OF NUCLEAR INTEREST: Why residents need potassium iodide

"Got KI?" Chances are you don’t, but if you live within 50 miles of Plymouth, you should – especially if you have children living with you. The "Got KI?" slogan is part of a growing movement focused on educating parents on the South Shore and Cape and Islands about risks associated with Pilgrim Nuclear Power Station (PNPS) and the important role potassium iodide (KI) plays in protecting the health of our children. So what is KI, and why should residents – and especially families – living within 50 miles of PNPS have it on-hand? To understand, it’s important to know a little about your thyroid gland. Located in the lower front of the neck, the thyroid gland produces hormones that are secreted into the blood and carried to every tissue in the body. These hormones help the body regulate metabolism, use energy, stay warm and keep organs working correctly.

The thyroid needs iodine (absorbed from the bloodstream) to produce hormones. Unfortunately, the thyroid cannot differentiate between regular vs. radioactive iodine – a substance which is often released into the atmosphere when a nuclear accident occurs. In a radiologic emergency, radioactive iodine can be readily absorbed by the thyroid and lead to thyroid cancer several years after exposure.

Luckily, there is potassium iodide (KI). It comes in both pill and liquid form, does not require a prescription, and can be bought online and at some pharmacies. Local health departments within 10-miles of PNPS (the Emergency Planning Zone, or EPZ) and on Cape Cod and the Islands also provide KI at no cost to residents. KI provides protection from radioactive iodine present in air, food, milk and water by flooding the thyroid with regular iodine, hence, preventing the radioactive form from being absorbed. The National Institutes of Health, American Academy of Pediatrics, and National Academy of Sciences agree that KI is a simple, cost-effective public health measure following a nuclear accident.

However, the Union of Concerned Scientists believes that KI is needed beyond 10 miles since radioactive iodine could be carried by the wind. The aftermath of Fukushima has demonstrated that radiologic hazards exist beyond the 10-mile EPZ; in fact, the U.S. urged Americans to stay at least 50 miles away following the accident. No one can predict how far radioactive iodine might spread during an accident; however many – including the American Thyroid Association – support "pre-distribution" of KI to households 0-50 miles from a nuclear reactor.

A single dose of KI protects the thyroid gland for 24 hours, and it needs to be taken as soon as possible (before or shortly after exposure). A one-time dose at the recommended level is normally all that is needed to protect the thyroid gland. In the case that exposure to radioactive iodine persists longer than 24 hours, public health or emergency management officials may instruct those in danger to take one dose every 24 hours for a few days.

There are cases, such as people with known iodine sensitivity or other medical conditions, where people should avoid KI. Those who are not sure whether they should take KI should consult their healthcare provider.

Although people of all ages are vulnerable to the effects of radioactive iodine following a radiologic emergency, the threat is greatest for children and infants, as well as pregnant and lactating women, because the young are at highest risk of developing thyroid cancer. There is a slight chance that fetuses and newborns may develop transient hypothyroidism (low thyroid function) following KI administration, especially if more than one dose is given. However, the suppressive effect on thyroid function has been shown to be minimal, even in small children. To decrease the risk associated with KI administration, the U.S. Food and Drug Administration recommends that neonates (newborn to one month), pregnant and lactating women, and those with known iodine sensitivity be given priority in terms of other protective measures, such as sheltering and evacuation.

Plymouth Public Schools, and many schools on the South Shore and Cape and Islands, will administer KI to children should a radiologic emergency occur during the school day, if a signed consent form is on file with the school. Availability of KI during the school day is important to protect our children against the threat of radioactive iodine – but the threat to what we hold dearest doesn’t end with the dismissal bell. Families within 50 miles of PNPS should be equipped with KI at home and in their vehicles. This is especially true for those families with pregnant or lactating women, infants, or young children.

While KI does offer protection from radioactive iodine, it is by no means a silver bullet in terms of public safety. It offers no protection from cancer-causing cesium-137 or strontium, which would also be released during a severe accident. The importance of a viable evacuation plan for those living within 50 miles of PNPS cannot be underestimated. As long as PNPS continues to operate and house spent fuel assemblies in an overcrowded spent fuel pool, a radiologic accident cannot be ruled out. Ongoing improvements in radiologic monitoring, emergency planning, and the storage of spent fuel are needed to truly protect all of us – and especially children – living within 50 miles of PNPS.

For information on KI distribution in your community, contact your local board of health. Heather M. Lightner is a registered nurse and president of the Concerned Neighbors of Pilgrim, a local, grassroots group focused on safer storage of spent nuclear fuel at Pilgrim Nuclear Power Station.

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