

# AAPCC Japan Earthquake 2011: Nuclear Concerns Master FAQ's

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Compilation of information provided by PCs from

California , Colorado, Illinois, Ohio, Oklahoma, and Michigan information and CDC, NRC, and REAC/TS Information

## General Information FAQs

### G1. What is the impact of the event in Japan on people in the United States?

At this time, there is no indication that materials from the incidents in Japan have the potential to have any significant radiological effect on the U.S.

Given the thousands of miles between the two countries, Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity. ) Note: Japan is 5478 miles from Los Angeles, 3859 miles from Honolulu, and 3302 miles from Anchorage.)

[<http://pbadupws.nrc.gov/docs/ML1107/ML110720002.pdf>] NRC Press Release 13 March 2011

### G2. What's the risk from the current nuclear power emergency in Japan?

At present, the Nuclear Regulatory Commission (NRC) says Japan's nuclear emergency presents *no danger* to the United States. The NRC is involved in the Japan emergency both at home and in Japan.

### G3. What is being done to assess the risk?

- The situation is being monitored closely in conjunction with many state and federal partners. This monitoring will continue to follow the effects of the damaged nuclear power plants as long as there are potential concerns.
- As the Nuclear Regulatory Commission has stated, we do not expect to see radiation at harmful levels reaching the U.S. from damaged Japanese nuclear power plants. As part of the federal government's continuing effort to make our activities and science transparent and available to the public, the Environmental Protection Agency (EPA) will continue to keep all RadNet data available in the current online database. EPA is working with its federal partners and has deployed additional monitors to Hawaii, Alaska, Guam and the Northern Mariana Islands.

- As always, EPA is utilizing this existing nationwide radiation monitoring system, RadNet, which continuously monitors the nation's air and regularly monitors drinking water, milk and precipitation for environmental radiation. The RadNet online searchable database contains historical data of environmental radiation monitoring data from all fifty states and U.S. territories.
- EPA monitors are not picking up any harmful levels of radiation on our RadNet monitors across the US.

#### **G4. Is there a plan in place to respond to a radiological emergency?**

Yes, local and state health departments as well as emergency response agencies all work closely with the federal partners, including the Environmental Protection Agency, US Department of Energy, FEMA and Nuclear Regulatory Commission. In the event that a threat to the United States is detected, a coordinated response will rapidly follow.

#### **G5. What are the harmful types of radiation that might be released from a damaged nuclear reactor?**

**There are 3 primary types of ionizing radiation to be concerned about, gamma, beta and alpha emitters.**

- **Gamma radiation is a high energy wave of radiation (similar to x-rays) that readily penetrates clothing and skin but is only a threat to those in the immediate area of the reactor.**
- **Beta radiation particles can be broadcast via the atmosphere. They pass a few centimeters through intact skin, but are generally stopped by a layer of clothing. The biggest threat is if they are inhaled, ingested or deposited on a wound.**
- **Alpha radiation particles can be broadcast via the atmosphere. They may be stopped by a sheet of paper or even intact skin. Like beta particles, the biggest threat is if they are inhaled, ingested or deposited on a wound.**

#### **G6. What are the health effects of radiation exposure?**

- Radiation *exposure* does not necessarily translate into radiation *poisoning*. Radiation must be incorporated into the body in sufficient quantities before harmful effects occur.
- The risks from radiation always depends on the amount of radiation in the atmosphere, the distance from the radiation source, and whether there is any shielding between the source and a person.
- Radiation can be dangerous if the dose of radiation exceeds a certain level. If a nuclear power plant is damaged, adverse health effects are most often seen among the first responders and nuclear power plant workers. This is because they are working in the

accident area where they are more likely to be exposed to higher levels of radiation that may cause immediate effects. Some of the immediate effects show up as skin redness, hair loss, and burns.

- In a nuclear power plant accident, only those individuals relatively close to the source are exposed to enough radiation to cause these effects. The thousands of miles that separate the US from Japan will act as a buffer to the radiation that has been released as a result of this accident.

### **G7. What are the long-term effects from radiation exposure?**

- Exposure to high levels of radiation could increase the risk of cancer. For instance, among the atomic bomb survivors after World War II, the risk of leukemia increased a few years after radiation exposure. The risks of other cancers increased after more than 10 years following the exposure to high amounts of radiation.
- The type and estimated total dose of radiation are used to assess human risk. Until the radiation is analyzed by experts, there is not enough information to predict the potential impacts of the radiation upon people and the environment.

