

Fukushima nuclear power plant and your health

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- (5) Radiation and radioactive materials released from the nuclear power plant
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There are only two episodes in human history :

Hundreds of thousands of people exposed **biologically significant dose**
(= meaningful amount) of radiation

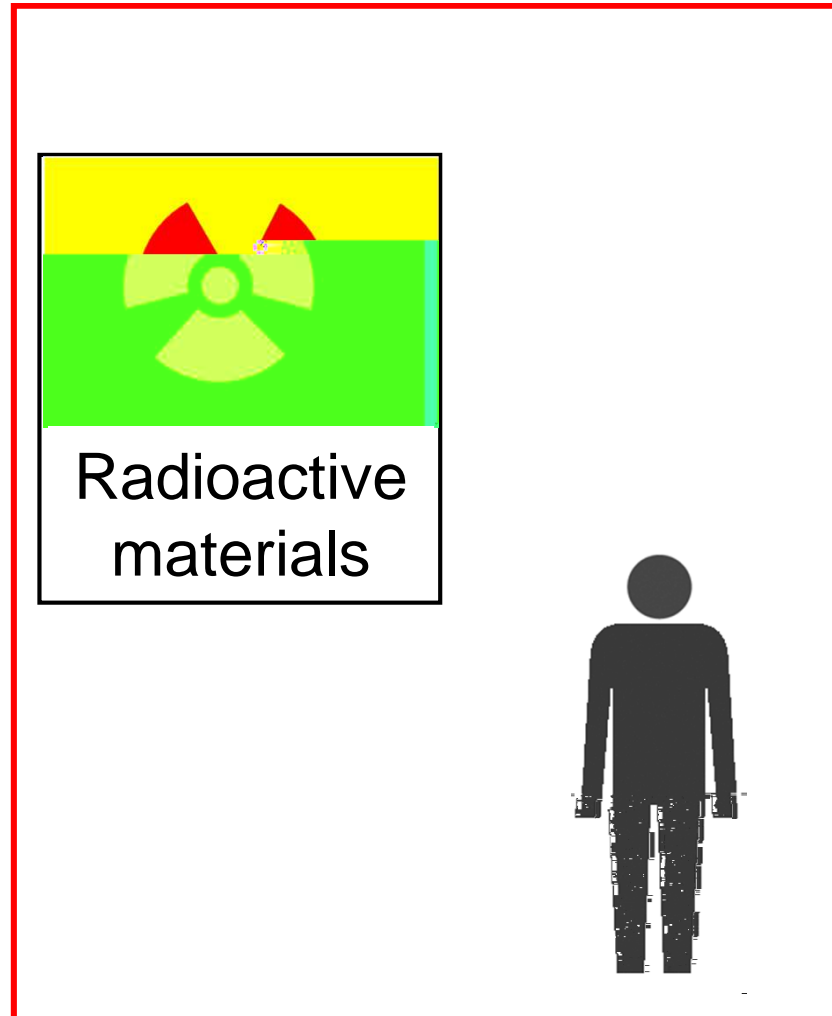
1. Hiroshima & Nagasaki, atomic bomb in 1945
2. Chernobyl, nuclear plant accident in 1986

