

**Social and Psychological Consequences of Radiological Misconceptions
Following the Fukushima Disaster**

Honors Thesis

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By

Ashley Morris
Department of Biomedical Sciences

Dr. Thomas Johnson, Department of Environmental and Radiological Health Sciences

Dr. Danielle Gardner, Department of Psychology

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Abstract

Numerous studies have been conducted regarding the somatic effects of radiation, but the social and psychological impacts remain less studied. The societal and psychological impacts on the residents and evacuees following the tsunami caused by the Great East Japan Earthquake and resulting explosion involving the Fukushima Dai-ichi reactors is seldom emphasized in non-scientific literature. No somatic effects of radiation from the accident have been reported, but communication regarding this has not been effectively disseminated to the public. Radiation can be dangerous, but there are known parameters which must be exceeded to express cellular damage, as well as regulatory limits, shielding and proximity. Additionally, non-scientific media tend to exaggerate radiation dose effects, even when radiation doses are indistinguishable from natural background radiation levels. However, the social and psychological effects of radiation in Japan after this accident have lasted into the present day. Social effects can include ostracization and discrimination from the general populus as well as the individual. Psychological effects tend to be rooted in mental health disorders, extreme fear of radiation, and other, less visible conditions. Research indicates both psychological distress following the incident and a harmful misunderstanding of radiation stemming from the belief that individuals exposed to radiation are radioactive, damaged, or infectious. Psychological and social effects have been measured through the use of surveys of the general populus, as well as interviews, focus groups, and longitudinal studies including those directly affected. Contrary to popular belief, the somatic effects of radiation from this incident are non-existent compared to the social effects that remain to this day. Exposure to radiation and the resultant evacuation changed Fukushima Prefecture lives forever. The majority of lingering effects stem from scientifically unsubstantiated fears regarding radiation, and the evacuation itself, impacting individuals and communities.

Introduction

The Great East Japan Earthquake, also known as the Tohoku Earthquake, was an undersea megathrust earthquake that lasted 6 minutes and caused a tsunami in its wake. Compounded together they caused the reactors in Fukushima Dai-ichi to overheat by destroying the external sources of power and flooding the generators keeping the cores cool. Without the cooling pumps, the decay heat exceeded limits, and resulted in the emission of radioactive fission products. (World Nuclear Association, 2026) in the resultant hydrogen gas explosions expelled mainly Iodine-131, Cesium-134, and Cesium-137. These radioactive fission products were safety concerns, and the government immediately ordered residents within a 2 kilometer radius of the plant to evacuate then increased it to 3 kilometers. Then, when they increased the evacuation radius that night, those in a 3-10 kilometer radius were to shelter-in-place till told otherwise. The next morning, all who had been told to shelter-in-place were now ordered to evacuate, and that night the evacuation radius had been once again increased, this time to a radius of 20 kilometers (World Nuclear Association, 2026).

While the government saw their orders as keeping the citizens safe and being cautious about radiation exposure and inhalation, people were struggling to traverse the debris-covered roads and panicking about what the radiation might be doing to them and their loved ones. At the time, public concern was more focused on the somatic effects of radiation exposure rather than the social effects. However, it was discovered after the incident that there were minimal somatic effects due to radiation, and negligible long-term biological damage (World Nuclear Association, 2026). The majority of health effects would eventually be social and psychological and attributed to the evacuation itself (World Nuclear Association, 2026). Despite minimal physical harm from radiation exposure, the Fukushima disaster produced profound and persistent social stigma, discrimination, and psychological distress, largely driven by misinformation and fear of radiation (Sawano, 2018).

