

## Iodine Sources & Chelating Agents for Radiation Protection

Due to overwhelming inquiries about the radiation from the reactor explosions in Japan, I have put together a quick info sheet about what supplements to take to protect yourself. This is not a complete what-to-do list for nuclear fallout, it is about guarding your thyroid from immediate and permanent damage from radioactive forms of iodine that are one of the primary types of radiation pollution. These particles attach to any available iodine receptor in your thyroid, so it is critical to fill those receptors with non-radioactive iodine BEFORE exposure, and keep them filled as long as there is still radiation present in the atmosphere. It is never too late to start mitigating the damage as long as Fukushima is still emitting waves of radiation, and after 2 years the levels have continued unabated.

Because the reactors in Japan that exploded are not simple uranium reactors, there is a variety of elements being released. For this reason, I also recommend taking chelating agents and free-radical scavengers (anti-oxidants) daily until all radiation exposure is past; **selenium, chlorophyll, vitamin B3 (niacin), vitamin C, vitamin E, glutathione**, all kinds of **dietary fiber** to keep your digestive system clean and moving quickly (**flax seeds** are a wonderful source of soluble and insoluble fiber with omega-3 as a side bonus), activated **charcoal and bentonite clay**. Another excellent resource for chelation is **zeolite**, which can be taken internally, fed to farm animals, and spread into your gardens to neutralize radioactive elements. Also, keep your immune system in high gear! **Probiotics** of all kinds (beneficial digestive bacteria, like acidophilus) are going to be important, as well as other immune boosters such as **herbs**, certain **mushrooms** (like reishi and shiitake), **vitamin D3** (no less than 5,000 IU per day), and **zinc**. Most of these supplements are available at your health food store, but do not wait - ideally you need these **before** the radiation affects you, and it is hitting the Pacific Northwest hard.

I have included information below from a trusted nutrition site about food sources of iodine and selenium, but keep in mind that the dosing information is for normal circumstances, not for radiation protection purposes. During times of heavy radiation exposure, the amounts of iodine recommended are up to almost 1,000 times higher than the normal daily intake.

### Hydration

Lots of good clean water is also very important now; do not let yourself get dehydrated for any reason. One important component of maintaining hydration is your electrolyte levels. Ionizing radiation can deplete your sodium, potassium, magnesium, and calcium to critical levels. If you are taking adequate vitamin D it tends to protect your calcium, but the other 3 critical electrolytes may still suffer. Sea salt is the best choice for sodium, Epsom Salt (magnesium sulfate) soaks easily into your skin when added to bathwater or rubbed on as a strong solution and is cheap and readily available at any grocery or drug store, and potassium is available in many common foods such as spinach, chard, all cruciferous vegetables, mushrooms, papaya, beets, asparagus, and many more (more if they are eaten raw). Coconut water is one of the best sources of both potassium and magnesium, and with a pinch of sea salt and a little blackstrap molasses added, it makes an electrolyte drink that puts the commercial sports drinks to shame.

### Chelation

Normally, many health experts recommend taking chelated minerals for nutrition. In the case of using minerals for radiation protection, that general rule reverses and the less-expensive synthetic or "pure"

forms of the minerals will work better for this purpose. You want the minerals to be chemically available to act as chelating agents to bind to radioactive elements and take them out of your system. This is also why you want your bowels to move well, and not let these toxins stay in your system once the minerals have done their work to bind them.

## **IODINE SOURCES**

There are already reports of iodine being in short supply. There are many forms, and all of them are useful. The iodine typically given out in pills for radioactive fallout is potassium iodide (the same kind used in tiny amounts to supplement iodized salt), in pills from 85 mg to 150 mg. The normal daily amount needed is only 150 mcg (micrograms) so the amount given during radiation exposure is 500-1,000 times the usual requirements of our bodies. Can this be dangerous? In some cases, yes, especially for people who are allergic to iodine. Toxicity information is included below.

