mud'. Reports deduced they appeared to have been there for years, a lucky find under any conditions. No data was released as to how the bottles were stored, and where the substance contained originated from.

Questions yet to be answered

Why do officials view decontamination of the exterior of the house more difficult than the internal decontamination.

> It was also determined at that time that the contamination appeared to be limited to one site, as other hot spots were found in different parts of Tokyo. On Friday, officials are to begin to decontaminate the house but said they were not sure yet how to decontaminate the street.
>
> The puzzle here is why the officials view decontamination of the exterior of the house more difficult than the internal decontamination. If the source inside of the house truly was the removed bottles, than the external airborne levels should quickly lower.
>
> The decontamination of Radium is researched and documented, based off the

limited information available, what issues officials perceive as the greatest obstacles to decontamination have yet to be revealed by the city. A variety of research and decontamination projects have been completed in North America, a series of mild chloride washing and flotation experiments have showed that the +300 micron and 300 x 10 micron fractions can be remediated below a criterion level of 6 picoCuries per gram (pCi/g).

Decontamination and Remediation of Radium

In August, 1975, the Ministry of Health of the Province of Ontario at the request of one of the tenants of a building in a large Canadian city conducted a radiation survey of the third floor of the building. The survey, showed that high radiation existed on the third and second floors and that significant contamination existed in some other parts of the six-floor building. The contamination was identified as radium-226.

An investigation revealed that the building had been used during World War II for processing radium and also for some radium dial painting work.

In Pittsburgh in 2003, the Flannery Building near the University of Pittsburgh required decontamination and remediation, and contaminated materials were removed, and then prepared for disposal.
The building was constructed in 1911, and had long been acquainted with processing radium for commercial and medical use.

Science and education ministry inspectors believe the bottles contain radium, a radioactive material used in the past as self-luminous paint for watches, Kyodo News agency reported. It said the inspectors concluded that the radiation was not related to the Fukushima disaster because no cesium was detected in the bottles. At this stage, it remained unclear whether the two radiation finds inside and outside the basement were linked.

Does the presence of Radium alone confirm claims contamination not from Fukushima?

Professor Masahiro Fukushi, the radiation specialist at Tokyo Metropolitan University who measured the fence's radiation level prior to locating the bottles in the basement of the house, was one of the first experts who told TV broadcaster Tokyo Broadcasting System Inc. it is highly probable the radioactive isotope detected is radium-226.

He continued to explain to the newscast that because "this isotope is not used in nuclear power plants, it is not believed to have been emitted by the Fukushima plant's wrecked reactors." As if to add another possible source to the mix, "Radium can be detected in some hot springs,"Fukushi added.

The claim that it could not be from Fukushima if it is Radium is very misleading as Radium is a decay product of U-238 and is not one of the isotopes used in the fuel, but can be produced by decaying U-238. However small the probability, maybe someone should assess the implications of finding a deposited small amount of uranium on a city sirface that had already decayed into Radium, and incorporated itself with the sidewalk during the process yielding a weeks worth of decontamination efforts futile.

- How does radium get into the environment? – Radium occurs naturally in the environment. As a decay product of uranium and thorium, it is common in virtually all rock, soil, and water. Usually concentrations are very low. However, geologic processes can form concentrations of naturally radioactive elements, especially uranium and radium.
- How does radium get into the environment from a nuclear reactor? – Radium can also be produced in the body from "parent" radionuclides (uranium and thorium). All isotopes of radium are radioactive. As they decay, they emit radiation and form new radioactive elements, until they reach stable lead. Isotopes of radium decay to form different isotopes of radon.

Radium data continued at end

> The next announcement was made following a probe by the Ministry of Education, Culture, Sports, Science and Technology about the increase in the detection of airborne radiation to over 3 uSv/hr earlier in the day in a follow-up inspection hastily undertaken by the government, which had been confirmed after Nobuto Hosaka, mayor of the ward, reassured the public the radiation did not appear to be linked to the nuclear crisis in Fukushima.