Somatic Effects of Radiation: A Brief Overview

There are two primary categories of effects that radiation has on the body; Deterministic and stochastic. Deterministic effects are physical symptoms that happen after being exposed to a specific amount of radiation above a predetermined radiation dose threshold. These symptoms are predictable and can be reproduced due to the specific amount of radiation exposure necessary in order to cause them. For example, some deterministic effects include nausea, vomiting, diarrhea, skin damage, hair loss, and decreased blood cell counts. The cells will be damaged and entire body systems tend to fail as described by acute radiation syndrome. Certain systems are more radiosensitive than others, especially those cells that are rapidly reproducing. Acute radiation syndrome, cataracts, and even temporary sterility are all examples of high dose deterministic effects. Deterministic effects increase in severity with increased radiation doses. The main stochastic effect from radiation is cancer. Increased radiation doses result in an increase in the probability of stochastic effects, not severity of effects. Stochastic effects besides cancer include and the possibility of genetic code mutations, genetic effects in reproductive cells, and other chronic illnesses such as cardiovascular diseases.

Both deterministic and somatic effects of radiation are caused by direct interactions with DNA and breaking bonds that cause mutations or cell death, or indirectly acting by breaking apart water molecules, resulting in free radicals that damage the DNA and other cellular components. These effects are nearly impossible to predict at low doses and stochastic effects may or may not present until many years after the exposure to radiation (Hall, 2011). Communication of the stochastic nature of radiation effects to the public is difficult, and often misunderstood.

Part of the issue with communicating radiation effects with the public is how we are presenting the risk of cancer due to radiation exposure. The current method used to communicate the effects of radiation is utilizing the Linear No Threshold Model (LNT) model for cancer risk assessment (US EPA, 2014). Utilizing the LNT model for communicating risk to the public has become controversial, as there is a

baseline level of background radiation that we are exposed to daily that cannot be avoided, and has not demonstrated deleterious effects that cannot be epidemiologically detected (Cardarelli, 2018). There is a threshold, 10 rem, below which, radiation effects cannot be effectively detected by epidemiological, pathological, or cellular measures (Burke, 2019). Additionally, the sensitivity of bodily tissues vary based on cellular mitotic future, mitotic activity, and differentiation. For example, stem cells tend to be significantly more radiosensitive than muscle cells. Additionally, cells which have efficient DNA repair mechanisms tend to be radio-insensitive (Hall, 2011).

Another problem with the communication of radiation dangers is that the general public is relatively uneducated on the topic of radiation itself. The cinematic death by radiation, horrifying mutations, and superpowers that have all been broadcast to the public twist the public perception of radiation. The media in general have no reliable information regarding radiation effects, and the main method of exposure to any radiation science is via movies or television shows that fail to present radiation effects in a scientific manner. External radiation is not a disease that can be spread and instantly cause tissue damage and death. Stochastic effects from low doses may cause cancer, but only at doses significantly above background, and after a latency period. Everyone is exposed to background radiation daily, with the global average being 2.4 mSv/year, with the national average levels in Japan being 2.2 mSv/year even after the Fukushima Dai-ichi disaster (Omori, 2020). Colorado has a background radiation level of more than 3.5-4 mSv/year due to altitude increasing cosmic radiation levels, as well as the Uranium-rich soil (radon). Colorado has some of the highest levels of background radiation in the United States. (Bolos, 2013).

Generally, acute radiation effects are detectable at approximately 0.25 Gy, and consistently manifest clinically at ~1 Gy, where the acute radiation sickness begins to take place. The LD50 is approximately 4. The LD100 is approximately 8 to 10 Gy, however the exposed individual will require days to weeks after exposure to expire, depending on the medical care given. As a comparison, 1 Gy of external gamma radiation is approximately equal to 1000 mSv, and in order for the radiation to cause acute effects, the dose must be delivered within days or shorter, not chronically.

The Social and Psychological Impacts of the Fukushima Accident

Radiophobia is the irrational fear of radiation which increased after the Fukushima accident (Amir, 2023).