### ***There are many other sources of iodine, however, and they all work!***

#### **Topical:**

Betadine, povidone iodine, "triodine" wash, iodine wound tincture, and all of the other iodine-based solutions used for topical application will absorb into your skin and provide iodine. Apply small amounts to the inner skin surfaces like inside your arms and legs and on your belly, where the skin is thinner and more permeable. It will make an ugly yellow-brown stain - GOOD, leave it on, do not rinse any of it off. Try not to let it get on your clothing. In only a few hours it will absorb right in and the stain will be faded or completely gone from your skin (but not clothes!). If you are very deficient in iodine, which many of us are, it absorbs faster. Do this starting NOW, and daily until all risk is definitely gone. You can put some of this on your pets (for small animals like dogs and cats soak a few drops into the skin along their back, or more for large animals like horses).

Where to get it: drug stores and grocery stores in the first-aid aisles, usually somewhere near the rubbing alcohol. If they are all sold out, try the feed stores! The iodine for veterinary use is exactly the same stuff, and usually reasonably priced.

#### **Foods:**

Sea vegetables of all kinds!!! Also other sea foods, such as shrimp and oysters. Do not, however, buy and eat seafood from the areas which are being affected by the radiation! Pacific seafoods are now likely to be contaminated (dangerously high levels of radiation are being detected in canned Pacific tuna and other foods), so Atlantic sources are best.

**Kelp** is the very best source, and the least likely to cause any kind of toxicity or allergic reaction. It is available at any health food store in granules or powder, and in capsules at most grocery stores that have a nutrition section. Be very generous with the kelp; I recommend taking it under normal circumstances for nutrition, and during radiation exposure it is a must. It contains not only iodine but many trace minerals and vitamins that will help chelate radioactive toxins, bind free radicals created by radiation, and boost your metabolism and immune system. It is delicious used in cooking as a seasoning, but add it at the last minute so you do not cook out the nutrients. (*Limited amounts of kelp and dulse tincture are available for pregnant clients on my website while supplies last, and are included in the herbal Pregnancy blends.*)

Sushi wraps are a good seaweed source, and you don't have to be a sushi chef to use them; they can

be munched on dry as a tasty snack. Dulse is another seaweed that is extremely high in iodine, and is used to flavor things like Asian soups; it can be sprinkled on rice, salads, into gravies, etc. Spirulina and blue-green algae can be taken in capsules or blended into smoothies.

Keep in mind that many good food sources of iodine may soon be contaminated, like yogurt, eggs, and cheeses. For more food sources, see below.

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## **From The George Mateljan Foundation for The World's Healthiest Foods, information about intake of iodine under normal non-radiation circumstances:**

### **Iodine**

Concentrated food sources of iodine include **sea vegetables**, yogurt, cow's milk, eggs, strawberries and mozzarella cheese. Fish and shellfish can also be concentrated sources of iodine.

### **Toxicity Symptoms**

What are toxicity symptoms for iodine?

Accidental overdose of iodine from medications or supplements in amounts exceeding one gram (NOTE: one gram is 1,000,000 mcg or 1,000 mg) may cause burning in the mouth, throat and stomach and/or abdominal pain, nausea, vomiting, diarrhea, weak pulse, and coma.

It is difficult to take in too much iodine from food sources alone. It is estimated that men and women consume at most 300 mcg and 210 mcg of iodine per day, respectively. In general, even **high intakes of iodine from food are well-tolerated by most people**.

However, in certain circumstances, excessive consumption of iodine can actually inhibit the synthesis of thyroid hormones, thereby leading to the development of goiter (enlargement of the thyroid gland) and hypothyroidism. Excessive iodine intake may also cause hyperthyroidism, thyroid papillary cancer, and/or iodemia (a serious skin reaction).

In an attempt to prevent these symptoms of iodine toxicity, the Institute of Medicine established the following Tolerable Upper Intake Levels (TUL) for iodine:

- 1-3 years: 900 mcg
- 4-8 years: 300 mcg
- 9-13 years: 600 mcg
- 14-18 years: 900 mcg
- 19 years and older: 1,100 mcg
- Pregnant women 14-18 years: 900 mcg
- Pregnant women 19 years and older: 1,100 mcg
- Lactating women 14-18 years: 900 mcg
- Lactating women 19 years and older: 1,100 mcg

It is important to note that if you have an autoimmune thyroid disease (for example, Grave's disease or Hashimoto's disease) or if you have experienced an iodine deficiency at some point in your life,

you may be more susceptible to the dangers of excessive iodine consumption, and may, therefore, need to monitor your intake of iodine more carefully.