### **G8. Is it true that we are all exposed to radiation daily?**

- Yes. It is important to understand that people are exposed to natural radiation on a daily basis. The radiation comes from the sun, from natural materials found in the ground, water and air, from our televisions, cell phones and computers, and from every structure around us. Levels of exposure to natural radiation also depend on local geology and elevation.
- People can also be exposed to radiation from chemotherapy or medical equipment such as X-ray machines.

### **G9. How does radiation become a health hazard during a nuclear power plant accident?**

- If radiation is released from a nuclear power plant during an accident, the radioactive particles might become airborne.
- Those particles that drift in the atmosphere could settle on water and land. If the particles come in contact with people, there is a possibility of radiation contamination both internal (breathing and eating) and external.
- It is important to monitor the instructions from the authorities to determine if there is a risk. You may be advised to stay indoors for a period of time.
- If there has been external contamination, such as radioactive particles falling on the skin, you may be advised to take a shower.

### **G10. Who is at highest risk of exposure in the Japanese nuclear power plant accident?**

Nuclear power plant workers may be exposed to higher radiation doses due to their professional activities and direct exposure to radioactive materials inside the power plant.

### **G11. What will public health be doing in an emergency involving radiation?**

- In the case of a nuclear power accident, protective actions may be implemented within an area around the site. Those could include staying indoors, and in more extreme cases, evacuation.
- The public health impacts depend on the amount of radioactivity released in the atmosphere and the prevailing weather conditions such as wind and rain. It may be helpful to evacuate people within a certain distance of the nuclear power plant; to provide shelter in order to reduce exposure; and to provide potassium iodide tablets or liquid, commonly called KI, for people to take to reduce the risk of thyroid cancers. These steps are determined by medical authorities after consultation with radiation experts. KI should only be taken on the recommendation of state and Federal public health officials.
- If warranted, steps such as restricting food use of vegetables and dairy products produced in the area of the power plant can help reduce exposure.

### **G12. How can I protect myself?**

- It is important to remember that according to the Nuclear Regulatory Commission, there is no risk to anyone in the United States at this time. The Environmental Protection Agency has permanent radiation monitoring stations on the West coast and stations have been set up in Hawaii. The EPA is keeping federal agencies informed.
- Keep yourself and your family informed by obtaining accurate information. Know where to get information, such the Centers for Disease Control and Prevention, the Nuclear Regulatory Commission and your state health department, rather than relying on unverified websites, where invalid information may spread quickly.
- Follow the instructions of your local government's authorities after any emergency.

### **G13. What is happening with U.S. citizens in Japan?**

- First, we are bringing all available resources to bear to closely monitor the situation, and to protect American citizens who may be in harm's way. Even as Japanese responders continue to do heroic work, we know that the damage to the nuclear reactors in Fukushima Daiichi plant poses a substantial risk to people who are nearby. That is why, we have called for an evacuation of American citizens who are within 50 miles of the plant. This decision was based upon a careful scientific evaluation and the guidelines that we would use to keep our citizens safe here in the United States, or anywhere in the world.

- Beyond this 50-mile radius, the risks do not currently call for an evacuation. But we do have a responsibility to take prudent and precautionary measures to educate those Americans who may be endangered by exposure to radiation if the situation deteriorates. That's why the President authorized the voluntary departures of family members and dependents of U.S. officials working in northeastern Japan.
- All U.S. citizens in Japan should continue to carefully monitor the situation and follow the guidance of the U.S. and Japanese governments. And those who are seeking assistance should contact our embassy and consulates, which continue to be open and operational.

For more health information for expatriates and students living in Japan:

<http://wwwnc.cdc.gov/travel/content/news-announcements/2011-earthquake-tsunami-expatriates-students.aspx>

#### **G14. Is there a risk to the US food supply?**

- Based on current information, there is no risk to the U.S. food supply. FDA is closely monitoring the situation in Japan and is working with the Japanese government and other U.S. agencies to continue to ensure that imported food remains safe. FDA already has a very robust screening process for imports and has staff in place at the ports to monitor incoming products. We do not have concerns with the safety of imported food products that have already reached the U.S. and that are in distribution. As part of our investigation, we are collecting information on all FDA regulated food products exported to the U.S. from Japan, including where they are grown, harvested, or manufactured, so we can further evaluate whether, in the future, they may pose a risk to consumers in the U.S. As FDA assesses whether there is a potential health risk associated with FDA-regulated food products imported from Japan, we will develop a monitoring strategy that may include increased and targeted product sampling at the border.