To tell the conclusion first,

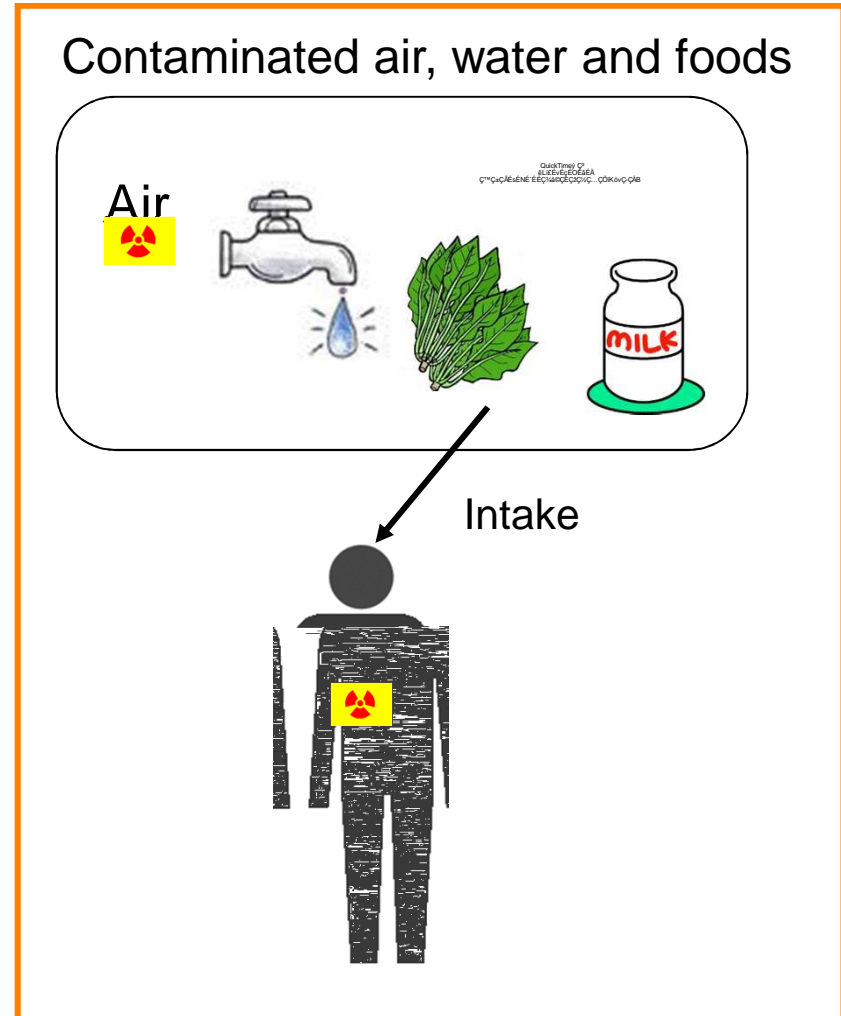
'Fukushima' *unlikely* becomes the third episode.

How people are exposed to radiation?