### **Factors that Affect Function**

What factors might contribute to a deficiency of iodine?

Since absorption of iodine from the digestive tract is very thorough, deficiency of iodine typically occurs from too little intake of iodine-containing foods. However, there has been some controversy surrounding the impact of diet not on iodine absorption, but on iodine utilization by the thyroid gland. Since the thyroid requires iodine to make thyroid hormones, this utilization is essential. Two groups of substances found in food - isoflavones, most commonly found in soy foods, and thiocyanates, most commonly produced in the body from glucosinolates found in cruciferous vegetables like broccoli - have been shown to interfere with iodine utilization by the thyroid gland, but only under very specific circumstances. These circumstances involve simultaneous dietary deficiency of iodine or selenium (or both) and imbalanced overall dietary intake. We're not aware of any evidence showing problems with iodine metabolism by the thyroid gland when either soy foods or cruciferous vegetables are eaten in moderate amounts in an overall balanced diet that also contains appropriate amounts of iodine and selenium. Since soy foods and cruciferous vegetables provide so many well-documented health benefits, we do not believe there is ordinarily any reason to eliminate these foods from the diet for iodine-related reasons. However, for individuals with a history of thyroid problems, poor dietary balance and deficient intake of iodine and/or selenium, we recommend consultation with a healthcare provider to decide about the role of these foods in health support.

### **Drug-Nutrient Interactions**

What medications affect iodine?

Amiodarone, a drug most commonly sold under the brand name Cordarone (TM), is sometimes used to treat irregular heart beat. This medication contains iodine and can disrupt proper thyroid function.

Similarly, erythrosine, a red coloring agent commonly used in foods and medications, also contains significant amounts of iodine and may also impact thyroid activity.

### **Nutrient Interactions**

How do other nutrients interact with iodine?

The conversion of thyroxine (T4) to triiodothyronine (T3) requires the removal of an iodine molecule from T4. This reaction requires the mineral selenium. The iodine molecule that is removed gets returned to the body's pool of iodine and can be reused to make additional thyroid hormones.

If your body is deficient in selenium (see below for info on selenium sources), the conversion of T4 to T3 is slowed, and less iodine is available for the thyroid to use in making new hormones.

Animal studies have shown that arsenic interferes with the uptake of iodine by the thyroid, leading to goiter. In addition, dietary deficiency of vitamin A, vitamin E, zinc and/or iron can exaggerate the effects of iodine deficiency.

### **Health Conditions**

What health conditions require special emphasis on iodine?

Iodine may play a role in the prevention and/or treatment of the following health conditions:

- Cognitive impairment
- Cretinism

- Fibrocystic breast disease
- Goiter
- Hyperthyroidism
- Hypothyroidism
- Multiple miscarriages

## Form in Dietary Supplements

What forms of iodine are found in dietary supplements?

The elemental form of iodine is available in dietary supplements as iodine caseinate and in products that contain kelp. Many supplements contain iodine complexed with potassium or sodium, called potassium iodide or sodium iodide, respectively.

## Food Sources

What foods provide iodine?

The amount of iodine found in most natural foods is typically quite small and varies depending on environmental factors such as the soil concentration of iodine and the use of fertilizers. Some of the richest food sources of iodine are often processed foods that contain iodized salt, and breads that contain iodate dough conditioners.

**Sea vegetables are an excellent source of iodine.** Yogurt, cow's milk, eggs, and strawberries are very good sources of iodine. Good sources include mozzarella cheese.

Fish and shellfish require their own special category when it comes to iodine content, because the amount of iodine they contain is not always easy to predict. For example, the amount of iodine found in fish may not match up very predictably with the amount found in their home waters, or even with their diet. Four ounces of very low iodine fish might only provide about 70 micrograms of iodine, or less than half of the adult RDA. By contrast, four ounces of very high iodine fish might contain as much as 1,000 micrograms of iodine - an amount just below the Tolerable Upper Limit (UL, or safety level) of 1,100 micrograms.

