

## GOVERNMENT RADIATION STANDARDS ARE TOO LENIENT

National and international radiation protection standards are based on an averaging of people who are more susceptible to radiation damage (children and women) with others who are more radiation-resistant (healthy men.) This process reduces protection standards for those people who are the most vulnerable.

Federal standards dictate the **permissible** levels of radiation for members of the public — including children, radiation workers, and even pregnant workers. **But “permissible” does not mean safe.** It means “as low as reasonably achievable” — that is, as low as the nuclear industry claims it can afford to achieve.

Levels of radioactive cesium in food that are decreed to be permissible in both the U.S. and Japan are higher than the levels of cesium associated with illnesses found in children exposed to Chernobyl accident fallout, and are higher than the permissible levels suggested by an international physicians' group.

**“Permissible” does not mean safe. It means as low as the nuclear industry claims it can afford to achieve**

Amazingly, the United States' current permissible level of radioactive cesium in food is 12 times higher than Japan's.

New “protective action guidelines” (PAGs) were set in place by the U.S. Environmental Protection Agency in 2013. These PAGs dictate the levels of permissible contaminants following a catastrophic release of radioactivity. The PAG levels could result in an incidence rate of one cancer among every six members of the public over a 70-year lifetime. The risk would, of course, be higher for children.

## WHAT YOU CAN DO TO HELP

### Support organizations that work to:

- ▶ close nuclear power reactors and uranium facilities;
- ▶ promote energy efficiency and conservation as well as clean energy sources like wind and solar.

### Contact elected officials to:

- ▶ stop the weakening of radiation standards;
- ▶ urge U.S. federal agencies to reduce the amount of radioactive contaminants permitted in food and drinking water at the tap;
- ▶ seek the continuing monitoring of radioactivity in U.S.-grown and imported food supplies;
- ▶ advocate for funding to support independent studies of radiation health effects.

Visit the **BEYOND NUCLEAR website** where you can learn more, register to receive our weekly email bulletin, and find out about actions, petitions and events.

References for this pamphlet can be found in the *Beyond Nuclear fact sheet* at:  
<http://www.beyondnuclear.org/storage/radiation-and-health/radchild.pdf>

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# Nuclear Power and Children



[www.BeyondNuclear.org](http://www.BeyondNuclear.org)

## EVERY NUCLEAR POWER REACTOR RELEASES RADIOACTIVITY

A nuclear reactor does not have to blow up or melt down to release some of its radioactive poisons. During its routine, everyday operation, every nuclear power plant releases radioactivity into the atmosphere and into the river, lake, or ocean that provides its cooling water. No economically feasible technology exists that can filter out all the radioactive liquids, gases and particles that a typical reactor generates — such as radioactive hydrogen (tritium), and radioactive xenon and krypton that become radioactive cesium and strontium.

**“The fission reactor produces both energy and radioactive waste. We want to use the energy now and leave the radioactive waste for our children and grandchildren to take care of. This is against the ecological imperative: Thou shalt not leave a polluted and poisoned world to future generations.”**

*Hannes Alfvén, a 1970 Nobel laureate in physics.*

## RADIATION HEALTH RISKS

The radiation doses experienced by people who live near nuclear power plants and those who live downwind or downstream can, over time, cause health damage.

Many scientific sources concur there is no safe dose of radiation. Exposure to radiation carries the potential to cause birth defects, and life-shortening illnesses.

Radiation exposure is strongly linked to leukemia, lung, breast, and other cancers. Exposing a fetus or a child can increase the risk of disease in adulthood.

**Radiation damage can accumulate not only in an individual, but also across generations.**

## HARM TO CHILDREN

Because children are smaller, their organs are closer together. This means that internal radionuclide contamination can harm more organs in a child than in an adult.

Radiation is particularly dangerous because it can damage a cell in ways that the cell may not be able to repair correctly. An unrepaired or improperly repaired cell can lead to a disease, such as cancer. The threat to cells in children may be higher than in adults because of the rapid and abundant cell divisions during childhood.

A substantial amount of data supports greater vulnerability to radiation-induced disease if exposure occurs in childhood. The effects of radiation exposure to a child may not only occur during childhood, but may become manifest many decades later.

More than 20 studies indicate an association between living near a nuclear reactor and an increase in childhood leukemia. Experts recognize childhood leukemia as a *sentinel indicator* for radiation exposure, meaning that other individuals in that same population are vulnerable. Children are clearly more radiosensitive than adults to cancers such as leukemia, breast, thyroid, skin and brain. Children in Ukraine exposed to

chronic, low-dose radiation from Chernobyl have manifested increased airway obstructions. In Belarus, near Chernobyl, children who have experienced very low internal radiation contamination may also have other non-cancer pathologies like heart problems and increases in hormone imbalance.



*Atomic Power? No Thanks!*

In Japan, since the Fukushima disaster began, children in the area have exhibited a range of symptoms that may be related to radiation exposure including nosebleeds, diarrhea, fatigue and rashes.

Current research in Japan shows that children have contamination levels of cesium on a par with the levels that can induce disease. While thyroid cancer incidence among children aged 0-19 is 1 to 2 in 100,000, as of November 2013, this number was 1 in approximately 5,000 for children in the areas of Fukushima fallout, where they could have been exposed to radioactive iodine-131.