

# Nuclear: War of Human Consequences

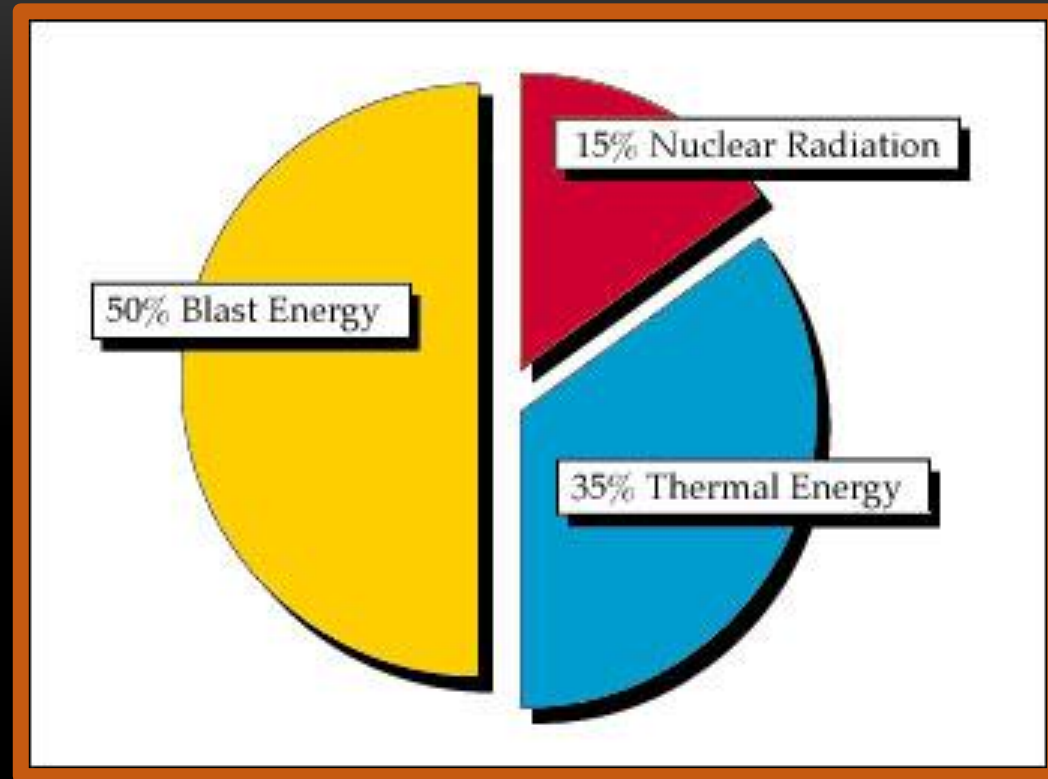
**Mary Olson, Nuclear Information and Resource Service**

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

Presentation posted:

<http://tinyurl.com/OlsonVienna-scrolldownpage>

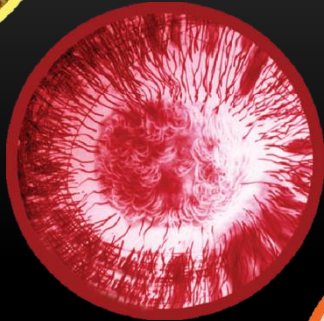
# The energy profile of a nuclear explosion:



