Volume 9 | Issue 29 | Number 1 | Article ID 3563 | Jul 19, 2011

Fukushima is Worse than Chernobyl – on Global Contamination□□チェルノブイリよりも深刻ーー世界的な汚染について

Satoko Oka Norimatsu, Chris Busby

Fukushima is Worse than Chernobyl – on Global Contamination Partial Japanese Text here

Chris Busby

Interview by Norimatsu Satoko and Narusawa Muneo

Introduction

Chemical physicist Chris Busby is at the forefront of scientists who are challenging the radiation risk model propounded by ICRP, the International Commission on Radiological Protection, whose standards for allowable radiation doses the Japanese government has adopted for its citizens affected by the Fukushima Daiichi nuclear plant accident.[1] Busby, Scientific Secretary of the European Committee on Radiation Risk (ECRR), points out that the ICRP model "deals with radiation exposure from all sources in the same way, as if it were external to the body,"[2] and then takes this dose and multiplies it by a risk factor based on the high acute external doses of the atomic-bomb survivors of Hiroshima and Nagasaki. The ICRP method thus fails to take into account a number of ways in which certain internal radionuclides can deliver very high doses to critical targets in cells, particularly the cell DNA. One of these is from "inhaled or ingested hot particles, which are solid but microscopic and can lodge in tissue delivering high doses to local cells."[3] As a result, internal radiation exposure can be "up to 1,000 times more harmful than the ICRP model concludes."[4] In his calculation based on the ECRR model that considers such internal radiation risks,[5] Busby has estimated that within 100 km of Fukushima Daiichi, approximately 200,000 excess cancers will occur within the next 50 years with about half of them diagnosed in the next 10 years, if the 3.3 million people in the area remain there for one year. He estimates over 220,000 excess cancers in the 7.9 million people from 100 to 200 km in the next 50 years, also with about half of them to be diagnosed in the next 10 years. By contrast, the ICRP model predicts 2,838 extra cancers in the 100 km population.[6] "The eventual yield will therefore be another test of the two risk models," Busby contends,[7] pointing out that many studies of the Chernobyl disaster showed much higher cancer yields than the ICRP model had predicted.[8]

The effect of the nuclear disaster, moreover, extends well beyond the 200 km radius. It has been reported in Japan that "traces of plutonium" have been found in the proximity of Fukushima Daiichi.[9] This is no surprise, since unusual amounts of plutonium and uranium have been detected in Hawaii, Guam, Alaska, and on the West Coast by the US Environmental Protection Agency in the wake of the 3.11 earthquake and tsunami.[10] CTBTO, the Comprehensive Test Ban Treaty Organization, has reported that radioactive materials had dispersed throughout the Northern Hemisphere within two weeks of the Fukushima accident, and that it had even reached the Southern Hemisphere by mid-April.[11] *Shukan Kin'yobi*, a weekly magazine,

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

interviewed Chris Busby on the issue of global contamination at a time when the Japanese media have maintained silence on the issue. This is a complete original English text of the interview, published simultaneously with the Japanese version on *Shukan Kin'yobi* (July 8 edition).

Norimatsu Satoko

Interview with Chris Busby

- Unusual amounts of plutonium have been found on the west coast of the United States and elsewhere. Radioactive materials have also been found in milk and water in the US. What is your view of these facts?

Plutonium has also been found in the UK in air filters.[12] This means that particles are now being globally dispersed. There will follow increased rates of ill health, including cancer and birth defects, which will be proportional to the overall air concentration. High in Japan, low in USA, and very low in Europe. I do not think plutonium is much more dangerous than the other alpha emitters, particularly Uranium, on a dose for dose basis. I think the danger is in Uranium, Tritium, Strontium-90, Carbon-14, Tellurium-132. I have found Te-132 in car filters from Japan.

Chris Busby

- If plutonium dispersed so widely, it only makes us wonder and fear how it's been dispersed in the immediate proximity of Fukushima Daiichi, Fukushima as a whole, and beyond… Tokyo and all Japan. What is your view of the seriousness of this issue?

