Surviving Harmful Radiation

Julia Ferré

Whenever manmade plutonium or other radioactive substances are released into the atmosphere, it affects every one of us. Right now, the radiation disaster in Japan is in the news and on everyone's mind; however, radiation is actually more prevalent than we realize. This is not necessarily bad, because our bodies handle most of it with ease. It's prolonged exposure or the one-time mega doses that cause problems.

Radiation surrounds us all day, every day—it is in the rays that come from the sun and the radon from the earth. Radiation is routinely given to people—it is in every dental x-ray ever taken. Radiation is in our communities—it emanates from cell towers and power lines. Radiation is in our homes—it is in microwave ovens and the fields around other appliances. While radiation from nuclear fallout scares people, it is not the only type of radiation that affects people. In fact, if people knew how much radiation they were exposed to, they would probably use more caution where they go, how long they are exposed, and what products they buy. In addition, most people would probably eat a more appropriate diet if they understood the effects of certain foods such as miso, umeboshi, sea vegetables, and leafy greens. Dietary considerations are discussed later in this article.

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Radiation

Radiation is a form of energy, and energy, if you recall from science class, moves in waves. Radiation, as waves of energy, can move through objects. There are two basic types of radiation—ionizing radiation and non-ionizing radiation.

Ionizing radiation penetrates cells; when it reaches the center of atoms, it can cause an internal change. Ionization occurs when electrons leave the atom and the atom becomes charged. In turn, the charged atom reacts with other atoms in the cell. This can cause damage. An example of this occurs when water molecules in tissue become ionized and react to DNA in the cell. Ionized radiation is present in uranium, plutonium, x-rays, and body scans.

Non-ionizing radiation surrounds cells and doesn't change the cell from the inside, but from a reaction due to outside influences. If changes happen, it is due to length of time of exposure, amount of exposure, and range or distance of exposure. For example, infrared and ultraviolet rays of the sun are non-ionizing types of radiation that can initiate skin cancer. Non-ionizing radiation is present in microwaves, cell phones, and electromagnetic fields (EMFs).

Radiation is measured in units called rem—1 rem equals 100 milirem (mrem). (Another measurement

Types of Radiation

Ionizing radiation	Non-ionizing radiation
Uranium	Ultraviolet rays
Plutonium	Microwave
Radar	Power lines
Dental x-rays	EMF from machinery, wiring, appliances, computer, etc.
Mammograms	
CT scans	Laser
Irradiation for food	Cell phones
Airport scanner	Cell towers

used is a sievant—1 sievant equals 100 rem.) The National Council on Radiation Protection (NCRP) says the average person gets 360 mrem every year, about 1 mrem per day, from background sources of sun, space, earth, and food. At such low doses, the cells in the body repair themselves. As you can see from the chart, we are exposed to many things that emit radiation.

At higher doses, such as up to 100 rem, cells may not be able to repair themselves. If the cells are permanently changed, they produce abnormal cells when they divide, and these abnormal cells can become cancerous.

Doses higher than 100 rem occur due to radiation exposure, rather than to normal everyday living. Above 100 rem, the cells can't replace fast enough. Above 300 rem, the immune system is damaged. Above 400 rem and without medical attention, it is speculated that about 50 percent of the people will die in 60 days. Above 1000 rem, 100 percent of the people will die. These figures are speculated because very rarely have people in history been exposed to such high levels of radiation. At Chernobyl, the amount of radiation was quite high. Evacuees were exposed to about 33 rem; the central blast emitted closer to 5000 rems per hour, a lethal amount within 10 minutes of exposure.

Amount of Radiation from Sources

Amounts of radiation	Source[1]
1 mrem per year	Average radiation at sea level
Less than 2% of 1 mrem	Airport body scan
2 to 3 mrem each	Dental x-ray (bitewing)
0.5 mrem per hour	x-rays from TV set, 1 inch
5 mrem round trip	Cost to coast airplane trip
8 mrem	Chest x-ray
10 mrem per year	Radon gas
10 mrem per year	Cooking with natural gas
54 mrem	Barium enema
80 mrem at plant	Three Mile Island, during accident
100 to 200 mrem	Mammogram
440 mrem	Bone scan
1000 mrem (1 rem)	Full body CT scan
33 to 5000 rem	Chernobyl[2,3]

The Unknown

The worrisome part about radiation in general and this situation in particular is the unknown aspects. We don't really know what will happen. We don't really know how radiation will affect people immediately, both in Japan and in the United States. We also don't really know of long-term effects. We don't really know if we should prepare for the worst-case scenario or proceed in daily life as if all is okay. Advice from the media ranges from "no worry, everything is under control" to "panic, supplement, and stockpile water and supplies." Surviving the fears of radiation is just as important as surviving the radiation.