# Icons used in this paper:



**Blast / Shock**



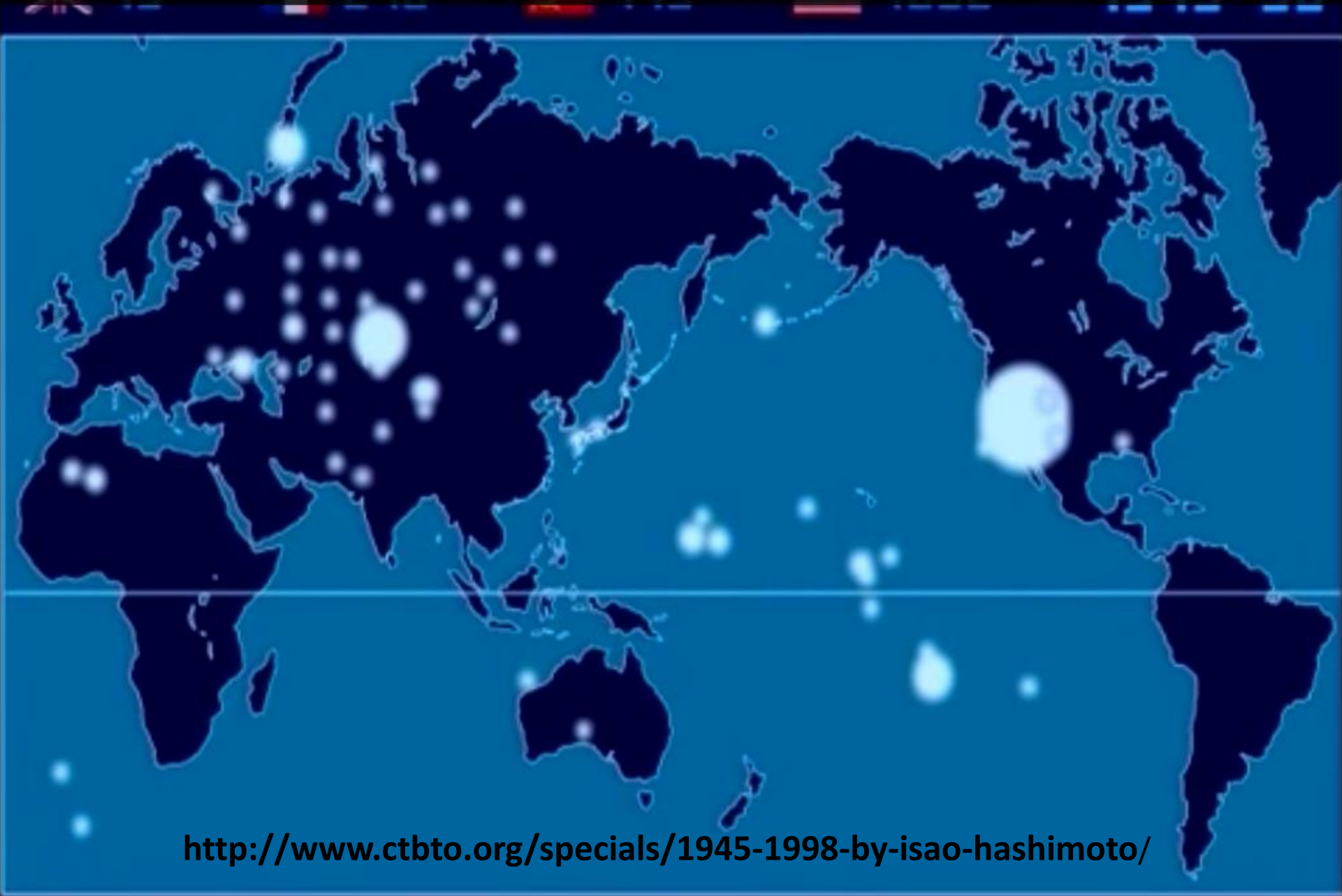
**Fireball / Thermal**



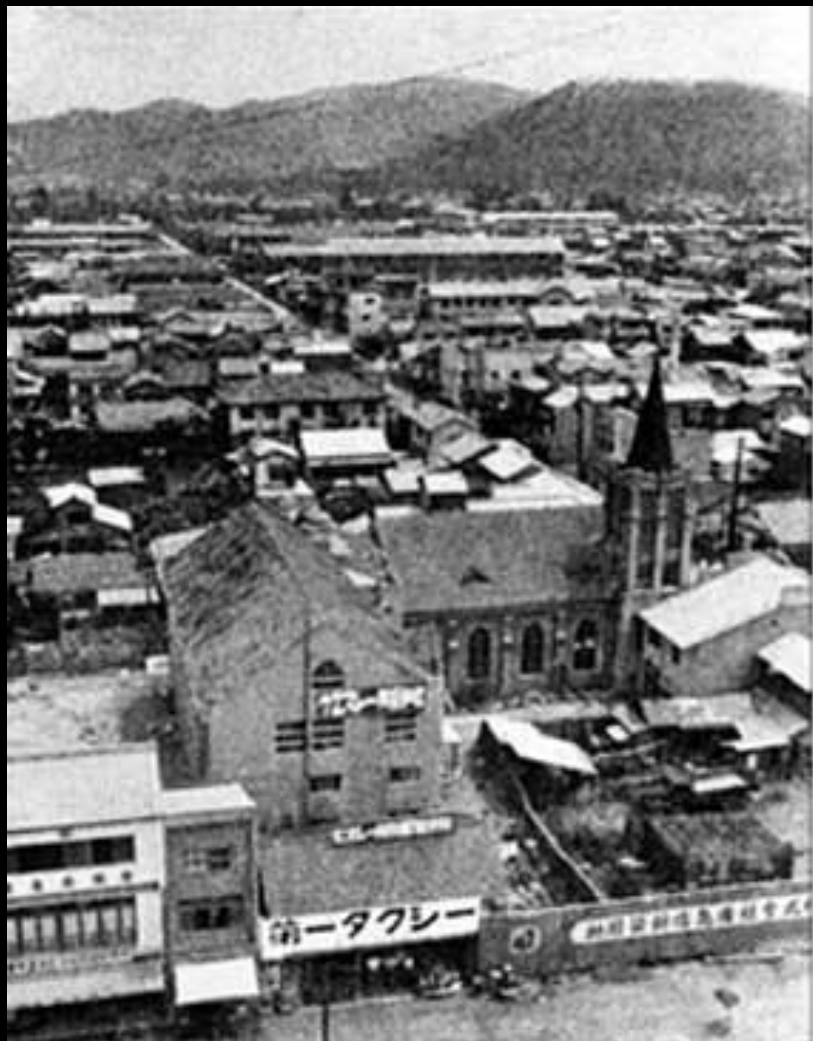
**Immediate Gamma / Neutron Radiation**



**Fall-Out / Persistent Radioactivity**



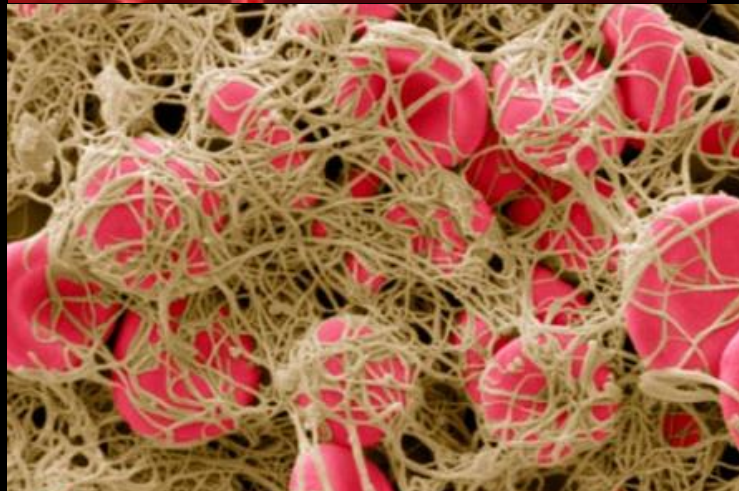
<http://www.ctbto.org/specials/1945-1998-by-isao-hashimoto/>