External exposure



Internal exposure

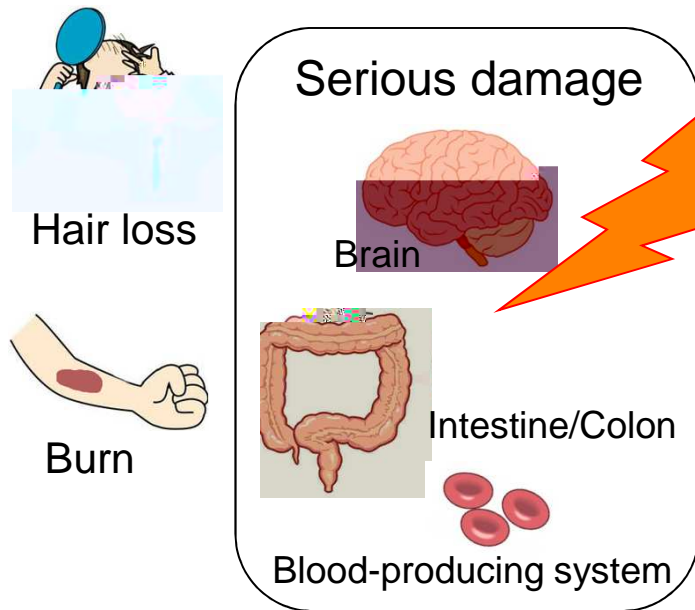


How radiation harms your health

Discriminate these two clearly

Immediate damage within weeks

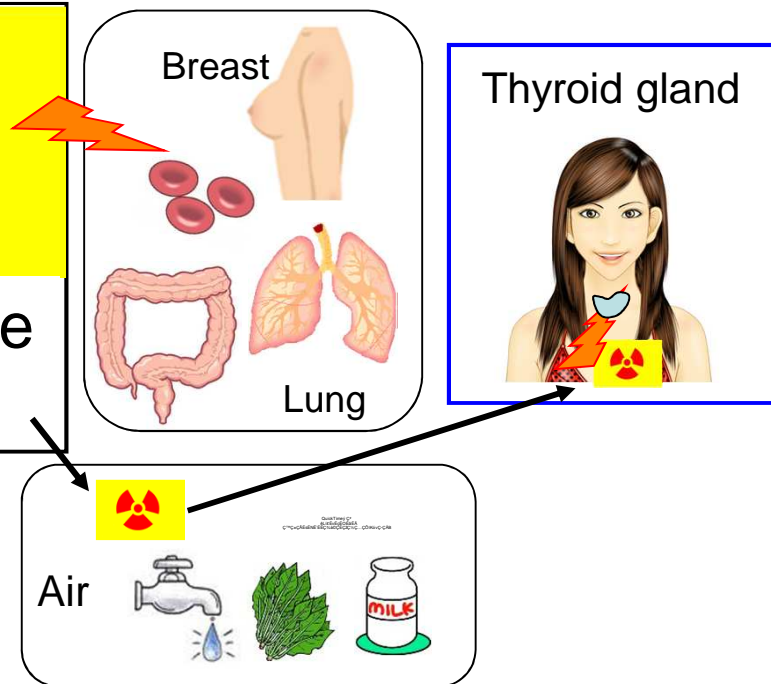
Very high dose (=amount)
by mainly external exposure



(It will *never* happen to you)

Cancer may develop years later

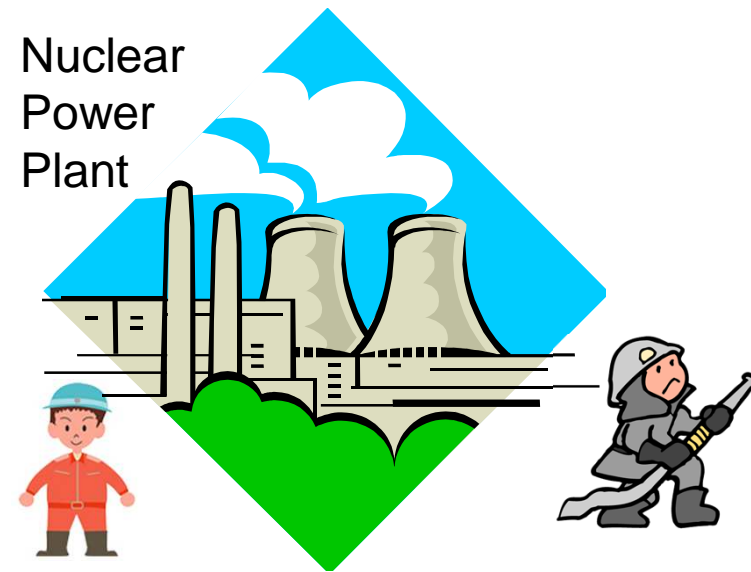
Relatively low dose
by external & internal exposure



