



FACT SHEET

Potassium Iodide (KI)

What is Potassium Iodide (KI)?

Potassium iodide (also called KI) is a salt of stable (not radioactive) iodine. Stable iodine is an important chemical needed by the body to make thyroid hormones. Most of the stable iodine in our bodies comes from the food we eat. KI is stable iodine in a medicine form. This fact sheet from the Centers for Disease Control and Prevention (CDC) gives you some basic information about KI. It explains what you should think about before you or a family member takes KI.

What does KI do?

Radioactive iodine may be released into the air—and then breathed into the lungs—as part of a radiological or nuclear event. In most cases, once radioactive iodine has entered the body, the thyroid gland quickly absorbs it. After it has been absorbed into the thyroid gland, radioactive iodine can then cause thyroid gland injury. Because KI acts to block radioactive iodine from being taken into the thyroid gland, it can help protect this gland from injury.

It is also important to know what KI cannot do. *KI cannot* protect parts of the body other than the thyroid from radioactive iodine. *KI cannot* protect the body from any radioactive elements other than iodine. If radioactive iodine is not present, then taking KI is not protective.

How does KI work?

The thyroid gland cannot tell the difference between stable and radioactive iodine and will absorb both. KI works by blocking radioactive iodine from entering the thyroid. When a person takes KI, the stable iodine in the medicine gets absorbed by the thyroid. There is so much stable iodine in the KI that the thyroid gland becomes “full” and cannot absorb any more iodine—either stable or radioactive—for the next 24 hours.

Iodized table salt also contains iodine; there is enough iodine in iodized table salt to keep most people healthy under normal conditions. However, there is not enough iodine in table salt to block radioactive iodine from getting into your thyroid gland. You *should not use table salt as a substitute* for KI.

How well does KI work?

It is important to know that KI may not give a person 100% protection against radioactive iodine. How well KI blocks radioactive iodine depends on

- how much time passes between contamination with radioactive iodine and taking KI (the sooner a person takes KI, the better),
- how fast KI is absorbed into the blood, and
- the total amount of radioactive iodine to which a person is exposed.

Who should take KI?

The thyroid glands of a fetus and of an infant are most at risk of injury from radioactive iodine exposure. Young children and people with low stores of iodine in their thyroid are also at risk of thyroid injury.

Infants (including breast-fed infants): Infants need to be given the recommended dosage of KI for babies (see **How much KI should I take?**). Even though some KI gets into breast milk, it is not enough to

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protect breast-fed infants from radioactive iodine exposure. The proper dose of KI given to a nursing infant will help to protect them from radioactive iodine that they breathe in or drink in breast milk.

Children: The United States Food and Drug Administration (FDA) recommends that all children exposed to radioactive iodine take KI, unless they have a known allergy to iodine. Children from newborn to 18 years of age are the most sensitive to the potentially harmful effects of radioactive iodine.

Young Adults: The FDA recommends that young adults (those between the ages of 18 and 40 years) who are exposed to radioactive iodine take the recommended dose of KI. Young adults are less sensitive to the effects of radioactive iodine than are children.

Pregnant Women: Because all forms of iodine cross the placenta, pregnant women should take KI to protect the growing fetus. However, pregnant women should take only one dose of KI following exposure to radioactive iodine.

Breastfeeding Mothers: Women who are breastfeeding should take only one dose of KI if they have been exposed to radioactive iodine. Because radioactive iodine quickly gets into breast milk, CDC recommends that women exposed to radioactive iodine stop breastfeeding and feed their child baby formula or other food if it is available. If breast milk is the only food available for an infant, nursing should continue.

Adults: Adults older than 40 years should not take KI unless public health or emergency management officials say that contamination with a very large dose of radioactive iodine is expected. Adults older than 40 years have the lowest chance of developing thyroid cancer or thyroid injury after contamination with radioactive iodine. They also have a greater chance of having an allergic reaction to KI.

When should I take KI?

After a radiological or nuclear event, local public health or emergency management officials will tell the public if there is a need to take KI or other protective actions. You may be told to shelter-in-place or evacuate. Follow the instructions given to you by these authorities.

How much KI should I take?