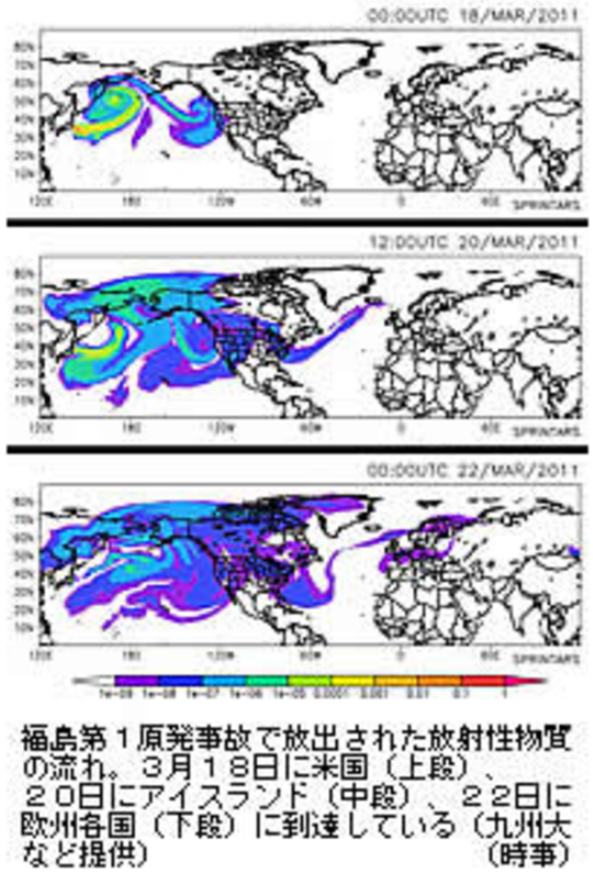
I have car air filters from Fukushima and Tokyo. We have found high levels of radioactive particles in these. In my March/April paper[13] I predicted more than 200,000 additional cancers in the next 10 years within a 200 KM radius of Fukushima.[14] I have seen nothing to change my mind. In fact it is worse than I thought then and said on TV. I have been hoping all along that I was wrong, and even now there may be some good development that I had not expected or foreseen, but the situation is bad and I am very sorry. I have been helping some lawyers who are making a legal case to have the children evacuated.[15] The problem is that dose rate, MicroSieverts per Hour, cannot be used to reassure on the basis

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

of comparisons with annual natural background. The exposures are internal and the risk model of the ICRP, which is based (ironically) on the external exposures at Hiroshima, cannot be used. This is the key issue. There is a more accurate model, the ECRR, one which has now been translated into Japanese and is available on the internet. (Link)

- What will be the effects of the Fukushima meltdown outside of Japan – the US, and beyond? Asia? Europe? What is the current situation and what further effects are expected?

I think the effects in Europe will be rare and undetectable. There will probably be detectable effects in the USA, Korea, Hawaii, Marianas and China.



Radioactive materials from Fukushima Daiichi reached the US by March 18, Iceland by March 20, and Europe by March 22 (Kyushu University and Tokyo University research. From Jiji Press)**.**

- Dr. Janette Sherman reported an increase in US infant mortality rate in the ten weeks after the Tohoku earthquake in her Counterpunch article. What is your view of possible causality from the Fukushima crisis?

It's possible. I have applied to get data from Seattle King County to check on this, also the sex ratio, since genetic damage causes a change in the ratio of births of boys and girls. The normal ratio is 1,055 boys to 1,000 girls. This is a sensitive indicator. We should wait for a few months for results. There were increased rates of infant mortality after the 1960s weapons tests. But the exposures were higher then.

- What do you see as the similarities between Fukushima and Chernobyl, and what are the differences between them?

The similarity is that in both cases the operators and/or the authorities lied about what was happening. In fact the Soviets reacted more quickly than the Japanese and got the people out from 30km much faster. There were buses taking everyone out on the Sunday after the explosion on Friday night at Chernobyl.

I believe that they were both nuclear explosions. In fact we now know that Chernobyl was a nuclear explosion; but there were also hydrogen explosions. The Reactor 3 explosion at Fukushima, I believe, was a nuclear explosion. Not that it makes a lot of difference in terms of fallout.

The other difference is that the Fukushima disaster involved a lot more material than Chernobyl where only 200 tons of fuel was

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

involved.

