

# FAQ on Radiation in Japan

Singapore Students' Association (Japan)

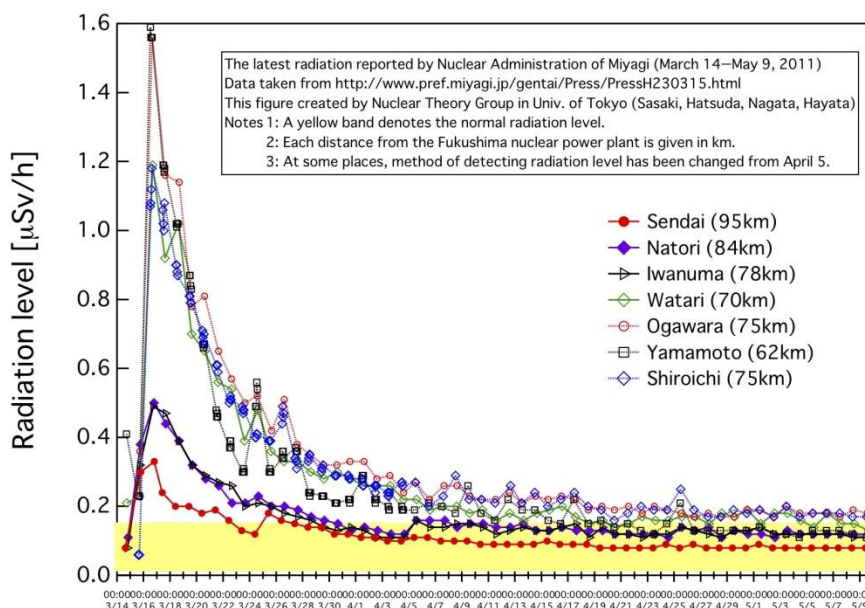
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## 1. Is there still a significant risk of radiation exposure in most parts of Japan?

**No.** The following is a data plot of radiation measurements in cities outside of the Fukushima plants' immediate vicinity, i.e. 60 kilometers and further. The plot was posted on 9 May on the Twitter account of Professor Ryugo Hayano, nuclear physics professor of the University of Tokyo, and put together by Prof. Hayano's Nuclear Theory Group at the university.



Using 0.2 uSv/h as a (very conservative) threshold, the data shows that areas that are outside of a 60-kilometer radius from the plants have been safe since May, now that the plants have begun to stabilize [1]. Radiation rapidly decreases with an 'inverse-square' law, such that the exposure decreases proportionally to the square of the distance from the radiation source. Tsunami-hit areas Sendai and Ishinomaki are more than 90 kilometers away from the plants, so there is low risk of dangerous radiation exposure there. Since the 3/11 incident, there have been many foreigners visiting these areas and participating in humanitarian efforts there. Most certainly, the rest of Japan, such as major cities Tokyo, Osaka, Kyoto, Sapporo and Fukuoka, can be considered safe for work and leisure.

[1]<http://online.wsj.com/article/SB10001424052702303795304576451532170573582.html>

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## 2. What are the main carriers of radiation in Japan, and how dangerous are they?

The primary suspects causing contamination are iodine-131 and cesium-137. These substances are known as *beta emitters*; their emitted activity is of relatively high energy and penetration. They would have little impact on the external skin (a bad burn at worst, if you were one of the workers who soaked their leaky boots in concentrated radioactive water at Fukushima Daiichi[2]), and would have non-trivial effects only if ingested. The half-life i.e. time for half the radioactivity to disappear for iodine-131 is 8 days, and for cesium-137, 30 years.

[2] <http://articles.latimes.com/2011/mar/25/world/la-fg-japan-quake-20110325>

## 3. What happens if I accidentally ingest Cesium-137?

While the long 30-year half-life of Cs-137 is a concern, Cs-137 has minimal impact on living chemistry even when ingested. Physiologically, Cs-137 mimics potassium, which is found in overwhelming abundance in the ocean relative to Cs-137, so ocean organisms are unlikely to absorb more than a trace amount of the radionuclide[3]. Also, Cs-137 is flushed out in urine together with potassium and other ionic salts, so it lingers in the body only momentarily even if ingested[4].

