

Follow Up on Thyroid Cancer! Patient Group Voices Opposition to Scaling Down the Fukushima Prefectural Health Survey¹

Aihara Hiroko

Translation by Yuki Miyamoto

Introduction by Eiichiro Ochiai

Abstract: Medical journalist Aihara Hiroko assesses the threat of childhood thyroid cancer for the victims of the 3.11 triple disaster as a result of radiation and the melting of nuclear fuel rods in Fukushima.

INTRODUCTION

More than five years have elapsed since the great earthquake and the accompanying huge tsunami (on 3.11 of 2011), and its subsequent disaster at the Fukushima Dai-ichi Nuclear Power Plant of the Tokyo Electric Power Co. Three nuclear reactors there underwent explosions and another, though without explosion, was highly damaged. A large amount of radioactive material has been and is still being released as a result of the accidents.

Aside from the very difficult issues of how to deal with the melted nuclear fuel rods and with the increasing amount of contaminated water, people all over Japan, particularly those in Fukushima prefecture, are concerned with the effects of radiation on human health from the released radioactive material.

One disease, childhood thyroid cancer, has been recognized even by the authorities

including the International Atomic Energy Agency (IAEA) and International Commission of Radiation Protection (ICRP), as the result of radiation released by the 1986 Chernobyl disaster in today's Ukraine. Hence Fukushima Prefecture initiated a health survey of Fukushima citizens, including evacuees, that included scanning for thyroid abnormalities of all children under age 18 at the time of the accidents. It turned out that a large number of children have contracted thyroid cancers over the last five years: 172 out of ca. 380,000 children by the end of 2015. The majority of them have undergone surgery, and many have been found to have metastasized. This number, and the annual rate per 1,000,000, ca 90, is unusually high, compared with the rate 1 to 3 per 1,000,000 under normal circumstances.

The Fukushima prefectural government and the organization charged with conducting the examination are trying to rationalize the results in many ways, without invoking the radiation impact of the reactor meltdowns. If this is indeed unrelated to the radiation from the damaged Fukushima Nuclear Power Plants, a similarly high rate of thyroid cancer should be found all over Japan. The survey should be expanded in order to see whether that is indeed the case. In fact, however, as Aihara Hiroko details, the authorities are interested in scaling down the survey in Fukushima itself. They

argue, curiously, that the results are causing anxiety and therefore are an example of “reputational damage,” an interpretation that excludes the possibility of actual harm to health and agricultural produce and other commercial activity. Moreover, they throw out the distraction of the need to respect individual choice, that is, the right of families to refuse screening. It is difficult to understand their reasoning as anything other than an expression of their wish to leave ambiguous the cause of rising rates of thyroid cancer. Thyroid cancer seems to be increasing even among adults. Indeed, Aihara’s article introduces the case of an adult patient, a rare case in which an individual is willing to be identified by name, given the degree of social anxiety generated by the fear of discrimination in Japan.

Thyroid cancer is only one of many health problems observed in the atomic bomb victims and the people affected by the Chernobyl disaster. Indeed, there are indications that many diseases including leukemia and heart diseases are increasing after the Fukushima accident all over Japan (Ochiai, 2015). Radiation is basically incompatible with life, indeed, everything on this earth (Ochiai, 2013). This fact needs to be recognized by the human race. No activity that releases radioactive materials in large quantities, whether for military use or power generation, should be allowed.

Ochiai, 2013: “Hiroshima to Fukushima: Biohazards of Radiation” (Springer Verlag Heidelberg, 2013)

Ochiai, 2015: “The Human Consequences of the Fukushima Daiichi Nuclear Power Plant Accident” (<https://apjff.org/-Eiichiro-Ochiai/4382>)”

Follow Up on Thyroid Cancer! Patient Group Voices Opposition to Scaling Down the Fukushima Prefectural Health Survey²

The total cost of the damage caused by the Fukushima Daiichi nuclear power plant accident is estimated at thirteen trillion yen. Yet, health damage is hard to see, and even when problems become evident, many of them are neglected. One of the most worrisome of these is thyroid cancer. Five years have passed since the accident of 2011, the threshold year when thyroid cancer began to increase after Chernobyl, according to experts such as Yamashita Shun’ichi, known as the “authority on the health risks of radiation exposure.” Here we try to grasp what is happening on the ground.

