

# An Open Letter To IAEA

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Director General  
International Atomic Energy Agency (IAEA)  
Vienna International Centre  
P.O. Box 100 A-1400  
Vienna, Austria

Dear Secretary General Amano,

We are members of Exposure to Low Level of Radiation Research Group which belongs to Citizen Science Initiative Japan (CSIJ)(\*), a non-profit organization working on issues concerning science and society. We are interested in major consequences of exposure to radiation and the effects on health that have arisen from the March 2011 Fukushima Daiichi accident.

Last August the IAEA released the **Director General's Report on the Fukushima Daiichi Accident** along with five technical volumes.

We would like ask you the following 16 questions concerning mainly the radiological consequences elaborated in the IAEA Director General's Report.

(\* Please see the attached document.

1.

In the report IAEA often uses the phrases “people affected”, “affected population” and “affected areas”. In the case of Chernobyl the term “affected” is defined clearly. Please explain what people and areas you are referring to “affected” in the case of Fukushima.

2.

1) Why do you use the terms “evacuation” and “relocation” in spite of the fact that the Japanese government only uses the term “evacuation”? Do you think that Japanese government should use both terms, i.e., “evacuation” and “relocation”?

2) In the IAEA Safety Glossary (\*), you define “relocation” as follows: “Relocation is considered to be permanent relocation (sometimes termed [resettlement]) if it continues for more than a year or two and return is not foreseeable; otherwise it is temporary relocation.”

*\* IAEA Safety Glossary Terminology Used in Nuclear Safety and Radiation Protection, 2007 Edition*

3) How do you evaluate foreseeability of return? How do you classify “temporary” or “permanent” in relation to the present situation of Japan?

3.

#### 4.1.2. Dispersion

FIG.4.1.(p108) shows the result of modelling the global dispersion of  $^{137}\text{Cs}$ . Why do you not show the results of dispersion of  $^{131}\text{I}$ ?

4.

#### 4.1.3. Deposition Terrestrial deposition

“The highest levels of deposited  $^{131}\text{I}$  exceeded 3 000 000 Bq/m<sup>2</sup> immediately after the accident” p112

However, on March 30 IAEA investigation team discovered that there was a point above 25 million Bq/m<sup>2</sup> in the south part of Iitate village, and they urged the Japanese government to take measures (\*). This became a trigger for the subsequent evacuation of Iitate village. Why do you not mention this fact?

(\* From IAEA Fukushima Update log)

"The average total deposition determined at these locations for iodine-131 range from 0.2 to 25 Megabecquerel per square metre and for cesium-137 from 0.02-3.7 Megabecquerel per square metre. The highest values were found in a relatively small area in the Northwest from the Fukushima Nuclear Power Plant. First assessment indicates that one of the IAEA operational criteria for evacuation is exceeded in Iitate village. We advised the counterpart to carefully assess the situation. They indicated that they are already assessing."

5.

#### 4.1.4. Consumer products

"Restrictions were established after the accident, on 21 March, by the Japanese authorities to prevent the consumption of drinking water and food containing radionuclides at levels that were higher than provisional regulation values" p112

Some foods were shipped and went into circulation or grown at home before March 21. They were possibly contaminated to the highest levels. Why do you not mention this fact?

6.

#### 4.3.1 Public exposures p121-p127

Why do you refer only to Fukushima prefecture in regard to both external and internal exposure, although we have dose evaluation of data of nearby prefectures also included in the UNSCEAR report of 2013?

7.

#### 4.3.1 Public exposures Doses to the thyroid gland in children

FIG. 4.10. Distribution of net value of measured dose rate in thyroid gland estimated by subtracting the background value from the reading value p126

- 1) Why has "ambient dose equivalent rate" been chosen for X axis of the graph?
- 2) How was the value of background dose rate to be subtracted? Please justify this methodology.
- 3) Thyroid equivalent doses were estimated for only 1080 children. How many children do you think should have been measured?

8.

#### 4.3.2 Occupational exposures

“Among IAEA staff members who participated in environmental monitoring and provided advice on protection and safety, the mean effective dose was around 0.5 mSv, while one staff member received an effective dose of around 2.5 mSv from external exposure.” p130

Why was this staff member exposed so much in such a short period?

9.

#### 4.4. Health effects

“This survey is aimed at the early detection and treatment of diseases, as well as prevention of lifestyle related diseases.” p130

1) What is the origin of the phrase “prevention of lifestyle related diseases”? In the Fukushima Health Management Survey, no such phrase is used.

*\*In the English website of “Radiation Medical Science Center for the Fukushima Health Management Survey” the purpose of the survey is explained as follows:*

*The primary purposes of this survey are to monitor the long-term health of residents, promote their future well-being, and confirm whether long-term low-dose radiation exposure has health effects.*

<http://fmu-global.jp/fukushima-health-management-survey/>

2)

“Additional tests, such as differential leukocyte counts, are being performed in addition to routine general medical check-ups at the workplace or by the local government.” p131

Tests such as differential leukocyte counts have been made only to evacuees. We wonder if you are aware of this fact.

10.

#### 4.4.2 Potential late radiation induced health effects

“Hyperthyroidism is not expected because the reported thyroid equivalent doses are below the level of around 15 000 mSv, above which such effects could occur.” p133

For what reason is 15,000mSv quoted as a threshold dose? And whether or not diseases such as hypothyroidism and autoimmune thyroiditis are expected?