Setagaya Mayor Nobuto Hosaka reported in the press conference that the ward obtained the owner's consent and entered the house to measure radiation levels. The Mayor reported the search uncovered four old and dirty bottles in a mud-covered box underneath the floor.

The radiation level of the bottles reportedly exceeded 30 microsieverts per hour — higher than the maximum that could be measured with the experts' devices. Police were investigating the contents and whether the bottles violated laws regulating possession of radioactive materials.

Questions yet to be answered

> Was there any indications aside from proximity led investigations to the house, which had been left out of any media coverage reports until after the Radium theory was proposed?
>
> How/why would 'Average Citizen' come up with 4 bottles containing radioactive materials at such a high level of radioactivity?
> It's not easy to create your own 30 uSv/hr radioactive container without some experience or knowledge, and trained individuals are aware of the dangers of unsecured waste and are instructed standard protocol for the storage and disposal of private quantities.
>
> If the authorities were investigating the possibility of violated laws, why was the homeowner not detained upon arriving at the property to give permission for entry? Why is there no mention of any comment from the mysterious owner?

Mr. Hosaka said the radiation emitted by the bottles was so high that Setagaya officials and other investigators were unable to check what was inside them out of safety concerns.

An investigator from Japan's science ministry, who was also at the house told a TV crew that officials managed to put the bottles inside a lead container made to block the radiation, and that the airborne levels around the house subsequently dropped significantly. "We don't yet know what specific radioactive material is inside the bottles," he said.

Questions yet to be answered

Why didn't officials secure a potential dirty weapon source identified in an abandoned house?

> It may not be a coincidence that nearly every report includes a statement about how consent was received to enter the house, considering it was perceived to be abandoned, it means officials claim to have waited until identifying the readings were coming from the house, and instead of entering it to locate a public health hazard, instead focused on identifying and locating the landowner for explicit information.
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The bottles were in a wooden crate and 'covered with mud'. Reports deduced they appeared to have been there for years, a lucky find under any conditions. No data was released as to how the bottles were stored, and where the substance contained originated from, leaving the door for premature suggestions it might be a collected run-off, or improperly stored radioactive waste that is accumulating.

One of the details most experts are interested to learn is if the bottles are the source of the contamination, many do not think it likely that a handful of these bottles of radium could produce such a large contamination so far away with leaving any trace of handling, or a trail that would have led it to the inspectors long before a week had passed.

If they had been stored there for an extended period of time, how had the radiation increased so much in between the space when it was first reported, and after the readings showed the increase after decontamination efforts?

If the bottles really are the source, and are as radioactive as the ward officials postulate, then the levels should drop fairly significantly once it is removed, and the street decontamination would not be expected to be forseen as such a daunting task by the city

This data was only released as the story went international, and although the sequence of events and multiple changes in opinion about the source are believed by many to be a coincidence, but the government is not winning any allies by playing sidekick to a vigilant resourceful community who expects the same out of their officials.

Despite the governments lack of evidence for their new findings, instead of waiting for the bottles to be analyzed, as soon as the updated press release was posted, the international main-stream media showed up on cue apt to display their willingness to turn the news faucet on and off at will, when they decided immediately to pick up on the story of

“radioactive materials were NOT from Fukushima”, and the story rocked headlines in nearly every major media source around the world

Questions yet to be answered

- The sporadic displacement of the contamination is interesting, all of the contamination was found above ground, in trees, leaves, the sidewalk, and a fence, but the government claims the source came from a BASEMENT, stored in a wooden box, contained in a collection of bottles. the fence, the trees, the sidewalk, possibly a roof, but no mention of external high radiation readings on the house or soil and no mention of the levels of the box where the bottles were found?
    - The box was noted to be wooden, and so are the fence and trees, so if it didn’t transfer through the box or soil, the source get from the basement, inside of a box, inside of bottles, to the sidewalk, fence, and TREES without contaminating the soil
    - How deep are the radioactive elements found in the tree if they were already transferred to the leaves?
    - How many bottles, what size, how much volume, and how much contamination?
    - How did it get there, was it a personal collection (if so, why) and if not, is it excess stored radioactive debris from the surrounding areas?
    - How did the source get from the basement, inside of a box, inside of bottles, to the sidewalk, fence, and TREES without contaminating the soil?
- If those bottles had been down there for a long time, and were still that ‘hot’ (assumed above normal standards for private possession), how radioactive were they when they were placed down there?