To help understand what we need to do and how proactive we need to be, it helps to understand the situation. In the worst-case scenario, radioactive particles blast into the air. The particles affect people in the immediate vicinity like a bomb, killing and destroying everything in a close proximity. In Chernobyl and Nagasaki, people died. Right now, in Japan, some people have evacuated. Workers at the plant are limiting the amount of time on site because, when they are there, they are exposed to a constant barrage of particles much like a continual x-ray.

If conditions at the plant at Fukushima worsen, there could be a blast of unknown proportions. It could be like the bomb of 1945 with hundreds of rems or it could be like the situation at Chernobyl with thousands of rems. As of March 24, 2011, about 18 rems per hour were reported at Fukushima.[3]

At Chernobyl, the highest level was 5000 rems per hour—a lethal dose for all life within a two to three-mile radius. The blast contaminated the surrounding area for a range of twenty-five miles, most of which is still radioactive. In addition, particles spewed into the high atmosphere, where the wind carried them thou-

sands of miles.

Radiation contaminates everything in its path; the closer to the initial blast, the worse it is. Due to the nature of radiation, the long-lasting effects can linger many miles away from the epicenter. Radioactive particles fall on everything in its way—water, plants, and animals. Over time, many particles neutralize. Some radioactive particles decay rapidly. Radioactive iodine 131 has a half-life of 8 days. However, many don't. Strontium 90 takes 28 years; plutonium 239 takes 25,000 years! When these particles get into the food chain or groundwater, they last a long time.

These particles can lodge in human tissue and congregate in particular areas. Iodine goes to the thyroid gland and ovaries. Strontium affects bones. Uranium and plutonium mostly affect the liver. If this sounds dire, it is. No one is really immune.

The Known

Even with all the worry, we can look at history as a hope for inspiration. Consider that there were patients in a hospital who survived the atomic bomb in World War II. Dr. S. Akizuko of St. Francis Hospital in Nagasaki, Japan writes of his experience when the atomic bomb exploded.

"On August 9, 1945, the atomic bomb was dropped on Nagasaki. Lethal atomic radiation spread over the razed city. For many it was an agonizing death. For a few it was a miracle. Not one co-worker in the hospital suffered or died from radiation. The hospital was located only one mile from the center of the blast. My assistant and I helped many victims who suffered the effects of the bomb. In the hospital there was a large stock of miso and tamari. We also kept plenty of brown rice and wakame (seaweed used for soup-stock or in miso soup). I had fed my co-workers brown rice and miso soup for some time before the bombing. None of them suffered from atomic radiation. I believe this is because they had been eating miso soup."[4]

People who survive radiation therapy inspire us too. Elaine Nussbaum reported receiving 200 rads (old term to describe radiation and approximately equal to rem) of radiation for each of 20 days (4,000 rads total).[5] She had side effects of nausea, vomiting, diarrhea, and hair loss—symptoms that also occur in radiation sickness. Even though the radiation was supposed to stop the cancer, it didn't. The cancer progressed to other areas of the body, a slow agonizing process that depleted her immune system, weakened her bones, and crippled her to a wheelchair. When she stopped the radiation and adopted miso soup, brown rice, sea vegetables, and other macrobiotic staples, her health turned around and she recovered from cancer. Many other people report similar stories of overcoming cancer and radiation therapy.

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Personal Responsibility

Macrobiotic practice is a lifestyle as much as a philosophy or diet—a middle way between extremes. Macrobiotic principles encourage avoidance of bouncing one way or another, creating either/or scenarios, or going with an all-or-nothing attitude. In other words—live your life. Love your children and parents. Eat healthy food. Use your cell phone, but not too much. Get your health screenings, fly on airplanes, and eat miso soup.

We can do our part to fortify our health. Here is some general information regarding various foods and practices that can help minimize the effects of harmful radiation. See also the boxed information on page 8.

Sea vegetables. If there is one bit of information to get from this article, it is to eat sea vegetables, although not exclusively and not too much. Eat them often, such as in every pot of beans, but not cups of them every day. According to Denny Waxman, director of Strengthening Health Institute in Philadelphia, Pennsylvania, "… over-consumption of seaweed creates a mineral imbalance and could lead to thyroid problems and extreme weight loss, due to the high mineral content of sea vegetables." Everyone has a natural rationing system about sea vegetables; it is difficult to consume large quantities.