Due to the great variability in fish iodine content, and the relative lack of good information for consumers to base their nutritional decisions in this area, we would not recommend reliance on fish alone to provide all of your dietary iodine needs. However, you can count on getting iodine from most fish, and on any one particular day, we would recommend thinking about a 4-6 ounce fish meal serving as providing at least 50% of your iodine needs. Conversely, if you are trying to greatly restrict your iodine intake, you might want to eat fish on a less frequent basis to lower your risk of iodine intake above the RDA level.

## Public Health Recommendations

What are current public health recommendations for iodine?

In 2000, the Institute of Medicine at the National Academy of Sciences developed new Dietary Reference Intakes for iodine. Adequate Intakes were established for children up to one year old, and Recommended Dietary Allowances were determined for all people over one year old. These recommendations appear below:

- 0-6 months: 110 mcg
- 7-12 months: 130 mcg
- 1-8 years: 90 mcg
- Boys 9-13 years: 120 mcg

- Girls 9-13 years: 120 mcg
- Boys 14-18 years: 150 mcg
- Girls 14-18 years: 150 mcg
- Men 19 years and older: 150 mcg
- Women 19 years and older: 150 mcg
- Pregnant women 14 years and older: 220 mcg
- Lactating women 14 years and older: 290 mcg

In an attempt to prevent these symptoms of iodine toxicity, the Institute of Medicine established the following Tolerable Upper Intake Levels (UL) for iodine:

- 1-3 years: 900 mcg
- 4-8 years: 300 mcg
- 9-13 years: 600 mcg
- 14-18 years: 900 mcg
- 19 years and older: 1,100 mcg
- Pregnant women 14-18 years: 900 mcg
- Pregnant women 19 years and older: 1,100 mcg
- Lactating women 14-18 years: 900 mcg
- Lactating women 19 years and older: 1,100 mcg

For more details on this, see the Toxicity Symptoms section above.

## **Selenium**

What can high-selenium foods do for you?

- **Protect cells from free-radical damage**
- Enable your thyroid to produce thyroid hormone
- Help lower your risk of joint inflammation

Brazil nuts are one of the most concentrated food sources of selenium, featuring about 70-90 micrograms per nut. Other excellent sources of selenium include button mushrooms, shiitake mushrooms, cod, shrimp, snapper, tuna, halibut, calf's liver, and salmon.

### **How it Functions**

What is the function of selenium?

#### **Prevention of oxidative stress**

Although humans have to breathe oxygen to stay alive, oxygen is a risky substance inside the body because it can make molecules overly reactive. When oxygen-containing molecules become too reactive, they can start damaging the cell structures around them. In chemistry, this imbalanced situation involving oxygen is called oxidative stress.

**Selenium helps prevent oxidative stress by working together with a group of nutrients that prevent oxygen molecules from becoming too reactive. This group of nutrients includes vitamin E, vitamin C, glutathione, selenium, and vitamin B3 (niacin).**

In many instances of heart disease, for example, where oxidative stress has been shown to be the source of blood vessel damage, low intake of selenium has been identified as a contributing factor to

the disease. Similarly, in rheumatoid arthritis, where oxidative stress damages the area inside and around the joints, dietary deficiency of selenium has been shown to be a contributing cause.

### **Support of the thyroid gland**

In addition to iodine, selenium is a critical mineral for maintaining proper function of the thyroid gland. In order for the thyroid to produce the most active form of its hormone (a version of thyroid hormone that is called T3), selenium is not only essential, but also helps regulate the amount of hormone that is produced.