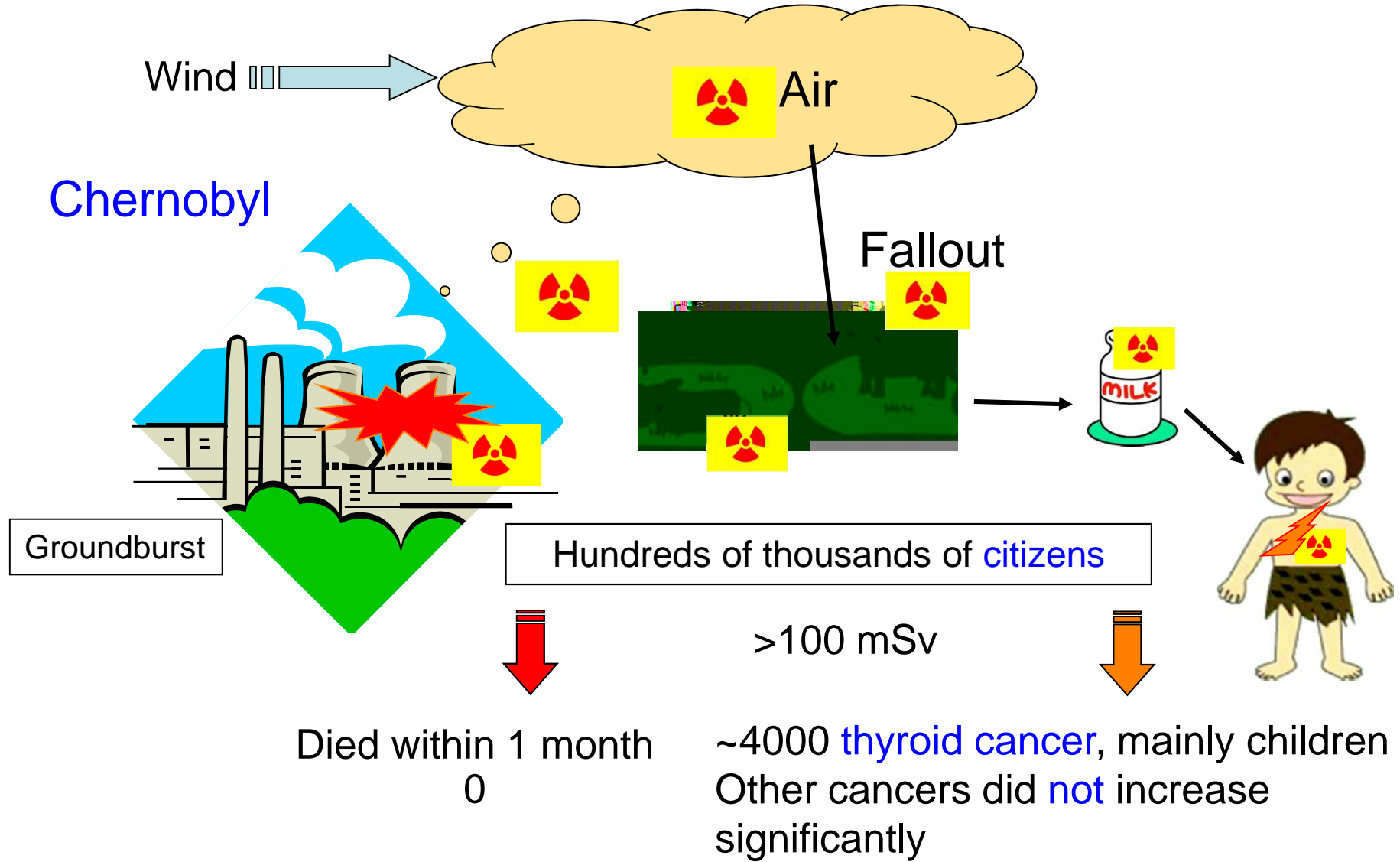
(It *might* concern you)

External exposure (Irradiation from outside)

& Nagasaki



Internal exposure (Irradiation from inside)