Sea vegetables, notably wakame and kombu, contain sodium alginate, which is reported to remove radioactive strontium from the body. In addition, kombu is especially rich in iodine; if the body has sufficient amounts of natural iodine, radioactive iodine will not be absorbed. Hugh Tinling sent us the following information about sea vegetables.

"Seaweeds bind heavy metals, a term usually applied to a number of toxic metals, but as elements increase in atomic weight, they are pretty much all metals, and when heavier yet, radioactive. I suspect the absorption process is similar to chelation and connected to the gel-like substance within seaweeds. Different species have differing characteristics regarding the proportions of which materials they absorb; a plant like bladderwrack is selective at absorbing particular substances based on its

Ideas to Protect Yourself from Harmful Radiation

by John Kozinski

1. Miso. Miso has a substance that will remove radiation from the body. Prepare soups and season with a strong taste of miso if there is a nuclear disaster. Drink 3 cups per day.

2. Umeboshi plums. Take 1 to 2 daily. This will stimulate the liver and colon to eliminate radiation.

3. Leafy greens. Greens such as kale, collards, mustard, and turnip tops stimulate the colon and help the liver discharge radiation from the body.

4. Kelp tablets from clean waters or kombu powder made from kombu from clean waters contain natural iodine, and can be used instead of potassium iodine pills. Potassium iodine helps protect a person from the harmful effects of radioactive iodine by blocking its uptake into the thyroid. One possible serious effect of exposure to large doses of radioactive iodine is thyroid cancer. If exposed to radioactive iodide, take a pill every 1 to 2 hours. North American Herb and Spice Company has good quality kelp under the name, PureKelp. If using kombu powder take a half teaspoon 3 times a day.

5. Fermented foods. Miso, natural cucumber pickles, and fermented sauerkraut have the same effect as leafy greens. They also are digestive aids and provide healthy supplies of probiotics. The best-quality pickles are homemade or found in the refrigerated section of the store. They do not have vinegar as an ingredient.

6. Macrobiotic quality food. Eat moderate amounts of grains, cooked vegetables, small amounts of beans, and fish, along with some cooked fruit, healthy fats, and natural seasonings. If you eat other animal foods, be moderate. Excessive amounts interfere with digestion.

7. Saturated fats. Good-quality saturated fats such as avocado and coconut oil block the toxicity of radioactive ions. Increase in times of a nuclear disaster.

8. Fish. Fatty fish like wild salmon or sardines contain fat-soluble vitamins that aid elimination. Eat more often in a disaster.

9. Supplements for radiation disasters. Organic selenium, 200 micrograms every hour for one week, then 600 micrograms daily. Vitamin E, 400 IU every hour for 1 to 2 days, then 2400 IU daily. Buy Vitamin E as mixed tocopherols and/or tocotrienols.

10. North American Herb and Spice Company has a product that combines herbs, supplements, and potassium iodine. It is called NukeProtect.

11. Chlorella. Take two 500 mg. capsules 3 times per day or follow directions on the bottle.

12. Avoid the following items as each can hamper elimination. Refined sugars—these will ferment in the gut. Excessive amounts of whole wheat flour products—these have excess fiber. Hard and dry grains such as granola and dried cereal—this kind of fiber creates bad bacteria. Raw foods—raw fiber is harder to digest.

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chemistry. Whether it happens to be radioactive is coincidental (chemistry functions at the electron level of atoms; mass/weight and radioactivity are nucleus-based phenomena). It is not that seaweed has an affinity for radioactive elements and/or radioactive isotopes, but rather has an ability to gather up specific heavy materials. Their effectiveness may be assisted by sea-waters buoying of anything submerged within it, thus allowing sea-water to hold heavier materials. Seaweed's ability to bind up heavy metals happens in the digestive systems, so they act somewhat like oral-chelaters and can carry the metals out as feces.