The Japanese government initially evacuated a smaller area, then increased the area and direction of evacuation within days, leading to a distrust of authorities regarding radiation information (Fukasawa, 2020). The distrust of the government, as well as a lack of education on radiation, led to misunderstanding and fear for both evacuees and members of the public. In addition to the Fukushima accident, another factor in Japan is lingering prejudice and fear remaining from atomic bombs (Kamite, 2017). Both events are radiation-related disasters that Japan as a society has known, and emotions and thoughts associated with atomic bombs may have been applied to the Fukushima Dai-ichi disaster (Sawano, 2018). Additionally, in the Japanese culture, cleanliness is important, and for something to be ‘radiologically contaminated’ carries connotations of being unclean, for both the area and people inhabiting the area (Sawano, 2018). The atomic bomb survivors were thought to be contaminated, contagious, and damaged, so they were ostracized from society out of fear and misinformation about radiation (Sierra, 2025). Fukushima and its residents might have been impacted by this thought process, causing fear due to lingering prejudice against radiation. However, there is nothing to fear about these people. Unless the radioactive material remains physically attached to a person, radiation is not spread by people. Radiation is not contagious in that sense, and it is only able to be spread via transfer of particles.

Japan’s falling birth rate has exacerbated the prejudice against women who were involved in the Fukushima evacuation because they are thought to be broken and sterile due to their possible exposure to radiation. This is a factually unsubstantiated claim that has caused discrimination against these women regarding marriage prospects, job opportunities, and social status. (Makino, 2021) Also, the overall set up of Japan’s societal culture has caused a perpetuating cycle of isolation due to the collective belief that those from Fukushima are dangerous, and since the community comes before the individual, the people from Fukushima will self-isolate to protect the community, and so on. (Takano, 2024) This also extends into the agricultural produce in Fukushima, something that has been almost fully reinstated as of 2022,

because people feared that the crops were contaminated and radioactive, regardless of the science proving otherwise and extensive radiological monitoring of products.

The lack of knowledge on radiation is only one source of social and psychological effects following the disaster, the evacuation was another source of problems. Being forced out of their homes in order to comply with the safety protocol is traumatic, and the execution of the evacuation added additional stress. Having limited methods and roads of escape in addition to earthquake damage roadways, caused traffic jams, and delays in reaching their destinations. Many people were forced to take refuge in large group spaces such as gymnasiums for shelter. Families had little to no privacy, sometimes only a blankets worth of floor space, and causing new issues that weren't directly related to the radiation. The evacuated people suffered from close proximity, poor living conditions, and consistent levels of high stress that often lead to anxiety, depression, radiophobia, and PTSD. These conditions persisted with some evacuees for multiple years. Mental health disorders if left unaddressed and untreated can lead to multiple untoward outcomes, something that is common in Japanese society. Mental health is frequently stigmatized in Japan, and the addition of radiation increases the discomfort for Japanese citizens attempting to get the help that they may need. (Kanehara, 2015) The initial lack of general knowledge about the psychological and social effects stemming from the Fukushima Daiichi disaster likely added to the complexity of problems evacuees were facing.

After surveying the general population in order to measure and attempt to quantify attitudes, fears, and stereotypes around radiation and Fukushima, it was found that the stigma and prejudice against those either from Fukushima or involved in the disaster is affecting the generation that were adults during the disaster, and the younger generation as well. For example, children reported being bullied due to being a part of the evacuation and had been physically assaulted due to their classmates being convinced that they were infected and dangerous. (Sawano, 2018) This is possibly due to the lack of radiation education in schools and in general, given that both the adults and the children are lacking necessary information. There have also been interviews, focus groups, and longitudinal studies with affected Fukushima

residents that indicated that there is lingering trauma associated with the evacuation and the disaster itself. (World Nuclear Association, 2026). Even though there were no radiation deaths or acute injuries to workers or general public from the Fukushima accident, confirmed by the World Health Organization, there were still lasting mental effects. All casualties or injuries were caused by the tsunami, the earthquake, travel in suboptimal conditions, and various other natural disaster related reasons. Studies are tracking the frequency of cancer and other long term health problems on individuals who were involved in the disaster. No conclusive evidence of an increased number of cancers has been detected (Harada, 2014). Models have demonstrated a possible increase in the chance of developing cancer, but have high levels of uncertainty and are based on Lifetime Attributable Risk (LAR) and the LNT.