“Although getting a checkup was a financial strain and time consuming, I am trying to view the experience positively as my cancer was detected at an early stage. If treatment had been delayed, the probability of the cancer spreading was quite high.”

So says Watanabe Norio, a high school teacher in Fukushima Prefecture who had thyroid cancer surgery in 2015. It was in the summer of 2013, when he and his family had their thyroids checked at a private clinic, that a tumor was discovered. The initial diagnosis was that the tumor was benign but called for observation. After a year, the tumor had grown bigger. Watanabe went to a larger hospital where his tumor was diagnosed, this time, as cancerous, and one side of his thyroid gland was removed.

Once Watanabe was discharged from the hospital, several of his current and former students, who happened to learn about his surgery, came to ask him personally about group thyroid screening: what to expect, the nature of the examination and treatment, and his hospitalization experience. All of them suffered from thyroid problems after the Fukushima nuclear accident.



**Self-portrait of Mr. Watanabe in the hospital.
Photo by Watanabe Norio**

Among them, one had been diagnosed with a primary thyroid cancer with an uncomplicated convalescence and favorable prognosis; another was diagnosed with papillary thyroid cancer. One had thyroid cancer surgery; another stopped going to school, unable to talk to anyone about the surgery. One was shocked by the scar on the neck left by the surgery, while another could not speak of the surgery even to extended family. People react to their illnesses differently: on the one hand, we know people who are leading “normal” lives after the surgery; on the other, there are those who, fearful of discrimination and prejudice, have no one to talk to.

Watanabe recalls that during his hospitalization, a nurse told him that there

were a considerable number of people hospitalized for thyroid cancer surgery. Even as an adult, he found the hospital stay and cancer treatment difficult to deal with financially, physically and emotionally. It was an experience that inevitably affected his whole family. Every time Watanabe hears doctors talk optimistically about the “favorable prognosis of thyroid cancer relative to other cancers” in the context of the Prefectural Health Survey conducted by Fukushima Prefecture, he feels put off, as if they were making light of his illness.

What to Expect after the Dissolution of the Reconstruction Agency?

As part of the Prefectural Health Survey, Fukushima Prefecture has conducted checkups on the thyroid glands of children who were under eighteen years old at the time of the accident. Among the 370,000 examined, 172 minors have been diagnosed with thyroid cancer or suspected thyroid cancer. 131 have already had their thyroids removed.

The Fukushima Prefectural Oversight Committee of the Prefectural Health Survey (hereafter “Oversight Committee”) holds that it is “unlikely” that these cases are related to radiation exposure from the accident in 2011, but the residents’ anxiety continues to mount over the abnormally high rate of cancer in children. Doctor Yamashita Shun’ichi,³ the “authority on radiation exposure risk,” estimates the dormant period of thyroid cancer to be four to five years, based upon the Chernobyl nuclear accident (though some argue that an increase in thyroid cancer was observed two to three years after the accident), which suggests that there may be a precipitous rise in rates in the near future.

It is precisely at this moment that plans to reevaluate the thyroid examination program, including the possibility of scaling back, surfaced.⁴ The rationale is that the screening is “disadvantageous for the children of

Fukushima.”