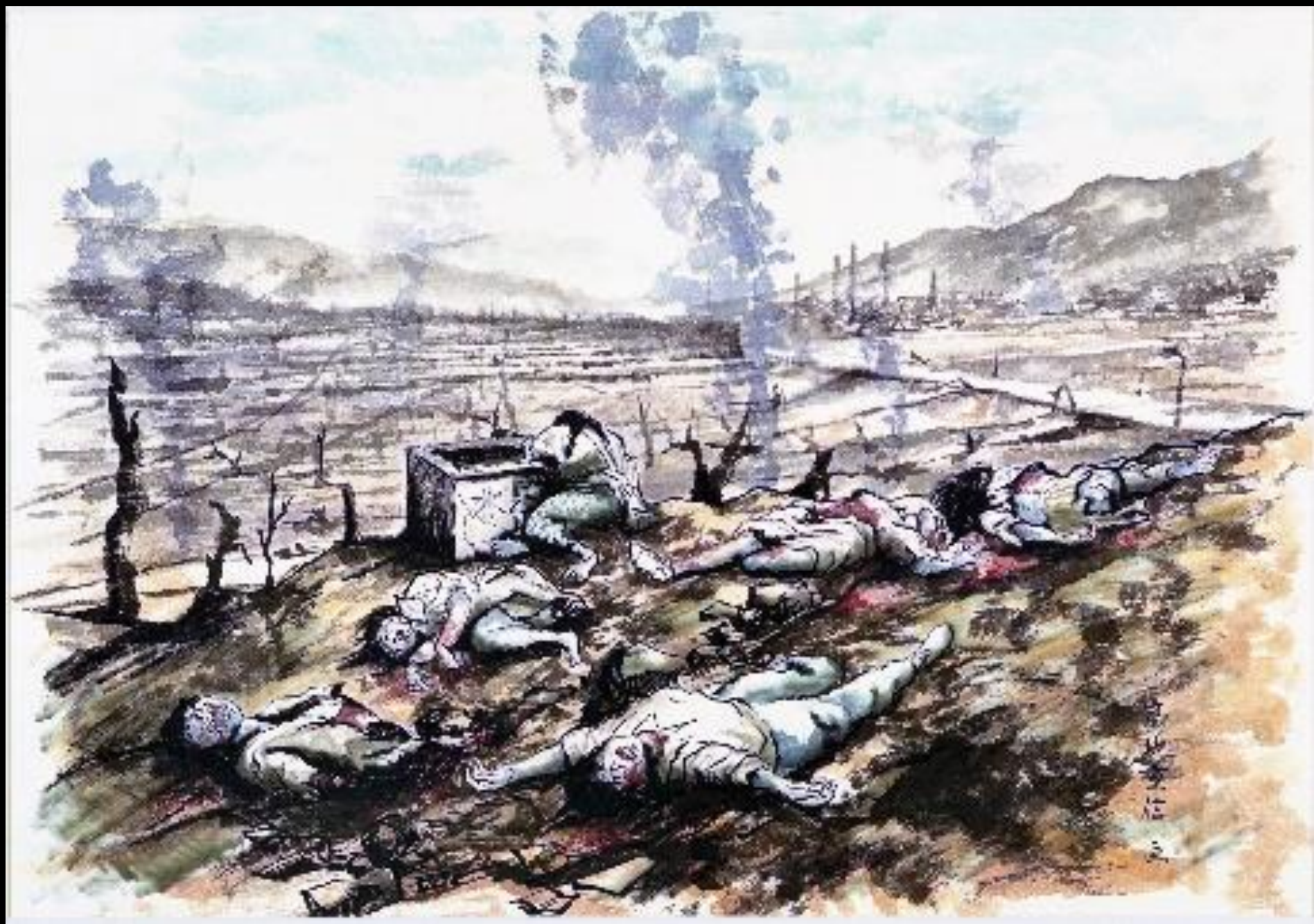


**Nagasaki, 1945**



- Blast: Immediate Medical Consequences







# Thermal: Immediate medical consequences

At Ground Zero temperatures are as hot as the surface of the sun (7000° F / 3800° C)

Resulting winds of 160 -- 500 mph / 250 -- 800 kph leveling people, homes and vegetation;

Immediate updraft of mushroom cloud carries particulate to atmosphere.









Immediate Air Radiation levels:  
Lethal if not shielded

### **Hiroshima:**

Gamma rays: 10,300 rads / 103 Gy;

