

Fukushima Collaborative Clinic Monthly Bulletin

Issue 4

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WBC Measurements by Ryugo Hayano *et al.*—

**Survey Team Threw Away Their Medical
Conscience and Fabricated an Official
Record: “No Internal Exposure”**



Survey Team Threw Away Their Medical Conscience and Fabricated an Official Record: “No Internal Exposure”

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1. For what purpose do they measure internal exposure levels?

Ryugo Hayano *et al.* used a poor sensitive whole-body-counter (WBC) in their report *Internal Radiocesium Contamination of Adults and Children in Fukushima 7 to 20 months after the Fukushima NPP accident as measured by extensive whole-body-counter survey*.^{*} Also, their measuring time was too short. The Fukushima Medical University is doing much the same way.

A word “survey” or “research” gives the public the impression that it is a purely scientific and objective conduct which has no room for political intention. However, is it really the case? In order to examine pathogenic bacterium, we generally use scientific tools such as microscopes and thus we extend our scope and knowledge. So, is it really scientific to use telescopes to examine bacterium in order to make a report saying, “There was no bacterium”?

Science is a “conduct of knowing in a conscientious way without exaggeration and

omission.” Therefore it is essentially different from science or medicine to “pretend to have seen in a way that cannot be seen.” As it is to measure physical quantity of radioactive contamination that involves ill effects on body, the results of measurements would strongly reflect the relation between interests of the liable parties and the victims. It should be noted that Ryugo Hayano *et al.* have done a political conduct selling their souls to the authority that promotes nuclear power, covering up radiation exposure by pretending to have done a scientific conduct. It’s really ruthless behavior to discard residents.

2. The actual condition of the survey

(1)

Measurement time is only for 2 minutes. Consequently, they setup the extremely high detection limit of 300Bq/body.

If the detection limit is 300Bq/body, it is scientifically judged that the target group should be the highly polluted persons of 1200Bq/body or more, as the major target

is 4 times as much as the detection limit. Actually, the contamination levels of those citizens who were in the target group are mostly included in the ND (not detectable) category. Conscientious scientists would setup a measurement level capable of measuring exposure quantity of the residents and never do anti-scientific measurement such as to use telescopes to see bacterium. We cannot help thinking that the measurement setup itself was, from the beginning, aimed to discard people exposed to radiation.

(2)

The team disguised to work up the ND value as a square root of 2 ($\sqrt{2}$).

They used Canberra's Fastscan Whole Body Counter. Its catalogue** says that Fastscan System includes two large sodium iodide detectors that typically provide a specific lower limit of detection of 150Bq (4nCi) for Co-60 point radiation source with a count time of 1 minute.

The detection limits of Hirata Central Hospital are 300 Bq/body (for Cs-137 and Cs-134) following a 2-minute scan. But is this correctly corresponded? The Co-60 beta decays to Ni-60. Ni-60 emits 2 gamma rays at a time to stabilize. As a radioactive equilibrium is already established at this time, we measure the gamma rays of Ni-60 and call them "Co-60 gamma ray" for descriptive purposes.

The 1 decay of Ni-60 (1Bq) is same as the 1 decay of Co-60 (1Bq) but it emits 2 gamma rays. Therefore, in the case of 150Bq of Co-60, the 300 gamma rays are emitted with a count time of 1 minute. Cs-137 emits 1 beta

ray when it decays to Ba-137. During the radioactive equilibrium, Ba-137 decays only 1 gamma ray, so the lower limit of detection of 150 Bq for Co-60 with a count time of 1 minute corresponds to 300Bq of Cs-137.

The actual measurement is not 1 minute but 2 minutes. Therefore, the detection limit is inversely proportional to square root of measurement time ratio, and so it should be 212Bq ($300/\sqrt{2}$).

The scientifically correct detection limits of Hirata Central Hospital are 212Bq/body following a 2-minute scan. But they say that the detection limits are 300Bq/body. The numerical region less than 300 Bq/body above 212 Bq/body is squeezed out illegally. They include exposure quantities into ND category that are more than the detection limits. We cannot guess whether the survey team had no scientific insight or did it intentionally. But this is really an egregious wrongful act against the citizens.

3.Urine Test

It is concerned that the survey by Hayano *et al.* was designed to conceal seriousness of internal exposure, because there is a fact that suggest Fukushima Prefectural Government's suppression of urine test, the most reliable and sensitive means of detecting internal exposure.

In November 2012, the Fukushima Prefectural Government showed reluctance to urine test at the 10th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey. However, this part of discussion was deleted from the meeting

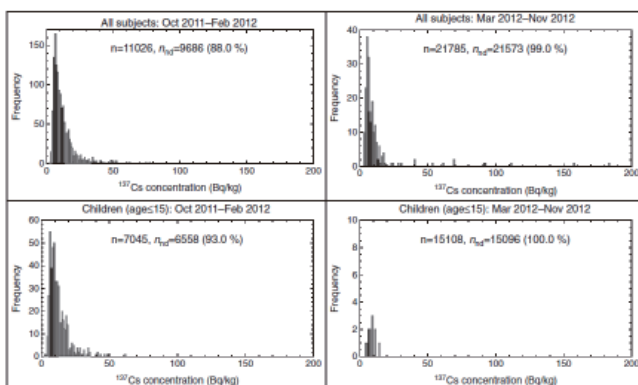
minute published by the Prefectural Government. Therefore, it may be presumed that the motive of the survey by Hayano *et al.* and that of Prefectural Government's concealment of the 10th Meeting minute is one and the same.

