How to Use Potassium Iodide After a Nuclear Emergency

Given the current concerns, you may be adding some emergency supplies that you are unfamiliar with to your pantry and medicine cabinet. This article explains how to use potassium iodide after a nuclear strike and addresses some frequently asked questions.

At the end, there's a link to a downloadable format of this article that you can print out for your emergency supplies. I'm not a doctor - this article is based on research done on official government websites. Sources are also cited at the end.

(The abbreviation for potassium iodide is KI, which I'll use for the rest of the article.)

Why you need potassium iodide after a nuclear emergency

Aside from the immediate threats of a nuclear blast, the thyroid gland is the most susceptible organ to damage from radiation. Potassium iodide is a stable form of iodine (stable meaning it isn't radioactive.) If the thyroid gland is loaded with stable iodine, it can't absorb radioactive iodine. Radioactive iodine can cause cancer. Here's how the CDC explains it:

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.

This doesn't protect your body from any other type of radioactive isotopes - only radioactive iodine. It won't undo the damage done by radioactive iodine, so you must begin taking it immediately for protection. If there is no radioactive threat, you should not take KI, as it can be harmful.

How do you take potassium iodide after a nuclear strike or other radiation emergency?

The sooner you begin taking KI after an emergency, the better. It works best if taken within 3-4 hours of an emergency.Here are the dosages recommended by the FDA.

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- **Newborns from birth to 1 month of age** should be given 16 mg (¼ of a 65 mg tablet or ¼ 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 (½ of a 65 mg tablet OR ½ 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.

Here's a chart provided by the FDA.

	Predicted Thyroid gland exposure (cGy)	KI dose (mg)	Number or fraction of 130 mg tablets	Number or fraction of 65 mg tablets	Milliliters (mL) of 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 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

One full dose protects the thyroid gland for 24 hours. Taking more does not add more protection and can cause illness or death. During times of extended exposure, take the dose once every 24 hours for the length of time recommended by emergency officials. (You've got your battery-operated or hand crank emergency radio, right?)

The following guidance is offered by the FDA:

- The FDA guidance prioritizes groups based on age, which is the primary factor for determining risk for radioiodine-induced thyroid cancer.
- Those at highest risk are infants and children, as well as pregnant and nursing females because of the potential for KI to suppress thyroid function in the developing fetus and the newborn.
- The recommendation is to treat them at the lowest threshold (with respect to predicted radioactive dose to the thyroid).
- Anyone over 18 years old and up to 40 years old should be treated at a slightly higher threshold.
- Anyone over 40 years old should be treated with KI only if the predicted exposure is high enough to destroy the thyroid and induce lifelong hypothyroidism (thyroid deficiency).

REMEMBER: DO NOT GIVE INFANTS, PREGNANT WOMEN, OR BREASTFEEDING WOMEN MORE THAN ONE DOSE OF KI.

Who should not take potassium iodide?

Some people should not take KI because the risks outweigh the benefits. According to the FDA, the following people should not take KI:

- Persons with known iodine sensitivity
- Individuals with dermatitis herpetiformis and hypocomplementemic vasculitis
- People with nodular thyroid with heart disease should not take KI.
- Individuals with multinodular goiter, Graves' disease, and autoimmune thyroiditis should be treated with caution -- especially if dosing extends beyond a few days.

A seafood or shellfish allergy does not necessarily mean that you are allergic or hypersensitive to iodine, but extreme caution should be used, and you should have the supplies on hand to treat a life-threatening allergic reaction. Personally, I probably would not take KI if I had a seafood allergy. If you are not sure if you should take KI, consult your healthcare professional before a disaster ever occurs.

If your thyroid gland has been removed, you will not benefit from taking KI.

What are the possible side effects of potassium iodide?

If you take the correct dosage and are not allergic to iodine, you shouldn't have any negative side effects. The possible issues are:

- Skin rashes
- Swelling of the salivary glands
- “Iodism” (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes upset stomach and diarrhea)

- An allergic reaction can have more serious symptoms. These include fever and joint pains; swelling of parts of the body (face, lips, tongue, throat, hands, or feet); trouble breathing, speaking, or swallowing; wheezing or shortness of breath. Severe shortness of breath requires immediate medical attention.

What kind of potassium iodide should I use for my emergency supplies?

Table salt, iodine-rich foods, and low-dose supplements do not contain enough iodine to be effective.

The FDA has approved these brands for use in a nuclear emergency. (I've included links to the products I could find.) The FDA recommends that you only take the following brands.

- iOSAT tablets, 130mg, from Anbex, Inc.
- ThyroSafe tablets, 65mg, from Recipharm AB (You'll have to pay extra for rush shipping of this brand to get it immediately)
- ThyroShield oral solution, 65mg/mL, from Arco Pharmaceuticals, LLC
- Potassium Iodide Oral Solution USP, 65mg/mL, from Mission Pharmacal Company

If you are unable to find the brands above, other products that *have not* been recommended by the FDA are:

- Pure Potassium Iodide Crystals (these are to be used to make a solution.)
- Iodoral (These are lower dosage, but high quality, so adjust your intake based on the recommendations above)
- Potassium Iodide tablets (Similar dosage to iOstat, but I'm unfamiliar with the brand)

It's essential to note that if you use a non-approved product, it may not be as effective as the approved products. I strongly urge you to get the recommended brands if possible.

You will have to calculate the appropriate doses with the recommendations above.

Sources:

- KI in Radiation Emergencies
- Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies
- FDA
- CDC

Other nuclear emergency resources:

- Nuclear Preparedness Intensive (a 90-minute interview with a military nuclear expert, hundreds of pages of downloads, and an action plan)
- How to Prepare for a Nuclear Attack
- Nuclear War Survival Skills, by Cresson Kearney, the inventor of the Kearney Fallout Meter