Future Research and Conclusions

Research into how best to communicate scientific knowledge with the general public will be highly beneficial. Better communication leads to increased understanding of the world around us and situations that may happen, which in turn decreases overall anxiety and fear related to new scenarios. The best method of mitigating risk perception in Japanese societies should be determined. Scientific communication from an individual not in a community generally means less than the beliefs of the people around them. The younger generation, who utilize social media or possibly games, could be a method that would help share correct information about radiation and Fukushima. Dissemination of information via social media and games is a novel method of dissemination of information. Those using social media and games would hopefully result in communicating to their families the information. Regardless of method, efforts must be made to combat stigma and discrimination otherwise the consequences will continue on into the future. Public awareness campaigns and policy interventions can help correct misconceptions and promote social inclusion in the older generations that respond better to more formal methods of dispersing information. Fukushima prefecture has already established prefectural facilities for the education of the public, and outreach programs. Additional methods of addressing and correcting these misconceptions, future responses to technological and environmental disasters can mitigate not only possible physical

harm but also the broader societal consequences that have previously been overlooked. Overall, we must continue to work towards bridging the gap between science and the public as well as include social and psychological consequences in the risk assessments of disaster plans and protocols. This will help lessen stigma against mental health issues, prejudice against those caught up in disasters like Fukushima Daiichi, and bring more awareness to the difference between risk perception and active danger.

References

- Akata, N., Anderson, D., Kakiuchi, H., Yamada, R., Hasegawa, H., & Ueda, S. (2024). Tissue-free water tritium and non-exchangeable organically bound tritium concentrations in fish near coastline during and after operation of Japan's first nuclear fuel reprocessing facility. *The Science of the Total Environment*, 947, 174404. <https://doi.org/10.1016/j.scitotenv.2024.174404>
- Amano, M. A., French, B., Sakata, R., Dekker, M., & Brenner, A. V. (2021). Lifetime risk of suicide among survivors of the atomic bombings of Japan. *Epidemiology and Psychiatric Sciences*, 30, e43. <https://doi.org/10.1017/S204579602100024X>
- Amir, I., Eguchi, Y., Saotome, K., Ogawa, S., Kojima, Y., Tamaki, T., & Masaharu Tsubokura. (2023). The “GU-GU-RU” project to eliminate discrimination related to the health effects of the Fukushima nuclear accident. *BMC Public Health*, 23, 2050. <https://doi.org/10.1186/s12889-023-16883-2>
- Antonini, J., & Hayes, J. (n.d.). *The real Fukushima aftermath was not what you think*. Mackinac Center. Retrieved November 5, 2025, from <https://www.mackinac.org/blog/2024/the-real-fukushima-aftermath-was-not-what-you-think>
- Bolus, N. E. (2013). NCRP Report 160 and What It Means for Medical Imaging and Nuclear Medicine. *Journal of Nuclear Medicine Technology*, 41(4), 255–260. <https://doi.org/10.2967/jnmt.113.128728>
- Bromet, E. J. (2014). EMOTIONAL CONSEQUENCES OF NUCLEAR POWER PLANT DISASTERS. *Health Physics*, 106(2), 206–210. <https://doi.org/10.1097/HP.000000000000012>
- Burk, B. (2019). *Radiation Risk in Perspective*. <https://hps.org/wp-content/uploads/2024/12/radiationrisk.pdf>
- Cardarelli, J. J., & Ulsh, B. A. (2018). It Is Time to Move Beyond the Linear No-Threshold Theory for Low-Dose Radiation Protection. *Dose-Response*, 16(3), 1559325818779651. <https://doi.org/10.1177/1559325818779651>
- CDC. (2024a, February 19). *About Health Effects of Radiation*. Radiation and Your Health. <https://www.cdc.gov/radiation-health/about/health-effects-of-radiation.html>
- CDC. (2024b, May 21). *Fukushima Radiation Emergency: Lessons Learned*. Radiation Emergencies. <https://www.cdc.gov/radiation-emergencies/features/fukushima.html>
- COLLECTIVISM IN JAPAN: HOW IT IS IMPEDING JAPAN'S GROWTH AND FUTURE / Renka Taguchi. (2021, May 14). *Angles*. <https://anglesjournal.org/2021/05/14/collectivism-in-japan-how-it-is-impeding-japans-growth-and-future-renka-taguchi/>
- Commission, C. N. S. (n.d.-a). *Natural background radiation*. Retrieved May 5, 2026, from <https://www.cnsccsn.gc.ca/eng/resources/fact-sheets/natural-background-radiation/>