#### **G15. What systems does FDA have in place to protect the US food supply?**

- FDA has a team of more than 900 investigators and 450 analysts in the Foods program who conduct inspections and collect and analyze product samples. FDA oversees the importation of the full range of regulated products, including food and animal feed, among other responsibilities.
- Altogether, FDA electronically screens all import entries and performs multiple analyses on about 31,000 import product samples annually. During Fiscal Year (FY) 2010, the Agency performed more than 175,000 food and feed field exams and conducted more than 350 foreign food and feed inspections.

- FDA works to inspect the right imports—those that may pose a significant public health threat – by carrying out targeted risk-based analyses of imports at the points of entry.
- If unsafe products reach our US ports, FDA’s imports entry reviews, inspections, and sampling at the border help prevent these products from entering our food supply.
- Although FDA doesn’t physically inspect every product, the Agency electronically screens 100 percent of imported foods products before they reach our borders. Based on Agency risk criteria, an automated system alerts FDA to any concerns. Then inspectors investigate further and, if warranted, do a physical examination of the product.
- FDA also works cooperatively with U.S. Customs and Border Protection and other agencies to help identify shipments that may pose a threat.

**G16. What products come to the US from Japan?**

- Imports from Japan include human and animal foods, medical devices and radiation emitting products, cosmetics, animal and human drugs and biologics, and dietary supplements. Foods imported from Japan make up less than 4 percent of foods imported from all sources. (Food products from Canada and Mexico each make up about 29 percent of all imported foods.) Almost 60 percent of all products imported from Japan are foods. The most common food products imported include seafood, snack foods and processed fruits and vegetables.

**G17. Are there dairy products that come from Japan?**

- Foods imported from Japan constitute less than 4 percent of foods imported from all sources. Dairy products make up only one-tenth of one percent of all FDA-regulated products imported from Japan. Most dairy products in the US market are produced domestically. FDA is consulting with USDA’s Animal Plant Health Inspection Service (APHIS) to ensure the continued safety of dairy products.

**G18. Are there food harvesting (fields, fisheries) or processing facilities in the area of the Fukushima nuclear reactor?**

- US FDA does not track fields or fishery areas in foreign countries, it’s important to note that the damage caused by the earthquake and ensuing tsunami has reportedly halted production prior to the explosion at the reactor.

**G19. Is there any reason for concern about radiation from these products when they are imported into the US?**

- Right now, due to the damage to the infrastructure in Japan, FDA believes that export activity is severely limited. FDA is monitoring all import records for Japan to determine when importation will resume and will conduct surveillance to assure safety. FDA does not have any concerns for products that were already in transit when the explosion occurred at the reactor.

**G20. What are the current procedures for measuring radiation contamination in food? How will these change? How will FDA ensure consumers' safety?**

- FDA has procedures and laboratory techniques for measuring radionuclide levels in food, and can also utilize the Food Emergency Response Network (FERN) (<http://www.fernlab.org/>). FERN integrates the nation's food-testing laboratories at the local, state, and federal levels into a network that is able to respond to emergencies involving biological, chemical, or radiological contamination of food. FDA is working with Customs and Border Protection (CPB) to share resources and techniques for measuring contamination. FDA has the ability to measure contamination in products and issued guidance in 1998 regarding safe levels.

**G21. Will FDA issue an import bulletin? What sort of techniques will FDA use to measure radiation in food?**

- FDA will issue an import bulletin or an assignment to the field once an assessment is completed on products and appropriate testing that can be completed. Products travel by vessel, the typical transit time for products to reach the US is about 8 days. FDA and other domestic regulatory labs have validated analytical methods to detect radiological contamination in food.

**G22. Is FDA looking at products that might have traveled *through* Japan at the time of the explosion?**

- FDA will be examining both food products labeled as having originated in Japan or having passed through Japan in transit. The same is true for raw ingredients.