I believe that in the explosions at Fukushima Daiichi, huge amounts of spent fuel were blown sky high. The ground contamination out to 100 km at Fukushima is worse than Chernobyl, the dose rates higher. And Fukushima has contaminated Tokyo with 35 million people. The population of the 200 km radius is also enormous, about 10 million. Most of the Chernobyl stuff fell away from big population centers. Luckily it went north and west and not to Kiev which is south. Fukushima is still boiling its radionuclides all over Japan. Chernobyl went up in one go. So Fukushima is worse.

Reactor 3 explosion on March 14

- What are the prospects that the Fukushima Daiichi accident will be brought under control or come to an end – when, how, or will it ever?

I do not see any way out of this. Here are some possibilities.

1. The units are just left alone. If this happens it will quickly get hotter and hotter and quickly vaporise most of the maybe 2,000 tons of reactor fuel and spent fuel. This material will contaminate northern Japan but probably not USA and Europe to any great extent. It may also explode. Whatever other scientists say, I believe that there were nuclear explosions involved, especially in Reactor 3. I believe that there was a criticality on June 14th. You can see it happening on the video and also there was a sudden increase in radiation in Ibaraki detectors just after it happened at about midnight on June 14th.
2. The units continue to be cooled by pumping sea water and fresh water. This means that so long as the surfaces of the melted fuel are cooled, the surfaces will not vaporise but will just contaminate the water. This will then find its way to the sea and contaminate the whole of the East coast of Japan. Concerning the recent development on the system installed to cool the reactors by water circulation, it may be that they have managed to sort out the cooling in a way that will keep the contamination in the cooling water, but I would have to know exactly what they have done before I accept that this will not contaminate the environment. I cannot see how they could have done this. It is my understanding that fuel has breached the containers, which have holes in them. A big problem is that we do not get sufficient information to draw conclusions.
3. They put a sarcophagus of some sort over the reactors. This will reduce the amount of fission products leaving the site. But unless they dig canals around the site and recycle the cooling water, it will get into the sea. This is maybe the best option.
4. Whatever happens, northern pacific fish and seafood will become contaminated. All individuals within 200 km of the site should be evacuated if the local air dose is greater than 1microSievert per hour. If they stay and the air dose is higher than 0.5uSv/h, have food and water imported from elsewhere. All food and water

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

should come with a certificate saying what radionuclides are in it.

- What can the world/the international community do to help Japan cope with the crisis and support the victims of Fukushima Daiichi?

I believe that the international nuclear industry is responsible and should be forced to pay.

Chris Busby is Scientific Secretary of the European Committee on Radiation Risk (ECRR), Visiting Professor in the School of Biomedical Sciences, University of Ulster, and Guest Researcher at the Federal Institute for Crop and Soil Research, Julius Kuehn Institute, Federal Research Centre for Cultivated Plants in Braunschweig, Germany.

Norimatsu Satoko, a Japan Focus Coordinator, is Director of Peace Philosophy Centre, a peace-education centre in Vancouver, Canada, and Director of Vancouver Save Article 9.

Narusawa Muneo is an editor of Shukan Kin'yobi (Weekly Friday)*, and author of "Mitteran to rokaru (Mitterand and Rocard)," "911 no nazo (Mysteries of 9/11)," and "Obama no kiken (Dangers of Obama)."*

An abbreviated Japanese version of this interview appeared in the July 8, 2011 edition of Shukan Kin'yobi (Weekly Friday).

Recommended citation: Chris Busby, Norimatsu Satoko and Narusawa Muneo, Fukushima is Worse than Chernobyl – on Global Contamination, The Asia-Pacific Journal Vol 9, Issue 29 No 1, July 18, 2011.