- Commission, C. N. S. (n.d.-b). *Radiation doses*. Retrieved December 10, 2025, from <https://www.cnsccsn.gc.ca/eng/resources/radiation/radiation-doses/>
- Fukasawa, M., Kawakami, N., Umeda, M., Akiyama, T., Horikoshi, N., Yasumura, S., Yabe, H., Suzuki, Y., & Bromet, E. J. (2020). Long-lasting effects of distrust in government and science on mental health eight years after the Fukushima nuclear power plant disaster. *Social Science & Medicine*, 258, 113108. <https://doi.org/10.1016/j.socscimed.2020.113108>
- Fukasawa, M., Umeda, M., Akiyama, T., Horikoshi, N., Yasumura, S., Yabe, H., Suzuki, Y., Bromet, E. J., & Kawakami, N. (2022). Worry about Radiation and Its Risk Factors Five to Ten Years after the Fukushima Nuclear Power Plant Disaster. *International Journal of Environmental Research and Public Health*, 19(24), 16943. <https://doi.org/10.3390/ijerph192416943>
- Fukushima Daiichi Accident—World Nuclear Association*. (n.d.). Retrieved November 19, 2025, from <https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-daiichi-accident>
- Fukushima Medical University*. (n.d.). Retrieved October 30, 2025, from https://www.fmu.ac.jp/univ/en/about/e_dbook.html
- Great East Japan Earthquake*. (n.d.). Retrieved November 19, 2025, from <https://www.reconstruction.go.jp/english/topics/GEJE/>
- Hall, E., & Giaccia, A. (2011). *Radiobiology for the Radiologist* (7th Edition). Lippincott Williams & Wilkins, Philadelphia, 455-466.
- Harada, K. H., Niisoe, T., Imanaka, M., Takahashi, T., Amako, K., Fujii, Y., Kanameishi, M., Ohse, K., Nakai, Y., Nishikawa, T., Saito, Y., Sakamoto, H., Ueyama, K., Hisaki, K., Ohara, E., Inoue, T., Yamamoto, K., Matsuoka, Y., Ohata, H., ... Koizumi, A. (2014). Radiation dose rates now and in the future for residents neighboring restricted areas of the Fukushima Daiichi Nuclear Power Plant. *Proceedings of the National Academy of Sciences*, 111(10), E914–E923. <https://doi.org/10.1073/pnas.1315684111>
- Hayashi, T., Morishita, Y., Kubo, Y., Kusunoki, Y., Hayashi, I., Kasagi, F., Hakoda, M., Kyoizumi, S., & Nakachi, K. (2005). Long-term effects of radiation dose on inflammatory markers in atomic bomb survivors. *The American Journal of Medicine*, 118(1), 83–86. <https://doi.org/10.1016/j.amjmed.2004.06.045>
- Hazards of Beta Radiation*. (n.d.). Retrieved January 9, 2026, from <https://cdp.dhs.gov/shared/se/courses/default/AWR-923-W%2005122021%201.2-20210512144644/groups/31.html>

