Mushrooms are known to be one of the food that absorbs high levels of radiation. Many post-Fukushima mushrooms were banned for consumption in Japan.

1 MILLISIEVERT: Maximum radiation dose you are allowed to be exposed to (international standard)

20 MILLISIEVERT: A new standard set by the Japanese government in the wake of Fukushima in order to avoid costly mass evacuations.

250 MILLISIEVERT: A new standard set for nuclear workers in the wake of Fukushima, from previous 100 MILLISIEVERT.

What You Need To Know To Protect Yourself & Your Loved Ones

Vol. 01
INTRODUCTION

Ever since the first discovery of “radium” in the late nineteenth century, radioactive materials have been used in various ways. We have seen several occasions when life has been acutely harmed by nuclear devices: Hiroshima, Nagasaki, outdoor nuclear bomb testings, Three Mile Island, Chernobyl, and now, Fukushima. Although we are already living with radiation present in nature (known as background radiation), many of us are most certainly living alongside man-made radiation, which is far more hostile to the life of all living forms. Nuclear energy is one of the biggest sources of harmful radiation (known as ionizing radiation) that enters our everyday life through air and water.

The Fukushima nuclear disaster that began in 2011 still continues to pose threats to the people, animals and the environment in the region, and even far outside the Japanese borders. What can we learn from Fukushima and people in Japan in order to together resist the form of energy that harms our lives by its toxic materials?

One thing all of us can do to protect our bodies from such harms is to learn about radiation. Scientific factors has long been controled by those in power. In this zine you can get the basics of negative effects of radiation. We can learn together in order to break the culture of silence in nuclear industry, and to break the myths that we have been made to believe for a very long time. Reclaim science, protest and survive!

The materials in this zine is copyright-free and you are encouraged to share it!

FUKUSHIMA

Q: What are people in Japan doing to avoid radiation?
A: While many people continue to live under invisible radiation, they are also monitoring radioactivity on their own to minimize exposure. In food, water, soil and air. Thanks to such efforts, people have relocated to safer areas judging from readings that was discovered. They still are today, for the radiation releases still continue.

Q: How would people monitor radiation and share the data?
A: The learning and monitoring of radiation initially began autonomously among parents with small children, who lost trust in the authorities. Geiger counters have become household items in eastern Japan (including Tokyo) soon after the Fukushima meltdown. People monitored and tweeted the data from neighborhood parks, schoolyards, their gardens. In some occasions they discovered hotspots (highly radioactive spots) in the areas where the officials did nothing otherwise. The monitoring continues to this day largely focused on food, water and soil.

Q: So, how is learning the radiation helpful to us right now?
A: Without proper knowledge of radiation, many suffered unexplainable health effects, but officials would continue to dismiss links to radiation. Here is one testimony from a mother who evacuated Fukushima:

What made me decide to move out of Fukushima was my 12-year-old son’s anxious look, when, in May 2011, he had continuous heavy nose bleeding. He asked me, “Are we okay to stay here?” Since that moment, it no longer mattered to me whether the nosebleed really was due to radiation or not – but it was just wrong to live in a place where children felt unsafe. (…)

Why is it that very basic of human dignity is neglected? Why is it that concerns and demands to protect vulnerable children are ignored? Why is it that nobody has been punished for causing the accident which was clearly stated to have been a human error? (…)

We must not leave our children a future that is full of despair and disappointment. “I didn’t know,” “I couldn’t see” - we can no longer accept these excuses.

Excerpts from testimony by Hiroko Tsuzuki, magazine MAMA REVO (Mom’s Revolution) Vol 5., 2013. Translation by Project to Save The Children and Future
The meltdown and explosions in March 2011 at 4 reactors at Tokyo Electric’s Fukushima Daiichi Nuclear Power Plant caused massive releases of radiation which still continue to this day.

People in Japan continue to live in radiation-contaminated areas, since the government’s policy prioritize the continuation of nuclear energy rather than supporting people for relocation. Cover-up and minimization of the damage, betrayal of the officials and the media blackout also continue, alongside the radioactive releases.

Since the wake of the disaster, many have lost confidence in the authorities. The protests continue in the governmental offices, in the streets, in courtrooms, at workplaces, at universities - but in the meantime, radiation continues to spread into their everyday life, and unless they have proper knowledge about radiation, their lives are threatened minute by minute, especially damaging the developing cells of small children.

From the crippled power plant in Fukushima in radiation is spreading all over Japan, and beyond – through air, water and food distribution. So people are taking various counter measures on their own to avoid exposure to radiation. “We must think survival, and no longer sustainable - such is the generation we live today,” writes Japanese feminist thinker Chizuko Ueno. Dr. Shuntaro Hida, who treated numerous A-Bomb victims in Hiroshima, calls for our autonomy to protect ourselves. “You must live as the protagonist of your own living body.”