**G23. How will the radiation affect fish and seafood that have not yet been fished or harvested?**

- The great quantity of water in the Pacific Ocean rapidly and effectively dilutes radioactive material, so fish and seafood are likely to be unaffected. However, FDA is taking all steps to evaluate and measure any contamination in fish presented for import into the US.

**G24. What are the chances of radiation affecting growing areas in the US? What action will FDA take to ensure the safety of consumers of those products?**

- At this time, there is no public health threat in the US related to radiation exposure. FDA, together with other agencies, is carefully monitoring any possibility for distribution of radiation to the United States. At this time, theoretical models do not indicate that significant amounts of radiation will reach the US coast or affect US fishing waters. Please see [www.epa.gov](http://www.epa.gov) for more information about monitoring efforts.

**G25. Hypothetically, if they were needed, what are the FDA-approved products for radiation exposure?**

- There are three FDA-approved potassium iodide (KI) products for use as an adjunct to other public health protective measures in the event that radioactive iodine is released into the environment. The three over-the-counter products are:
  - Iosat Tablets (130 mg), Anbex, Inc., Williamsburg, Va., <http://www.anbex.com>
  - ThyroSafe Tablets (65 mg), Recipharm AB, Jordbro, Sweden, <http://www.thyrosafe.com>
  - ThyroShield Solution (65 mg/mL), Fleming & Company Pharmaceuticals, Fenton, Mo. <http://www.thyroshield.com>

**G26. Is potassium iodide the only medication available for radiation exposure?**

- Potassium iodide is the only FDA-approved medication available for exposure to radioactive iodine. There are FDA-approved products available that increase the rate of elimination of other radioactive elements. They include:
- Calcium-DTPA and Zinc DTPA, Hameln Pharmaceuticals
  - Approved to treat known or suspected internal contamination with plutonium, americium, or curium to increase the rates of elimination.
- Radiogardase (Prussian blue insoluble capsules), HEYL Chemisch-Pharmazeutische Fabrik GmbH & Co. KG
  - Approved to treat known or suspected internal contamination with radioactive cesium and/or radioactive or non-radioactive thallium to increase their rates of elimination.

**G27. We have heard that potassium iodide is in short supply? Is that correct?**

- FDA is aware of an increased demand for KI products. FDA is working with these companies to facilitate increased production. We can't provide an exact date on when that might happen, but it will occur as quickly as possible.
- Several components of the federal government maintain stockpiles of medical supplies for emergency situations. For instance, the CDC maintains the Strategic National Stockpile for civilian use, while the Department of Defense maintains their own supplies for support of military operations. The respective federal organizations should be contacted with any additional requests about the specific items and quantities in those stockpiles. Deployment of these stockpiles is governed by policies and procedures developed by the individual organizations based on available information and potential benefits and risks to public health.

**G28. Does FDA recommend that consumers purchase potassium iodide as a protective step?**

- No. There is no public health event requiring anyone in the US to take KI because of the ongoing situation in Japan.

**G29. With exports from Japan disrupted, is there any possibility that some medical products could be in short supply?**

- FDA has been contacted by a few companies who receive product from Japan and we are working with them on their supply issues.

**G30. If I see web sites advertising potassium iodide or alternative cures, should I buy the products?**

- Due to the public concern related the nuclear incident in Japan, there has been an increased demand for drugs, such as Potassium iodide (KI), used to prevent and treat the harmful effects of radiation.

