Fukushima : Worse than Chernobyl

- Homepage - News - External sources -

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"It's worse than Chernobyl": says Greenpeace. People living within 100km of the plant are in mortal danger. The Japanese Government is not clearly communicating the real risks. Greenpeace's spokesperson on nuclear issues, Jan Vande Putte of Belgium, is worried.

Item broadcast on RTL Belgique, 13 April 2011, 8.30pm :

Jan Vande Putte arrived back in Belgium on Tuesday after spending a month in Japan where he coordinated radioactivity testing in the Fukushima Prefecture on behalf of Greenpeace International. With his team he carried out two research projects: to measure radioactivity close to the plant... and at nearly 100km from the contaminated site.

Altogether, readings were taken at 261 points outside the evacuation zone. The results show that contamination extends well beyond the exclusion area established by the Japanese Government. Everywhere the Geiger counters were going crazy and samples of earth and vegetables showed potentially lethal doses of radioactivity, including those "distant" from the Fukushima Daiichi (N°1) plant. For example, a strong concentration of Césium 137 was found in the towns of Fukushima and Koriyama, both about 60 km from the plant.

And there's worse news: "85% of the radiation we can measure today is from long-term isotopes", explains the researcher Samuel Ledoux speaking on our 7pm newscast. That means that this zone will remain contaminated for decades and even longer. The defenders of the environment also ascertained that radiation levels are spreading out in disparate ways around the plant. Therefore, they say, to set up a circular security zone makes no sense. The Japanese Government has already indicated it will bear this in mind.

What is the government doing?

Over a million people are still living within the danger zone. They are in mortal danger, but know nothing of the risks they are exposed to. "People with vegetables in their gardens don't know if they can eat them or not. No one is explaining the risks to them. We took samples and found very dangerous doses on contamination in some vegetables," says Mr. Vande Putte. In fact the researcher discovered above-normal radioactivity levels in garden vegetables and in a sample taken from a supermarket in Fukushima city. If these results are "similar" to the data released by the Japanese government, then "the people are badly informed because they don't know the significance of what the authorities are telling them." Because of this, Greenpeace has sent a letter to the Japanese PM including precise questions about the government's publication of data.

Worse than Chernobyl

The number of people under threat is so high it prompts Vande Putte to say that this nuclear accident is comparable to Chernobyl, or even "worse". To evacuate over a million people would be a challenge for any society today. "Evacuating millions is extremely complicated in practice. A nuclear accident the size of Fukushima is not something that any society can organise a practical response to." Greenpeace is therefore pleading for the evacuation zone to be extended. If this doesn't happen, there is at least an urgent need to evacuate infants and pregnant women, and to close schools and shift them elsewhere, into less contaminated zones.

Fukushima : NEW DANGER. Fission reactions in pool n°4

by Dominique Leglu, *Sciences et Avenir*

Attention, danger ! Because of new anxieties, a close watch is being made on Fukushima's pool n°4. Chain reactions are occurring there that release very strong radioactivity! The levels are "100 000 times above normal", according to the Japanese security agency NISA.

This is apparent from the notice posted on its site on 14 April (1) by TEPCO's operator of the Fukushima plant.

This operator presents the results of "an analysis made of 200 ml of water taken on 12 April from pool n°4" (into which 195 tonnes of water were pumped on 12 April according to the IAEA (2)). These results, obtained on 13 April and announced on the 14th, show that in addition to the cesium 137 and 134 found in this water there is also iodine 131. Now iodine 131 has a half-life of only 8 days. In other words if it is found present in large quantities - as here, with a finding of 220 000 Bq per litre - that means that it was created quite recently (note that measurements made in the same pool on March 4, before the catastrophic events, detected none). So if it was created quite recently, that means that fission reactions are taking place in the fuel that is there.

Let us recall that reactor n°4 was not operating just before the earthquake and tsunami. All the reactor's used fuel was in the pool. But today we learnt (3) that in addition to the used fuel, there is also "new fuel": in addition to 1331 rods (barres) of used fuel there are "204 barres of unused". The levels found could also be due, it is estimated, to the pumping into the pool of rainwater containing particles emitting radioactivity.

When asked about this, the US nuclear engineer Arnie Gundersen (whom we quoted in our blog of 15 March (4)), says that he views the presence of iodine 131 in pool 4 as *« BIG news »*. And so is the presence of new fuel, because it can become "critical" (have fission reactions) much "more easily than used fuel can". Gundersen thinks that could be why this pool is no longer full of water. Minor changes in the geometry of the compartments (where the fuel rods are normally contained) could be "the reason why new fuel is becoming critical again. I know, because my working group has for years been calculating criticality in compartments of this kind."

Seeing how dangerous the fuel is, one wonders how the operator will be able to manipulate the fuel to confine it and and stop the release of radioactivity that must be happening now. It was announced that "a little drone helicopter is being deployed to see if the fuel can be extracted" (according to TEPCO, this flight happened on 14 April between 10.17am and 12.25.) The task was extremely difficult, given the radiation levels: gamma rays, but also and worse, there were extremely dangerous gusts of neutrons that are very hard to guard against (it is also difficult, in fission reactions, to measure exactly the radiation level at the moment of emission). And let's not forget the "sky-effect" phenomen already mentioned in the blog, a sort of rebounding of radiation against atmospheric layers that can make it hit the ground in unexpected places."

Besides the enormous difficulties of clearing out tens of thousands of tonnes of radioactive water, the workers at the plant have now a major problem to manage in unit 4. There are particularly dangerous fission products, and nobody knows how far the released radiation could go.

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1) http://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/110414e20.pdf

2) http://www.iaea.org/newscenter/news/tsunamiupdate01.html

3) http://english.kyodonews.jp/news/2011/04/85295.html

4) « Whistle-blower », who founded the enterprise called Fairewinds Associates, and participated notably in the inquiries at the Vermont Yankee plant, the same type of plant as Fukushima (a boiling-water reactor built by General Electric).

http://sciencepourvousetmoi.blogs.sciencesetavenir.fr/arc