**How Does Radiation Affect You?**

It depends on where you are, what you do and your age, sex, health condition, etc. There is a whole variety of radiation and understanding it is imperative to protect yourself. Even if your body is not directly exposed to radiation, your body can develop illnesses by inhaling and ingesting radioactive materials. This is called internal exposure (as opposed to external exposure), which is often excluded from “risks” conceived by nuclear power industry as well as governmental regulator. However, because of low-level radiation the long-term health effects have cast shadows in many communities around the globe like towns near uranium mines and nuclear power plants, which routinely release radioactive materials into the air. The danger of radiation is inherent even without accidents like Fukushima and Chernobyl.

“Standard Safe Dose” Isn’t For Everybody.

There is no safe dose of radiation, but the nuclear regulators employ the international “standard” of maximum dose one is allowed to be exposed to. Usually, such standard is created for a model: a reference man. A reference man is modeled around healthy 20-to-30-year-old white male weighing 155lb, living based on western diet. The effects to more vulnerable age groups, especially children, are dismissed. So are pregnant women, people of color, people with disabilities, and people with illnesses.

There is no solution in figures that scientists impose upon you, or in terms such as “there is no immediate effects.” Your body belongs to you! A little bit of science can help protect you and your loved ones (including your furry friends, of course).
WHAT DOES COEXISTING WITH RADIATION MEAN?

...TO STAY AWAY FROM IT!

Radiation isn’t an obvious subject like cigarette smoke. It is odorless, flavorless and invisible. Although there are still politicians and scientists who say small amount is no harm (or even beneficial!) to your body, you need to learn to doubt what their motivations are. Those are the people who benefit from status-quo, and most of the time your health does not concern them, for the sake of keeping the profitable nuclear business going.

The basic idea of radiological science is that there is no such thing as a completely safe dose, and even “background” and medical radiation is harmful to you. There is a scientific consensus known as 2005 BEIR VII (Biological Effects of Ionizing Radiation) report from National Academy of Science which found that risk rises with exposure at any level above zero.

RADIATION IS EMMITTED FROM RADIOACTIVE MATERIALS.

When an atom of radioactive material decays, there are three types of radiation that emit:

**Alpha particles, Beta particles & Gamma rays** (and X-Rays)

Most radioactive materials emit two or all three types of radiation.

IN THE BEGINNING - THERE IS URANIUM

Radiation doesn’t just come from your local nuclear power plants. Radioactive waste is generated at every stage of nuclear production, contaminating the surrounding communities. How long will these wastes stay toxic? thousands, some even millions of years. There is no long-term solution to manage the waste to keep it away from us.

NUCLEAR FUEL CHAIN

--- Setsuko Kuroda, in the film “Women of Fukushima”
x-rays are what we are accustomed at medical facilities. You wear lead jackets to prevent your body parts to be penetrated with radiation apart from where you are being scanned.

γ (gamma) rays, very similar to but has more energy than x-rays, also goes through your body and could hurt your DNA.

How radiation acts in your body

α (alpha) particles, emitted from atoms such as uranium and plutonium, do not go through your skin but you can inhale and ingest them. If they get into your body, they can irradiate cells of various organs and cause illnesses like cancer.

β (beta) particles can do the same to your body as alpha particles.

Now, let’s look at ways in which radiation is produced alongside our daily lives. Nuclear power plants aren’t the only source of radiation... (next page)
RADIATION IS CUMULATIVE IN YOUR BODY.

This diagram shows human organs and radioactive materials that are likely to accumulate in each organ. Each radioactive material also indicates its decay mode and the numbers showing biological half-life (but doesn’t indicate how toxic it stays).


**SOME OF THE RADIOACTIVE MATERIALS RELEASED FROM FUKUSHIMA DAIICHI:**

- Iodine-131: β, γ (half-life 7.5 days)
- Tellurium-129m: β (half-life 33 days)
- Caesium-137: β (half-life 30 years)
- Strontium-90: β (half-life 30 years)
- Xenon-133: β (half-life 5 days)
- Plutonium-239: α (half-life 24,000 years)

**Diagram Details:**

- **THYROID**
  - Iodine (β & γ) (7.5 d)

- **LUNGS**
  - Plutonium (α & β) (1000s of y)

- **LIVER**
  - Cobalt (β) (565 d)

- **MUSCLES**
  - Cesium (β & γ) (30 y)

- **REPRODUCTIVE ORGANS**
  - Cesium (β & γ) (30 y)
  - Plutonium (α & β)(1000s of y)

- **BONES**
  - Strontium (β) (18 y)
  - Zirconium (β) (64 d)
  - Plutonium (α & β) (1000s of y)

- **KIDNEYS**
  - Uranium (α & β) (1000s of y)
  - Ruthenium (β) (268 d)

- **SKIN**
  - Krypton (β) (10 y)