"Furthering this thought, I researched arsenic and edible seaweeds to find that a major food seaweed—hijiki—has levels so high that people need to avoid it. Based on health risk information received from Health Canada, the Canadian Food Inspection Agency (CFIA) is advising consumers to avoid consumption of hijiki seaweed. Tests results have indicated that levels of inorganic arsenic were significantly higher than in other types of seaweed. Although no known illnesses have been associated with consuming hijiki seaweed to date, inorganic arsenic is suspected of causing cancer in humans and exposure to high levels of inorganic arsenic has been linked with gastrointestinal effects, anemia, and liver damage. Sample results for several other sea vegetables, including dulse, nori, and kombu have been low."[6]

Miso. Miso is said to bind and remove radioactive substances from the body due to a compound called zybicolin. Choose a dark unpasteurized barley miso aged 1½ to 2 years. Due to its lengthy fermentation, miso contains wonderful probiotics and aids intestinal flora, helping everyone strengthen intestinal health and especially anyone with compromised health who wishes to rebuild digestive strength.

Denny Waxman offers advice

about imported products from Japan. "The most recent shipment of Japanese macrobiotic foods—miso, umeboshi, shoyu, wakame, and other seaweeds was already at sea before the earthquake hit, according to my suppliers. The coming shipment is untainted but as far as future supplies are concerned, seaweed will be most affected by radiation fallout.

"Johsen shoyu is made in Sendai Miyagi prefecture. Onozaki miso is not made in Sendai. It is made in Yaita-city Tochigi prefecture, a long way from Sendai. Both shoyu and miso take a long time to make—it takes eighteen months to make shoyu and two years for miso. Hatcho miso comes from Okazaki, nine hours southwest from Fukushima. Ryujin umeboshi plums come from Wakayama Prefecture in south-central Japan and so should remain unaffected. The quality of the product depends on the ingredients: wheat, soybeans, salt, and water, and the environment in which they are made. We will have to wait and see how the radiation settles, but for now, this might be a good time to start exploring American macrobiotic products, e.g. South River Miso, Miso Master Miso, Maine Coast Seaweed, and California-made Umeboshi."

Umeboshi. Umeboshi is also said to be able to bind and remove strontium 90, a radioactive element, due to the citric acid in the umeboshi. It helps reduce nausea and simultaneously strengthens the digestive tract. Umeboshi has a long history of use as a digestive aid. Japanese soldies carry it to prevent dysentery. Folk remedies encourage its use for colds, general weakness, and hangovers. Pregnant women use it to combat morning sickness.

One account, as reported in Traditional Herbs for Natural Healing, says, "According to Dr. Hichiro Akiya of Tokyo University, Strontium 90, which is easily absorbed into the bones, will chemically combine with citric acid and can be excreted out of the body. Its radioactive strength is such that once Strontium 90 is absorbed; it will sit in the body for 28 years with its strength not decreasing even half. All that time, radiation is emitted which can cause changes in the cell structure. These changes can lead to premature aging, or more frequently, cancer. This leads to a strong argument for eating foods rich in citric acid, like the plum extract.

"As an example of the connection between Japanese plums and radiation detoxification, there is the following story. An elderly woman from Hiroshima was suffering from leucopenia—a decrease in the number of white blood cells. This was thought to be the result of her exposure to some of the radioactivity from the atomic bomb dropped in Hiroshima. After eating umeboshi everyday not only the number of white blood cells but the number of red blood cells as well started to increase. Needless to say, the people at the hospital where she was getting treated were surprised at her improved condition."[7]

"Umeboshi is also said to be able to bind and remove strontium 90, a radioactive element, due to the citric acid in the umeboshi."

Detox baths. Take proper hygienic care in case of exposure to radiation. The skin absorbs radiation. If exposed to particles, rinse well, without scrubbing, to remove contaminants. The workers at the plant site in Japan wear full protective gear. After working, this outer gear is removed. Another way to detox includes bathing in a tub of water to which baking soda is added.

Reducing exposure to low levels of sources of radiation. Ongoing exposure to radiation cumulates and affects health. Here are some ideas.

Electromagnetic fields. Electromagnetic fields (EMFs) are invisible, oscillating fields of energy generated due to electricity. Frequency is measured in hertz, which are cycles per second. Some studies show that workers exposed to high frequencies have increased cancers. The strongest fields come from high voltage power lines, cell towers, and the main wiring of a house. Other fields surround computers, televisions, and appliances.[8] Do your best to reduce exposure.

Cell phones. The antenna is the dangerous part as it transfers the waves of energy. Turn it completely off at night and sleep in a room away from the cell phone. Cell phones have an antenna that is in contact with the cell tower; even if you aren't using the cell phone, there is a field that surrounds it when it is on. In addition, use a headset for long conversations and avoid holding it next to the head for long periods of time.

