

Information Handout

Japan – Accident at Fukushima Daiichi

March, 18th 2011

Today, Japan's nuclear safety agency lifted the ranking of the accident at Fukushima Daiichi nuclear power plant from 4 to 5 on the International Nuclear and Radiological Event Scale (INES). 5 means an accident with wider consequences on the scale from 0 to 7.

While receiving more and more questions, we want to offer this information leaflet.

1. What is the current risk of radiation-related health problems for those people staying in Japan?

According to the assessment of World Health Organisation as at today (18. March 2011), given the amount of radiation so far released near the reactor, WHO believes that the public health risk is small. The assessment can change if there are further incidents at these plants. The Japanese government is asking people living within 20 km of the Fukushima Daiichi nuclear power plant to evacuate and those between 20 km and 30 km away from the plant to stay indoors in unventilated rooms. People farther away are at lower risk than those live nearby. The health risk changes with the prevailing situation in Japan. We advise people in Japan to monitor the announcements made by the Japanese Government.

2. What is the current risk of radiation-related health problems for those people living in nearby Countries?

As there is strong dilution effect due to the current climatic situation and the long distance, the current risk of radiation-related health problems to people living in other Asian countries and Northern America is considered to be very minimal.

3. How may people be exposed to ionizing radiation?

People expose to the natural radiation in the environment (background irradiation). Apart from this, they can commonly acquire radiation through external medical irradiation, such as X-ray or internal irradiation through ingestion or injection of irradiating material during medical examination. People can be exposed to ionizing radiation via internal route such as breathing-in, swallowing radioactive material or through contamination of wounds. People can also be exposed via external irradiation such as X-rays or when radioactive material (e.g. dust, liquid, aerosols) is attached to skin or clothes.

4. What is the meaning of Sievert (Sv)?

Radiation dose absorbed by human body are expressed in units of Sievert (Sv). On average, a person is exposed to approximately 3.0 mSv/year (1 mSv = 1/1000 Sv) of which, 80% (2.4mSv) is due to naturally-occurring sources (i.e. background radiation), 19.6% (almost 0.6mSv) is due to the medical use of radiation and the remaining 0.4% (around 0.01mSv) is due to other sources of human-made radiation.

In some parts of the world, levels of exposure to natural radiation differ due to differences in the local geology. People in some areas can be exposed to more than 200 times the global average.

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5. What type of radiation exposure would occur in a nuclear plant accident?

A nuclear plant is safe when it is functioning properly. It causes risk to the health of people only when there is an accident involving damage to the nuclear reactor causing leakage of radioactive materials, mostly radionuclides. Radioactive materials in the reactor core may be released into the atmosphere with a mixture of products generated inside the reactor ("nuclear fission products"). The radioactive caesium (Cs-137) and radioactive iodine (I-131) are the most abundant radionuclides that may be released into the atmosphere during the accident. The severity of the risk so caused will depend on the geographical and weather situation of the nuclear plant and the amount and type of radionuclide released.

6. What are the acute health effects of radiation exposure?

If the dose of radiation exposure exceeds a threshold level, it can produce acute health effects such as skin redness, hair loss, radiation burns and acute radiation syndrome (ARS). However, the general population is not likely to be exposed to doses high enough to cause these effects. Rescuers, first responders and nuclear power plant workers are more likely to be exposed to doses of radiation high enough to cause acute effects.

Acute radiation syndrome (ARS) is a set of signs and symptoms that may develop after whole-body doses above 1 Sv (i.e. about 300 times the annual dose to background radiation). It is mainly related to the damage of the bone marrow, where the blood cells are produced. At higher doses (>10 Sv) other organs may be affected (e.g. gastrointestinal, cardiovascular).

7. What are the possible long-term effects from radiation exposure?

Exposure to radiation can increase the risk of cancer. Radioactive iodine can be released during nuclear emergencies. If breathed in or swallowed, it will concentrate in the thyroid gland and increase the risk of thyroid cancer. The risk of thyroid cancer following radiation exposure is higher in children and young adults.

In very extreme situation, such as among Japanese atomic bomb survivors, the risk of leukemia increased a few years after radiation exposure, whereas the risks of other cancers increased more than 10 years after exposure.

8. Can radiation spread from person to person? Would contaminated persons transmit the radiation to me/ my fetus?

Unless one was in the close vicinity of the Fukushima Daiichi nuclear power plant, otherwise, the chance of radiation exposure could only be minimal. For whatever small amount of contamination, it would usually be sufficient to wash away the radioactive contaminants by changing clothes and rubbing with soaps and have showers.

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9. I just travelled back from Japan and did not go to the health desk for radiation check-up, if I feel uncomfortable now, where can I go?

People who still have doubts about their health can go to the Accident and Emergency Department of any public hospital for medical advice.

10. Does a person who is suspected to have radiation exposure need to be sent to the hospital?

People who still have any doubt about their health can go to the Accident and Emergency Department of any public hospital for medical advice.

11. Can eating salt or applying iodine solution onto the body surface prevent or treat radiation-related injury?

There is no scientific evidence that eating salt or applying iodine onto the body surface can prevent or treat radiation-related injury. Not all salt available in shopping centers and supermarkets in the world is iodized and the iodide content of iodised salt is low. Moreover, one has to take about 2.5 to 5 kilograms of iodized salt a day in order to absorb the equivalent dose of iodine that is contained in an iodine tablet. Consuming an excessive amount of salt is harmful to health especially for those with high blood pressure, heart disease or kidney disease. Applying iodine solution onto body surface may cause skin irritation.

12. I am now staying in Japan, should I take iodine tablets?

Iodine tablets are not radiation antidotes. They do not protect against external irradiation or any other radioactive substances besides radioactive iodine. When there is a nuclear plant accident, iodine tablets are given to people likely to be exposed, especially nuclear plant workers and rescuer, to saturate their thyroid glands so as to prevent the uptake of radioactive iodine released from the accident. The drug must be given before or shortly after an exposure for the prevention of thyroid cancer in the long term. It is a universal consensus among the World Health Organisation and all leading public health authorities that only after professional analysis of the emergency situation will a competent public health authority be in a position to recommend the use of iodide tablets.

If you have further questions, please contact us.