



Information for Pharmacists: Prophylactic Use of Potassium Iodide (KI) in Radiological Emergencies:

What is Potassium Iodide (KI)?

Potassium iodide (KI) is a salt of stable iodine that is used as a thyroid blocking medicine during a nuclear radiation emergency. It is available at the pharmacy and should be considered part of a disaster supply kit. It will not be dispensed after an emergency occurs at a nuclear power plant. This is a pre-event distribution program only.

Why is KI available to the public now?

The Nuclear Regulatory Commission has made a supply of KI available to the State of Michigan at no cost. The State decided to accept the KI and offer it to residents, businesses and institutions within 10 miles of a nuclear power plant at no cost. This does not mean that the threat of a nuclear accident has increased. The plants are safer than ever.

What does KI do?

Following a radiological or nuclear event, radioactive iodine may be released into the air and breathed into the lungs or ingested in contaminated food or drink. This results in internal radiological exposure, or internal contamination. The thyroid gland quickly absorbs the radioactive iodine, potentially injuring the gland. Taking KI in a timely manner fills the thyroid with KI, blocking uptake of harmful radioactive iodine.

When should KI be taken?

KI should only be taken when a General Emergency is declared at a nuclear power plant. When a General Emergency is declared, people who have their KI readily accessible should take it. If the KI is not readily accessible, they should **NOT** return home for it. They should not go to the pharmacy to get it during the emergency. They should proceed with the evacuation as instructed by emergency officials. Evacuation, to distance themselves from the area, is the best defense against exposure to radiation.

Who should not take KI?

Advise patients **NOT** to take KI if :

- They are **allergic to iodine** (If they are unsure about an allergy, they should consult their physician prior to an emergency event. A seafood or shellfish allergy does not necessarily mean that they are allergic to iodine).
- They have certain **skin disorders** (such as dermatitis herpetiformis or urticaria vasculitis).

Note: Patients with thyroid disease should consult their physician prior to taking KI.

What side effects can KI cause?

When taken as instructed, the benefits of taking KI outweigh the risks. This is true for all age groups. In case of allergic reaction or overdose, instruct the patient to seek immediate medical attention.

Adapted from the Centers for Disease Control & Prevention website on Radiation Emergencies.

Side effects caused by KI may include:

- intestinal upset
- skin rashes such as hives
- fever and joint pain
- swelling of various body parts such as the face, lips, tongue, throat, hand or feet
- inflammation of the salivary glands.
- allergic reactions causing difficult breathing, speaking or swallowing

When taken as recommended, KI only causes rare adverse health effects. In general, these adverse health effects are more likely if someone:

- takes a higher than recommended dose of KI
- takes the drug for several days, or
- has 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 hypothyroidism (thyroid hormone levels that are too low). If left untreated, hypothyroidism can cause brain damage. **Infants who receive KI should have their thyroid hormone levels checked and monitored by a physician.**

Who should take KI?

Patients should only take KI when a General Emergency has been declared during a nuclear event. A press release will be issued by emergency officials recommending ingestion of KI.

Children: The United States Food and Drug Administration (USFDA) recommends that all children that are internally contaminated with (or likely to be internally contaminated with) radioactive iodine take KI, unless they have known allergies 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 (between the ages of 18 and 40 years) that are internally contaminated with (or likely to be internally contaminated with) radioactive iodine take the recommended dose of KI. Young adults are less sensitive to the effects of radioactive iodine than are children.

Adults: Adults older than 40 years **do not need to take KI** unless public health officials make the recommendation. 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 allergic reactions to KI.

Are there special instructions for pharmacists?

- Vouchers will be mailed to residents and businesses within the 10 mile Emergency Planning Zone (EPZ) of a nuclear power plant. The vouchers will be presented by the patient to your pharmacy in exchange for their free KI.
- Ask to see photo ID to verify the identity of the patient presenting the voucher. KI should only be dispensed to the individual named on the voucher.
- You do not need to verify residency within the 10-mile planning zone.

Adapted from the Centers for Disease Control & Prevention website on Radiation Emergencies.

- Each box of KI has 20 tablets. Patients should be provided with enough boxes of KI to supply one dose of KI for each member of the household. Do not repackage the boxes of KI. Some households will receive more KI than is needed.
- Complete the bottom section of the voucher when dispensing KI. Retain the voucher. It will be returned to MDCH on a quarterly basis.

What is the proper dosage?

The tablets contain 65 milligrams (mg) of KI each. The tablets are scored. According to the Food and Drug Administration, the following doses are appropriate to take after internal contamination (or likely internal contamination) with radioactive iodine:

Adults over 18 years	two 65 mg tablets daily
Children over 12 years to 18 years who weigh <u>at least</u> 150 pounds	two 65 mg tablets daily
Children over 12 to 18 years who weigh <u>less than</u> 150 pounds	one 65 mg tablet daily
Children over 3 years to 12 years	one 65 mg tablet daily
Children over 1 month to 3 years	1/2 of a 65 mg daily, crushed into liquid
Babies at birth to 1 month	1/4 of a 65 mg tablet daily, crushed into liquid.
Note: Pregnant or breastfeeding women should take the recommended dose for one day only. They should call their physician’s office as soon as possible to let the physician know that they have taken KI.	

Use this table to determine the appropriate number of boxes to dispense to a household.

Patient Description	Number in family	Number of tablets for <u>one dose</u>	Number of boxes (20 tablets/box)
Adults 18 years and older			
Pregnant or breastfeeding women			
Children over 12 years to 18 years who weigh <u>at least</u> 150 pounds			
Children over 12 to 18 years who weigh <u>less than</u> 150 pounds			
Children over 3 years to 12 years			
Children over 1 month to 3 years			
Babies at birth to 1 month			
Total boxes			

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SPECIAL NOTE REGARDING PREGNANT WOMEN AND BREAST-FEEDING INFANTS:

Infants (including breast-fed infants): Infants, including breast-fed infants, need to be given the recommended dosage of **KI for babies**. The amount of KI that gets into breast milk is not enough to protect breast-fed infants from exposure to radioactive iodine. The proper dose of KI given to a nursing infant will help protect the infant from radioactive iodine that it breathes in or drinks in breast milk.

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

Breastfeeding Women: Women who are breastfeeding should **take one dose of KI** if they have been internally contaminated (or are likely to be internally contaminated) with radioactive iodine. Because radioactive iodine quickly gets into breast milk, the CDC recommends that women who have been exposed to radiation and are internally contaminated (or are likely to be internally contaminated) with 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.

Although these precautions should be taken, the benefits of short-term use of KI to block uptake of radioactive iodine by the thyroid gland far exceed the risks of side effects.

What information should be provided to patients?

Patients should be given:

- The appropriate amount of KI for their household. Patients will receive the voucher in the mail.
- **KI Fact Sheet for the Public**
- **How to Prepare KI for Kids** fact sheet

How can you order more KI?

- To order more KI, call the Michigan Department of Community Health, 1-800-648-6942 or e-mail Susan Manente at manentes@michigan.gov.

**For more information, contact the
Michigan Department of Community Health,
1-800-648-6842**

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