

Q. Sievert (Sv)

A. The sievert is the unit used to measure the size of impact of the radiation when human body was exposed to it. It is also called the “dose equivalent”. Radiation exposure levels for an hour are measured at the measuring locations, which are usually outside, and the cumulative exposure levels are obtained by multiplying them by the hours. The figure is lower indoors.

Q. Becquerel (Bq)

A. The becquerel (symbol: Bq) is the unit showing the radiation level. One Bq is the radioactive in which one atomic nucleus decays and releases radiation per second. For example, 370 Bq of radiocesium releases radiation by 370 nuclei decaying per second.

Q. What sort of impacts do radioactive materials in the atmosphere have on people? Do the impacts differ according to the degree of radiation levels?

A. The radioactive materials in the air may deposit on the surface of the earth and buildings, and thus remain in the environment around us. These radioactive materials can be taken inside human body through drinking water and agricultural products. Also radioactive materials in the air can be directly inhaled, which should be prevented by covering mouth and nose when we are outside.

If we are exposed to radiation, our health may be affected, but whether the radiation has effect on our health and what kind of effect it has depend on its level. For example, radiation dose lower than 100 mSv has no immediate health impact. While the risk of developing cancer from 5 years to decades later is considered to increase as the exposed radiation level rises, the risk of developing cancer from exposure to radiation at 100 mSv is about 0.5 percent, which is only one out of tens when compared to the risk of developing cancer from living habits such as smoking and diet. This should not be a cause for concern.

Q. The government explains that the current radiation levels do not have immediate effects on health. Do they have long-term effects?

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Q. How to do decontamination and can I do it at home?

A. Decontamination can be done through daily activities such as taking bath, washing your body, hair and clothes.

Q. Does radiation have effect on pregnant women?

A. Regarding radiation exceptional cautions are not necessary for pregnant women. Radiation dose under 100 mSv<sup>※</sup> is not considered to have effects on fetuses that cause birth defect, mental retardation, etc. Also the risk that the unborn babies might develop the childhood and adult cancer in the future from the radiation to which the mothers might be exposed under the current situation is much lower than the risk from other causes such as living habits.

※Accurate description regarding radiation exposure of fetuses is “under100 *mGy*”, but here sievert, which is frequently used by the media including in news, is used assuming that they receive uniform irradiation of the whole body.

Q. It is said that the radiation survey is not thoroughly performed on people from the area designated to evacuate. Is not there a possibility that they spread radiation?

A. Though radioactive materials were detected on some people in the survey performed on the evacuees, they were such a small quantity that can be removed with wet tissues.

Given that radioactive materials were detected on only a small group of the surveyed evacuees and the amount was very few, if the people from the evacuation area had not surveyed, it's unlikely that they are contaminated with radiation and even if so the amount will be very small. They cannot be a threat to the health of people around them.

※The Regional Disaster Prevention Plan provides that residents should be ordered to move to the designated shelters. Screening of radiation-contaminated people is to be carried out in the shelters through tests and interview.

Q. Should people living in Tokyo metropolitan area including Chiba and Kanagawa Prefectures refrain from going out?

A. As the radiation levels measured in Tokyo metropolitan area since the nuclear accident until now are low, and therefore unless the situation gets substantially worse there is no problem in conducting regular activities.

Q. Was the rain which fell in Tokyo metropolitan area (including Chiba and Kanagawa Prefectures) a few days after the nuclear accident safe?

A. Though the rainfall contains the radioactive materials released in the accident, the amount is very small. According to the radioactivity concentration of the air reported until now, the radiation levels of the rainfall are estimated so low that it has no health effect if we wet by it and have it on the skin. However, we do not recommend you to carelessly wet by rain and it is better to dry yourself when you get home.

Q. Is the effect of the accident at the Fukushima Daiichi Nuclear Power Plant same with that of the Chernobyl accident or the atomic bombing in Hiroshima and Nagasaki?

A. At the atomic bombing of Hiroshima and Nagasaki, fission reaction occurred in the air where there was no shielding and therefore a large quantity of radioactive materials fell over the ground. At the Chernobyl accident, fission reaction going out of control led to explosion of the reactor and eventually fire occurred there spread larger amount of radioactive materials than the atomic bombs dropped on Hiroshima and Nagasaki.