[3] <http://news.sciencemag.org/scienceinsider/2011/03/quake-question-8-what-impact.html>

[4] <http://www.epa.gov/radiation/radionuclides/cesium.html#body>

## 4. What happens if I accidentally ingest Iodine-131?

Iodine-131 has a much shorter half-life, so the overwhelming majority of the I-131 emissions from the Fukushima plants since the accident in March has already decayed to inactive xenon, which is considered harmless. However, even in the *incredibly unlikely* scenario that we should be directly ingesting water with elevated levels of I-131 (say 200 times over the limit of 0.1 Bq/L set by the US Agency for Toxic Substances and Disease Registry [5]) *every single day over the entire month of August*, that would come up to about 0.7 mSv of additional exposure. For reference, a single chest X-ray is 0.1 mSv. This is on top of the yearly background exposure of 3 mSv from our natural environment, and still lower than the lowest threshold provided by the US Environmental Protection

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Agency[6] of 50-100 mSv representing non-symptomatic minor changes in blood chemistry. Note that we could be drinking that water for *the entire year of 2011* without crossing that threshold. You would also have to be drinking water directly from the coast of Fukushima.

[5] <http://www.atsdr.cdc.gov/csem/csem.asp?csem=23&po=12>

[6] [http://www.epa.gov/rpdweb00/understand/health\\_effects.html](http://www.epa.gov/rpdweb00/understand/health_effects.html)

## 5. Is seafood in Japan safe? How about the beef and mushrooms?

**Yes.** There is a strict ban on fishing around the Fukushima nuclear plants [7], and radioactivity concentrations fall rapidly to harmless levels as you move away from the coast into the massive Pacific[3]. All food products with a likelihood of being contaminated are tested daily by the Japanese Ministry of Health, Labor and Welfare [8] and only food free of contamination is distributed.

The radioactive beef incident was the result of human error, which resulted in hay containing active cesium being fed to cattle owned by a single farmer based near Fukushima[10]. Beef from Fukushima has since been completely banned from distribution[11]. Nameko mushrooms grown in the open air in Soma, a city about 40 kilometers north of the Fukushima nuclear plants, were found to contain nine times the legal limit of cesium [12]. The authorities have since banned the harvesting and distribution of these mushrooms. As mentioned earlier, cesium has little impact on health when consumed in small quantities.

[7] <http://www.fis.com/fis/worldnews/worldnews.asp?monthyear=&day=19&id=42873&l=e&special=&ndb=1%20target=>

[8] <http://www.mhlw.go.jp/english/topics/2011eq/>

[9] [http://www.mhlw.go.jp/english/topics/2011eq/level\\_aug04.html](http://www.mhlw.go.jp/english/topics/2011eq/level_aug04.html)

[10] <http://www.nytimes.com/2011/07/18/business/global/japanese-retailer-sold-beef-contaminated-by-radiation.html>

[11] <http://www.bbc.co.uk/news/business-14181046>

[12] <http://www.bloomberg.com/news/2011-08-14/mushrooms-join-growing-list-of-radioactive-threats-to-japan-s-food-chain.html>

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## **6. Is the mass media exaggerating in reports of Fukushima and the situation in Japan in general? How do I know which ones to believe?**

There is no easy answer, but it depends, as of all media reporting on a certain topic, on the origins of the reports and their allegiances. I will attempt to delineate this by looking briefly at coverage by the local media in Japan, and the global media with a small section on Singapore.

### The Local Media in Japan

In his analysis of the local media in Japan on their coverage of Fukushima and related issues, David McNeill, freelance journalist of CNN International, observed that as opposed to their foreign counterparts, Japanese journalists were calm in reporting such news. However, these same journalists also concealed or delayed releasing information on what was going on inside the plant, specifically in the instance of a blackout of the word “meltdown” [13].

One thing to note about the Japanese media is that the main newspapers and television companies obtain their information by means of a press club system [14][15]. This means that information is channeled and amplified directly from the government, TEPCO and The Nuclear Industrial Safety Agency. It also means that local media were discouraged from speculating about the stricken plant and instead reported the news only when they were absolutely certain, thereby resulting in a tendency towards reporting objective facts.