Cell towers. Cell towers emit strong EMFs—the closer you are, the worse it is. Check out where they are in your area and consider moving if you live within ½ mile of one.[9]

Irradiated foods. When food is irradiated, it passes through a field of radiation in order to sterilize it and kill microbes. Chemical changes occur in the food. To avoid irradiated foods, buy organic foods from reputable sources.[10]

Other common sense ideas. Don't let yourself get sunburned. Expose hands and face to sunshine for at least 15-20 minutes of facial and hands daily for the vitamin D, but don't overdo it. When traveling, avoid alcohol because it adds to stress, but don't stress about scanners and cosmic radiation—these are minor compared to other forms of radiation exposure.

Here are a Few Easy Recipes

Kombu in dried beans—Soak and cook kombu with beans. Use 1 to 2 inches kombu per cup of beans; soak and cook as regular. Kombu can be mashed into beans before eating.

Miso soup with kombu—Use 1 inch kombu per 1 cup of water. Bring to a boil and remove kombu (you can save kombu for another batch of soup or use in beans). Add ¼ cup diced vegetables (onion, carrot, broccoli, cabbage, scallion) and/or tofu, and bring to a boil. Simmer 2 to 3 minutes until vegetables are tender. Dissolve 1 teaspoon of miso in broth and heat without bringing to boil.

Miso soup with wakame—Soak 1 tablespoon of wakame in 1 cup of water for 5 minutes. Cut wakame into bite-size pieces. Then, bring wakame and water to boil and simmer 4 to 5 minutes. Add ¼ cup diced vegetables and/or tofu, bring to a boil, and simmer 2 to 3 minutes. Dissolve 1 teaspoon of miso in broth and heat without bringing to boil.

Miso tea—Use 1 inch kombu per 1 cup of water. Bring to a boil and remove kombu. Dissolve 1 teaspoon of miso in this kombu stock and heat without bringing to boil.

Umeboshi tea—Bring 1 medium umeboshi plum in 1 cup water to boil. Simmer for 1 to 2 minutes. Season with a few drops of soy sauce and/or lemon juice or ginger juice. To make ginger juice, grate fresh ginger on a fine grater and squeeze out juice.

Get health screenings such as x-rays and mammograms when you need them; they are worthwhile preventable measures. However, space them apart as much as possible.

Role of Intuition

I talked with my friend, Athena, last week about intuition and its place in times of disaster. I asked, "How can a person increase intuition? Could intuition guide a person to avoid fatal crashes and nuclear disasters?"

"No," she said, "you must be careful about this type of thinking. It leads to the conclusion that people involved in catastrophes have (or had) little intuition. How can you know who is intuitive or not? How can you judge what someone else does or doesn't do and determine its reason? And worst of all, if you find yourself in a situation, why doubt that you have intuition? Perhaps your intuition put you there.

"Think of how you would react if you were in a disaster. You would depend on intuition to survive, to think clearly and to stay levelheaded. And if you weren't calm, you would appreciate the one who was. Don't doubt that in every disaster, every catastrophe, there is someone there who is intuitive and helping others."

Intuition is a tool to help us stay calm in the midst of emergencies, whether in the epicenter or the fringes. Let your intuition help you make informed choices about radiation, products, and technologies. Let it help you determine what to eat. And above all else, let intuition help you remain at peace no matter what the wind blows your way.

Notes

1. See http://www.physics.isu.edu/radinf/risk.htm for general info about radiation and statistics.
2. See http://www.greenfacts.org/en/chernobyl/l-2/2-health-effects-chernobyl.htm.
3. http://www.npua.org.
4. Aihara, Herman and Cornellia, *Soybean Diet*, George Ohsawa Macrobiotic Foundation, 1974, page 50. Passage translated from Japanese by Herman Aihara.
5. Nussbaum, Elaine. *Recovery from Cancer*, Avery Publishing Group, NY, 1992, page 30.
6. See: http://www.inspection.gc.ca/english/fssa/concen/specif/arsenices.html. Another study conducted by U.C. Davis reveals that 8 out of 9 kelp supplements, selected at random from health food stores in California, had higher than permissible levels of arsenic and other heavy metals. See http://www.ucdmc.ucdavis.edu/welcome/features/20070509_kelp_arsenic/index.html.
7. Matsumoto, Kosai. *Traditional Herbs for Natural Healing*. Sun Art Printing, Japan. 1977, page 37.
8. More information can be found on this website, http://earthcalm.com/, as well as products designed to offset magnetic fields.
9. Locations of cell towers may be found here: www.findcellsites.com.
10. See www.ccnr.org/food_irradiation.html.

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