

## **FoE Japan's comments on ICRP's "Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident"**

### **1. Overall Comments**

Before ICRP finalizes the update of its Publications 109 and 111, we recommend that ICRP should carefully examine whether the said publications effectively contributed to radiological protection in the case of the 2011 Fukushima Daiichi Nuclear Accident.

1.1. In April 2011, the Japanese government adopted the annual dose of 20 mSv as the criterion for reopening schools in Fukushima Prefecture. The government claimed that the criterion was based on the ICRP Publication 111 recommending reference levels be chosen in the band of 1 to 20 mSv per year; however, many parents and citizens in Fukushima protested against the government's criterion and demanded that it should be retracted, for they reasoned that the annual dose of 20 mSv was 20 times higher than the ICRP limit of 1 mSv per year for the general public and 4 times higher than the Japanese legal limit of 5 mSv per year for the occupational radiation worker. In this respect, para B8 does not accurately describe the logic of reasoning behind the protest.

1.2. In April 2011, the Japanese government also established the deliberate evacuation area by using the annual dose limit of 20 mSv. Because similar levels of nuclear contamination were also found outside the deliberate evacuation area, however, many people decided to evacuate without guaranteed compensations from the government. The plight of these voluntary evacuees—economically struggling and socially isolated—was not initially recognized, but the "Right to Evacuation" movement emerged to demand government compensations and support for those who had voluntarily evacuated from areas with the annual dose of 1 mSv in light of the so-called Chernobyl Law that had granted the right to evacuation for residents in areas with the annual dose of 1 to 5 mSv. (The Chernobyl Law required residents in areas with the annual dose of 5 mSv to evacuate.) Although the Dispute Reconciliation Committee for Nuclear Damage Compensation's Mid-term Guideline in December 2011 delineated the areas eligible for government compensations for voluntary evacuation, the recommended amount of compensations was still insufficient for covering total expenses of voluntary evacuation. Moreover, Fukushima residents remain deprived of the right to evacuation even today. ANNEX B does not mention this troubling situation.

1.3. The Japanese government initially specified three requirements for lifting its evacuation order: (a) the annual dose is guaranteed to be lower than 20 mSv, (b) the reconstruction of infrastructures, and (c) adequate consultations with the Fukushima prefectural government, municipal councils, and residents. Although the ICRP Publication 111 recommended the long-term goal of reducing reference levels to 1 mSv per year, the government ignored the recommendation and continued to use the annual dose of 20 mSv as a threshold value. Moreover, the government did not conduct "adequate consultations" but offered only "briefing sessions" to explain its already formulated policy, ignoring many residents voicing

their concerns that the lifting of the evacuation order was premature. Thus, the first sentence in para B30 “Based on this policy, consultations and adjustments were made with Fukushima Prefecture and relevant municipalities as well as residents” is not accurate.

1.4. In June 2012, the National Diet legislated the Act on Support for Victims of the Nuclear Accident. This act promised to respect “the right to choose” to stay, evacuate, or return as well as provide appropriate support for Fukushima residents no matter what choices they made. The Japanese government also promised to use a new threshold value to expand areas eligible for governmental support beyond those already covered by its evacuation order; however, the government never fulfilled its promise, ignoring the demand from Fukushima residents and NGOs that the annual dose of 1mSv should be used as a threshold value for delineating areas eligible for governmental support. ANNEX B makes no reference to this problematic implementation of the Act, not to mention a complete lack of reference to the Act itself.

1.5. In light of the foregoing discussion, we think that the ICRP Publications 109 and 111 failed to protect Fukushima residents from radiation exposure as well as their rights to choose whether to stay, evacuate, or return. To prevent similar failures in the future, we recommend the following.

1.5.1. The rights to participate in radiological-protection policymaking and avoid radiation exposure should be guaranteed.

The Japanese government used the ICRP Publications (recommending “the lower part of the 1–20 mSv/year band” with 1 mSv/year being a typical value in the long-term) only partially—and calculatedly—in choosing the threshold value for delineating the evacuation zone. The government also disregarded stakeholder consultations recommended in the ICRP Publications and ignored dissenting voices among Fukushima residents when making important policy decisions regarding the creation, modification, and termination of the evacuation order as well as the Act on Support for Victims of the Nuclear Accident.

1.5.2. Reference levels should not be raised even during emergency and recovery periods.

We question the validity of raising the permissible dose limit during emergency and recovery periods far beyond the normal level. This is because it is possible to maintain the dose limit of 1 mSv per year (under normal circumstances according to the ICRP Publications) by providing necessary measures for people whose doses significantly exceeded the normal level. For many citizens, it is unacceptable to impose on the general public, especially children and pregnant women, the dose limit that is much higher than the normal level during emergency and recovery and periods.

1.5.3. The concept of “reference level” should be revised.

“Reference level” leaves the dose limit unspecified and unbinding. It also assumes that a certain number of people have been already exposed to radiation beyond the reference level.