- Heath, M. (2013). *Radiation Stigma, Mental Health and Marriage Discrimination: The Social Side-Effects of the Fukushima Daiichi Nuclear Disaster*. <https://hdl.handle.net/1794/12994>
- How Fukushima's radioactive fallout in Tokyo was concealed from the public. (n.d.). *Bulletin of the Atomic Scientists*. Retrieved December 10, 2025, from <https://thebulletin.org/premium/2025-01/how-fukushimas-radioactive-fallout-in-tokyo-was-concealed-from-the-public/>
- How to Deal With the Risk of Evacuation of Psychiatric Hospital in Nuclear Disaster: A Case Study. (n.d.). *ResearchGate*. <https://doi.org/10.1017/dmp.2022.298>
- HRN. (2011, May 8). *Statement concerning the unjustified discrimination of the people living in close proximity to the Fukushima Nuclear Power Plants—Human Rights Now Global Site*. <https://hrn.or.jp/eng/news/2011/05/09/fukushima-discrimination-statement/>
- Kamite, Y. (2017a). Prejudice and Health Anxiety about Radiation Exposure from Second-Generation Atomic Bomb Survivors: Results from a Qualitative Interview Study. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.01462>
- Kamite, Y. (2017b). Prejudice and Health Anxiety about Radiation Exposure from Second-Generation Atomic Bomb Survivors: Results from a Qualitative Interview Study. *Frontiers in Psychology*, 8, 1462. <https://doi.org/10.3389/fpsyg.2017.01462>
- Kamiya, K., Ozasa, K., Akiba, S., Niwa, O., Kodama, K., Takamura, N., Zaharieva, E. K., Kimura, Y., & Wakeford, R. (2015). Long-term effects of radiation exposure on health. *The Lancet*, 386(9992), 469–478. [https://doi.org/10.1016/S0140-6736\(15\)61167-9](https://doi.org/10.1016/S0140-6736(15)61167-9)
- Kanehara, A., Umeda, M., & Kawakami, N. (2015). Barriers to mental health care in Japan: Results from the World Mental Health Japan Survey. *Psychiatry and Clinical Neurosciences*, 69(9), 523–533. <https://doi.org/10.1111/pcn.12267>
- Kheamsiri, K., Anderson, D., Tazoe, H., Okada, K., Otashiro, N., Kuwata, H., Kakiuchi, H., Hosoda, M., Kovács, T., Tokonami, S., & Akata, N. (2025). Elevated levels of tritium in surface water collected in the immediate aftermath of the Fukushima accident. *Environmental Pollution*, 372, 126040. <https://doi.org/10.1016/j.envpol.2025.126040>
- Kobashi, Y., Susa, N., Ryzhii, E., & Ito, N. (2025). Prioritized Health Issues, Solutions, and Vulnerable Groups of Residents Recovering From Nuclear Disaster: A Qualitative Analysis of Interview Data. *Disaster Medicine and Public Health Preparedness*, 19, e319. <https://doi.org/10.1017/dmp.2025.10237>
- Kobayashi, T., Yoshida, K., Takebayashi, Y., Goto, A., Kumagai, A., & Murakami, M. (2019a). Social identity threats following the Fukushima nuclear accident and its influence on psychological distress. *International Journal of Disaster Risk Reduction*, 37, 101171. <https://doi.org/10.1016/j.ijdrr.2019.101171>

