

# Potassium Iodide Tablets (KI)

## Fact Sheet

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This fact sheet provides basic information only. It must not take the place of medical advice, diagnosis or treatment. Always talk to a health care professional about any health concerns you have, and before you make any changes to your diet, lifestyle or treatment.

In the event of an accident at a nuclear generating station that involves a release of radioactive iodine into the environment that impacts Ontario, one of the health risks is possible internal exposure of the thyroid gland to radioactive iodine. One way to protect the thyroid from the harmful effects of radioactive iodine is to take potassium iodide (KI). Here are some commonly asked questions about KI tablets:

**Q: What is KI?**

**A:** KI (the chemical name for potassium iodide) is a salt of stable (not radioactive) iodine. Stable iodine is an essential nutrient needed in very small quantities for the thyroid gland to function properly. KI comes in tablet form and can be easily swallowed.

**Q: How does KI work?**

**A:** When swallowed just prior to or shortly after exposure to radioactive iodine, KI fills up the thyroid with stable iodine so it cannot absorb any other iodine for a period of time. This prevents the thyroid from absorbing harmful levels of radioactive iodine so that the radioactive iodine will not accumulate, and the body will naturally excrete it. This process is also called iodine thyroid blocking.

The thyroid gland does not know the difference between non-radioactive and radioactive iodine and can absorb both. Absorption of harmful levels of radioactive iodine can increase the risk of thyroid cancer later in life, especially in children.

**Q: Can KI be used to protect against all forms of radiation?**

**A:** No. KI provides protection only to the thyroid gland and only against internal contamination from radioactive iodine. Radioactive iodine may be found in emissions from nuclear generating stations during an accident. KI will not protect against exposure to other contaminants contained in those emissions.

**Q: When should I take KI and how will I know to take it?**

**A:** If possible, KI should be taken before exposure to radioactive iodine during a nuclear emergency. The optimum time is two to six hours earlier. If that is not possible, KI should be taken as soon as possible after first exposure, ideally within three hours. There is no benefit to taking KI if there has been a 24-hour delay.

If there is a threat of significant exposure to radioactive iodine from a nearby nuclear generating station during an accident, the Chief Medical Officer of Health for Ontario will provide instructions through radio, TV, Internet and other available channels on where, when, how, and by whom KI should be taken.

KI is only to be used during an emergency situation at a nuclear generating station that impacts Ontario.

***KI is only to be taken when instructed to do so by provincial authorities.***

**Q: Who benefits most from taking KI?**

**A:** Pregnant and breastfeeding women, infants, children and adolescents should be among the first to receive KI as they are at higher risk for developing thyroid cancer after exposure to radioactive iodine.

**Q: How many KI tablets should be taken and how often?**

**A:** People who are at risk from exposure to radioactive iodine may be directed by provincial authorities to repeat a dosage every 24 hours for the duration of the exposure and/or until it is possible to evacuate.

Unless otherwise instructed, pregnant and breastfeeding women and newborn babies should take **only one** single dose of KI and not take repeat dosages.

The dosages that follow on the next page are consistent with Health Canada and World Health Organization recommendations. Larger doses than those indicated have no additional benefit and may increase the risk of side effects.

## Recommended single dosage of KI according to age group:

| Age Group  | Potassium Iodide (KI) Dose (mg) | # of 130 mg tablets                 | # of 65 mg tablets                  |
|--|---------------------------------|-------------------------------------|-------------------------------------|
| Adults (18 yrs +) Incl. pregnant or lactating women <sup>3</sup> | 130                             | 1                                   | 2                                   |
| Adolescents (12-18 yrs) <sup>1</sup>                             | 65                              | 1/2                                 | 1                                   |
| Children (3–12 yrs)  | 65                              | 1/2                                 | 1                                   |
| Infants (1 month–3 yrs)  | 32                              | Use KI Liquid Solution <sup>2</sup> | 1/2                                 |
| Newborns (< 1 month) <sup>3</sup>                                | 16                              | Use KI Liquid Solution <sup>2</sup> | Use KI Liquid Solution <sup>2</sup> |

1 Adolescents approaching adult size (over 150 lbs/70 kg) should receive the full adult dose (130 mg)

2 See “Preparation of a KI Liquid Solution”

3 Pregnant or lactating women and newborns should take **only one** single dose of KI

### Q: What if I have a family member who cannot swallow a KI tablet?

**A:** People unable to swallow a KI tablet, and children under three years of age will require a KI liquid solution. Instructions for preparing the KI liquid solution are attached.

### Q: How long are KI tablets good for? How should they be stored?

**A:** The expiry date is printed on the label of the KI packaging. The KI tablets should be kept sealed at room temperature and away from light.

### Q: Are there any side effects from taking KI?

**A:** The risk of side effects from taking a dose of KI is extremely low for all age groups who have normal thyroid function. The overall benefit during a nuclear emergency outweighs the risks of side effects.