Estimated neutrons: 14,100 rads / 141 Gy

### **Nagasaki:**

Gamma rays: 25,100 rads / 251 Gy

Estimated neutrons: 3,900 rads / 39 Gy

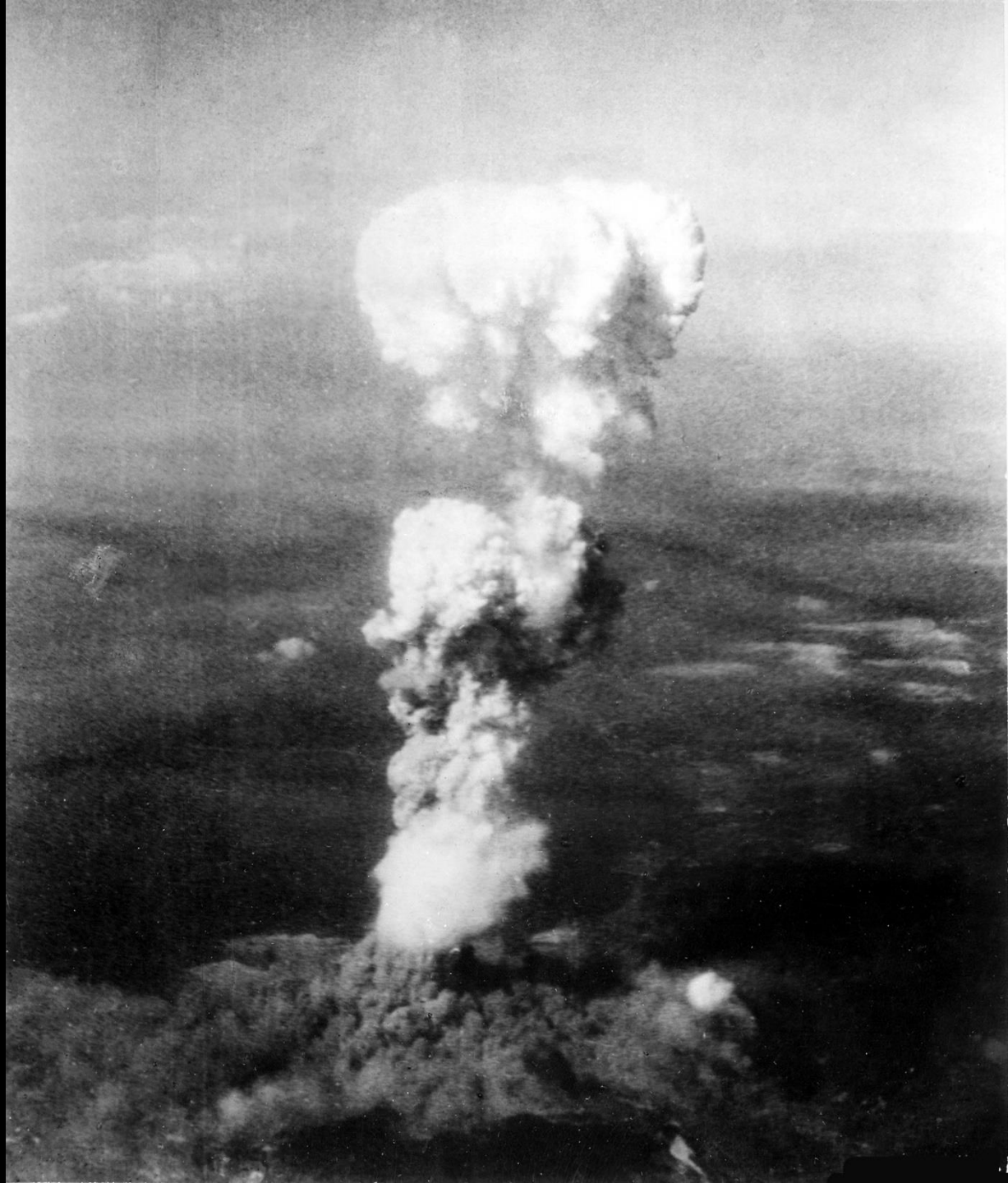
**Lethal level ~ 4.5 Gy**

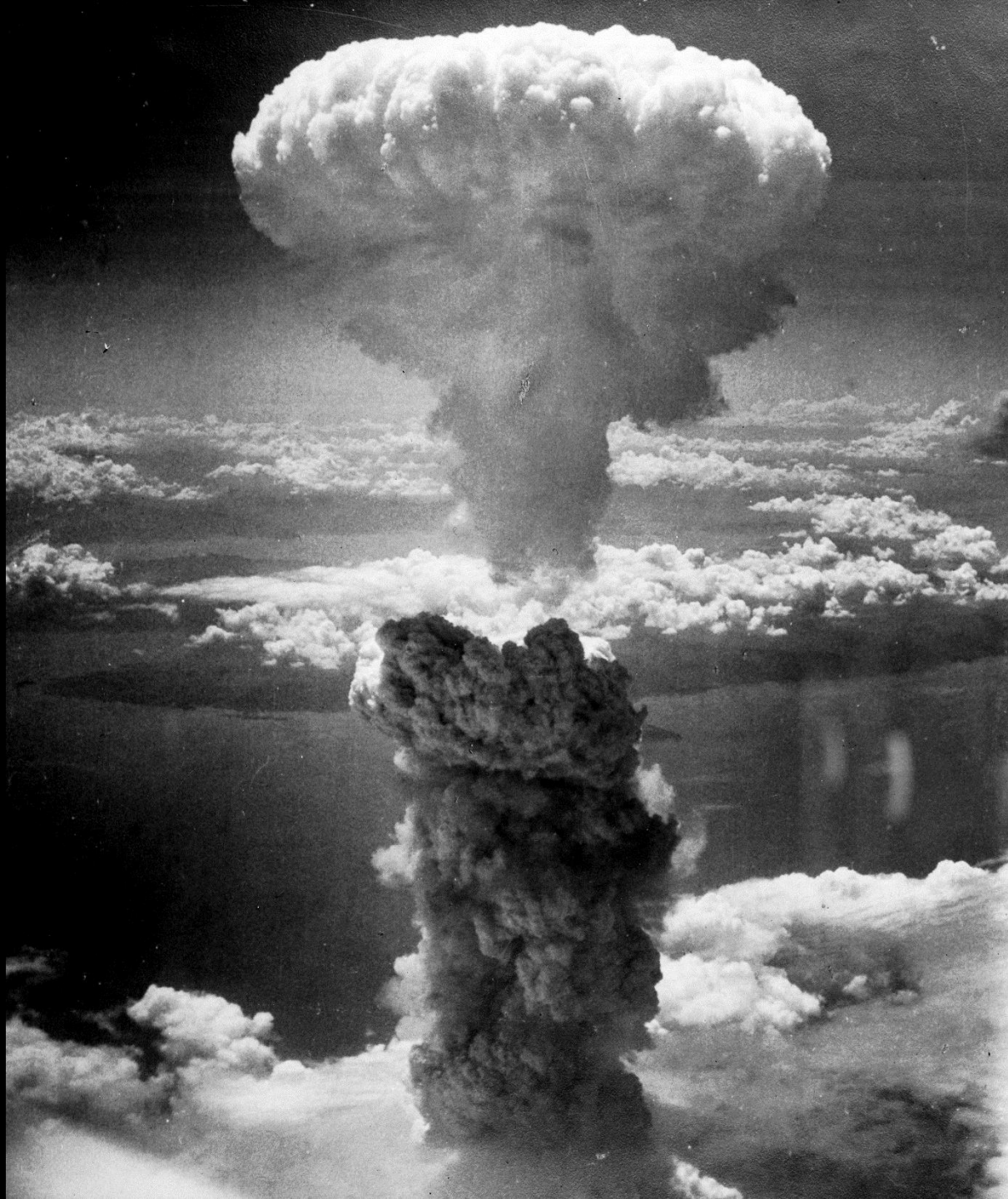


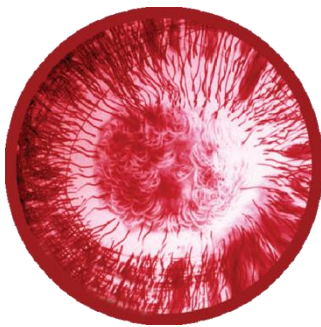
# Acute High-Dose Ionizing Radiation: Immediate Medical Consequences

In the human body systemic failure is in three forms:

1. (> 30 Gy whole body) **Cerebrovascular syndrome**
2. (6 to 30 Gy whole body) **Gastro-Intestinal syndrome**
3. (1 to 6 Gy whole body) **Hematopoietic syndrome**







## Immediate Fatalities

City	Estimated Population at the time of the bombing	Estimated number of acute deaths (with 2 – 4 months)
Hiroshima	340,000 – 350,000	90,000—166,000
Nagasaki	250,000—270,000	60,000—80,000

Source: Radiation Effects Research Foundation



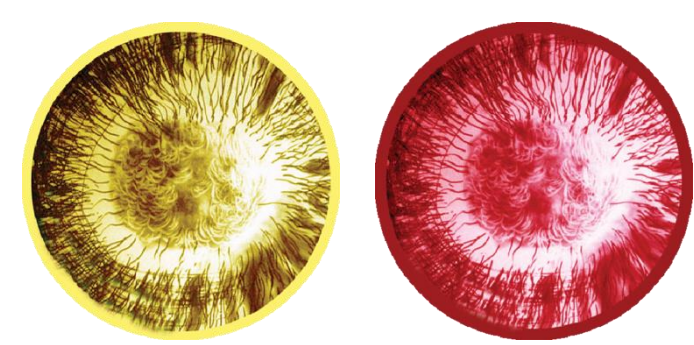




## Community Infrastructure Gone

At Hiroshima, 270 of 300 Doctors perished  
and also 1654 of 1780 nurses

Source: ICRC Resource Center



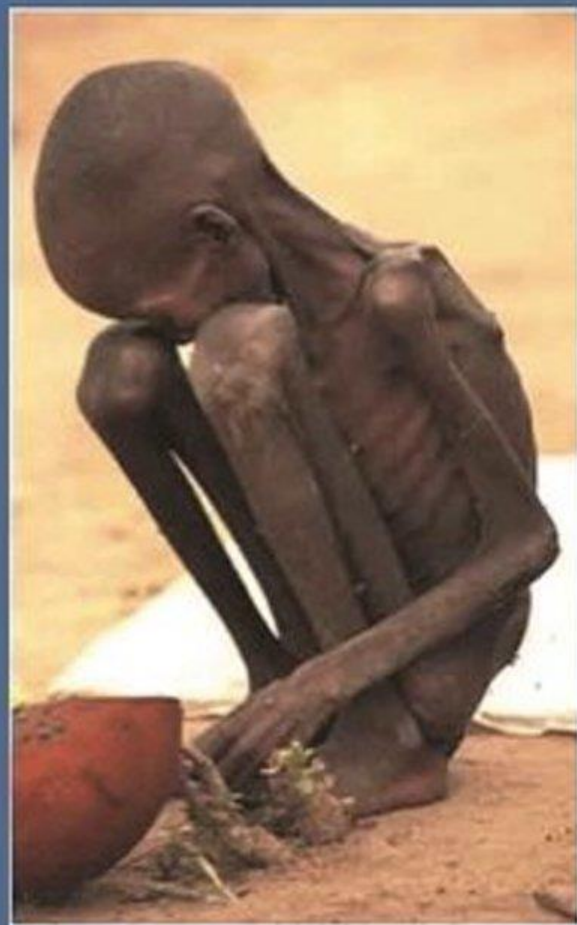
# Climate and Public Health Impacts

- Firestorms from 100 Hiroshima-size bombs used against modern cities would inject 5 teragrams of smoke and soot into the atmosphere, blocking sunlight from reaching the Earth.