### **Cancer prevention**

Accumulated evidence from prospective studies, intervention trials and studies on animal models of cancer have suggested a strong inverse correlation between selenium intake and cancer incidence. Several mechanisms have been suggested to explain the cancer-preventive activities of selenium. Selenium has been shown to induce DNA repair and synthesis in damaged cells, to inhibit the proliferation of cancer cells, and to induce their apoptosis, the self-destruct sequence the body uses to eliminate worn out or abnormal cells. In addition, selenium is incorporated at the active site of many proteins, including glutathione peroxidase, which is particularly important for cancer protection. One of the body's most powerful antioxidant enzymes, glutathione peroxidase is used in the liver to detoxify a wide range of potentially harmful molecules. When levels of glutathione peroxidase are too low, these toxic molecules are not disarmed and wreak havoc on any cells with which they come in contact, damaging their cellular DNA and promoting the development of cancer cells.

### **Factors that Affect Function**

What factors might contribute to a deficiency of selenium?

Dietary deficiency is the most common cause of selenium deficiency. Because plant content of selenium is so heavily dependent on the selenium content of the soil, researchers have been able to identify different areas of the world where selenium deficiency is particularly common.

For example, several areas of Africa, Russia, New Zealand, and China have been identified as high-risk selenium deficiency areas. In the United States, parts of the **Pacific Northwest**, parts of the Great Lakes region moving eastward toward the New England states, and parts of the Atlantic Coast have also been identified as selenium-deficient regions. Living in these regions and eating foods grown within them could contribute to risk of selenium deficiency.

### **Drug-Nutrient Interactions**

What medications affect selenium?

Glucocorticoids are a widely-used family of anti-inflammatory drugs based on a prototype substance called cortisol. In the United States, cortisol-based anti-inflammatory drugs are available under 70 different brand names. Many of these medications are based on one of the three major cortisol subtypes that consist of prednisolone, dexamethasone, and triamcinolone. All of these medications can reduce the body's supply of selenium.

### **Nutrient Interactions**

How do other nutrients interact with selenium?

Selenium is indirectly responsible for keeping the body's supply of at least three other nutrients intact: these three other nutrients are vitamin C, glutathione, and vitamin E. Although the chemistry of these relationships is complicated, it centers around an enzyme (protein molecule in the body that helps

"jump start" a chemical reaction) called glutathione peroxidase. This enzyme cannot function without selenium.

Both iron deficiency and copper deficiency appear to increase the risk of selenium deficiency.

### Form in Dietary Supplements

What forms of selenium are found in dietary supplements?

Selenium can be purchased as a dietary supplement in one of two basic forms: chelated or non-chelated. "Chelated" means connected with another molecule. In the case of selenium, the most common chelates fall into the category of amino acid chelates. The most widely-available are selenomethionine and selenocysteine.

Supplemental selenium is also available in non-chelated form. Here the most widely available choices are sodium selenate and sodium selenite. Although all forms of selenium described above are fairly well absorbed by the body, some studies show a slight edge to selenomethionine over selenocysteine, selenocysteine over sodium selenate, and sodium selenate over sodium selenite.

Selenized yeast is a more food-like form of selenium also available in supplemental form.

### Food Sources

What foods provide selenium?

It is important to remember that the selenium content of food is highly variable because it depends so heavily on soil conditions. In fact, some researchers have concluded that it is not possible to create a valid list of foods and their selenium content for this very reason. While soil conditions affect plant foods most directly, they also affect animal foods, since most animals depend upon plants for their diet.

**Brazil nuts** are the most highly concentrated source of selenium. In fact, scientists have shown that a daily Brazil nut is a better source of the mineral than taking a supplement. New Zealand researchers compared Brazil nuts' efficacy to that of selenomethionine supplements in increasing selenium status in 59 New Zealand residents with low selenium (plasma selenium concentrations < 1.27 micro mol/L). ... Not only was consumption of two Brazil nuts each day as effective for increasing selenium status and enhancing GPx activity as 100 micrograms of selenomethionine per day, but just *one* Brazil nut per day would have been sufficient to raise dietary selenium intake to within recommended intake levels for the mineral. The researchers pointed out that food sources are always preferable to supplementation for improving the nutritional status of a population because they are sustainable, less expensive and have a lower risk of toxicity. The authors did, however, warn that Brazil nuts are not uniform in their selenium content and may contain much more or much less than the estimated 50 micrograms per nut. No more than one or two Brazil nuts should be consumed daily to avoid excessive accumulation of selenium in tissues. (Thomson CD, Chisholm A, et al., *Am J Clin Nutr*) Practical Tip: Why take expensive supplements? Enjoy just one Brazil nut each day and ensure your selenium levels remain OK.