After the nuclear accident, Fukushima Prefecture embarked on the Prefectural Health Management Survey of May 2011 to study the impact of radiation on health and managing resident health. The task was consigned to Fukushima Medical University. It entails a “basic survey” in which all citizens of the prefecture (including mandatory and voluntary evacuees) are queried about their daily activities following the accident in order to estimate their level of external exposure; “thyroid examinations” targeting 370,000 children who were eighteen or younger at the time of the accident; an “internal exposure examination using whole body counters,” which measure the internal exposure dose; a “medical examination” providing a general checkup, including measuring leukocyte counts⁵ and a “survey on mental health and daily habits” of the residents of evacuation zones; and a “questionnaire for expectant and nursing mothers” who have maternity passbooks.⁶

Since the establishment of the Survey, however, problems have emerged one after another. For example, in the fall of 2012, it turned out that the Oversight Committee held a “secret meeting,” inviting the members to conform to an interpretation of the Survey results that concludes that a newly discovered thyroid cancer case has no causal relation with the Fukushima nuclear accident. When this secret meeting was made public, Murata Fumio, then vice governor, apologized for it before the prefectural assembly.⁷ The Committee also received complaints about the term “management” in the title of the Survey, as it suggested that the Survey could lead to the “management/control” of citizens. The Oversight Committee subsequently removed “management” from the Survey name [in 2014, the Survey was renamed the Prefectural Health Survey].

The Prefectural Health Survey (hereafter

“Survey”) is administered independently by Fukushima Prefecture. It is to be distinguished from the medical examinations and special health checkups mandated at businesses and schools. Under the supervision of the central government’s Reconstruction Agency, the Act on Special Measures for Fukushima Reconstruction and Revitalization⁸ stipulates the content of the Survey and provides budgetary assistance. An enormous sum of public funds and funds related to reconstruction poured into the reserves of the Prefectural Health Management Fund for these activities. As of the beginning of fiscal year 2015, the amount in this Fund was approximately 135 billion yen. However, 55.7 billion of that 135 billion has already been spent, and the current balance is estimated to be 76 billion. Although Fukushima Prefecture claims that the national government has pledged to continue to fund the Survey, the Reconstruction Agency itself is scheduled to be dissolved in 2020, and the Fund to be discontinued in 2040. While the prefecture promises “life-long examinations,” with funding and other issues unresolved, continuation of the practice is up in the air.

A New Form of “Reputational Damage” (Fūhyō higai)?

The discussion about “reevaluation/scaling down” began on July 3, 2016 when the Fukushima Pediatric Association (hereafter “Pediatric Association”) adopted a statement at its general assembly, which it submitted to Fukushima Prefecture in the form of a petition on August 25. The statement reads, “[regarding the result of the Prefectural Health Survey] at this stage, it is difficult to make a scientific and objective assessment of the multiple cases reported [of thyroid cancer]. Yet we observe health concerns and anxieties spreading among not only the youth targeted for this examination and their parents but among prefectural residents in general.” Here, the Survey reports are identified as the cause of resident anxiety.

“From the standpoint of alleviating such anxiety,” reads the statement, “current practice regarding thyroid examination as well as subsequent medical treatment and care should be reconsidered in part.” Additionally, the statement announces the launching of a new and independent review committee by the Pediatric Association.

On July 4, Fukushima Min’yū, a local newspaper, first reported the Pediatric Association’s statement under the following headline: “Calling for reconsideration of ‘thyroid examinations,’ Fukushima Pediatric Association to establish independent committee.” About a month later, on August 8, Min’yū ran another article, entitled “Discussion to reconsider thyroid examination; Oversight Committee may reduce scope,” introducing the views of Hoshi Hokuto, chair of the Oversight Committee, and Ōga Kazuhiro, president of the Pediatric Association.

In the article, both Hoshi and Ōga endorse the idea of restructuring the thyroid examinations, despite the fact that the risk of exposure following the nuclear accident remains high in Fukushima. Moreover, neither refers to the importance of early detection and prevention of cancer among children.

“There is little merit to early detection of a cancer that progresses slowly and has a favorable prognosis,” Ōga declares. “Conducting the screening is itself provoking anxiety.” He continues, “Reports of multiple cancer cases can lead to reputational damage, which might disadvantage not only the children but all residents of Fukushima.” It is his personal opinion that “The choice not to take the examination should be respected, and the current practice, in which examinations are conducted in semi-compulsory fashion at schools and kindergartens needs to be corrected. Instead, we should establish a system restricted to those who wish to be screened.”