- According to the Nuclear Regulatory Commission, all the available information continues to indicate that Hawaii, Alaska, the U.S. Territories, and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.
- The FDA is alerting consumers to be wary of internet sites and other retail outlets promoting products making false claims to prevent or treat effects of radiation or products that are not FDA-approved. These fraudulent products come in all varieties and could include dietary supplements, food items, or products purporting to be drugs, devices or vaccines.
- Consumers should be wary of the following:
  - claims that a product not approved by FDA can prevent or treat the harmful effects of radiation exposure;
  - suggestions that a potassium iodide product will treat conditions other than those for which it is approved, i.e., KI floods the thyroid with non-radioactive iodine and prevents the uptake of the radioactive molecules, which are subsequently excreted in the urine;
  - promotions using words such as —scientific breakthrough, —new products, —miraculous cure, secret ingredient, and ancient remedy;
  - testimonials by consumers or doctors claiming amazing results;
  - limited availability and advance payment requirements;
  - promises of no-risk, money-back guarantees;
  - promises of an —easy fix; and,
  - claims that the product is —natural or has fewer side effects than approved drugs.
- Don't be fooled by professional-looking Web sites. Avoid Web sites that fail to list the company's name, physical address, phone number, or other contact information. For more tips for online buying, visit Buying Medicines and Medical Products Online. To determine if a particular drug is FDA approved, check The Orange Book (<http://www.accessdata.fda.gov/scripts/cder/ob/default.cfm>) or Drugs@FDA (<http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm>).
- Consumers and health care professionals are encouraged to report adverse side effects or medication errors from the use of both approved and unapproved radiation exposure products to the FDA's MedWatch Adverse Event Reporting program at [www.fda.gov/MedWatch](http://www.fda.gov/MedWatch) or by calling 800-332-1088.

### **G31. Where can I find more information?**

Nuclear Regulatory Commission Statement on Japanese Nuclear Power Plants:

<http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-046.pdf>

Radiation Contamination and Exposure:

<http://www.bt.cdc.gov/radiation/contamination.asp>.

General Information About Radiation:

<http://www.bt.cdc.gov/radiation/aboutradiation.asp>.

Fact Sheets About Radiation: <http://www.bt.cdc.gov/radiation/factsheets.asp>.

REAC/TS - Quick Reference Information – Radiation

<http://orise.orau.gov/files/reacts/radiological-terms-quick-reference.pdf>

General information about the use of Potassium Iodide, including information about use by pregnant women and children (<http://www.bt.cdc.gov/radiation/ki.asp>).

CDC Emergency Response Site for Radiation Emergencies (<http://www.bt.cdc.gov/radiation/index.asp>).

Guidance for People Living in Japan from the U.S. Embassy in Japan (<http://japan.usembassy.gov/>)

For more health information for expatriates and students living in Japan:

<http://wwwnc.cdc.gov/travel/content/news-announcements/2011-earthquake-tsunami-expatriates-students.aspx>

## Potassium Iodide (KI) FAQs

### **KI1. What is Potassium Iodide (KI)?**

- Potassium iodide (KI) is a salt form of non-radioactive iodine. Iodine is needed to make thyroid hormones. Most of the iodine in our bodies comes from the food we eat. KI is non-radioactive iodine in a medicinal form. *KI is only useful for radioactive **iodine** exposures.*

### **KI2. Why is KI used following a radiologic or nuclear event?**

- Radioactive iodine may be released into the air and be either breathed in through the lungs or ingested through contaminated food or drink. In the case of internal contamination with radioactive iodine, the thyroid gland quickly absorbs this chemical. Radioactive iodine absorbed by the thyroid can injure the gland. Because non-radioactive KI acts to block radioactive iodine from being taken into the thyroid gland, it can help protect this gland from injury.
- It is important to remember that potassium iodide (KI) works only to prevent the thyroid from taking up radioactive iodine. It is NOT a general radio-protective agent. It will NOT protect against radiation from sources other than radioactive iodine.

### **KI3. How does KI work?**

- The thyroid gland cannot tell the difference between non-radioactive and radioactive iodine and will absorb both. KI works by blocking 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 at least the next 24 hours.

Iodized table salt typically also contains between 60-100 mg KI per kg of salt. Many kelp supplements are 150 mcg iodine per tablet (the RDA), but some supplements have been found to average 1-1.2 mg of iodine per the daily dosing recommended on the label of the supplement. However, these substances do not contain enough iodine to block radioactive iodine from getting into the thyroid gland. *You should not use them as a substitute for KI.*

**KI4. When should KI be started?**

- KI must be given early in the exposure, preferably in the first 2 hours. If it is longer than 4 to 24 hours, the effect is negligible and should not be given. Because of the extreme distance between the US and Japan, health officials will have more than enough time to undertake the KI distribution process should it be warranted.

