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# Fundamental Issues

- 1.No safe dose of radiation
  - 2.Medical effects of radiation
  - 3.Reality of nuclear waste
- 
- 1.Must be kept out of environment  
for thousands of years

# Purpose of this presentation

To Discuss the hazards of Radiaton

To Discuss some of the long term issues regarding nuclear waste and monitoring that should be done

To discuss some of the problems that have existed in monitoring the nuclear Fuel cycle and leakage that has occurred in the past in facilities similar to SRS

To heighten awareness of the importance of citizen input into the monitoring process

There is no safe dose of radiation

# Biologic Effects of Ionizing Radiation (BEIR VII )

National Academy of Science

Low doses of radiation

Direct linear relationship between dose and  
development of solid tumors

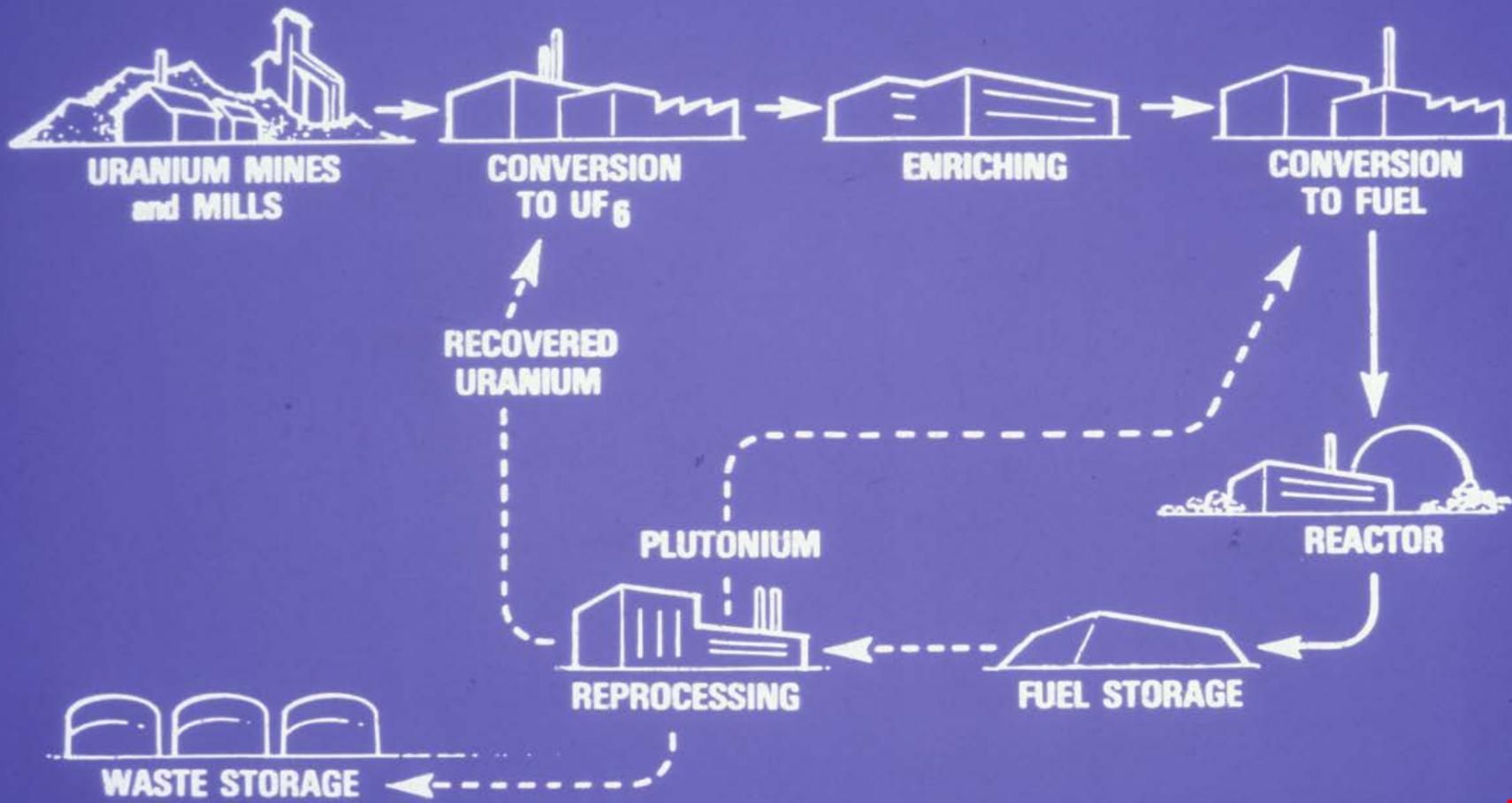
There is no “safe” dose of radiation

BEIR VII June 2005

# