

**Attachment 12**

# Public Health Emergency Preparedness

## Potassium Iodide (KI) Treatment

### What is potassium iodide (KI) and what is it used for?

Potassium iodide is a chemical compound (a salt) that can be used to help protect your thyroid gland from harm if there is a radiological emergency occurring from a nuclear power plant or nuclear device. It is made in the form of a tablet. KI does not protect any part of the body other than the thyroid from radiation; nor does it protect against any radioactive substances other than radioactive iodine.

### What is the thyroid gland and why is iodine important to it?

The thyroid is a small gland located in a person's neck. Its main function is to make, store, and release thyroid hormones, which regulate the body's metabolism (metabolism is the way the body produces energy). The thyroid needs iodine to make thyroid hormones. Most of the iodine in people's bodies comes from the food they eat, such as iodized table salt, dairy products and plants grown in soil that is rich in iodine (coastal region), seafood, and multivitamins.

### How might a radiological/nuclear incident damage the thyroid?

If a nuclear power plant has an emergency situation, there may be a large amount of radioactive iodine that is released into the air. The thyroid gland, which will use any iodine that is in a person's bloodstream, cannot tell the difference between radioactive and non-radioactive forms of iodine. The thyroid would rapidly absorb radioactive iodine just as it does regular iodine from a person's diet. The radioactive iodine would release energy (radiation) that, in high concentrations, can damage the cells of the thyroid. In some people, especially young children, this damage can lead to thyroid cancer or other diseases of the thyroid within a few years of exposure.

### How does KI protect the thyroid?

Because the thyroid will rapidly absorb any iodine that is in the body, people may need to take KI tablets soon after a nuclear incident that releases radioactive iodine into the air. The stable, non-radioactive iodine in the KI pill will load up the thyroid gland so that there is no space left for the radioactive iodine to be absorbed. The harmful radioactive iodine will then harmlessly be excreted from the body through the kidneys.

### When should KI be taken?

KI should only be taken when directed by City or State health officials. In a public health emergency, always tune in to television or radio broadcasts for information and instructions on how best to protect yourself and your loved ones. If a nuclear incident occurs, officials will have to find out which radioactive substances are involved before recommending that people take KI. KI will only be recommended when there are significant amounts of radioactive iodine in the air. If radioactive iodine is not present, then taking KI will not protect you.

If radioactive iodine is present, KI works best when taken before (about one-half hour) or at the same time of exposure to radioactive iodine. KI can still offer some protection even if taken up to 3 hours or longer after exposure.

## Should I give KI to my children?

Yes. The people who benefit most from taking KI are children – infants through teenagers – and developing fetuses. The younger a child, the higher the risk of developing thyroid cancer after being exposed to radioactive iodine.

## How much should I take?

The amount of KI that a person should take depends on his or her age and body size. A one-time dose at the levels recommended in the table below is usually all that is required. It is important to listen to City and State officials on TV and radio broadcasts for recommendations after an incident. If officials expect people to be exposed to radioactive iodine for more than 24 hours, they will announce that people should take another dose every 24 hours.

KI tablets currently come in 65 mg and 130 mg pills. An adult dose would be one 130 mg pill or two 65 mg pills. Because it is sometimes difficult to divide whole pills into sections, the New York State Health Commissioner has said that, in an emergency, it is safe for children in schools or daycare centers to take the entire 130 mg pill, if that is the only form available.

For babies or children who cannot take pills, a parent or caregiver can cut or crush the pill to make lower doses. For example, a 130 mg pill can be dissolved in 8 ounces of water or juice, so that 1 ounce (6 teaspoons or 2 tablespoons) would contain 16 mg of KI.

Age group	Recommended KI dosage	Number of 130mg tablets	Number of 65mg tablets
Birth –1 month old	16 mg	1/8	1/4
> 1 month – 3 years old	32 mg	1/4	1/2
> 3 years – 18 years old*	65 mg	1/2	1
Adults over 18 years	130 mg	1	2

\* Teenagers approaching adult size (roughly 154 pounds) should receive the full adult dose.

## How do I make a child's dose of KI?

KI is stockpiled as tablets because tablets are easier to store. However, infants and small children cannot swallow tablets, and the dose of the tablets is too high for this age group. As mentioned in the question above, you can dissolve KI in water to make a solution that will allow you to give your child the recommended dose. For example, a 130 mg pill can be dissolved in 8 ounces of water or juice, so that 1 ounce (6 teaspoons or 2 tablespoons) would contain 16 mg of KI. For 32 mg (for children over the age of one month through age 3), you would use 2 ounces of the solution (12 teaspoons or 4 tablespoons).

Because KI dissolved in water may be too salty to drink, the Food and Drug Administration (FDA) provides instructions on how to mix the KI tablets with a food or a drink to disguise the taste so infants and small children will take the medicine in an emergency. These instructions (along with more detailed instructions on how to make KI solutions for children's doses) are available at <http://www.nyc.gov/cgi-bin/exit.pl?url=http://www.fda.gov/cder/drugprepare/kiprep.htm>.

## Should I take KI if I'm pregnant or breastfeeding?

Yes. Pregnant and breastfeeding women who may be exposed to radioactive iodine from a nuclear accident should take KI (130 mg) to protect both themselves and their fetus.

As mentioned above, if officials expect people to be exposed to radioactive iodine for more than 24 hours, they will announce that people should take another dose every 24 hours. However, *pregnant and breastfeeding women should not repeat dosing*, even if exposure to radioactive iodine lasts longer than 24 hours.

### **Who benefits the most from KI treatment?**

Young children, adolescents (those under the age of 18), and developing fetuses benefit the most from KI treatment, because these groups are more sensitive to the effects of radioactive iodine than adults. Adults between the ages of 18 and 40 would only be instructed to take KI if their radioactive iodine exposure were twice as great as the amount at which children would be advised to take KI. Adults over the age of 40 would only be instructed to take KI if their radioactive iodine exposure were 100 times greater than the amount at which children would be advised to take KI.

### **Are there some people who should not take KI?**

People who are allergic to iodine should not take KI. Also, people who have certain thyroid conditions (such as Graves' disease, other autoimmune thyroid diseases, and/or a goiter) should be very careful about taking KI. If you have any thyroid disorder, be sure to check with your doctor in *advance* of an emergency to find out whether you should take KI. If you are unsure whether or not you would be able to take KI, ask your doctor.

### **When do I stop taking KI?**

If officials expect people to be exposed to radioactive iodine for more than 24 hours, they will announce on local TV and radio that people should take a dose of KI every 24 hours. *However, if you are pregnant or breastfeeding, do not repeat dosing.*

City or State officials will announce on local TV and radio when to stop taking the KI. It should be taken for as long as exposure to a radioactive iodine cloud is a threat.

### **Where do I get KI? Can I get it at the drugstore?**

KI is available as an over-the-counter medication. No prescription is needed. Though KI is available through many sources, a pharmacist will be able to give out KI that has been produced under standard conditions and approved by the FDA. Only KI that has been FDA-approved should be taken.

There are three KI products that have received FDA approval. Iostat (Anabex) is a 130mg tablet and is the most widely available; ThyroSafe is a 65 mg tablet. ThyroBlock (Medpointe, Inc.) is another 130 mg tablet (but it is sold mostly to government institutions). Tablets can be purchased online and at select pharmacies.

### **How long does KI last?**

The manufacturer's shelf life of KI is 3-5 years. To store the KI properly, you should protect it from direct light, moisture, heat, and air.