Groundburst

Chernobyl

Wind



Air

Fallout



Hundreds of thousands of citizens

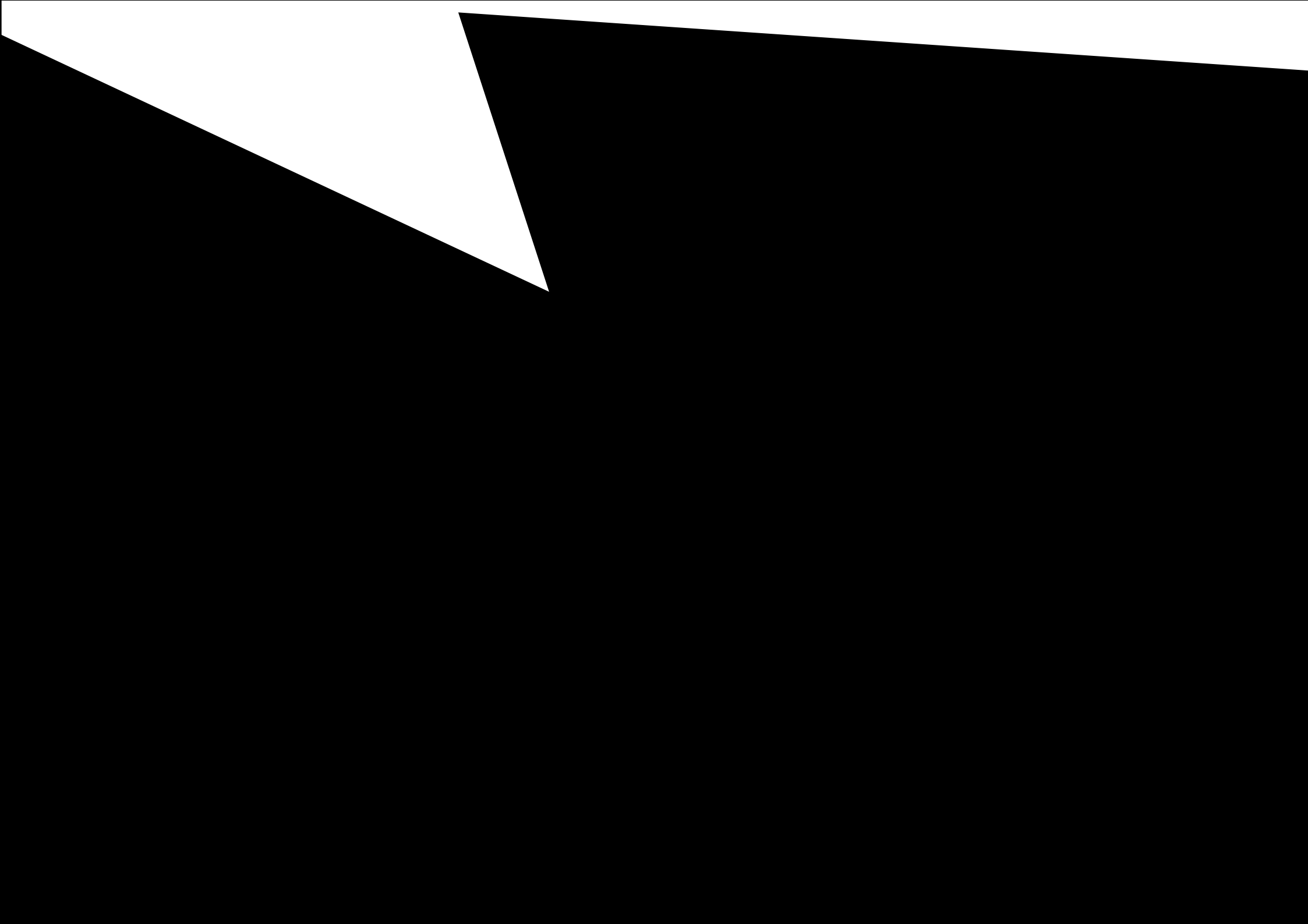
>100 mSv

Died within 1 month
0

~4000 thyroid cancer, mainly children
Other cancers did not increase significantly



