

POTASSIUM IODIDE (KI): WHAT IT DOES AND FDA DOSAGE

Potassium iodide (KI) blocks the thyroid from absorbing radioactive iodine and protects nothing else. Take it only when public health or emergency officials tell you to, at the FDA dose for your age.

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■ WARNING

Take KI only when public health or emergency officials tell you to. It protects only the thyroid, and only from radioactive iodine. It is not a general radiation protection and does not protect other parts of the body. After a nuclear detonation, the main protection is to get inside, stay inside, and stay tuned.

WHAT POTASSIUM IODIDE DOES

KI is a stable, non-radioactive form of iodine. FDA explains that it “floods the thyroid with non-radioactive iodine and prevents the uptake of the radioactive molecules, which are subsequently excreted in the urine” (FDA FAQ, Q1). Taken at the recommended dose, FDA says KI is effective in reducing the risk of thyroid cancer in people at risk of inhaling or swallowing radioactive iodine.

CDC adds that KI “may not give a person 100% thyroid protection from radioactive iodine,” and that it “is not a treatment and cannot reverse damage already done to the thyroid” (CDC, Potassium Iodide).

WHAT IT DOES NOT DO

- **It does not protect against other radioactive materials.** FDA: KI “works only to prevent the uptake of radioactive iodine into the thyroid gland. It is not a general radioprotective agent” (FDA FAQ, Q2).
- **It does not protect the rest of the body.** CDC: “KI protects only the thyroid. KI does not protect other parts of the body” (CDC).
- **It is not the main defense after a nuclear detonation.** CDC: “Radiation from radioactive fallout is the biggest threat to your health after a nuclear detonation (explosion),” and “the best protection in a radiation emergency is always to get inside, stay inside, and stay tuned” (CDC). See Shelter in place.

WHEN TO TAKE KI

Only when officials say so. FDA: “KI should not be taken as a preventative before radiation exposure. After a radiological or nuclear event in the United States, local public health or emergency management officials will tell the public if there is a need to take KI or other protective actions” (FDA FAQ, Q6). CDC: “Do not take KI unless you are instructed by public health or emergency response officials or a healthcare provider” (CDC).

Timing matters once officials give the instruction:

- CDC: “KI must be taken within 24 hours before or 4 hours after exposure to be most effective” (CDC).
- FDA: “KI works best if used within 3-4 hours of exposure” (FDA FAQ, Q12).

More is not better. FDA: “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” (FDA FAQ, Q6).

WHO KI IS FOR

FDA prioritizes by age, which it calls “the primary factor for determining risk for radioiodine-induced thyroid cancer” (FDA FAQ, Q3):

- **Highest priority:** infants and children, and pregnant and nursing women. FDA recommends treating them at the lowest predicted thyroid exposure.
- **Adults over 18 through 40:** treated at a slightly higher threshold.
- **Adults over 40:** FDA says they should take KI “only if the predicted exposure is high enough to destroy the thyroid and induce lifelong hypothyroidism.” CDC says adults over 40 should take KI only when officials recommend it.

CDC summarizes: “KI is only recommended for people under 40 and women who are pregnant or breastfeeding” (CDC).

FDA POTASSIUM IODIDE DOSAGE BY AGE

This is FDA’s table as published in its FAQ (FDA FAQ, Q5), which follows FDA’s 2001 guidance (FDA Guidance, 2001). Officials decide whether your predicted exposure calls for KI; the exposure column is how they decide, not something you measure at home.

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups

GROUP	PREDICTED THYROID GLAND EXPOSURE (CGY)	KI DOSE (MG)	130 MG TABLETS	65 MG TABLETS	ORAL SOLUTION, 65 MG/ML
Adults over 40 years	> 500	130	1	2	2 mL
Adults over 18 through 40 years	> 10	130	1	2	2 mL
Pregnant or lactating women	> 5	130	1	2	2 mL
Adolescents, 12 through 18 years*	> 5	65	½	1	1 mL
Children over 3 years through 12 years	> 5	65	½	1	1 mL
Children over 1 month through 3 years	> 5	32	Use KI oral solution**	½	0.5 mL
Infants birth through 1 month	> 5	16	Use KI oral solution**	Use KI oral solution**	0.25 mL

* FDA: “Adolescents approaching adult size (> 150 lbs or > 70 kg) should receive the full adult dose (130 mg).”