Showing his respect for Ōga’s opinion, Hoshi states that, “At the very least, we cannot willfully charge ahead with the current form of examination.”

No Expansion in Scope or Substance

Let us now turn to the prefectural take on this issue—the very agent of the examinations.

Ide Takatoshi, director of the health and welfare division, received the petition from the Fukushima Pediatric Association, represented by Ōga, on August 25. In response to my query, Ide stated, “We would like to await the discussions that will take place at an Oversight Committee meeting and an international conference to be held in September in Fukushima.” The 24th Oversight Committee meeting was scheduled to take place on September 14, and Ide did not deny the possibility that the meeting might spark a discussion for scaling down the thyroid screenings (As for the result, please see note 3).

In fact, however, even before the Pediatric Association petition, the Prefecture had already taken steps to prepare for the possibility of decreasing the pool of examinees.

One of these can be seen in the change in the consent form distributed at the second round of full-scale examinations that began in fiscal year 2015. Whereas earlier forms simply had a “consent” box to be checked off, the new form had a new “do not consent” box.

This addition may suggest the desire of the prefecture to respect the will of individuals who do not wish to take the examination. Given, however, the clearly noninvasive technology of ultrasound examination of the thyroid, and the importance from the standpoint of preventive medicine of protecting children’s health through early detection and treatment, does this shift—which proactively identifies children who will not be examined and removes them

from the process—not strike at the heart of the principle of “fairness and uniformity” underlying this taxpayer-supported project? This change gives rise to another question, as to whether the prefecture has fully explained the possible consequences of delayed cancer detection. Adding the choice to opt out, I worry, is a means for gathering concrete numbers of those who are not interested, which in turn, might be used to provide “a rationale for scaling down the examinations.”



On August 25: representatives of the Fukushima Pediatric Association submitting a petition to Fukushima Prefecture, asking for reevaluation/scaling-down of thyroid examinations. Photo by Aihara Hiroko

With these questions in mind, I had an opportunity to ask Ōga and Hoshi about the motivation behind their statements. Both Ōga and Hoshi said “the newspapers exaggerated,” and denied a part of their statements as cited in the media. Ōga claims, “There was too much personal opinion in my interview article, which wasn’t great. What the Pediatric Association is asking for is not to cut back on the examination, but to revise a part of its procedure. The current thyroid screening practice turns up more and more latent cancer cases, which almost all medical doctors ‘believe have no association with radiation exposure.’” In response to my question on revision of the

procedure, Ōga replied, “We will discuss the best procedure to be implemented in our review committee.” But he also made clear that “neither expansion of the examination nor enhancement of its content” would be on the table.

In contrast, Hoshi remained ambiguous: “The Pediatric Association’s petition is one of many opinions. We will continue to discuss the matter, including maintaining the current practice as an option.”

The Disadvantages of Screening?

“Excessive screening? Preposterous. I am quite concerned about the discussion of possible scaling down. I asked the prefectural staff what disadvantages could be expected, with respect to protecting residents and patients. They only said, ‘That’s what the experts say,’ and failed to provide any concrete explanations. They ought to be seriously thinking about what disadvantages there are to be eliminated, and what advantages are to be protected.”

Such is the strong protest expressed by lawyer Kawai Hiroyuki, founding member and co-organizer of the “3/11 Thyroid Cancer Family Association” (hereafter “Family Association”), at a press conference held at the prefectural hall press club after submitting a petition on behalf of the Family Association to Fukushima Prefecture on August 23.⁹



On August 23: lawyer Kawai Hiroyuki and co-organizers of the “3/11 Thyroid Cancer Family Association” holding a press conference pleading for expansion of the scope and substance of thyroid examinations. Photo by Aihara Hiroko

Dentist Takemoto Yasushi, vice-representative of the Family Association, followed up with this appeal: “Some may think that it is the growing frequency of diagnosis that is causing anxiety, but discontinuing the examination would cause anxiety. True relief would come from enhancing the examination and follow-up treatment.”