Such a concept was not adopted in Japan because it did not fit in culturally to the regulatory agency. Moreover, the concept, lacking a time horizon, permits the government to continue to use the higher part of the reference level. Although the ICRP Publications recommend prioritizing measures for groups of people whose doses exceed the reference level, it is more pragmatic to first establish the dose limit and then limit land use in certain zones in light of the levels of radiation in the air and soils. Finally, although the ICRP Publications recommend using the annual dose of 100 mSv as the highest end of the reference level for both emergency and recovery periods, this is too high and hence inhumane.

#### 1.5.4. The responsibility of the government and the operator for compensations and support for victims should be defined.

People can choose whether to stay, evacuate, or return only if they are provided with compensations and support. The current plight of evacuees in Japan has been caused by a lack of clear guidelines for compensations and policy support for nuclear accident victims.

#### 1.5.5. The concept of “optimisation” should be scrutinized.

It should be taken for granted that the government will take into account social and economic factors in formulating its radiological-protection policy; in this regard, ICRP’s emphasis on “optimisation” is redundant. Nevertheless, in reality, the government tends to minimize the evacuation area and encourage evacuees to return so as to limit social and economic effects of a nuclear accident and hence downplay the radiological protection of residents. In light of the stochastic effects of lower doses, it is difficult to prove that illnesses of residents at a later time were caused by radiation exposure. We think that ICRP should issue an unequivocal recommendation to prioritize the radiological protection of residents over other factors.

## **2. Comments on the Publication Procedure**

2.1. The proposed update of the ICRP Publications should be translated into the Japanese language, so that those who have been affected by the Fukushima Daiichi Nuclear Accident will be able to provide their feedback.

2.2. In addition to extending the deadline for public comments, ICRP should conduct public hearings in Fukushima and adjacent prefectures as well as in Tokyo.

## **3. Specific Comments and Questions**

3.1. ICRP’s recommendation on reference-level selection (e.g. main point 4 and para 80) is too ambiguous. ICRP should generally designate 1 mSv as the annual dose limit.

3.2. The clause “a typical value used for constraining the optimisation process in long-term post-accident situations is 1 mSv/year” in the current ICRP Publication 111 should be retained. The proposed wording change, “with the objective to reduce exposure progressively

to levels on the order of 1 mSv per year” (e.g. main point 4 and para 80), is too ambiguous, and the phrase “levels on the order of” should be deleted.

3.3. A time horizon should be set for emergency and recovery periods. Para 77 states “the reference level for restricting exposures of the affected population and the emergency responders should generally not exceed 100 mSv. This may be applied for a short period, and should not generally exceed 1 year.” Maintaining 100 mSv as a reference level for up to a year, however, will be inappropriate. Moreover, a lack of a time horizon for the recovery process risks permitting the government to keep using a high reference level for a long time.

3.4. Paras 20 and 21 make little use of recent research publications on effects of low-dose radiation. For example, see “Studies of the Mortality of Atomic Bomb Survivors, Report 14, 1950-2003” (Ozasa et al., 2012); “Solid cancer incidence and low-dose rate radiation exposures in the Techa River cohort: 1956-2002” (area affected by an explosion at the Mayak Reprocessing Plant) (Krestinina et al., 2007); “The 15-Country Collaborative Study of Cancer Risk among Radiation Workers in the Nuclear Industry: Estimates of Radiation-Related Cancer Risks” (Cardis et al., 2007); a German survey finding significant increases in childhood leukaemias near nuclear power plants (Kendall et al., 2012); “Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study” (Pearce et al., 2012); and a large-scale epidemiological survey in Australia confirming increased cancer in children following exposure to radiation from CT scans (about 5 millisieverts) (Mathews et al., 2013).

3.5. Para 20 merely “assumes” no threshold, but it should explicitly acknowledge the validity of a linear non-threshold model.

3.6. Para 41 states, “Considering the level of exposure of the affected population, these disorders [e.g. diabetes and circulatory 463 diseases] cannot be considered as direct radiation-induced health effects but are linked to a change in lifestyle resulting from the accident,” but what is the scientific and evidential basis for this statement? Is it not premature for ICRP to make this statement?

3.7. It is questioned whether or not “citizens who volunteer to help” should be included as part of “individuals who may be involved in the emergency response” (para 106), considering the safety of emergency responders.

3.8. References cited in ANNEX B are biased; for example, ANNEX B does not seem to give due consideration to the National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission Report. ANNEX B should also take into account publications critical of the Japanese government’s radiological-protection policy. The following is a sample of these critical publications:

FoE Japan “Citizen’s Movement for Establishing the Rights to Evacuate: Watari, Fukushima and Beyond” (March 2012) <http://www.foejapan.org/en/news/120308.html>

CCNE 2015, The state of affairs and ongoing challenges of the Fukushima nuclear disaster: a civil society response toward recovery (WCDRR 2015 Edition) - chapter 1: An overview of the damage caused by the Fukushima nuclear power plant accident and the "Restoration of Humanity".