**KI5. How well does KI work?**

- Knowing that KI may not give a person 100% protection against radioactive iodine is important. How well KI blocks radioactive iodine depends on
  - How much time passes between the contamination with radioactive iodine and the taking of KI (the sooner a person takes KI, the better AFTER public health authorities have declared an emergency warranting KI),
  - How fast KI is absorbed into the blood, and
  - The total amount of radioactive iodine to which a person is exposed.
- AAPCC and public health agencies are not recommending that individuals, at this time, take prophylactic KI.

**KI6. Should I be taking potassium iodide (KI) to protect myself?**

- **No.** Potassium iodide (KI) is not warranted at this time, and can present a danger to people with allergies to iodine, shellfish or who have thyroid problems. Dosages can vary and should only be taken as advised by a PUBLIC HEALTH or a medical professional.

- Potassium iodide (KI) may have side effects even with therapeutic doses. Possible side effects can be related to the dose that you take and your health condition. Using potassium iodide can cause intestinal upset (vomiting, nausea, and diarrhea), rashes, allergic reactions, soreness of teeth and gums, inflammation of the salivary glands and hypothyroidism.
- Using homemade or KI from unapproved is risky and may result in many of the adverse reactions described above.
- If KI supplementation is deemed necessary by health officials, individuals should only take products FDA approved for radioactive iodine exposure.

## **K17. Special Populations**

- PREGNANT WOMEN and the developing fetus are particularly sensitive to the health risks of taking potassium iodide because all form of iodine cross the placenta. For example, newborn infants (less than 1 month old) who receive unnecessary doses of potassium iodide are at particular risk for developing a condition known as hypothyroidism (thyroid hormone levels that are too low). If not treated, hypothyroidism can cause brain damage.
- LACTATING WOMEN
  - Iodine (KI) is one of the few substances that is actively pumped into the milk. Most substances move into milk in a controlled process or passive diffusion so there is little or none in the milk.
  - When a mother must take KI the infant will also receive a partial dose depending on the gestational age, chronologic age, and weight. No more is needed. If the infant is older (>4 months and bigger) the infant should receive a dose calculated to age and weight only once.
  - Breastfeeding should continue and should not be stopped. This is especially true in the current disaster in Japan where breastfeeding is life saving.
  - Ruth Lawrence has graciously offered the services of the Lactation Center. It is open 9 to 4, daylight savings (EST) Monday to Friday: (585) 275-0088 for questions about breastfeeding.
- ADULTS older than 40 years have a greater chance of having allergic reactions to potassium iodide.

## ***K18. Medical conditions that may make it harmful to take KI***

Taking KI may be harmful for some people.

- You should not take KI if you:

- know you are allergic to iodine (If you are unsure about this, consult your doctor.  
NOTE: A seafood or shellfish allergy does not necessarily mean that you are allergic to iodine.
- have certain skin disorders (such as dermatitis herpetiformis or urticaria vasculitis).
- People with thyroid disease (for example, multinodular goiter, Graves' disease, or autoimmune thyroiditis) may be treated with KI. This should happen under careful supervision of a health care professional, especially if dosing lasts longer than a few days.
- In all cases, talk to your health care provider if you are not sure whether to take KI or not.

***KI9. What are the possible risks and side effects of KI?***

- When public health or emergency management officials advise the public to take KI following a radiologic or nuclear event, the benefits of taking this drug outweigh the risks. This is true for all age groups. Some general side effects caused by KI may include
  - Allergic reactions (possibly severe)
  - Transient hypothyroidism or in rare cases, hyperthyroidism
  - Intestinal upset (nausea, vomiting)
  - Rashes
  - Inflammation of the salivary glands.
- When taken as recommended, KI causes only rare adverse health effects that specifically involve the thyroid gland. In general, you are more likely to have an adverse health effect involving the thyroid gland if you
  - take a higher than recommended dose of KI,
  - take the drug for several days, or
  - have 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 a condition known as hypothyroidism (thyroid hormone levels that are too low). If not treated, hypothyroidism can cause brain damage. Infants who receive KI should have their thyroid hormone levels checked and monitored by a physician. Avoid repeat dosing of KI to newborns. Whether or not to give KI to an infant should be discussed with your health care provider.