Shadow of Mr. Watanabe. Photo by Watanabe Norio

Medical doctor and another Family Association

facilitator, Ushiyama Motomi, added, “It was just at the five-year point after Chernobyl that cancer cases started increasing. There is so much that we don’t know yet. Given the fact that so many cancer patients were found after the second-round full-scale examination, scaling down the screenings will not benefit residents. Without providing sufficient and appropriate information to patients, it is problematic to leave individuals to decide on their own whether to take part in the examination.”

On September 1, 124 groups—domestic and international—jointly submitted a petition to the prefecture. They demand that the prefecture maintain the current practice and further broaden the pool in order to gain an accurate grasp of the situation; to elucidate the causal relationship between cancer and radiation exposure; and to reexamine the appropriateness of the surgeries performed upon 131 patients.¹⁰

Watanabe, the high school teacher introduced at the beginning of this article who had his thyroid removed, reflects, “We Fukushima residents have fears about health problems cropping up in the future. Especially for the young generation, continued screening and examination are indispensable. Even adults should have regular checkups.”

For the second-round full-scale examination, there is no compensation for parents who miss work to accompany their children, and transportation is also out of pocket. The Family Association receives complaints about a system that fails to provide for accessible examination and treatment.

Continued vigilance is necessary to ensure that the prefecture not scale back the screening and examination program in response to pressures from one set of doctors and organizations while ignoring the voices of all residents as well as patients.

Table 1: Developments to date regarding thyroid cancer among children (Shūkan Kinyōbi)

2011 March	Meltdown at TEPCO's Fukushima Daiichi nuclear power plant
May	First Fukushima Health Management Survey Oversight Committee meeting
October	Preliminary screening (first round) begins (continues into 2013)
2013 February	Oversight Committee announces ten cases of thyroid cancer
November	Environment Ministry convenes "Expert Committee Regarding the Status of Health Management of Residents Following the Accident at the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station"
2014 April	First Thyroid Examination Evaluation Task Force meeting
December	Full-scale examination (second round) begins (continues into 2015)
2015 March	Interim report issued by Environment Ministry's "Expert Committee Regarding the Status of Health Management of Residents Following the Accident at the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station"
2016 March	"Interim report on thyroid cancer" issued by Oversight Committee
April	"Interim report on Prefectural Health Survey" issued by Oversight Committee
September 14	Third-round examination begins
	24th meeting of Oversight Committee scheduled (translator's note: as for the result, please see note 3.)

Table 2: Modifications in the Prefectural Health Survey (Hiroko Aihara)

	Initial Conditions (views of the Oversight Committee and Chair)	After Launch of the Survey
Name	"Prefectural Health Management Survey"	"Prefectural Health Survey" ("management" deleted)
Objectives	To alleviate resident health concerns and promote future health management	To assess residents' levels of radiation exposure and determine their health condition; to maintain and enhance long-term health through prevention, early detection and treatment
Number of Thyroid Cancer Patients (under 18 years old at the time of the accident)	One to several cases per million	To assess residents' levels of radiation exposure and determine their health condition; to maintain and enhance long-term health through prevention, early detection and treatment 172 cases out of approximately 300,000
Influence of Radiation	In comparison with Chernobyl, no patient under age five; hard to attribute to radiation	One thyroid cancer patient under five
Consent to Examination	Acknowledging consent	Additional box to state refusal of examination
Increase Response Rate for Basic Survey	To increase response rate as much as possible	Urge shift from attempting to raise response rate to providing service for residents wishing to know exposure rates

This article originally appeared in *Shukan Kinyōbi*, no. 1103, Sept. 9, 2016.

It was Norma Field who suggested a contribution from Eiichiro Ochiai as a preface to this article. Without her generous help, recommendations and suggestions, this article would not be made available in English, and in fact, it would be more appropriate to name her as a co-translator. Having said that, however, should any mistakes and factual errors be found in this article, it would fall under the responsibility of myself.