Grown or raised under ideal soil conditions, button **mushrooms, shiitake mushrooms, cod, shrimp, snapper, tuna, halibut, calf's liver, and salmon** are also excellent sources of selenium.

Very good sources of selenium include **chicken's eggs, lamb, barley, sunflower seeds, turkey, mustard seeds, and oats**. Other good sources: **whole rye, garlic, brown rice, blackstrap molasses, asparagus, spinach**.

### Public Health Recommendations



What are current public health recommendations for selenium?

Adequate Intake (AI) levels for selenium, set in 2000 by the Institute of Medicine at the National Academy of Sciences, are as follows:

- Males and females, 0-6 months: 15 micrograms
- Males and females, 6-12 months: 20 micrograms

Recommended Dietary Allowances for selenium, set in 2000 by the Institute of Medicine at the National Academy of Sciences, are as follows:

- Males and females, 1-3 years: 20 micrograms
- Males and females, 4-8 years: 30 micrograms
- Males and females, 9-13 years: 40 micrograms
- Males and females, 14 years and older: 55 micrograms
- Pregnant females: 60 micrograms
- Lactating females: 70 micrograms

The Institute of Medicine set a tolerable upper limit (UL) for selenium of 400 micrograms per day for men and women 19 years and older. For more details on this, see the Toxicity Symptoms section above.

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*Much of the following information was obtained from a retailer of KIO3, and has good dosing information and other facts about how iodine protects the thyroid from radiation, and what cautions should be observed when taking purified iodine sources internally:*

## **KIO3 (Potassium Iodate) Pronounced: Kay-Eye-Oh-Three**

*Each Bottle contains 90 tablets of KIO3. Each tablet contains 85mg of the active ingredient Potassium Iodate, a thyroid blocker. Store in a dry, cool, place where children cannot reach them.*

**If there is a "nuclear event," and you are down-wind, you need to take KIO3 or KI before the radioactive plume reaches you.**

Dosage:

- Adults 2 tablets Daily.
- Children 3 to 12 years----1 tablet Daily.
- Children 1 month to 3 years----1/2 tablet Daily.
- Newborn to 1 month----1/4 to 1/2 tablet Daily.
- Pets ---- Weight of Pet Equals Dosage to a small child. Animals 1-6 lbs. 1/8 Tablet Daily. Pets 6-15 lbs 1/4 Tablet. Pets between 15-60 lbs 1/2 Tablet Daily. Pets 60-120 lbs 1 tablet daily. Pets 120-200 lbs 1 1/2 tablets. Pets 200 to 600 lbs 2 tablets daily.

**BEFORE YOU TAKE KIO3 (or any Thyroid Blocker) consider these questions...**

- Is it a true radiation emergency?
- Are you allergic to iodine?
- Do you suffer from a skin disease?
- Do you suffer from inflammation of the blood vessels?
- Are you being treated for an overactive thyroid?
- Do you have problems with your kidneys?

- Are you being treated for problems with your adrenal glands?
- Are you suffering from dehydration due to extreme heat?
- Are you currently taking a diuretic?

**IF YOU ANSWERED YES, TALK TO YOUR DOCTOR BEFORE TAKING KI OR KIO3 POTASSIUM IODATE.**

- **ONLY TO BE TAKEN BEFORE A RADIOACTIVE THREAT/NUCLEAR FALLOUT.**
- **DO NOT TAKE LIKE A VITAMIN NOR DAILY SUPPLEMENT.**
- **TAKE PRIOR TO IMMEDIATE RADIATION EXPOSURE ONLY.**

*\*Authorities may determine that repeat or longer dosing may be necessary.*

*\*Under heavy plume conditions 1/2 tablet may be given to newborns as a starting dose. It is extremely important that young children be taken out of harm's way as soon as possible.*

*For young children or newborn babies, the 1/2 to 1/4 tablet may be crushed and taken mixed with milk, juice or water.*

If you are pregnant or breast-feeding you should normally not take more than two doses for a minor "reactor leak". Babies up to a month old should only received one dose for a minor "reactor leak". However, this should be determined by authorities.

