



## Emergency Preparedness and Response

### Potassium Iodide (KI)



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#### What is Potassium Iodide (KI)?

KI (potassium iodide) is a salt of stable (not radioactive) iodine that can help block radioactive iodine (/radiation/isotopes/iodine.asp) from being absorbed by the thyroid gland, thus protecting this gland from radiation injury.

The thyroid gland is the part of the body that is most sensitive to radioactive iodine.

**People should take KI (potassium iodide) only on the advice of public health or emergency management officials. There are health risks associated with taking KI.**

KI (potassium iodide) does not keep radioactive iodine from entering the body and cannot reverse the health effects caused by radioactive iodine once the thyroid is damaged.

- KI (potassium iodide) only protects the thyroid, not other parts of the body, from radioactive iodine.

KI (potassium iodide) cannot protect the body from radioactive elements other than radioactive iodine—if radioactive iodine is not present, taking KI is not protective and could cause harm.

Table salt and foods rich in iodine do not contain enough iodine to block radioactive iodine from getting into your thyroid gland.  
**Do not use table salt or food as a substitute for KI.**

Do not use dietary supplements that contain iodine in the place of KI (potassium iodide). They can be harmful and non-  
efficacious. Only use products that have been approved by the U.S. Food and Drug Administration (FDA).

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#### How does KI (potassium iodide) work?

The thyroid gland cannot tell the difference between stable and radioactive iodine. It will absorb both.

KI (potassium iodide) blocks radioactive iodine from entering the thyroid. When a person takes KI,



the stable iodine in the medicine gets absorbed by the thyroid. Because KI contains so much stable iodine, the thyroid gland becomes “full” and cannot absorb any more iodine—either stable or radioactive—for the next 24 hours.

KI (potassium iodide) may not give a person 100% protection against radioactive iodine. Protection will increase depending on three factors.

- **Time after contamination:** The sooner a person takes KI, the more time the thyroid will have to “fill up” with stable iodine.
- **Absorption:** The amount of stable iodine that gets to the thyroid depends on how fast KI is absorbed into the blood.
- **Dose of radioactive iodine:** Minimizing the total amount of radioactive iodine a person is exposed to will lower the amount of harmful radioactive iodine the thyroid can absorb.

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## Who can take KI (potassium iodide)?

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

### Infants (including breast-fed infants)

Infants have the highest risk of getting thyroid cancer after being exposed to radioactive iodine. All infants, including breast-fed infants need to be given the dosage of KI (potassium iodide) recommended for infants.

- Infants (particularly newborns) should receive a single dose of KI. More than a single dose may lead to later problems with normal development. Other protective measures should be used.
- In cases where more than one dose is necessary, medical follow up may be necessary.

### Children

The U.S. Food and Drug Administration (FDA) recommends that all children internally contaminated with (or likely to be internally contaminated with) radioactive iodine take KI (potassium iodide), unless they have known allergies to iodine (contraindications).

### Young Adults

The FDA recommends that young adults (between the ages of 18 and 40 years) internally contaminated with (or likely to be internally contaminated with) radioactive iodine take the recommended dose of KI (potassium iodide). 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 (potassium iodide) to protect the growing fetus. Pregnant women should take only one dose of KI following internal contamination with (or likely internal contamination with) radioactive iodine.

### Breastfeeding Women:

Women who are breastfeeding should take only one dose of KI (potassium iodide) if they have been internally contaminated with (or are likely to be internally contaminated with) radioactive iodine. They should be prioritized to receive other protective action measures.

### Adults:

Adults older than 40 years should not take KI (potassium iodide) 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.
- Adults older than 40 are more likely to have allergic reactions to or adverse effects from KI.

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## How is KI (potassium iodide) given?

The FDA has approved two different forms of KI (potassium iodide), tablets and liquid, that people can take by mouth after a radiation emergency involving radioactive iodine.

Tablets come in two strengths, 130 milligram (mg) and 65 mg. The tablets have lines on them so that they may be cut into smaller pieces for lower doses.

For the oral liquid solution, each milliliter (mL) contains 65 mg of KI (potassium iodide).

According to the FDA, the following doses are appropriate to take after internal contamination with (or likely internal contamination with) radioactive iodine:

- 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.
- 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.
- 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.
- 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.

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## How often should KI (potassium iodide) be taken?

**Taking a stronger dose of KI (potassium iodide), or taking KI more often than recommended, does not offer more protection and can cause severe illness or death.**

A single dose of KI (potassium iodide) protects the thyroid gland for 24 hours. A one-time dose at recommended levels is usually all that is needed to protect the thyroid gland.

In some cases, people can be exposed to radioactive iodine for more than 24 hours. If that happens, public health or emergency management officials may tell you to take one dose of KI (potassium iodide) every 24 hours for a few days.

Avoid repeat dosing with KI (potassium iodide) for pregnant and breastfeeding women and newborn infants.

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## What are the side effects of KI (potassium iodide)?

Side effects of KI (potassium iodide) may include stomach or gastro-intestinal upset, allergic reactions, rashes, and inflammation of the salivary glands.

When taken as recommended, KI (potassium iodide) can cause rare adverse health effects related to the thyroid gland.

These rare adverse effects are more likely if a person:

- Takes a higher than recommended dose of KI
- Takes the drug for several days
- Has a pre-existing thyroid disease.


Newborn infants (less than 1 month old) who receive more than one dose of KI (potassium iodide) are at 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 more than a single dose of KI should have their thyroid hormone levels checked and monitored by a doctor.
- **Avoid repeat dosing of KI to newborns.**

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## Where can I get KI (potassium iodide)?

KI (potassium iodide) is available without a prescription. The Food and Drug Administration (FDA) (<http://www.fda.gov/Drugs/EmergencyPreparedness/BioterrorismandDrugPreparedness/ucm072265.htm>)  (<http://www.cdc.gov/Other/disclaimer.html>) has approved some brands of KI.

People should only take KI (potassium iodide) on the advice of public health or emergency management officials. **There are health risks associated with taking KI.**

More detailed information on KI (potassium iodide) can be found at the FDA Website

(<http://www.fda.gov/Drugs/EmergencyPreparedness/BioterrorismandDrugPreparedness/ucm072265.htm>) 

(<http://www.cdc.gov/Other/disclaimer.html>)

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