### The Global Media

In the aftermath of 3/11, the media all over the world have been quick to capitalize on what they collectively recognize as sensationalist news that will sell. One source noted on March 20 this year that both CNN and Drudge Report [16], a specialist in catching the news among the first in the world, were continually dishing out stories and reports on Fukushima [17], thereby enshrining this issue as main news.

It should be noted that the Japanese government had been slow to disclose information regarding the plants [18], which may have resulted in panic among foreign journalists in a bid for (a lack of) information to base their reports on. This may also have led to various speculations regarding the issue and possibly fabrication of information to spiral out of control [13].

That said, as an American student who was doing an exchange at Temple University's Tokyo Campus noted, the differences between Fukushima reportage in Japanese media and American media were vast, and which she felt difficult to reconcile. She thought the latter “apocalyptic” in its coverage of the crisis and played on the fact that most Americans could not distinguish Fukushima, Sendai or Tokyo from one another and perceived the issue to belong to all of Japan [19].

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For an online archive of Fukushima reportage drawn from English-language mainstream and indie online news sites and blogs all over the world, please go to: <http://fukushimanewsresearch.wordpress.com/>

The media in Singapore has not been entirely comprehensive in its reporting of the Fukushima crisis. Several sources for information and reports on the issue have been taken from foreign ones, such as Reuters [20], which would draw similar reactions comparable to readers in other parts of the world.

## Responsibility of the Media and Readers

Critics have debated about the responsibility of the media in reports of Fukushima. In comparing local and global reportage on the issue, Japanese freelancer Takashi Uesugi suggested that the media could have assumed the worst case scenario and write about it, *with* an addition of what the current situation is like in relation to that [13]. While he criticized the Japanese media for plainly reassuring the public that all was safe, McNeill noted that Japanese magazines, uncurbed by the press club system, were unrestrained in their criticism of the handling of the crisis in general [13]. There arises the question of how to balance reportage of Fukushima in a way that would avoid panic, and at the same time, present the facts accurately and as objectively as possible.

In this respect, we, as readers, need to remain composed and critical when encountering news of highly sensational content, such as the issue in question. While the media in general struggle to report news holistically, we need to understand information presented with a critical eye. This means investigating sources or news that may seem dubious, not being afraid to contradict such reports, as well as responding to the media to provide correct information for other readers.

[13] <http://www.cngo.com/tokyo/life/tell-me-about-it/david-mcneill-whos-telling-truth-fukushima-448215>

[14] <http://www.kanzaki.com/jpress/newspaper.html>

[15] [http://en.wikipedia.org/wiki/Kisha\\_club](http://en.wikipedia.org/wiki/Kisha_club)

[16] <http://www.drudgereport.com/>

[17] <http://www.dailyonigiri.com/2011/03/is-the-media-more-out-of-control-than-the-nuclear-power-plant-in-fukushima/>

[18] [http://www.nytimes.com/2011/04/13/world/asia/13japan.html?\\_r=2&pagewanted=1&ref=world](http://www.nytimes.com/2011/04/13/world/asia/13japan.html?_r=2&pagewanted=1&ref=world)

[19] [http://thetartan.org/2011/4/4/forum/study\\_abroad\\_experience](http://thetartan.org/2011/4/4/forum/study_abroad_experience)

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## 7. How are the Singaporean students living in Japan after 3/11?

It can be said that life has almost resumed back to normal. In central Tokyo and other parts of Japan, the trains are running as per normal, and usually arrive on schedule. Although slight tremors and minor aftershocks still occur occasionally, no major disruption to the public transportation system has been seen. The local supermarkets are regularly stocked with food supplies and other daily necessities, and consumer prices of goods are similar to before the Great East Japan Earthquake.

There is a nationwide effort underway to conserve energy (mainly electrical energy). Many schools have implemented initiatives to cut down the amount of electricity use by turning of unnecessary lighting and/or regulating air-conditioning temperatures. All students, including Singaporeans, are usually expected to cooperate and follow the guidelines issued by their schools in this regard. However, there has not been any electrical outage experienced that has severely interrupted school or work life.

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