If you swallow a lot of the tablets all together, or if you think a child has accidentally swallowed any of the tablets, contact your nearest hospital emergency room or Doctor immediately.

## **AFTER TAKING POTASSIUM IODATE**

Potassium Iodate can be taken by the majority of people, without any problems.

Although rarely, hypersensitivity reactions such as rash, swollen salivary glands, headache, wheezing or coughing, and stomach upsets may occur. If you have these or any other effects while taking Potassium Iodate or Potassium Iodide tell a doctor immediately.

Keep In mind that if you are allergic to any Iodine product, then you will also be allergic to Radioactive Iodine. Please consult your doctor if you have concerns.

## **STOCK UP WHILE SUPPLIES LAST**

If you do not have KIO3 or KI at the time of the event, then it is most likely too late to take a thyroid blocker unless the authorities can reach you with the proper dose during fallout conditions.

Both KIO3 and KI are thyroid blockers and are used world-wide to help prevent radioactive damage to the thyroid in the event of a nuclear incident.

If a nuclear bomb detonates or a nuclear power plant is compromised or has a melt-down, then radioactive iodine is always released into the air and environment.

## **Protects the thyroid**

Radioactive Iodine (I-131) can destroy the thyroid of humans and animals. Even small amounts of I-131 can cause cancer of the thyroid. By taking KIO3 the thyroid becomes saturated with “good iodine” and cannot absorb the “bad iodine” I-131. Yes, animals or pets can take KIO3 too.

## **KIO3 FAQ**

### **FAQ #1: What is the difference between KI and KIO3?**

**KI causes cancer** in lab animals and **KIO3 does not.**

### **FAQ #2: Is KIO3 effective?**

Yes. It is used worldwide in Ireland, Scotland, the USA, Asia and Arab countries.

### **FAQ #3: Does KIO3 have a long shelf-life?**

Yes, a very long shelf-life. Most countries are replacing the KI in salt with KIO3 because heat does not affect KIO3 significantly. KIO3 tablets have an extended shelf-life of 8 or more years.

### **FAQ #4: Do other countries recommend KIO3 being stocked by the citizens?**

As a matter of fact, Ireland, Scotland and other countries do. In fact a study was done in Scotland on that very question.

### **FAQ #5: Is KIO3 FDA Approved?**

KIO3 is FDA approved.

## **Potassium Iodate Compared to Potassium Iodide Study**

Radiation Medicine Centre, B. A. R. C., Parel, Bombay.

Potassium iodide is the preferred thyroid blocker for personnel handling radioiodine and is recommended as a prophylaxis for the population in the near-field of a nuclear reactor which would be likely to be exposed to radioiodine in an accidental breach of containment.

However, in hot and humid climates, this hygroscopic chemical has a poor shelf life due to hydrolytic loss of iodine vapors. On the other hand, another iodine-rich salt, potassium iodate (KIO3), is quite stable and has a much longer shelf life.

The present study compares potassium iodide and KIO3 as thyroid blockers and examines the appropriate time at which they should be administered in case of radioiodine exposure. Either of the two were given in recommended dosage (100 mg stable iodine per 70 kg body weight) at -2, 0, +2, +4, +6, and +8 h after administration of tracer quantities of radioiodine (131I) to age-, weight-, and sex-matched rats.

131I uptake in thyroid was measured 24 h after its administration in the experimental animals and compared with placebo administered controls. Results suggest that KIO3 is as effective a thyroid blocking agent as potassium iodide.

In comparison to controls, 24-h thyroid uptake of 131I can be substantially reduced if potassium iodide or KIO3 is given to the animals within 2-4 h after exposure to 131I. Another noteworthy observation is that KIO3 is effective even at 8 h when administered at twice the usual dosage in comparison to the single dose, which does not show appreciable thyroid blocking properties after 8 h.