***KI10. Where can I get KI?***

- Your Poison Center does not recommend taking KI unless an emergency has been declared.
- If it ever becomes necessary to take potassium iodide, it will be distributed by governmental agencies. The federal government's Strategic National Stockpile keeps massive supplies of FDA-approved KI and can deliver emergency equipment and supplies within 12 hours.
- Although KI is available without a prescription, the safety and efficacy of these products for the treatment of a radioactive iodine exposure has not been demonstrated. Follow the instructions of public health officials regarding obtaining and taking KI.

#### **KI11. Where can I get more information about Potassium Iodide (KI)**

The Centers for Disease Control and Prevention (CDC) has a fact sheet about KI that gives you some basic information about KI. It explains what you should think about before you or a family member takes KI. It is available at:

<http://emergency.cdc.gov/radiation/ki.asp>

### **KI Dosing Recommendations: Known Release and Exposure Risk Probable AND Public Health Officials Recommend KI.**

#### **KI12. Who really needs to take potassium iodide (KI) after a nuclear radiation release?**

- FDA guidance prioritizes groups based on age, which primarily determines risk for radioiodine-induced thyroid cancer.
- Highest Risk:
  - INFANTS
  - CHILDREN
  - PREGNANT FEMALES
  - LACTATING FEMALES
- NO Risk:
  - Individuals who have had thyroid gland ablated or removed.

#### **KI13. What are the basic treatment parameters?**

- Treat exposure victims at the lowest threshold possible (with respect to predicted radioactive dose to the thyroid). Anyone over age 18 and up to age 40 should be treated at a slightly higher threshold. Finally, anyone over 40 should be treated with KI only if the predicted exposure is high enough to destroy the thyroid and induce lifelong hypothyroidism (thyroid deficiency).

#### **KI14. What dosages of potassium iodide (KI) should be taken for specific exposure levels?**

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups				
	Predicted Thyroid exposure(cGy)	KI dose (mg)	# of 130 mg tablets	# of 65 mg tablets
Adults over 40 yrs	$\geq 500$	130	1	2
Adults over 18 through 40 yrs	$\geq 10$			
Pregnant or lactating women	$\geq 5$	65	1/2	1
Adoles. over 12 through 18 yrs*				
Children over 3 through 12 yrs				
Over 1 month through 3 years				
Birth through 1 month		16	1/8	1/4

\*Adolescents approaching adult size ( $\geq 70$  kg) should receive the full adult dose (130 mg).

**Use the dose in EITHER the 65 mg column or the 130 mg column. This dose is to be given once per day.**

Note: Individuals without thyroid glands do not need Potassium Iodide.

<http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM080542.pdf>

#### KI15. When should KI be taken?

- After a radiologic or nuclear event, local public health or emergency management officials will tell the public if KI supplementation or other protective actions are needed.
- KI supplementation is most beneficial when taken with the first few hours of exposure, but may be of benefit if started later in the setting of ongoing exposure.
- If a “plume” is expected to arrive in your area, KI supplementation should be started before the plume arrives; the goal is to saturate the thyroid gland with nonradioactive iodine first in the form of potassium iodide.

#### KI16. How long should potassium iodide (KI) be taken?

- Since KI protects for approximately 24 hours, it should be dosed daily until the risk no longer exists. Priority with regard to evacuation and sheltering should be given to pregnant females and neonates because of the potential for KI to suppress thyroid function in the fetus and neonate. *Unless other protective measures are not available, repeat dosing in pregnant females and neonates is not recommended.*
- Daily therapy beyond 7-14 days appears unnecessary in the absence of continued exposure.

**KI17. HEATH CARE PROVIDER QUESTION: Should I be recommending potassium iodide (KI) for my patients who request it?**

- As with any drug, physicians should understand the risks and benefits of KI before recommending it or prescribing it to patients. We recommend that physicians read our guidance for more information. It is available at:

<http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM080542.pdf>.

- The FDA guidance discusses the rationale and methods of safe and effective use of KI in radiation emergencies. It specifically addresses threshold predicted thyroid radioiodine exposure for intervention and dosing by age group. The recommendations for intervention are based on categories of risk for thyroid cancer, with the young prioritized because of increased sensitivity to the carcinogenic effects of radioiodine.

**KI18. What potassium iodide (KI) products are currently available?**

As of January 2005, the FDA APPROVED PRODUCTS are:

- Iosat
- ThyroSafe
- ThyroShield

Please be aware that only KI products approved by FDA may be legally marketed in the United States.