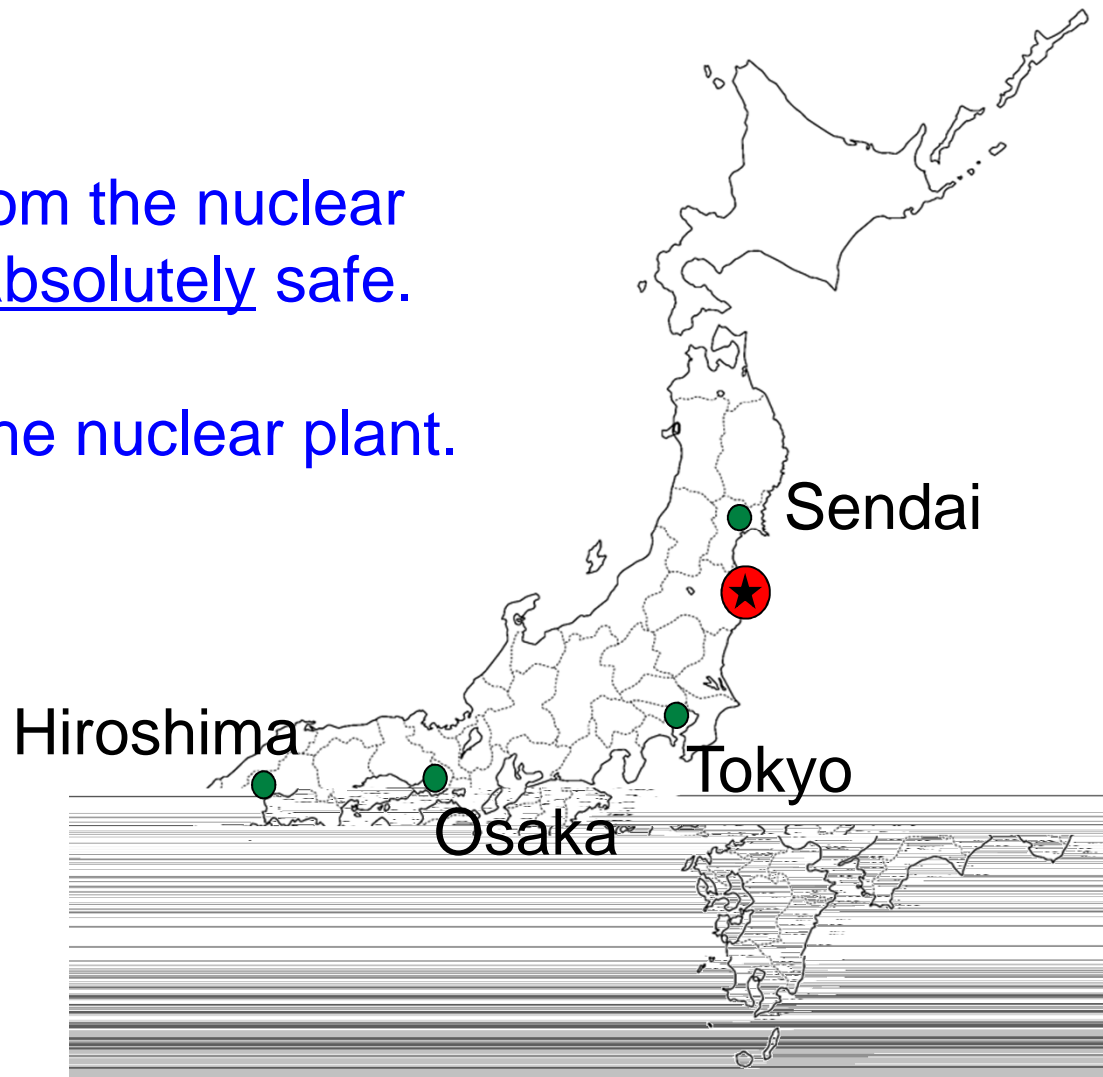
What's going on in Fukushima