International Physicians for the Prevention of Nuclear War Action Kit on Humanitarian Impacts of Nuclear Weapons: <http://hinwcampaignkit.org/>



# Multiple nuclear explosions can destroy societies/ecosystems



**2** billion dead  
from starvation  
alone?





# Ionizing Radiation: No Safe Dose

- All regulatory agencies acknowledge that every exposure to ionizing radiation carries risk of harm:

**There is no “safe” dose of ionizing radiation:**

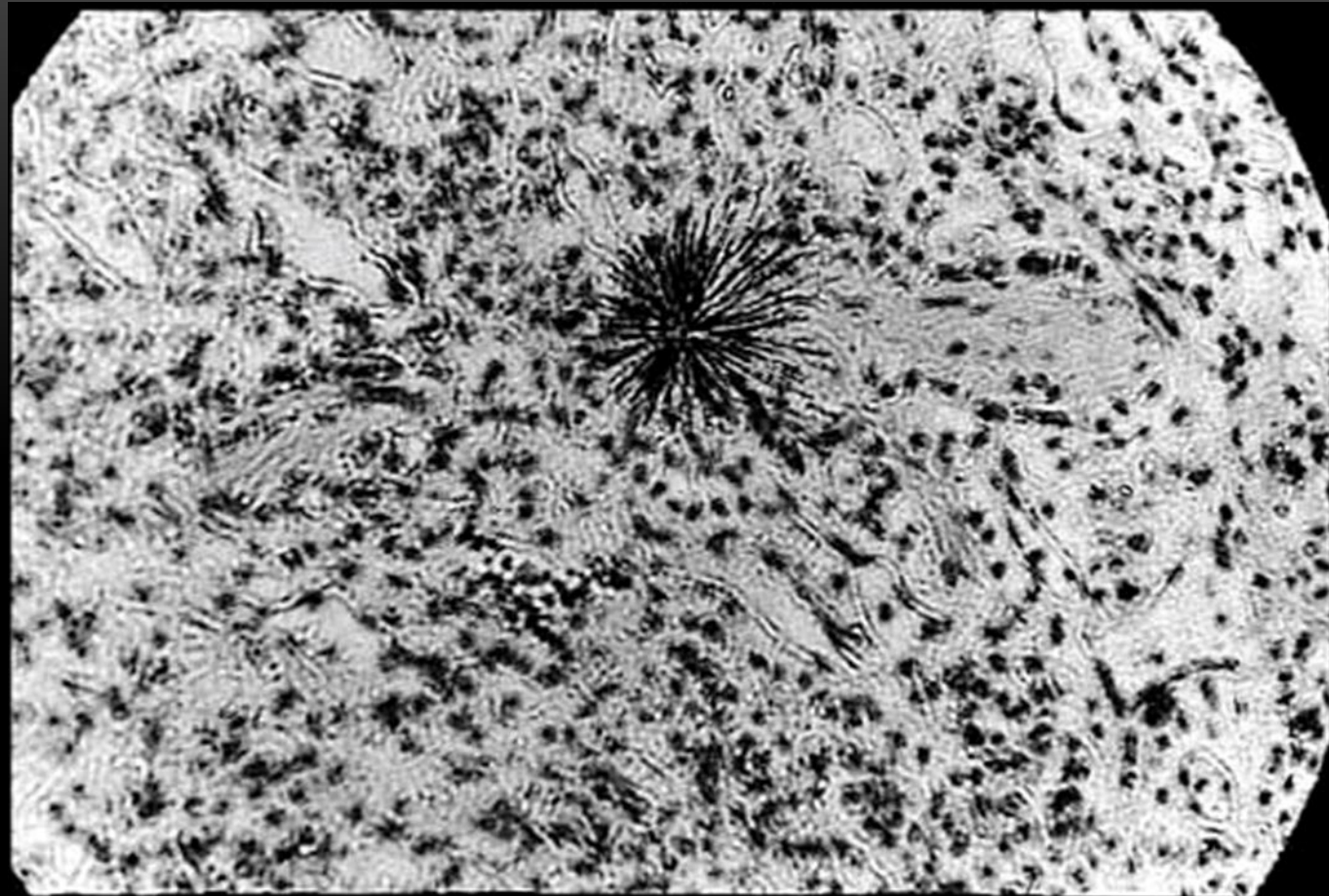
**It is not safe for adult males.**

**Recent findings:**

**Ionizing radiation is even less safe for children and for females.**

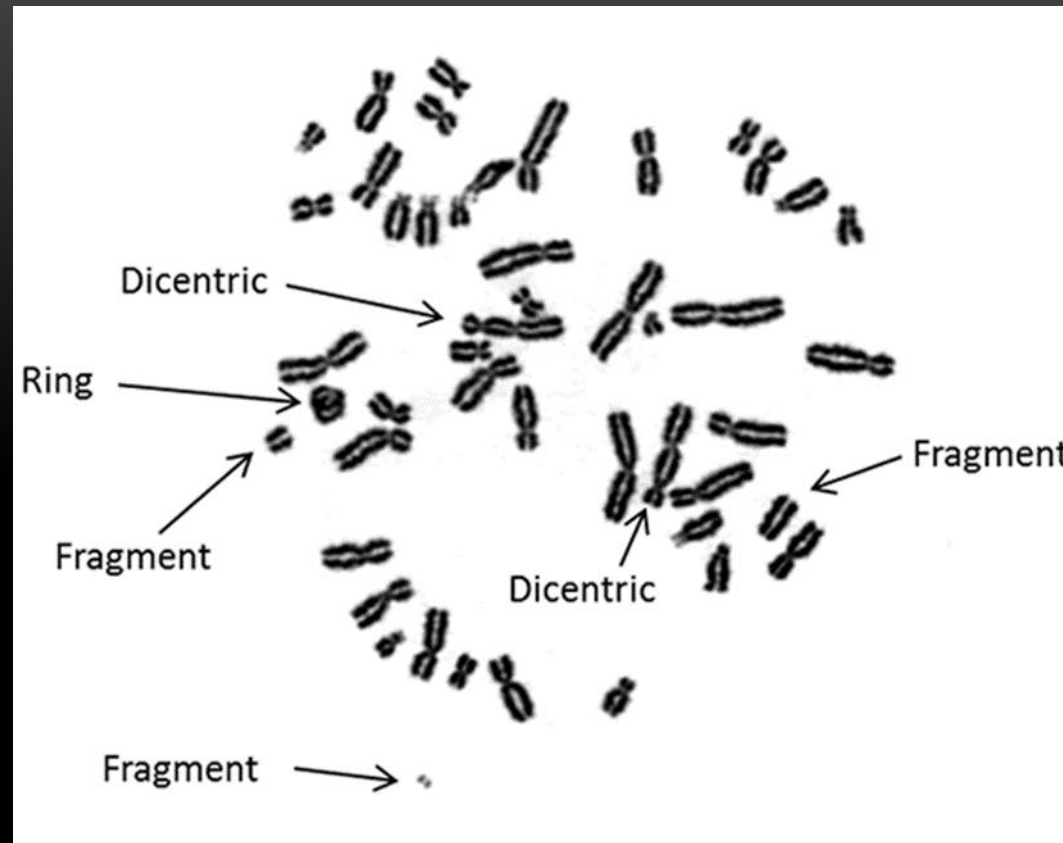


# Visible damage from Plutonium emitting alpha radiation in lung tissue



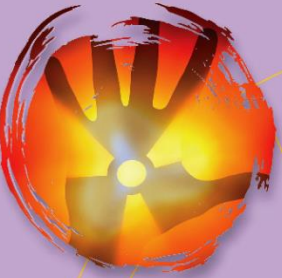


# Radiation Induced Chromosomal Aberrations, as seen with microscope



# RADIATION AND HEALTH

Radiation is different from any other poison.



Radioactivity lasts for many thousands of years. If it gets into the land, water, plants and animals, it might be too dangerous to go there, to hunt, or to collect tucker for many generations.



IT BREAKS THE STORIES OUR BODIES HOLD THAT KEEP US HEALTHY. DAMAGED STORIES CAN BE PASSED ON TO OUR CHILDREN.



Radiation causes cancer. The most common cancers caused by radiation are cancer of the thyroid, breast, lung and blood. Sometimes it can take many years before the cancer grows.



In a nuclear reactor, radioactivity is increased a million times.

Uranium in the water can cause kidney damage.

Mining uranium increases people's exposure to radiation.



There is no safe dose of uranium.



# RADIATION HAS INTERGENERATIONAL CONSEQUENCES

IT BREAKS THE STORIES OUR BODIES HOLD THAT KEEP US HEALTHY. DAMAGED STORIES CAN BE PASSED ON TO OUR CHILDREN.