On the other hand, at the Fukushima Daiichi Nuclear Power Plant, the reactors were automatically shut down immediately after the earthquake stopping the fission reaction. However, as the cooling functions of the reactors and fuel storage pools were lost, the nuclear fuels generated heat, which led to the partial damage of the reactor cores and the release of radiation. As the most of the radioactive materials are kept inside the fuel rods and reactors, the amount of released radiation is considerably small compared to the radiation released by the atomic bombing or the Chernobyl accident. Whether to restrict the use of the grounds around the nuclear power plant depends on the kinds and quantity of the radioactive materials that fell over them. Unless the large amount of radiation is not released any more, if restrictions are placed, they will not be kept long nor cover broad area as the restrictions placed after the Chernobyl accident. In any case, we must carefully observe the development of the situation and the detailed results of contamination survey.

Q. Should the situation at the Fukushima Daiichi Nuclear Power Plant get worse to be comparable to the Chernobyl accident, will the life in Tokyo and Oosaka be affected?

A. Though short-term rises are observed in the radiation levels of Tokyo since 15 March, as media report, the exposed doses are so low that they had no effect on health. There is no need to refrain from going out.

What happens should the situation at the plant get worse and serious is only predictable from the prior nuclear accidents, and according to them it is clear that acute

symptoms such as decrease in the white cell count or hair loss have not observed among the residents.

According to the UNSCER report published in 2008 (Sources and Effects of Ionizing radiation, UNSCEAR 2008 Report Annex D: Health effects due to radiation from the Chernobyl accident, United Nations, New York, 2011), in the Chernobyl accident, the worst nuclear accident in the history, the radiation effects observed among the residents are only thyroid cancer of children, and it is also said that is mainly because the residents continued drinking milk contaminated with radioiodine after the accident. The government of the Soviet Union did not make public the nuclear accident at first, and appropriate measures in the early stage such as evacuation of the residents and restriction of the contaminated food were not taken.

From the experience of prior nuclear accidents, it is unlikely that Tokyo will become uninhabitable. Rather, the chaotic state is worried if people get panics and start moving west. In any situation Oosaka will not be affected by the accident.

Q. Are the current radiation data of atmosphere and water open to the general public?

A. The radiation data are provided on the MEXT's website. (<http://www.mext.go.jp/>)

Q. Are agricultural and marine products of Tohoku and Kanto areas safe?

A. At this time there is no problem if you eat agricultural and marine products of Tohoku and Kanto areas. However, the transition of radiation levels of the seawater around drain outlets of the nuclear plant and other locations, which are released to the public, need to be carefully observed continuously. At the time of the Chernobyl accident, while the Japanese government placed restrictions on imported foods with radioactivity levels exceeding 370 Bq/kg, in Europe ten times higher levels were deemed safe and were eaten, and no related health problems have been observed. Contamination of foods that has impact on human health can be detected easily by measuring the radiation dose and radioactivity quantity, and therefore it is unlikely that they pass through the check and come to market.

Q. Are the foods in the market safe?

A. In regard to the products from the region where restrictions on the distribution are not placed, necessary approaches are taken so that products with radioactivity levels exceeding provisional regulation values fixed in accordance with the Food Sanitation Act will not be marketed.

(Reference: Food Safety Commission Q&A: <http://www.fsc.go.jp/>)

Q. Why are the protection guideline of Japan and that of IAEA different?

A. While the avertable dose, the dose avertable if some measures are taken, is used in criteria for protection measures in documents of IAEA and ICRP, etc., the projected dose is used in the Japanese guideline for disaster prevention measures (taking shelter indoors/evacuation). This is because at the time of the occurrence of accidents it is better to use the projected dose, which is calculated based on a fixed certain period for deciding protection measures to be on the safe side, instead of using the avertable dose, which is calculated based on the implementation period of the protection measures.

(Reference: Regarding protection measures of nuclear facilities, Nuclear Safety Commission, partially amended in August, 2010,

<http://www.nsc.go.jp/shinsashishin/pdf/history/59-15.pdf>)