Related Articles

Eiichiro Ochiai, *The Human Consequences of the Fukushima Dai-ichi Nuclear Power Plant Accidents* (<https://apjff.org/-Eiichiro-Ochiai/438>)

Eiichiro Ochiai, *The Manga "Oishinbo" Controversy: Radiation and Nose Bleeding in the Wake of 3.11* (<https://apjff.org/-Eiichiro-Ochiai/4138/article.html>)

Nakasatomi Hiroshi, *After Nuclear Disaster: The decision-making of Fukushima University authorities, the threat to democratic governance and countermovement actions* (<https://apjff.org/-Nakasatomi-Hiroshi/4136>)

Kyle Cleveland, *Mobilizing Nuclear Bias: The Fukushima Nuclear Crisis and the Politics of Uncertainty* (<https://apjff.org/-Kyle-Cleveland/4116>)

David McNeill, *Japanese Government Squelching Efforts to Measure Fukushima Meltdown* (<https://apjff.org/-David-McNeill/4094>)

Yasuhito Abe, *Safecast or the Production of Collective Intelligence on Radiation Risks after 3.11* (https://apjff.org/-Yasuhito-Abe_/4077/article.html)

Adam Broinowski, *Fukushima: Life and the Transnationality of Radioactive Contamination* (<https://apjff.org/-Adam-Broinowski/4009>)

Paul Jobin, *The Roadmap for Fukushima Daiichi and the Sacrifice of Japan's Clean-up Workers* (<https://apjff.org/-Paul-Jobin/3967>)

Anders Pape Møller and Timothy A. Mousseau, *Uncomfortable Questions in the Wake of Nuclear Accidents at Fukushima and Chernobyl* (https://apjff.org/-Timothy-A_Mousseau/3921)

Aihara Hiroko, a native of Fukushima, is a freelance medical journalist. After having worked for Fukushima Minyū newspaper as a journalist and editor, she served as a government-paid secretary for a Diet member. She was a visiting research fellow at the Miller School of Medicine at Miami University, the University of the Philippines, and the Ateneo de Manila University, the Philippines. Drawing upon her expertise in medical journalism, Aihara has been contributing to various news media, such as Big Issue Japan, Nikkei Business Online, Shūkan Asahi, and Shukan Kinyobi. Since 2013, she has published news through her own company, Japan Perspective News.

Eiichiro Ochiai was born in Japan, and educated up to the PhD in Japan. He taught and conducted research in chemistry at college/universities in Japan, the United States, Canada and Sweden. Publications include “Bioinorganic Chemistry, an Introduction” (Allyn and Bacon, 1977), “Bioinorganic Chemistry, a Survey” (Elsevier, 2008), “Chemicals for Life and Living” (Springer Verlag, 2011), and “A Sustainable Human Civilization Beyond ‘Occupy’ Movements” (Kindle, 2011). His recent publications in Japanese include *Hōshanō to jintai* (Radioactivity and human beings; Blue Backs, 2014); *Hōshanō wa jinrui o horobosu* (Radioactivity will destroy humanity, Ryokufū Shuppan, 2016).

Yuki Miyamoto is an associate professor at DePaul University, Chicago IL 60604, US. In addition to working on environmental ethics in Minamata, Japan, her publication centers around the atomic bomb discourse—a monograph, *Beyond the Mushroom Cloud: Commemoration, Religion, and Responsibility after Hiroshima* (Fordham University, 2011) and articles such as “In the Light of Hiroshima: Banalizing Violence and Normalizing Experiences of the Atomic Bombing,” (forthcoming) and “Gendered Bodies in *Tokusatsu*: Reproduction and Representation of the Atomic Bomb Victims.” She manages a website *The Atomic Age* with her colleagues.

Notes

¹ The website of the Fukushima prefectural government translates *Fukushima kenmin kenkō chōsa* as the “Residents’ Health Survey,” but in this article, I will employ the term “Prefectural Health Survey”. See here (<http://www.pref.fukushima.lg.jp/site/portal-english/en03-03.html>). [All footnotes are by the translator].

² The website of the Fukushima prefectural government translates *Fukushima kenmin kenkō chōsa* as the “Residents’ Health Survey,” but in this article, I will employ the term “Prefectural Health Survey”. See here (<http://www.pref.fukushima.lg.jp/site/portal-english/en03-03.html>).