**KI19. How are these products available?**

In addition to distributing to state, local and federal agencies, Anbex, Inc., has made Iosat Tablets (130 mg) available to the general public via the Internet. For further information on KI products, you can contact these companies:

- Anbex, Inc. for Iosat Tablets (130 mg) at 212-580-2810 (M-F 9am-5pm), at 1-866-463-6754 (other times), or <http://www.anbex.com><sup>3</sup>
- Recipe for ThyroSafe Tablets (65 mg) at 1-866-849-7672 or <http://www.thyrosafe.com/recipe.html><sup>4</sup>
- Fleming & Company, Pharmaceuticals for ThyroShield Solution at 636-343-8200 or <http://www.flemingcompany.com><sup>5</sup> or <http://www.thyroshield.com><sup>6</sup>

*Remember do not take KI for radiation exposure unless advised by public health authorities or your health care provider.*

## Air Travel FAQs

### AT1. PLACE HOLDER FOR REAC/TS Travel Related FAQs

### AT2. What should travelers from Japan do on returning to the US?

TRAVELERS who were not in the “hot zone” or outside 50 mile radius\* around reactors:

- Decontamination not warranted.
- If asymptomatic, no treatment is required. If symptomatic, see physician.

TRAVELERS who had prolonged exposure in areas contaminated with radioactive iodine:

- Decontamination not warranted.
- If they have not started KI shortly after exposure, it will not help.
- Call Medical Toxicologist on call to discuss case, especially if the person has nausea, vomiting or diarrhea (possible early prodrome of acute radiation syndrome)
  - REAC/TS has a bioassay to quantify exposure, but it is only for truly exposed individuals
  - The  $\frac{1}{2}$  life of  $I^{131}$  is 8 days, so the assay must be done within 7 days.
  - Hospital Nuclear Medicine Departments can perform thyroid scans for uptake of  $I^{131}$ . Direct caller to contact their physician assess feasibility of thyroid scan.
  - Individuals who have had significant exposure will need to communicate with their primary care physician the need for possible increased surveillance for thyroid cancer.
- **From NRC, available at: <http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-050.pdf>**

### AT3. I am going to Hawaii on vacation, should I begin taking potassium iodide?

- No. Just like on the continent, KI supplementation should only be instituted once public health officials have established a credible risk to health. Potassium iodide can have unpleasant and sometimes serious side effects. The risks of taking potassium iodide outweigh the benefit of taking it (i.e.; there is none), in the absence of a declared radiation emergency in your area.
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### AT4. What is the U. S. Customs and Border Protection doing to monitor the situation?

- U.S. Customs and Border Protection (CBP) is monitoring developments in Japan carefully and is specifically assessing the potential for radiological contamination associated with the ongoing impact of the earthquake and tsunami to Japan’s nuclear facilities.

- Out of an abundance of caution, CBP has issued field guidance reiterating its operational protocols and providing specific field personnel direction with regard to monitoring of maritime and air traffic from Japan.
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- In general, travelers that have been exposed to radiation are not a risk to other persons. When a radiation alarm occurs, CBP has protocols in place to isolate the affected traveler, baggage, or cargo, and resolve the concern. Travelers who manifest signs of radiation sickness will be referred to health authorities and provided appropriate treatment.
- CBP employs several types of radiation detection equipment in its operations at both air and sea ports. CBP frontline personnel are equipped with Personal Radiation Detectors (PRDs) that can detect the presence of radiological materials. All airports and seaports have sensitive Radiation Isotope Identification Devices (RIIDs) to determine both the presence and type of radiation encountered. Upon radiation detection, CBP exercises specific protocols to resolve any security or safety concerns for inbound travelers, baggage, and cargo.
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- In addition to airplanes and ports, CBP utilizes radiation portal monitors at international mail facilities as well. The monitors provide a non-intrusive method to screen mail items for the presence of nuclear and radiological materials. The U.S. Postal Service assists Customs and Border Protection officers with response and mitigation of items when radiation is detected to ensure the safety of our employees and the American public.
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For more information: [http://www.cbp.gov/xp/cgov/newsroom/news\\_releases/national/03172011\\_6.xml](http://www.cbp.gov/xp/cgov/newsroom/news_releases/national/03172011_6.xml)