Q&A

Steps to avoid exposure to fallout

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Residents near the Fukushima No. 1 nuclear power plant in Fukushima Prefecture were ordered to evacuate Tuesday, raising concerns about radiation exposure.

Here are basic questions and answers on what to do when faced with possible radiation contamination:

I live within 20 to 30 km of the power plant. What should I do?

Masaharu Hoshi, professor at Hiroshima University's Research Institute for Radiation Biology and Medicine, advises residents in the evacuation zone to stay indoors, keep all doors and windows shut and keep fans and air conditioners off to prevent contaminated air from entering.

What if I have to go outside?

According to the National Institute of Radiological Science website, it is important for residents near the power plant to cover up and prevent skin exposure. At the same time, in order not to inhale radioactive material, cover your mouth and nose with a wet towel or handkerchief.

After coming back in, Hoshi of Hiroshima University said people should remove their clothes and shower.
NIRS advises that clothes and shoes be put into a plastic bag or wiped clean with a wet cloth or tissue. Make sure to dispose of the wet cloths and tissues in a plastic bag.

Experts warn people not to get rained on because the radioactive materials in the air will come down in it.

**What radioactive materials could be released from the damaged nuclear plant?**

Radioactive materials produced by spent fuel rods in reactors include iodine-131, known as radioactive iodine, cesium-137, krypton-85, strontium-90, xenon-133 and plutonium-239.

Iodine-131 can be spread over a wide area depending on the strength of the wind, and can be harmful to the human body if inhaled. Cesium-137, which is absorbed by the organs, can enter the body through consumption of contaminated food and water. Strontium-90, meanwhile, can become concentrated in bones and teeth and cause leukemia or bone cancer.

Most radioactive particles, if absorbed in substantial quantities, can destroy or restructure a cell’s DNA. The human body is equipped to deal with minor exposure to radioactivity, but only up to a certain point. Extended exposure to radioactivity causes hair loss and a lowering of white blood cells, and causes cancer in the long term, according to the Japan Atomic Energy Agency’s website.

**How long will radioactive materials remain in the air or on the ground once exposed? Will it affect the safety of agricultural products and fish caught near Fukushima?**

The radioactive half-life of such materials, or the amount of time it takes for them to lose half their radioactivity, is different for each material. While iodine-131 has a half-life of 8 days, that of strontium-90 is approximately 29 years and for cesium-137 about 30 years. But it takes plutonium-239 more than 24,000 years to reach its half-life.

However, experts say there is no reason to believe agricultural and fisheries products from Fukushima Prefecture and surrounding areas have been contaminated with radioactivity, considering the low level of emissions so far.

The health ministry has taken a precautionary measure by announcing Thursday that it will check the radioactivity level of produce from the region to guarantee the safety of the market.

**What if one inhales radioactive iodine?**

In a case of internal contamination with radioactive iodine, it is important to take iodine pills that help protect the thyroid gland, which regulates many of the body’s functions.

Iodine pills will help decrease the amount of radioactive iodine that can be absorbed and reduce the risk of thyroid disease occurring in the future, according to NIRS. Iodine pills are only prescribed by medical professionals and will be dispensed at evacuation facilities.

Some may develop side effects, including iodine allergies, NIRS said, noting the pills are effective only for internal iodine contamination.

**Is it true disinfectants can be substituted for iodine pills? What about seaweed?**

Although disinfectants and gargles contain potassium iodine, NIRS warns people not to use them because they are ineffective, despite the rumors spreading on the Internet.
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This is because both products contain other ingredients that can harm the body when consumed and the amount of potassium iodine they contain is too small to help.

Some also believe seaweed can help because it contains iodine, but NIRS says the effectiveness of seaweed is questionable because the amount of iodine it contains is very low.

In addition, it also takes a long time for the body to absorb that iodine, it said.

**Should I be worried if I am expecting a child?**

The Japan Society of Obstetrics and Gynecology said Wednesday the current level of radiation from the Fukushima nuclear plant will not affect the mother and her fetus providing she was living at least 5 km from the epicenter when the leaks occurred. There is no need to avoid breast-feeding or take iodine pills at this stage, the society said.

A mother should take iodine pills prescribed by a doctor only if she is exposed to more than 50 millisieverts in total and is under 40 years old, since younger people are at a higher risk of developing thyroid cancer.

The society also said a fetus is at risk if a pregnant woman is exposed to a high level of radiation, but warned that taking iodine pills can cause side effects to the child’s thyroid.

**Is the higher radiation in Tokyo dangerous enough to pose immediate health risks? Should I evacuate?**

In the Kanto region, radiation levels in the air rose significantly across the board Tuesday — as much as 100 times normal in Ibaraki Prefecture and about 20 times normal in Tokyo.

But Hoshi said there is no imminent need for Tokyoites to evacuate, although it's advisable that they shower when they get home.

The biological effects of radiation are measured in sieverts, but more commonly in smaller units like millisieverts and microsieverts.

The average radiation one naturally receives from food, radon in the air, water and space over a year is 2.4 millisieverts worldwide and 1.5 millisieverts in Japan.

One millisievert is one-thousandth of a sievert. It takes 1,000 microsieverts to make 1 millisievert.

The radiation level in Shinjuku Ward was 0.809 microsievert per hour at 10 a.m. Tuesday, or 0.000809 millisievert per hour. On Friday, the level in Shinjuku Ward was 0.049 microsievert per hour at around 9 a.m., or 0.000049 millisievert per hour.

If you are exposed to radiation of 100 millisieverts, your long-term risk of getting cancer rises 0.5 percent, according to the NIRS website.

This is much lower than the cancer risks posed by smoking or a bad diet, it says.

The future risk of contamination will depend on how persistent exposure will be. This could hinge very much on the direction of the wind.

Since the level of radiation exposure in the coming days will be uncertain and varies vastly from place to place, residents should seek information from the best sources they can find, and also seek guidance from their municipal governments, Hoshi said.

**Are there enough stocks of iodine pills in Tokyo?**

Media reports say the Thai government has begun handing iodine tablets to those visiting Japan, and that the French government has distributed the pills to French nationals in the country through its embassy.

But the Tokyo Metropolitan Government has said it has no plans to stock up on the pills at this point because radiation hasn't reached a hazardous level in the

www.japantimes.co.jp/text/nn20110319f1.html
capital.

Under the guidance of the Nuclear Safety Commission of Japan, iodine tablets are stocked by prefectures that operate nuclear power plants, including Fukushima and Fukui. As of Thursday, the Fukushima Prefectural Government said it had stocked about 380,000 pills, enough to cover all the residents within the 30-km radius around the Fukushima nuclear plant who have been ordered to either evacuate or remain inside their homes.

Iodine pills are not sold over the counter, and generally require a prescription from a doctor because of the possible side effects.