[http://www.ccnejapan.com/eng/policy\\_outline\\_0-2.pdf](http://www.ccnejapan.com/eng/policy_outline_0-2.pdf)

Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, Anand Grover, Mission to Japan (15- 26 November 2012) A/HRC/23/41/Add.3

[https://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session23/A-HRC-23-41-Add3\\_en.pdf](https://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session23/A-HRC-23-41-Add3_en.pdf)

Fukushima Booklet Committee “10 Lessons from Fukushima - Reducing risks and protecting communities from nuclear disaster,” March 11, 2015

[http://fukushimalessons.jp/assets/content/doc/Fukushima10Lessons\\_ENG.pdf](http://fukushimalessons.jp/assets/content/doc/Fukushima10Lessons_ENG.pdf)

FoE Japan “Fukushima Today and Japan’s Energy Future 2019,” March 2011

[http://www.foejapan.org/en/energy/doc/fukushima\\_2019.pdf](http://www.foejapan.org/en/energy/doc/fukushima_2019.pdf)

Harutoshi Funabashi (2012), Why the Fukushima nuclear disaster is a man-made calamity. *International Journal of Japanese Sociology* 21: 65-75.

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1475-6781.2012.01161.x>

Tom Gill, Brigitte Steger and David H. Slater (eds.), 2015, *Japan copes with calamity: ethnographies of the earthquake, tsunami and nuclear disasters of March 2011*. [2nd Ed.] Oxford: Peter Lang.

Aya H. Kimura (2018), Fukushima ETHOS: post-disaster risk communication, affect, and shifting risks. *Science as Culture* 27(1): 98-117.

[www.tandfonline.com/doi/full/10.1080/09505431.2017.1325458](http://www.tandfonline.com/doi/full/10.1080/09505431.2017.1325458)

Aya H. Kimura (2016), *Radiation brain moms and citizen scientists: the gender politics of food contamination after Fukushima*. Duke Univ Press.

Reiko Hasegawa (2015), Returning home after Fukushima: displacement from a nuclear disaster and international guidelines for internally displaced persons. *Migration, Environment and Climate Change: Policy Brief Series* 1(4): pp.1-8.

<http://reliefweb.int/report/japan/returning-home-after-fukushima-displacement-nuclear-disaster-and-international>

Masashi Shirabe, Christine Fassert and Reiko Hasegawa (2015), From risk communication to participatory radiation risk assessment. Fukushima Global Communication Programme Working Paper Series 21.

<http://i.unu.edu/media/ias.unu.edu-en/news/12850/FGC-WP-21-FINAL.pdf>

3.9. Para B15 mentions the radionuclide analysis of soil samples conducted between June and July 2011; however, the fact that the Japanese government never conducted another systematic radionuclide analysis of soil like this one indicates that it took the matter of soil contamination lightly. In this regard, it is notable that soil contamination was measured by citizen-led groups across East Japan, and the results have been collated at the Data Site for All (<https://en.minnanods.net/soil>).

3.10. Para B16 should mention the following facts: the permissible limit was raised from 13,000 to 100,000 counts per minute (cpm); and neither radiation dose in the thyroid among evacuees with the contamination level of more than 13,000 cpm was measured, nor stable iodine prophylaxis was administered, contrary to the Nuclear Emergency Guidelines of Fukushima Prefecture.

3.11. It is premature to conclude “Childhood thyroid cancer cases found in Fukushima Prefecture are unlikely to be the result of radiation exposure after the accident” (para B42). It should be noted that thyroid cancer occurrence after the Fukushima nuclear accident is considerably higher than the estimation based on the nationwide cancer occurrence database, and that post-accident thyroid cancer occurrence shows a statistically significant difference across areas.

3.12. Para B42 emphasizes the relevance of lifestyles and radiation doses at the individual level, which risks downplaying the importance of policy responses (e.g. management of contaminated soil and evacuation policy) and forcing the entire burden and responsibility upon individuals.

3.13. Para B40 emphasizes the usefulness of individual dose measurements, but it is problematic to ask citizens to individually monitor their own doses. For example, such an initiative is unreliable because many residents leave their dosimeters in their cars or outside their home, compromising the accuracy of measurement. Indeed, personal dosimeters are originally designed for occupational radiation workers exposed to high-level dose and unable to detect radiation from all directions—using them risks underestimating the real doses among residents.

3.14. Section B.4.6 positively describes “co-expertise,” but in the case of Japan, cooperation between “experts” and “citizens” was predicated on the status quo of living with nuclear contamination, and hence citizens could not influence the government’s evacuation policy to genuinely protect residents from radiation exposure.