** FDA: “Potassium iodide oral solution is supplied in 1 oz (30 mL) bottles with a dropper marked for 1, 0.5, and 0.25 mL dosing. Each mL contains 65 mg potassium iodide.” FDA also publishes home instructions for making a KI solution from tablets for infants and small children, linked from its FAQ.

HOW LONG TO TAKE IT

FDA: “Since KI protects for approximately 24 hours, it should be dosed daily until the risk no longer exists” (FDA FAQ, Q7). CDC says officials will tell you whether you need another dose, and that once exposure has ended, KI is no longer needed (CDC).

Pregnant women and newborns are the exception. FDA: “Unless other protective measures are not available, we do not recommend repeat dosing in pregnant females and neonates,” and they should get priority for evacuation and sheltering instead (FDA FAQ, Q7). CDC warns that infants under one

month who receive more than one dose can develop hypothyroidism, and suggests breastfeeding women consider temporarily stopping and feeding the baby another way until evacuated, if possible (CDC).

WHO SHOULD NOT TAKE KI

FDA (FAQ, Q8):

- People with known iodine sensitivity should avoid KI, as should people with dermatitis herpetiformis or hypocomplementemic vasculitis.
- “A seafood or shellfish allergy does not necessarily mean that you are allergic or hypersensitive to iodine.”
- “People with nodular thyroid with heart disease should not take KI.”
- People with multinodular goiter, Graves’ disease, or autoimmune thyroiditis “should be treated with caution,” especially if dosing goes beyond a few days.
- “If you are not sure if you should take KI, consult your health care professional.”

FDA also says that although KI is sold without a prescription, anyone with health concerns or questions should check with their doctor before taking it (FDA FAQ, Q10).

SIDE EFFECTS

FDA says side effects are unlikely at the recommended dose for a short time. Possible side effects are skin rashes, swelling of the salivary glands, and “iodism” (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes upset stomach and diarrhea) (FDA FAQ, Q9).

An allergic reaction can be more serious. FDA lists fever and joint pains; swelling of the face, lips, tongue, throat, hands, or feet; trouble breathing, speaking, or swallowing; and wheezing or shortness of breath. “Severe shortness of breath requires immediate medical attention.”

TABLE SALT AND SUPPLEMENTS ARE NOT SUBSTITUTES

CDC: “Do not use table salt or foods that contain iodine as a substitute for KI,” and “Dietary supplements that contain iodine may not work to protect the thyroid and can hurt you” (CDC). Use only FDA-approved KI products.

SHOULD YOU KEEP KI AT HOME?

FDA has not made a specific recommendation either way. Its FAQ says: “Although FDA has not made specific recommendations for individual purchase or use of KI, the Nuclear Regulatory Commission (NRC) supplies KI tablets, in accordance with FDA dosing guidelines, to states (including tribal governments) that request it for populations within the 10-mile emergency planning zone of a nuclear power plant” (FDA FAQ, Q12).

FDA says only FDA-approved KI products may be legally sold in the United States, and lists the approved products, which are available without a prescription, in its FAQ (FDA FAQ, Q4).

■ SOURCE

This page quotes and closely paraphrases FDA and CDC and adds nothing to them. It is not medical advice. Ask your doctor or pharmacist about KI for anyone in your household, and in an emergency, follow the instructions of your local public health and emergency officials.

NEXT STEPS

- What protects you from fallout: Shelter in place
- What to do hour by hour: The first 72 hours
- What to keep at home: Fallout shelter kit

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COMPILED FROM THESE SOURCES

1. FDA, Frequently Asked Questions on Potassium Iodide (KI)
2. FDA, Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies (2001)
3. CDC, Potassium Iodide (KI)

Every safety claim on this sheet links to its primary source.