There is an increased risk of side effects for people with thyroid disorders i.e., auto-immune thyroiditis, Graves’ disease, iodine deficiency, and nodular goiter. These disorders are more common in adults and the elderly, and are rare in children.

Rare side effects in other parts of the body, such as gastrointestinal effects or hypersensitivity reaction, may occur but are generally mild.

People who are sensitive to iodine or who have an existing or previous thyroid disorder or any other concerns should consult their doctor or nurse practitioner prior to taking KI.

**Q: Who should not take KI?**

**A:** People with the following conditions must not take KI:

- Hypersensitivity to iodine. This is a very rare disorder that should not be confused with the more common hypersensitivity to contrast agents which contain iodine used in certain radiological examinations. A seafood or shellfish allergy does not necessarily mean that you are allergic or hypersensitive to iodine.
- Dermatitis herpetiformis (a chronic skin condition).
- Hypocomplementaemic vasculitis (an uncommon inflammation of the vascular walls, which can occur in certain immunological disorders).
- Myotonia congenita (extremely rare congenital defect involving muscle stiffness).

**Q: Where can I get KI?**

**A:** If you live in the vicinity of a nuclear generating station, contact your local municipality or [Public Health Unit](#) to obtain more information about acquiring KI, and to learn more about nuclear preparedness and response planning in your jurisdiction. These organizations will have information on planning around access to KI for residents within the primary zone.

KI is stocked near nuclear generating stations and is made available, free of charge, to people living or working in the primary zone (within 10 km of the station) as a precautionary measure due to the potential risk of exposure during the unlikely event of a radioactive iodine emission.

In the event of a nuclear emergency, the Chief Medical Officer of Health for Ontario will provide information on where to obtain KI through radio, TV, Internet and other available channels.

**Q: Where are nuclear generating stations located in Ontario?**

**A:** Please see the chart below listing the municipalities that are within 10 kilometres of a nuclear generating station:

| <b>Nuclear Generating Station</b>                 | <b>Municipality</b>             |
|---|---------------------------------|
| Bruce Power                                       | Kincardine                      |
| Chalk River Laboratories                          | Deep River and Laurentian Hills |
| Darlington Nuclear Generating Station             | Durham                          |
| Pickering Nuclear Generating Station              | Durham and Toronto              |
| Fermi 2 Nuclear Generating Station, Michigan, USA | Amherstburg                     |

For more information, please visit: [www.ontario.ca/radiationhealth](http://www.ontario.ca/radiationhealth)

## Preparation of a Potassium Iodide (KI) Liquid Solution

People who are unable to swallow a KI tablet, and children under three years of age, will require a KI liquid solution. Instructions for preparing the KI liquid solution using **two 65 mg tablets** are given below.

### To Make the KI Solution, You Will Need:

- **Two 65 mg KI tablets**
- Teaspoon
- Small bowl
- Four teaspoons of water
- Four teaspoons of a drink, for example: milk, chocolate milk, orange juice, infant formula, or water

### Directions for Making the KI Solution:

#### Step 1. Soften the KI tablets:

- Put two **65 mg** KI tablets into a small bowl. Add four teaspoons of water. Soak the tablets for one minute.

#### Step 2. Crush the softened KI tablets:

- Use the back of the teaspoon to crush the tablets in the water. At the end of this step, there should not be any large pieces of KI. This makes the KI and water mixture.

#### Step 3. Add a drink to the KI and water mixture:

- Choose a drink from the list above. Mix four teaspoons of the desired drink with KI and water mixture made in Step 2. Adding the desired drink makes the final KI solution.

#### Step 4. Give the right amount of the final KI solution, using the chart on the next page.

## How Much of the Final KI Solution to Give Each Day

The chart below tells you how many teaspoons of the final KI solution to give each day. The amount is based on the person's age. Give KI **once** a day until a risk of significant exposure to radioiodines no longer exists, with the exception of infants less than 1 month of age who should only receive one dose.

| Age                                   | Once Daily Dose of KI Solution* |
|---------------------------------------|---------------------------------|
| 19 years and older                    | 8 teaspoons (40 ml)             |
| 13 to 18 years (over 150 lbs/70 kg)   | 8 teaspoons (40 ml)             |
| 13 to 18 years (under 150 lbs/70kg)   | 4 teaspoons (20 ml)             |
| 4 to 12 years                         | 4 teaspoons (20 ml)             |
| Over 1 month through 3 years          | 2 teaspoons (10 ml)             |
| An infant from birth through 1 month* | 1 teaspoon (5 ml)               |

\*This is the amount to give for one dose. Infants less than 1 month of age should receive **only one** single dose.

### Storage of Prepared KI Mixture

KI mixtures keep for up to seven days in the refrigerator. Discard unused portions.

Adapted from: United States Food & Drug Administration, Potassium Iodide ("KI") Preparation and Dosing Instructions for Use During a Nuclear Emergency To Make KI Solution (Liquid Form), using two 65 mg KI Tablets, August 22, 2012. Available online at: [www.fda.gov/kiprepare](http://www.fda.gov/kiprepare).