Related Articles

Matthew Penny, Nuclear Workers and Fukushima Residents At Risk: Cancer Expert on the Fukushima Situation

Say-Peace Project, Protecting Children Against Radiation: Japanese Citizens Take Radiation Protection into Their Own Hands

Norimatsu Satoko, Worldwide Responses to the 20 Millisievert Controversy

Peter Karamoskos, Fukushima Burning: Anatomy of a Nuclear Disaster

Also see the series of Russia Today interviews with Chris Busby on YouTube:

Full meltdown in a full swing? Japan nuclear maximum alert (March 30)

Busby: 400,000 to develop cancer in 200 km radius of Fukushima (April 13)

Busby: Can't seal Fukushima like Chernobyl – it all goes into the sea (April 25)

Busby: Fukushima reactors a raging radioactive inferno (May 17)

Notes

[1] See ICRP statement, "Fukushima Nuclear Power Plant Accident," March 21, 2011. Link, and ICRP Publication 111, "Application of the Commission's Recommendation to the People Living in the Long-Term Contaminated Areas after a Nuclear Accident or a Radiation Emergency," Annals of the ICRP, Volume No.39, No.3, 2009.

[2] Chris Busby, "The health outcome of the Fukushima catastrophe – Initial analysis from risk model of the European Committee on Radiation Risk ECRR," March 30, 2011. p.1. Link.

[3] Ibid., p.1.

[4] Ibid., p.1

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

[5] Chris Busby, Rosalie Bertell, Inge Schmitz-Feuerhake, Molly Scott Cato, Alexey Yablokov, "ECRR 2010 Recommendations of the European Committee on Radiation Risk – The Health Effects of Exposure to Low Doses of Ionizing Radiation," Regulators' Edition, Green Audit, August 2010.

[6] See Table 5 and 6 in Chris Busy, "The health outcome of the Fukushima catastrophe – Initial analysis from risk model of the European Committee on Radiation Risk ECRR," March 30, 2011. p.12. Link.

[7] Ibid., p.12.

[8] Ibid., p.1.

[9] IAEA, "Japan Confirms Plutonium in Soil Samples at Fukushima Daiichi," Fukushima Nuclear Accident Update, March 28, 2011. Link. TEPCO reported plutonium detection within the premises again on April 22 (see Yomiuri report). On June 5, Sankei reported that Professor Yamamoto Masayoshi of Kanazawa University detected traces of plutonium outside the Fukushima Daiichi premises (1.7km away), the first of such detection regarded as coming from the Fukushima Daiichi accident. Link.

[10] A report and analysis of EPA database "RadNet" by blog "Chuoni to o-oni no futarigoto," April 29, 2011. Link.

[11] CTBTO, "Fukushima-Related Measurements by the CTBTO," April 13, 2011 Link.

[12] Later we asked whether the UK air filters were also car air filters, and the answer was no. Busby was referring to "high volume air samplers deployed around the Atomic Weapons Establishment at Aldermaston." To our question on whether the radioactive materials on those filters could be from that atomic establishment instead of Fukushima, he answered, "There was also an increase in Uranium. This level of plutonium in one filter is very unusual and the increase in uranium followed the Fukushima accident. The level of uranium was about three times the normal level and this was statistically significant. We know this because we analysed these filters after the 2003 Gulf war and found uranium. There was an enormous increase in plutonium in only one filter and a slight increase in a second filter. Taken together with the uranium data this seems persuasive but not, of course (for the plutonium) absolute proof (that it was from Fukushima)."

[13] Chris Busby, "The health outcome of the Fukushima catastrophe – Initial analysis from risk model of the European Committee on Radiation Risk ECRR," March 30, 2011 Link.

[14] About half of the 191,986 excess cancers expected in 50 years are expected to be diagnosed in the first 10 years in the 100 km zone, and also about half of the 224,623 excess cancers expected in 50 years are expected to be diagnosed in the first 10 years in the 100 – 200 km zone, so the sum of those expected to be diagnosed in 10 years in both zones is approximately 200,000. See Table 5 and Table 6 of Chris Busby, "The health outcome of the Fukushima catastrophe – Initial analysis from risk model of the European Committee on Radiation Risk ECRR," March 30, 200 Link.

[15] Peace Philosophy Centre, "Fukushima parents sue government for safe educational environment," July 4, 2001. Link. See Chris Busby's statement to support this lawsuit, "Statement of Chris Busby in relation to provisional injunction against Education Committee of Koryama City, Fukushimma to

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press

evacuate the children for the radioactively contaminated area being filed on 24th June 2011. Link.

https://doi.org/10.1017/S1557466011011570 Published online by Cambridge University Press