- Kobayashi, T., Yoshida, K., Takebayashi, Y., Goto, A., Kumagai, A., & Murakami, M. (2019b). Social identity threats following the Fukushima nuclear accident and its influence on psychological distress. *International Journal of Disaster Risk Reduction*, 37, 101171. <https://doi.org/10.1016/j.ijdrr.2019.101171>
- Lau, S. S. S., Fong, J. W. L., Rijsbergen, N. van, McGuire, L., Ho, C. C. Y., Cheng, M. C. H., & Tse, D. (2024). Emotional responses and psychological health among young people amid climate change, Fukushima's radioactive water release, and wars in Ukraine and the Middle East, and the mediating roles of media exposure and nature connectedness: A cross-national analysis. *The Lancet Planetary Health*, 8(6), e365–e377. [https://doi.org/10.1016/S2542-5196\(24\)00097-4](https://doi.org/10.1016/S2542-5196(24)00097-4)
- Maeda, M., & Oe, M. (2017). Mental Health Consequences and Social Issues After the Fukushima Disaster. *Asia-Pacific Journal of Public Health*, 29(2_suppl), 36S-46S. <https://doi.org/10.1177/1010539516689695>
- Maeda, M., Oe, M., & Suzuki, Y. (2018). Psychosocial effects of the Fukushima disaster and current tasks: Differences between natural and nuclear disasters. *Journal of the National Institute of Public Health*, 67(1). <https://www.niph.go.jp/journal/data/67-1/201867010007.pdf>
- Murayama, T. (n.d.). *Social impacts induced by radiation risk in Fukushima*.
- Omori, Y., Hosoda, M., Takahashi, F., Sanada, T., Hirao, S., Ono, K., & Furukawa, M. (2020). Japanese population dose from natural radiation. *Journal of Radiological Protection*, 40(3), R99. <https://doi.org/10.1088/1361-6498/ab73b1>
- Physics, V. (2021, April 21). Deterministic vs. Stochastic Effects: What Are the Differences? *Versant Medical Physics and Radiation Safety*. <https://www.versantphysics.com/2021/04/21/deterministic-vs-stochastic-effects/>
- Radiation Health Effects | US EPA*. (n.d.). Retrieved October 27, 2025, from <https://www.epa.gov/radiation/radiation-health-effects>
- Sawano, T., Nishikawa, Y., Ozaki, A., Leppold, C., & Tsubokura, M. (2018). The Fukushima Daiichi Nuclear Power Plant accident and school bullying of affected children and adolescents: The need for continuous radiation education. *Journal of Radiation Research*, 59(3), 381–384. <https://doi.org/10.1093/jrr/rry025>
- Scott, B. R. (2025). Radiophobia Harm, Its Main Cause, and a Proposed Solution. *Dose-Response*, 23(1), 15593258251318305. <https://doi.org/10.1177/15593258251318305>
- Sierra, A. (2025, July 23). *Hibakusha: Stories of Survivors of Hiroshima and Nagasaki*. PBS. <https://www.pbs.org/articles/hibakusha-stories-of-survivors-of-hiroshima-and-nagasaki>

- Suzuki, Y., Yabe, H., Yasumura, S., Ohira, T., Niwa, S.-I., Ohtsuru, A., Mashiko, H., Maeda, M., & Abe, M. (2015). Psychological distress and the perception of radiation risks: The Fukushima health management survey. *Bulletin of the World Health Organization*, 93(9), 598–605. <https://doi.org/10.2471/BLT.14.146498>
- Takano, Y. (Ed.). (2024). “Japanese Collectivism.” In *Cultural Stereotype and Its Hazards: ‘Japanese Collectivism’ as a Case* (pp. 1–16). Cambridge University Press. <https://doi.org/10.1017/9781108973625.002>
- Testimonies reveal discrimination, oppression of Fukushima women after nuclear crisis. (2021, March 10). *Mainichi Daily News*. <https://mainichi.jp/english/articles/20210310/p2a/00m/0na/030000c>
- University, © Stanford, Stanford, & California 94305. (2018, February 14). *How did the Fukushima disaster affect air pollution?* <https://cisac.fsi.stanford.edu/news/how-did-fukushima-disaster-affect-air-pollution>
- US EPA, O. (2014, May 23). *Risk Assessment for Carcinogenic Effects* [Reports and Assessments]. <https://www.epa.gov/fera/risk-assessment-carcinogenic-effects>
- Zhao, C., Wang, G., Zhang, M., Wang, G., de With, G., Bezhenar, R., Maderich, V., Xia, C., Zhao, B., Jung, K. T., Periañez, R., Akhir, M. F., Sangmanee, C., & Qiao, F. (2021). Transport and dispersion of tritium from the radioactive water of the Fukushima Daiichi nuclear plant. *Marine Pollution Bulletin*, 169, 112515. <https://doi.org/10.1016/j.marpolbul.2021.112515>