Decontamination and Remediation of Radium Cont…

Understanding the physical and chemical processes associated with materials containing uranium, thorium, and radium is important when addressing associated radiological risks. The long-lived starting isotopes of these three isotopes, respectively thorium-232, uranium-238, and uranium-235, have existed since the formation of the earth. Uranium, radium, and thorium occur in three natural decay series, headed by uranium-238, thorium-232, and uranium-235, respectively.Natural uranium is not significantly radioactive, but uranium ore is 13 times more radioactive because of the radium and other daughter isotopes it contains.

> This is evident at processing sites what was once a single, long decay series (for example the series for uranium-238) may be present as several smaller decay series headed by the longer-lived decay products of the original series (that is, headed by uranium-238, uranium-234, thorium-230, radium-226, and lead-210 in the case of uranium-238). Not only are unstable radium isotopes significant radioactivity emitters, but as the next stage in the decay chain they also generate radon, a heavy, inert, naturally occurring radioactive gas, frequently found in homes and in soil.

Long-term exposure to radium increases the risk of developing several diseases. Inhaled or

ingested radium increases the risk of developing such diseases as lymphoma, bone cancer, and diseases that affect the formation of blood, such as leukemia and aplastic anemia. These effects usually take years to develop. External exposure to radium's gamma radiation increases the risk of cancer to varying degrees in all tissues and organs.

Uranium Decay Series – The 4n+2 chain of U-238 is commonly called the "radium series" (sometimes "uranium series"). Beginning with naturally occurring uranium-238, this series includes the following elements: astatine,bismuth, lead, polonium, protactinium,radium, radon, thallium, and thorium.

nuclide
historic name (short)
historic name (long)
decay mode
half-life
(a=year)
energy released, MeV
product of decay

238U
UI
Uranium I
α
4.468·109 a
4.270
234Th

234Th
UX1
Uranium X1
β−
24.10 d
0.273
234mPa

234mPa
UX2
Uranium X2,
Brevium
β− 99.84 %
IT 0.16 %
1.16 min
2.271
0.074
234U
234Pa

234Pa
UZ
Uranium Z
β−
6.70 h
2.197
234U

234U
UII

Uranium II
α
245500 a
4.859
230Th

230Th
Io
Ionium
α
75380 a
4.770
226Ra

226Ra
Ra
Radium
α
1602 a
4.871
222Rn

222Rn
Rn
Radon,
Radium Emanation
α
3.8235 d
5.590
218Po

218Po
RaA
Radium A
α 99.98 %
β− 0.02 %
3.10 min
6.115
0.265
214Pb
218At

218At
α 99.90 %
β− 0.10 %
1.5 s
6.874
2.883
214Bi
218Rn

218Rn
α
35 ms
7.263
214Po

214Pb
RaB
Radium B
β−

26.8 min
1.024
214Bi

214Bi
RaC
Radium C
β− 99.98 %
α 0.02 %
19.9 min
3.272
5.617
214Po
210Tl

214Po
RaC′
Radium C′
α
0.1643 ms
7.883
210Pb

210Tl
RaC″
Radium C″
β−
1.30 min
5.484
210Pb

210Pb
RaD
Radium D
β−
22.3 a
0.064
210Bi

210Bi
RaE
Radium E
β− 99.99987%
α 0.00013%
5.013 d
1.426
5.982
210Po
206Tl

210Po
RaF
Radium F
α
138.376 d
5.407
206Pb

206Tl
RaE″
Radium E″

β−
4.199 min
1.533
206Pb

206Pb
RaG
Radium G
–
stable
–
–

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