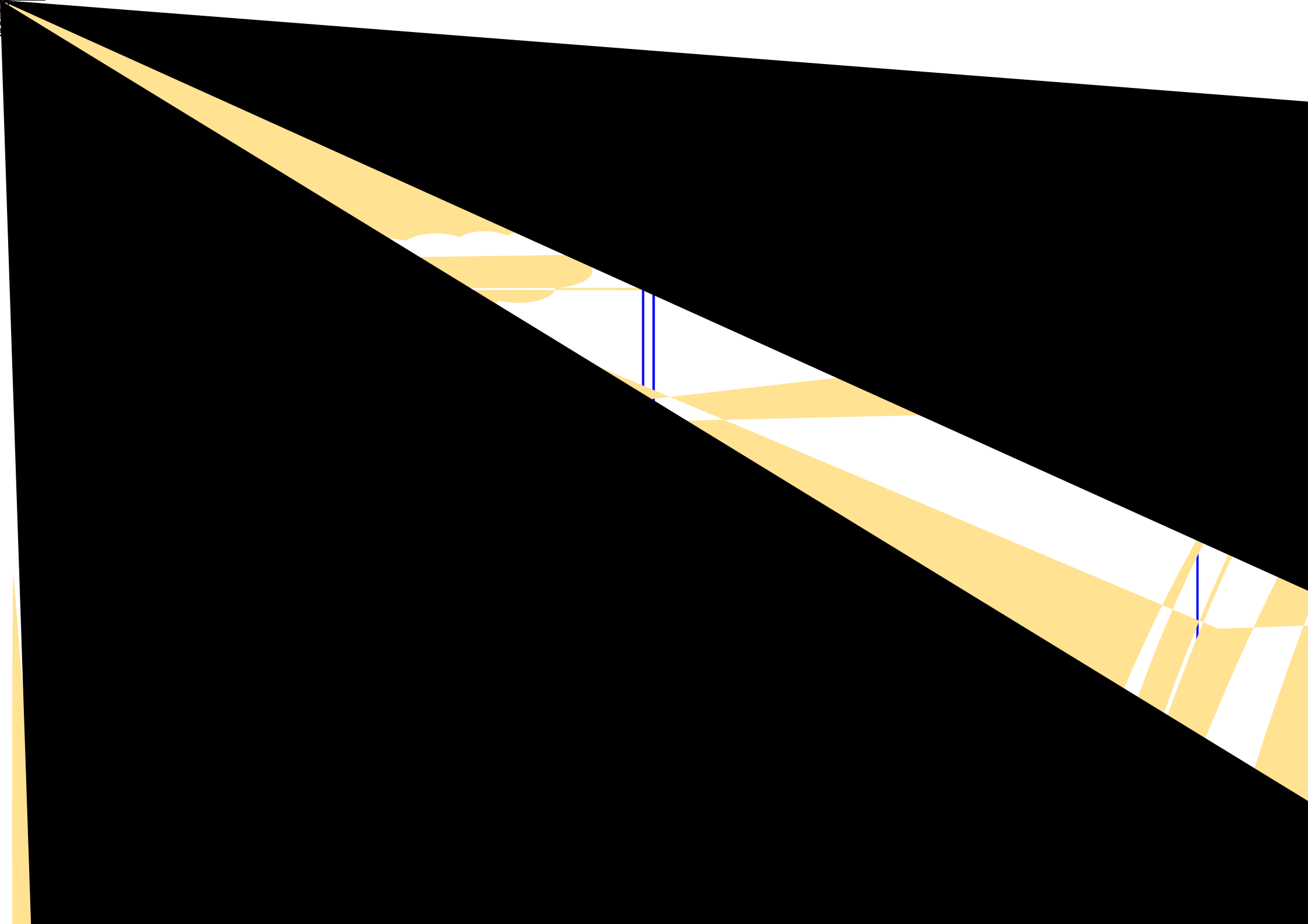


Fukushima : To avoid external exposure what you should do?

