



FACT SHEET

Potassium Iodide (KI)

Recent terrorist events have many people concerned about potential future attacks using radioactive materials. Taking potassium iodide (KI) tablets after an incident involving radioactive materials may or may not limit the risk of damage to a person's thyroid gland from ionizing radiation. The Centers for Disease Control and Prevention (CDC) has prepared this fact sheet to further explain when KI might be appropriate and what people should consider before making a decision to take KI.

When to take KI

Local emergency management officials will tell people when to take KI. If a nuclear incident occurs, officials will have to find out which radioactive substances are present before recommending that people take KI. If radioactive iodine is not present, then taking KI will not protect people. If radioactive iodine is present, then taking KI will help protect a person's thyroid gland from the radioactive iodine. Taking KI will not protect people from other radioactive substances that may be present along with the radioactive iodine.

The Food and Drug Administration (FDA) recommends that KI be taken as soon as the radioactive cloud containing iodine from the explosion is close by. KI may still have some protective effect even if it is taken 3 to 4 hours after exposure to radioactive iodine. Because the radioactive iodine will be present in the initial blast and decays quickly, a single dose of KI may be all that is required. The FDA recommendations on KI can be reviewed on the Web at <http://www.fda.gov/cder/guidance/4825fnl.htm>.

Forms of KI, and how much should be taken

KI comes in tablets of 130 mg. A one-time dose at the levels recommended in this fact sheet is usually all that is required. However, if a person expects to be exposed to radioactive iodine for more than 24 hours, another dose should be taken every 24 hours. People should listen to emergency management officials for recommendations after an incident. According to the FDA,

- Adults should take one 130-mg tablet.
- Children between 3 and 18 years of age should take one-half of a 130-mg tablet (65 mg).
- Children between 1 month and 3 years of age should take one-fourth of a 130-mg tablet (32 mg).
- Infants from birth to 1 month of age should be given one-eighth of a 130-mg tablet (16 mg).
- Women who are breastfeeding should take the adult dose, and their infants should receive the recommended infant dose.
- Children who are approaching adult size (greater than or equal to 150 pounds) should take the adult dose regardless of their age.

KI tablets can be stored for at least 5 years without losing their potency.

People should remember that taking a higher dose of KI, or taking KI more often than recommended, will not offer more protection and can cause severe illness and death due to allergic reaction.

Potassium Iodide

(continued from previous page)

Where to obtain KI

People should talk to their pharmacists to obtain KI and instructions on taking it. Though KI is available through many sources, the pharmacist will be able to give out KI that has been produced under standard conditions and approved by the FDA.

How a nuclear incident might cause thyroid damage

Some types of radioactive incidents release radioactive iodine. The thyroid gland, which will use any iodine that is in a person's bloodstream, cannot tell the difference between radioactive and nonradioactive forms of iodine. Because of this, the thyroid would rapidly absorb radioactive iodine just as it does iodine from a person's diet. The radioactive iodine releases energy (radiation) that, in high concentrations, can damage the cells of the thyroid gland. In some people, especially young children, this damage can cause thyroid cancer or other diseases of the thyroid within a few years of the exposure.

What KI is

KI is a salt of iodine. It is one of several ingredients that can be added to table salt to make it iodized. KI has also been approved by the FDA as a nonprescription drug for use as a "blocking agent" to prevent the human thyroid gland from absorbing radioactive iodine. However, KI may not provide people with 100% protection against all radioactive iodine. Its effectiveness will depend on a variety of factors, including when a person takes it, how much iodine is already in the person's thyroid, how fast the person's body processes it, and the amount of radioactive iodine the person is exposed to. Iodized table salt will not provide enough iodine to protect the thyroid and should not be used as a substitute.

Why KI would be important in the event of a nuclear incident

Because the thyroid will rapidly absorb any iodine that is in the body, people may need to take KI tablets soon after an incident that involves radioactive iodine. The KI will saturate the thyroid gland with iodine and help prevent it from absorbing radioactive iodine. However, KI does not prevent the effects of other radioactive elements. Using KI will only protect the thyroid gland from radioactive iodine. It will not protect other parts of the body from radioactive iodine, and it will not protect a person from other radioactive materials that may be released.

Who should or should not take KI when the public is told to do so

Children are the most susceptible to the dangerous effects of radioactive iodine. The FDA and the World Health Organization (WHO) recommend that children from newborn to 18 years of age all take KI unless they have a known allergy to iodine.

Women who are breastfeeding should also take KI, according to the FDA and WHO, to protect both themselves and their breast milk. However, breastfeeding infants should still be given the recommended dosage of KI to protect them from any radioactive iodine that they may breathe in or drink in breast milk.

Young adults between the ages of 18 and 40 have a smaller chance of developing thyroid cancer or thyroid disease from exposure to radioactive iodine than do children. However, the FDA and WHO still recommend that people ages 18 to 40 take the recommended dose of KI. This includes **pregnant and breast-feeding women**, who should take the same dose as other young adults.

Potassium Iodide

(continued from previous page)

Adults over the age of 40 have the smallest chance of developing thyroid cancer or thyroid disease after an exposure to radioactive iodine, but they have a greater chance of having an allergic reaction to the high dose of iodine in KI. Because of this, they **are not recommended** to take KI unless a very large dose of radioactive iodine is expected. People should listen to emergency management officials for recommendations after an incident.

Medical conditions that make it dangerous to take KI

The high concentration of iodine in KI can be harmful to some people. People should not take KI if they:

- have ever had thyroid disease (such as hyperthyroidism, thyroid nodules, or goiter).
- know they are allergic to iodine (if you are allergic to shellfish, ask your doctor or pharmacist about taking KI).
- have certain skin disorders (such as dermatitis herpetiformis or urticaria vasculitis).

People should consult their doctor if they are unsure whether or not to take KI.

Facts about the thyroid gland

The thyroid is a small gland located in a person's neck on either side of the breathing tube (trachea). The thyroid has two parts, a right lobe and a left lobe, that are connected by a small strip of tissue called the isthmus. The main function of the thyroid gland is to create, store, and release thyroid hormones. These hormones regulate the body's metabolism.

Why iodine is important to the thyroid gland

The thyroid gland takes iodine from the bloodstream and uses it to make thyroid hormones. Without the required amounts of iodine, the thyroid will not be able to make these hormones. Most of the iodine in people's bodies comes from the food they eat.

Other Sources of Information

- **The Centers for Disease Control and Prevention's Emergency Response Site** is available at <http://www.bt.cdc.gov/radiation/index.asp>.
- **The Environmental Protection Agency's Web site** is available at <http://www.epa.gov/>.
- **The Nuclear Regulatory Commission Office of Public Affairs** can be contacted at (301) 415-8200.
- **The Radiation Emergency Assistance Center/Training Site (REAC/TS)** can be contacted at (865) 576-3131 (ask for REAC/TS).
- The state radiation control director can be contacted through the **Conference of Radiation Control Program Directors (CRCPD)** at (502) 227-4543.
- **The U.S. National Response Team's Web site** is available at <http://www.nrt.org>.

For information on other radiation emergency topics, visit www.bt.cdc.gov/radiation, or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)