

# As fears of a meltdown in Japan rise, so do the fears of radiation exposure. What does radiation do to the human body?

## BACKGROUND RADIATION

Everybody is exposed to both naturally-occurring and artificial background radiation; levels typically range from 0.0015 – 0.0035 Sv/year.



## COMPARING EXPOSURES

10 Sv	Fatal within weeks
6	Typical levels in Chernobyl workers who died within a month
5	A single dose would kill half of those exposed within a month
1	A single dose could cause radiation sickness and nausea
0.4	Detected level at Fukushima (as of Tuesday morning in Japan)
0.35	Exposure of relocated Chernobyl residents
0.10	Recommended limit for people working with radiation every 5 years
0.01	Full-body CT scan
0.002	Typical natural radiation per year
0.0004	Mammogram x-ray
0.0001	Chest x-ray
0.00001	Dental x-ray

The Japanese government has recommended evacuation within the 30 km radius of Fukushima, and so far there is no threat to the Tokyo metro area.

## SYMPTOMS OF RADIATION EXPOSURE

Generally speaking, radiation sickness is brought on by a large dosage of radiation in a short period of time, but it has also occurred with long term exposure.

	1-2 Sv	2-6 Sv	6-8 Sv	8-10 Sv
<b>Early symptoms, exposure levels and time to symptom onset</b>				
Nausea, vomiting	6 hrs.	2 hrs.	1 hr.	10 min.
Diarrhea	—	8 hrs.	3 hrs.	1 hr.
Headache	—	24 hrs.	4 hrs.	2 hrs.
Fever	—	3 hrs.	1 hr.	1 hr.

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<b>Later symptoms</b>				
Dizziness, disorientation	—	—	1 wk.	Immediate
Weakness, fatigue	4 wks.	1-4 wks.	1 wk.	Immediate
Hair loss, bloody vomit and stools, infections, poor wound healing, low blood pressure	—	1-4 wks.	1 wk.	Immediate

**Thyroid gland:** High cancer risk as the thyroid absorbs radioactive iodine-131

**Lungs:** Inflammation and scarring

**Red blood cells:** Low platelet count, spontaneous bleeding

**Stomach:** Nausea, vomiting, internal bleeding

**Small/large intestine:** Diarrhea, bleeding, destruction of lining

**Bone marrow:** Depletion of white blood cells (up to 50% within 48 hours), leading to high risk of infection

Radiation exposure can also increase the chances of developing cancers, tumours, and genetic damage.

## CHANCES OF DEATH BASED ON EXPOSURE LEVEL



Sources: guardian.co.uk; World Nuclear Association; Wikipedia; Graphicknews; Mayo Clinic; sciencemag.org; nrl.gov