The detection limit of urine test is around 0.05 Bq/kg. For the sake of simplicity, we assume that the voided volume is 1kg a day. The biological half-life of cesium for children is around 40 days, which affects directly to the sensitivity. So, the calculation result is that the detection limit of urine test is 2.9Bq/whole body: 115 times more sensitive than the WBC by Hayano *et al.*—300Bq/whole body. For adults, the biological half-life of cesium is around 80 days. The 0.05Bq/kg detection limit translates into 5.8Bq/whole body—57 times more sensitive than the WBC.

The urine test by the Joso Co-op detected internal exposure from 70% of 85 children from Kanto region.

Urine test ensures sensitivity 50 to 100 times higher than the WBC by Hayano *et al.*. Despite of that, the Fukushima Prefectural Government ruled out urine test and Hayano *et al.* conducted the WBC. Why has the Prefectural Government been neglecting urine test?

▼ Figure 1 (“Figure 6” and its explanation by Hayano *et al.*)



4. Danger of Clothes Exposure is Comparable to Internal Exposure

Hayano *et al.* reported radioactive contamination of clothes of the subjects and argued that the test after the change of clothes into hospital gowns detected virtually no subject with internal contamination. They thus compare the WBC test results after the change of clothes with these from areas around Chernobyl that had been taken without clothes change.

Radioactive contamination of the clothes exposes a subject from radiation sources in close contact with the body. The health effects of exposure to gamma ray—the only detectable radiation by the WBC—do not vary whether it is external exposure from adjacent location to the body or internal exposure. The clothes contamination as well as internal contamination is especially dangerous and alarming; it expose people form radiation sources adjacent to the body all the time whether outdoors or indoors. Figure. 1 and its description are cited from the paper by Hayano *et al.* that shows their WBC test results. Contamination of over 10% of the subjects were confirmed in their test with 300Bq detection limit (ND). This result suggest that it would be detected nearly 100% of clothes contamination of the residents in a more honest test such as that of Joso Co-op.

Did particles in air contaminate the clothes? The Fukushima Daiichi NPP are still releasing 10 million Bq/h. Transported by wind, such radioactive particles internally expose all the residents in Japan. Children who play on soil

with radioactive particles get their clothes contaminated. Living on contaminated soil itself causes clothes contamination.

The team of “extensive whole-body-counter surveys” did not worried about it.

5. Who Protect the People?

After the Chernobyl Accident, the IAEA admitted only the increased thyroid cancer incidence as its health effects. However, the actual health consequences are far more serious.

Even in the low radiation areas, the health consequences were enormous. In the European areas where the radioactive contamination levels were under 0.1mSv/y, the abnormal sex ratio at birth (the ratio of newborn boys to newborn girls), vascular diseases, weakened immune system, stillbirth, anomaly, Down syndrome, opacity of lens, leukemia etc. increased abruptly after 1986. The main cause of such health problems were internal exposure. The countries around the Chernobyl have the resident protection legislation, which helps to avoid residents exposure to radiation, providing for “Guaranteed Voluntary Resettlement” for areas with radiation level exceeding 1mSv/y and “Mandatory Resettlement” for areas with radiation level exceeding 3mSv/y.

In contrast, in Japan, around a million people still live in areas with radiation level exceeding 3mSv/y. On top of it, the government is campaigning that radiation level under 20mSv/y is safe and people have

to return to such areas.

The contamination continues two centuries. What is needed is a century-long radiation protection program. Some of the indispensable components of this national program are as follows:

(1)

Restoration of the maximum radiation exposure limit before the Fukushima disaster, guarantee of residents' migration from areas with radiation level higher the 1mSv/y, and special support for people vulnerable to radiation.

(2)

Mandatory radiation examination of all foods with detection limit under 1Bq/kg, labeling of the result of such examination and reduction of the maximum radiation limit for food to tenth or to hundredth of current regulation.

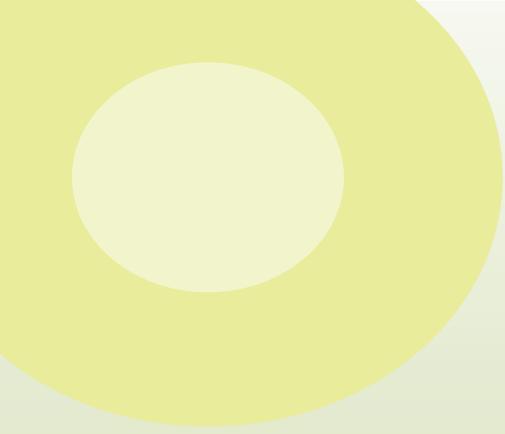
(3)

Repeal of the “Support Fukushima Eating Foods From There” campaign that promotes consumption of produce from contaminated land and sea and guarantee such producers' livelihood in safe areas.

(4)

Drastic increase of food production in west Japan's safe areas.

If the central and local governments do nothing positive, the radiation protection is impossible. Japanese citizens have no other option other than to change this country and promote human rights. We can depend ourselves alone.



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