The FDA has approved two different forms of KI—tablets and liquid—that people can take by mouth after a nuclear radiation emergency. Tablets come in two strengths, 130 milligram (mg) and 65 mg. The tablets are scored so they may be cut into smaller pieces to give lower doses. Each milliliter (mL) of the oral liquid solution contains 65 mg of KI.

According to the FDA, you should take (or give) the following doses after exposure to radioactive iodine:

- Adults should take 130 mg (one 130 mg tablet OR two 65 mg tablets OR two mL of solution).
- Women who are breastfeeding should take the adult dose of 130 mg.
- Children between 3 and 18 years of age should take 65 mg (one 65 mg tablet OR 1 mL of solution). Children who are adult size (greater than or equal to 150 pounds) should take the full adult dose, regardless of their age.
- Infants and children between 1 month and 3 years of age should take 32 mg ($\frac{1}{2}$ of a 65 mg tablet OR $\frac{1}{2}$ mL of solution). This dose is for both nursing and non-nursing infants and children.
- Newborns from birth to 1 month of age should be given 16 mg ($\frac{1}{4}$ of a 65 mg tablet or $\frac{1}{4}$ mL of solution). This dose is for both nursing and non-nursing newborn infants.

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How often should I take KI?

A single dose of KI protects the thyroid gland for 24 hours. A one-time dose at the levels recommended in this fact sheet is usually all that is needed to give full protection to the thyroid gland. In some cases, radioactive iodine might be in the environment for more than 24 hours. If that happens, local emergency management or public health officials may tell you to take *one dose* of KI every 24 hours for a few days. You should do this only on the advice of emergency management officials, public health officials, or your doctor. Avoid repeat dosing with KI of pregnant and breastfeeding women and newborn infants. Those individuals may need to be evacuated until levels of radioactive iodine in the environment fall.

Taking a higher dose of KI, or taking KI more often than recommended, does not offer more protection and can cause severe illness or death.

Medical conditions that may make it harmful to take KI

It may be harmful for some people to take KI because of the high levels of iodine in this medicine. You should not take KI if

- you know you are allergic to iodine (If you are unsure about this, consult your doctor. A seafood or shellfish allergy does not necessarily mean that you are allergic to iodine.) or
- you have certain skin disorders (such as dermatitis herpetiformis or urticaria vasculitis).

People with thyroid disease (for example, multinodular goiter, Graves' disease, or autoimmune thyroiditis) may be treated with KI. This should happen under careful supervision of their doctor, especially if dosing lasts for more than a few days.

In all cases, talk to your doctor if you are not sure whether or not to take KI.

What are the possible risks and side effects of KI?

When public health or emergency management officials tell the public to take KI following a radiological or nuclear event, the benefits of taking this drug outweigh the risks. This is true for all age groups. Some general side effects caused by KI may include intestinal upset, allergic reactions (possibly severe), rashes, and inflammation of the salivary glands.

When taken as recommended, KI causes only rare adverse health effects that specifically involve the thyroid gland. In general, you are more likely to have an adverse health effect involving the thyroid gland if you

- take a higher than recommended dose of KI,
- take the drug for several days, or
- have pre-existing thyroid disease.

Newborn infants (less than 1 month old) who receive more than one dose of KI are at particular risk for developing a condition known as hypothyroidism (thyroid hormone levels that are too low). If not treated, hypothyroidism can cause brain damage. Infants who receive KI should have their thyroid hormone levels checked and monitored by a doctor. Avoid repeat dosing of KI to newborns.

Where can I get KI?

KI is available without a prescription. You should talk to your pharmacist to get KI and to get the directions about how to take it correctly. Your pharmacist can sell you KI brands that have been approved by the FDA.

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Other Sources of Information

- The FDA recommendations on KI can be reviewed on the Internet at www.fda.gov/cder/drugprepare/default.htm#Radiation.
- The Centers for Disease Control and Prevention's Emergency Response Site is available at [CDC Radiation Emergencies](http://www.bt.cdc.gov/radiation/index.asp) (<http://www.bt.cdc.gov/radiation/index.asp>).

For more information, visit www.bt.cdc.gov/radiation,
or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

February 7, 2006

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