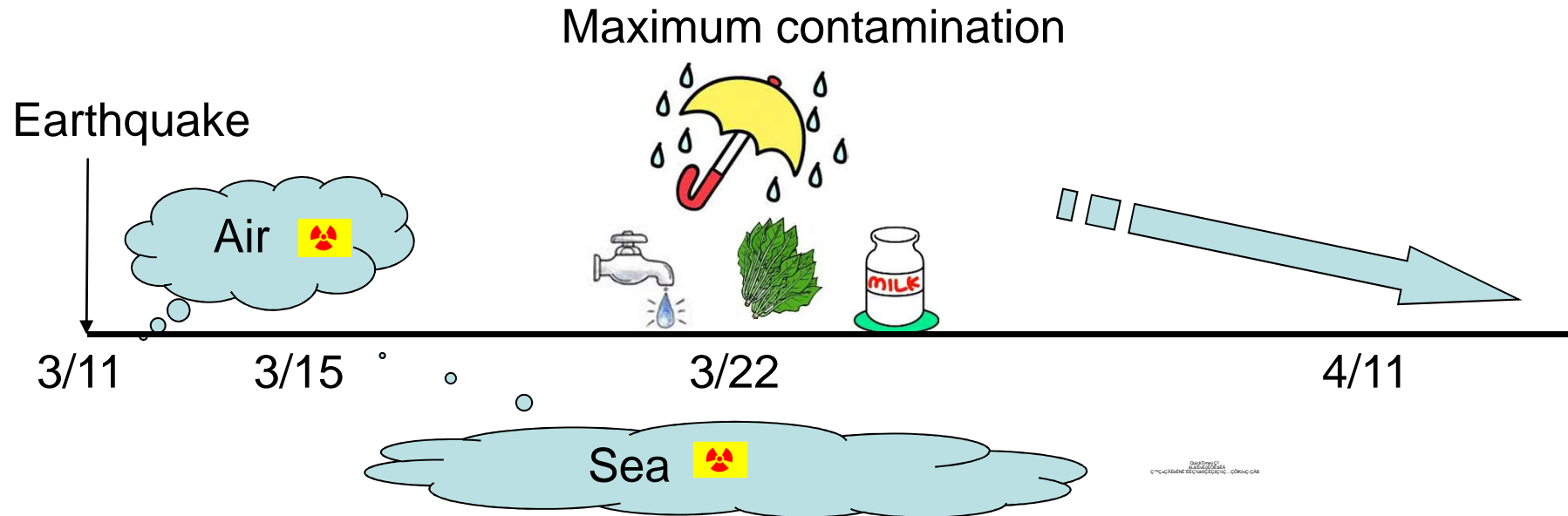
Stay 20 km away from the nuclear plant, and you are absolutely safe.

Do not try to enter the nuclear plant.





Fukushima : Time course of release of radioactive materials



Contamination levels are **very low** even at maximum levels
Contamination levels are improving

If you take in these contaminated water **more than 1Kg for 1 year**,
you may get slightly increased risk for cancer.....

2. Inhalation of contaminated air (by breathing)

Once air in this area
was contaminated
with radioactive materials
at very low levels.

Currently radioactivity of air in Tokyo
is less than half of that in Moscow



3. Tapwater



Once tapwater in this area was contaminated with radioactive materials **at very low levels.**

At that time, if you drink >10 L of tapwater every day for years, you might get slight increase of cancer risk.



4. Food



Quantity of
Cesium-137
in the
milk
of cows
in the
area
of
Sendai
in
1986

Vegetable, milk, and fish in this area might be contaminated with radioactive materials **at very low levels.**

If you have such food more than 1 Kg every day for years, you might get a slight increase of cancer risk.

Contaminated food won't be shipped to market.



Possible question

Q: I have heard that Fukushima is now rated 'Level 7', the same as Chernobyl. If there is a big difference between Fukushima and Chernobyl, why the same level?

A: Many experts in United Nations, USA, France, Russia, and other countries think that this rating system is not good for evaluating big accident. I expect that the rating system will be changed in the future to avoid confusion. I think that if Fukushima is '7', Chernobyl should be '8' or even '9'. Many experts will agree.

Do not worry too much

External exposure : you are absolutely safe as long as you stay 20 Km away from the plant.

Internal exposure : Air, tapwater, vegetable, milk, and fish near the nuclear power plant are once contaminated with radioactive materials **at very low levels**.

Overall, radioactivity is decreasing to normal levels.

If you take in (maximum) contaminated water/food **more than 1 Kg every day for 1 year**, you might get slightly increased cancer risk.

Research Institute for Radiation Biology & Medicine will inform you immediately if the situation worsens.