

Precautions Should Limit Health Problems From Nuclear Plant's Radiation By **DENISE GRADY**

Worsening conditions at the Fukushima Daiichi nuclear power plant in Japan have raised fears that people will be harmed by radiation. But experts say that in terms of public health, the Japanese have already taken precautions that should prevent the accident from becoming another Chernobyl, even if additional radiation is released.

The Japanese government has evacuated people closest to the plant, told others to stay indoors and distributed the drug potassium iodide to protect the thyroid gland from radioactive iodine.

The great tragedy of Chernobyl was an epidemic of [thyroid cancer](#) among people exposed to the radiation as children — more than 6,000 cases so far, with more expected for many years to come. There is no reason for it to be repeated in Japan.

The epidemic in Chernobyl was preventable and would probably not have happened if people had been told to stop drinking locally produced milk, which was by far the most important source of radiation. Cows ate grass contaminated by fallout from the reactors and secreted radioactive iodine in their milk.

The thyroid gland needs iodine and readily takes in the radioactive form, which can cause [cancer](#). Children are especially vulnerable. Potassium iodide pills are meant to flood the thyroid with ordinary iodine in the hope that it will prevent the gland from taking in the radioactive type. The drug may be unnecessary if people avoid drinking the milk, but for most people, there is no harm in taking it. And if radioactive iodine has already started building up in the thyroid, the pills can help get rid of it, said Dr. Richard J. Vetter, a professor emeritus of biophysics at the [Mayo Clinic](#) in Rochester, Minn.

“It will always help if you’re within a month or so of the exposure,” Dr. Vetter said. “The later it is, the less it helps.”

If the pills are in short supply and have to be rationed, he said, they should go first to children and pregnant women. But taking the drug does not make it safe to stay near a reactor that is emitting radiation, he said. People still must evacuate.

Apart from the increase in thyroid cancer, “there is no evidence of a major public health impact attributable to radiation exposure two decades after the accident” at Chernobyl, in part because of the evacuation efforts, according to [a recent United Nations report](#).

There are several ways to tell if someone has been exposed to radiation. A Geiger counter will detect radioactivity outside the body, on clothing, hair and skin. People found to be contaminated should be advised to undress and take a shower, and their clothing should be discarded as hazardous waste, Dr. Vetter said.

Another device, a sodium iodide detector, can be held an inch or so from the neck to check for radioactive iodine in the thyroid gland; if it detects any, the person may be given iodide pills.

In photographs from Japan, health workers appear to be screening members of the public with both Geiger counters and sodium iodide detectors.

If there is a suspicion that someone has been exposed to a large dose of radiation, the first test that doctors are likely to perform is a [complete blood count](#), Dr. Vetter said. Abnormalities in the count — fewer white cells than would be expected, for example — can show up within a day or so, and give a ballpark estimate of how bad the exposure was.

“In Japan, it’s very unlikely that a member of the public would get a dose of radiation that would result in a decrease in any blood cells,” Dr. Vetter said. “If anyone got that kind of dose, it’s likely people who are working in the nuclear plants themselves.”

People with significantly lowered blood counts from radiation can be given drugs to stimulate their bone marrow to make more blood cells. Those drugs were not available in 1986, when a nuclear power plant in Chernobyl, Ukraine, blew up. Other drugs can be used to help rid the body of certain radioactive isotopes. But if the exposure was so high that the drugs do not help, people may need to be treated in the hospital — put into isolation and given [antibiotics](#) to protect them from infection, and possibly blood transfusions as well. A [bone marrow transplant](#) may be a last resort, but, Dr. Vetter said, “the patient is in real trouble at that point.”

Crops can be contaminated by fallout, which can cling to surface of plants at first and later be taken up by their roots.

Radioactive iodine has a half-life of only eight days — the time it takes for half of it to decay or disappear — so most of it is gone within about two months. But radioactive forms of the particulate cesium persist much longer, and in the regions affected by Chernobyl, they are still the main threats to human health and will be for decades.

Wild mushrooms, berries and animals have been found to be contaminated with cesium in areas contaminated by Chernobyl, and that is expected to last for decades. Lakes and freshwater fish may also be contaminated, but experts say ocean fish are less of a worry because the contaminants are more dispersed and diluted in the ocean than in lakes.