**URANIUM** leave it in the ground





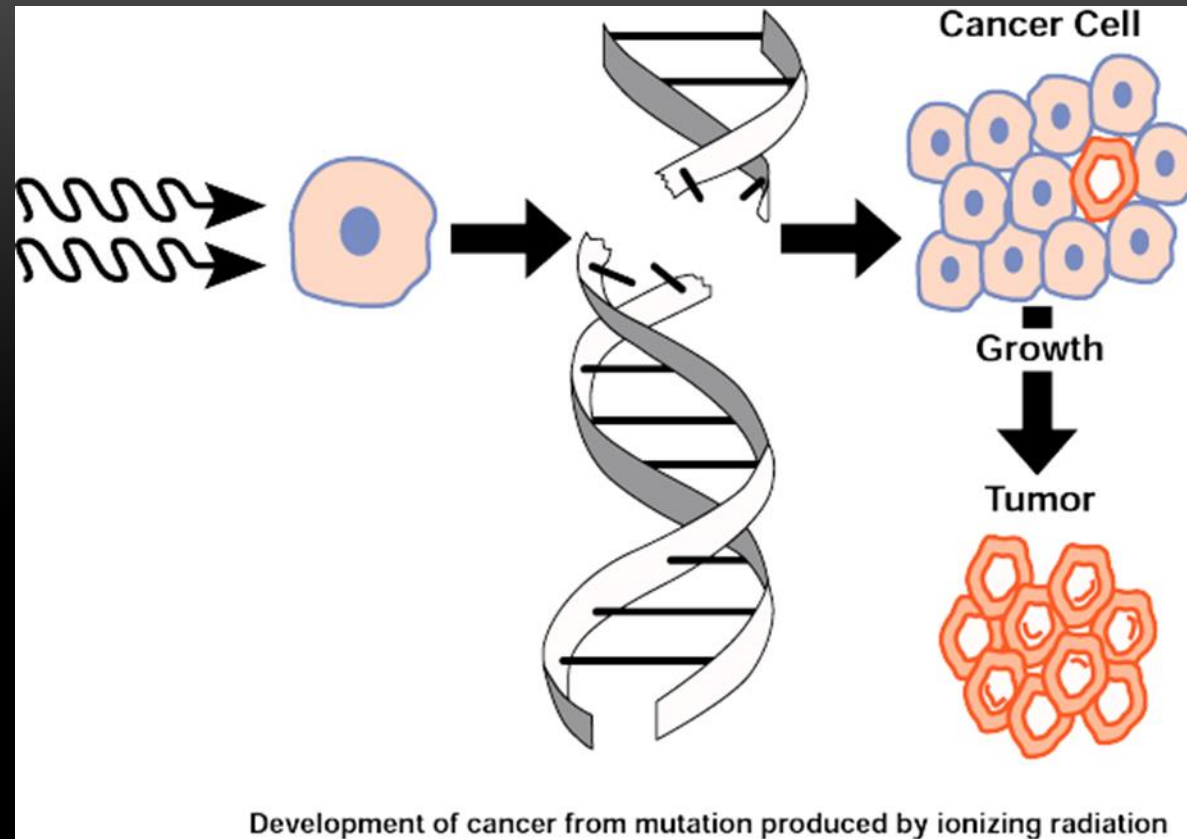


# Ionizing Radiation: Non-Cancer Medical Impacts





# Medical Impacts of Ionizing Radiation: Cancer



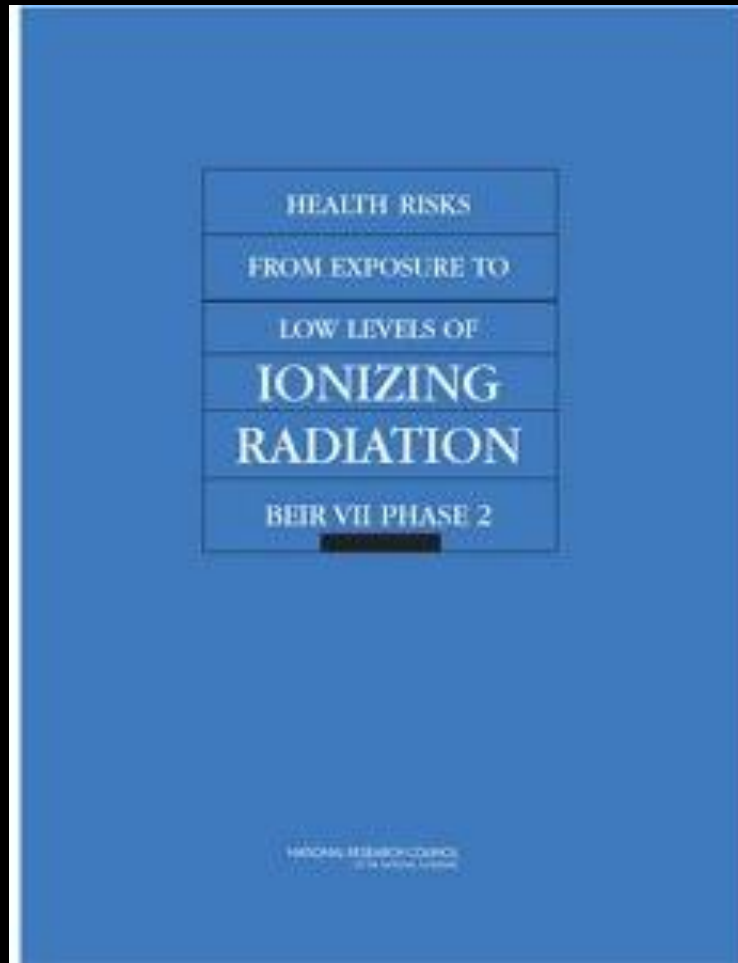
Ionizing radiation harms our cells.



Radiation is more harmful to children



**Children Between Birth and 5 Years**



U.S. National Academy of Science:  
Biological Effects of Ionizing Radiation (BEIR VII Phase 2)  
published 2006.