³ Yamashita was a Nagasaki-born second-generation *hibakusha*. After working at the Nagasaki University School of Medicine, he visited Chernobyl in 1991 in order to conduct research on children suffering from thyroid cancer. Since then, he has visited Chernobyl over a hundred times. In light of his experience in Chernobyl, shortly following the meltdown of

nuclear reactors in Fukushima in 2011, Yamashita was invited to serve as a radiation risk management adviser to Fukushima Prefecture. He is known for his claims, regarding radiation risk in Fukushima, that exposure to 100 mSv of radiation per year is safe and that radiation does not affect people who are “happy and laughing” but rather affects those who are “weak-spirited” and who “brood and fret.” See “Japan Admits 3 Nuclear Meltdowns, More Radiation Leaked into Sea; U.S. Nuclear Waste Poses Deadly Risks” *Democracy Now!* June 10, 2011. Transcript is available here

(https://www.democracynow.org/2011/6/10/as_japan_nuclear_crisis_worsens_citizen).

⁴ The Fukushima prefectural assembly, in response to a petition opposing cutbacks in health screenings, agreed to maintain the program at its regular meeting on October 13, 2016. See “Fukushima Daiichi genpatsu jiko kōjōsen kensa kibo iji o Kenmin kenkō chōsa, kengikai ga seigan saitaku (<http://mainichi.jp/articles/20161014/ddl/k07/040/023000c>)” (Fukushima Daiichi nuclear accident, thyroid examinations will remain at the same scale; Prefectural assembly adopts petition)

⁵ Leukocytosis occurs when white cells (the leukocyte count) are above the normal range in the blood. It is frequently a sign of an inflammatory response, most commonly the result of infection, but may also occur following certain parasitic infections or bone tumors. See here (<https://en.wikipedia.org/wiki/Leukocytosis>).

⁶ The “maternity passbook” is issued to a woman when she reports her pregnancy to the municipal government of her residence. The book provides health advice, and documents the prenatal development of a baby as well as post-delivery health of mother and child. It also allows the holder to receive free public health services. See the website of Fukushima Prefecture: “Health of prefectural residents” (<http://www.pref.fukushima.lg.jp/site/portal-english/en03-03.html>).

⁷ See “Fukushima kenkō chōsa: ‘himitsukai’ de kenkai suriawase” (Prefectural Health Survey: Producing an agreement by a secret meeting) here (<https://lucian.uchicago.edu/blogs/atomicage/2012/10/02/fukushima-kenko-chosa-himitsu-kaigi/>) and here (http://www.windfarm.co.jp/blog/blog_kaze/post-11734). The original article in Mainichi Shimbun on October 3, 2012 has been taken down from their website.

⁸ Article 26 of the act states: “Based on the Basic Guidelines for Reconstruction and Revitalization of Fukushima, Fukushima Prefecture may conduct Health Management Surveys (meaning surveys to estimate radiation exposure, conduct health checkups on thyroid cancer in children, and otherwise manage residents’ health care effectively; the same applies hereinafter), covering persons who had addresses in Fukushima as of March 11, 2011 and others equivalent thereto.” The document is available here (http://www.japaneselawtranslation.go.jp/law/detail_main?re=01&vm=02&id=2582).

⁹ The 3.11 Fund for Children with Thyroid Cancer was established on September 8, 2016, with the purpose of supporting thyroid cancer patients and their families. Donations are accepted at the organization website. The first round of applications for the fund began on December 1, 2016. See more information here (<http://www.311kikin.org/>).

¹⁰ Since this article was published, the number of thyroid cancer patients among those 18 years old and younger at the time of the accident has increased from 131 to 145. “18sai ika no kōjōsengan, kei 145nin ni Fukushima ken kensa (<http://www.asahi.com/articles/ASJDW5KC9JDWUGTB00N.html>)” (The examinations show a rise of thyroid cancer patients among children to 145), December 27, 2016.