11.

#### 4.4.3 Radiation effects in children *Thyroid effects in children*

“The latency time for radiation induced thyroid cancer is longer than the four years that have elapsed since the accident, at the time of writing.” p133

1) What are grounds for the latency time longer than four years for children younger than twenty years old?

2) The minimum empirical induction time for thyroid cancer is 1 year for children, according to the US Centers for Disease Control and Prevention(\*). What views does the IAEA have about this shorter latency time?

*(\*)Howard J. Minimum latency & types or categories of cancer. Replaces administrator’s white paper on minimum latency & types of cancer. Centers for disease control and prevention, 2013 May. Available at: <http://www.cdc.gov/wtc/pdfs/wtchpminlatcancer2013-05-01.pdf>. Accessed March 29, 2015.*

12.

#### 4.6. Observations and lessons

“The risks of radiation exposure and the attribution of health effects to radiation need to be clearly presented to stakeholders, making it unambiguous that any increases in the occurrence of health effects in populations are not attributable to exposure to radiation if levels of exposure are similar to the global average background levels of radiation.” p138

1) There are many results of epidemiological studies such as the following articles i) ii) in which increased incidence of diseases were discernible even though levels of exposure are similar to the global average background levels of radiation. What is the IAEA’s view of these epidemiological studies?

- i) *Spycher et al. Background Ionizing Radiation and the Risk of Childhood Cancer: A Census-Based Nationwide Cohort Study, Environmental Health Perspectives, 1 June 2015.*
- ii) *Kendall et al. A record-based case-control study of natural background radiation and the incidence of childhood leukaemia and other cancers in Great Britain during 1980–2006, Leukemia, 2013 January*

2) On the basis of these and similar studies does the IAEA endorse the linear no-threshold (LNT) concept for application to estimating risks in exposed populations as well as in planning exposures: if not why not?

3) According to the IAEA and UNSCEAR reports, thyroid doses of many people in Fukushima are greater than 10 mGy, i.e., more than ten times the background levels. UNSCEAR says “the annual absorbed dose to the thyroid from natural sources of radiation is about 1 mGy.” (\*) For these reasons, increased incidence of the rare disease such as thyroid cancer in children is at least expected to be discernible. Is there a need to clearly inform stakeholders of this?

*\* E43. p255 UNITED NATIONS, Report of the United Nations Scientific Committee on the Effects of Atomic Radiation, A/68/46, UN, New York (2013)*

4) Other rare diseases such as leukemia and brain cancer in children are also expected to be discernible depending on the whole body doses in addition to natural background doses. Is there a need to clearly inform stakeholders of this, either?

13.

#### **4.6. Observations and lessons**

“After a nuclear accident, health surveys are very important and useful, but should not be interpreted as epidemiological studies.” p139

1) Does this mean that epidemiological studies are not needed or should not be done? If so, what is the reason for this view?

Are not epidemiological studies very important and useful as well?

2) As mentioned at question 9, one of the primary purposes of this survey is to confirm whether long-term low-dose radiation exposure has health effects. So the epidemiological study is essential. Isn't it?

14.

## **5. Post-accident recovery**

### **5.1. OFF-SITE REMEDIATION OF AREAS AFFECTED BY THE ACCIDENT**

“the authorities in Japan adopted a ‘reference level’ as a target level of dose for the overall remediation strategy. This level was consistent with the lower end of the range specified in international guidance.” p140

The authorities in Japan do not adopt a ‘reference level’, but just adopt 1 mSv/year as the criterion for remediation. To what is the IAEA referring as a “reference level” and what does it depend on?

15.

### **Box 5.1. Reference level for remediation**

“Usually, these are specified in terms of easily measurable quantities, such as ambient gamma dose rates ( $\mu\text{Sv/h}$ ) or deposited activity per unit area ( $\text{Bq/m}^2$ ), and derived from the reference levels” p142

The Japanese government does not adopt contamination concentrations as criteria for remediation. Residents want to use both ambient dose rates ( $\mu\text{Sv/h}$ ) and deposited activity per unit area ( $\text{Bq/m}^2$ ). The authorities in Japan seem to interpret IAEA’s advice (\*) as not to use contamination concentrations. Should not IAEA recommend them to adopt contamination concentrations as well as ambient dose rates?

*\* IAEA says as follows in 2011 as Advice Point 6 in Final report of the International Mission on Remediation of Large Contaminated Areas Off-site the Fukushima Dai-ichi NPP.*

*“The Team draws the authorities’ attention to the potential risk of misunderstandings that could arise if the population is only or mainly concerned with contamination concentrations [surface contamination levels ( $\text{Bq/m}^2$ ) or volume concentrations ( $\text{Bq/m}^3$ )] rather than dose levels.”*

*“The Team encourages authorities to maintain their focus on remediation activities that bring the best results in reducing the doses to the public.”*

16.

**5.1.3. Progress in remediation**

“By the end of March 2015, decontamination in most parts of the Intensive Contamination Survey Area outside Fukushima Prefecture was almost complete (in about 80% of the municipalities).” p144

What are the IAEA’s criteria for the “completion of decontamination”?

Thank you very much for your attention, and we look forward to hearing from you soon.