# Lifetime Risk of Cancer Incidence (acute exposure between birth and age five)

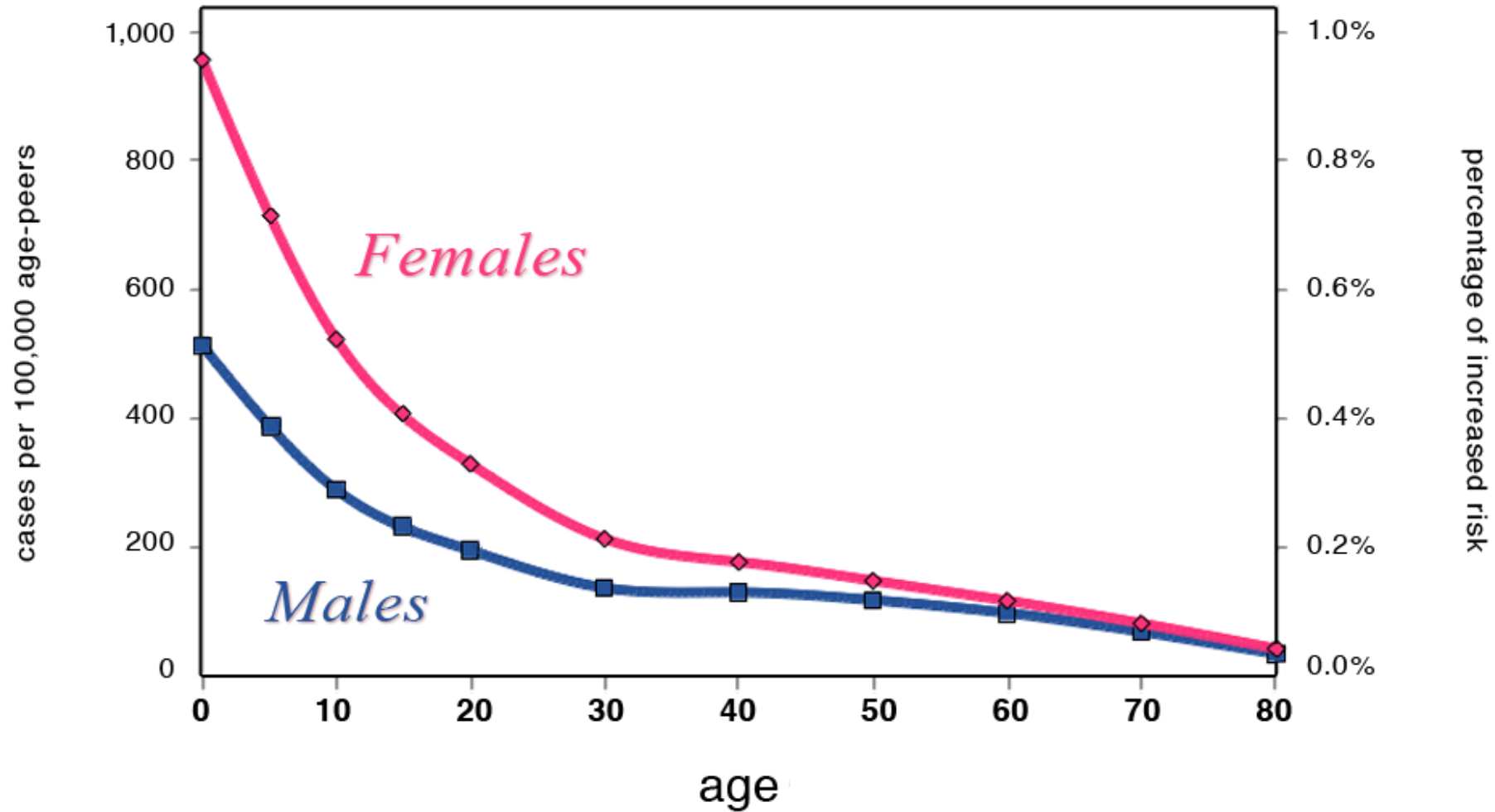


**2 Boys**



**4 Girls**

## Increased Cancer Risk by Age at Exposure to 20 mSv Radiation

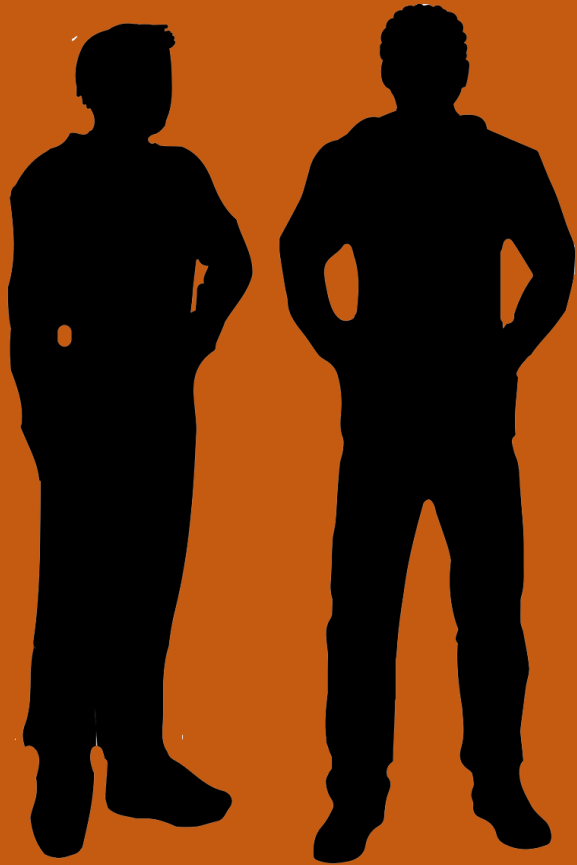


Data points from: U.S. National Academy of Sciences BEIR VII Phase 2 Risk Model





# Lifetime Cancer fatalities among those exposed to ionizing radiation as adults



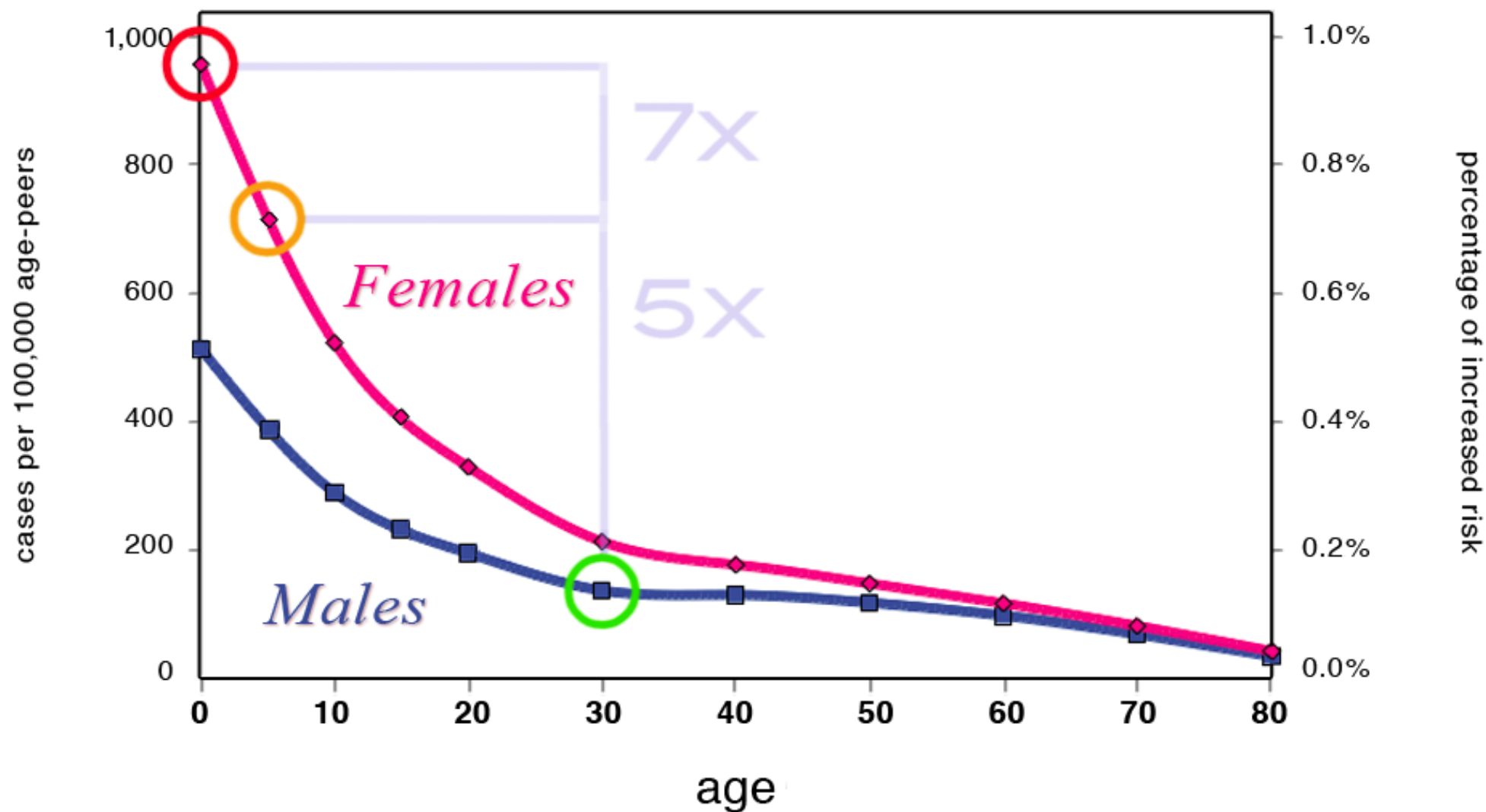
**2 Men**



**3 Women**



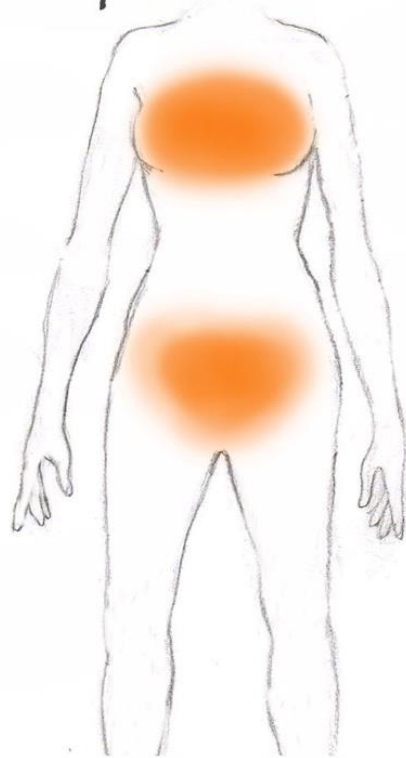
# Increased Cancer Risk by Age at Exposure to 20 mSv Radiation





# Possible Factors in Gender Difference

Females have 50% more  
high-risk tissue  
compared to males





# “Collateral Damage” Nuclear Power Stations Could Multiply Radiological Impacts







**Earth will be more safe,  
people will be more healthy  
when we have  
ended the Atomic Age, peacefully,  
by investing in strong and  
just agreements.**

-- view of a traditional healer



FOSTER — KLEISER

**Nuclear  
War**

**No Cure  
Only  
Prevention**

BALTIMORE PHYSICIANS FOR SOCIAL RESPONSIBILITY - (301) 235-7760

A billboard advertisement with a black background and a white border. The text is arranged in two columns. The left column features the words "Nuclear" and "War" in a bold, red, serif font, positioned above a white silhouette of a mushroom cloud. The right column features the words "No Cure", "Only", and "Prevention" in a bold, yellow, sans-serif font. At the bottom of the billboard, the text "BALTIMORE PHYSICIANS FOR SOCIAL RESPONSIBILITY - (301) 235-7760" is written in a smaller, white, sans-serif font. The billboard is mounted on a metal frame, and the name "FOSTER — KLEISER" is visible at the top.

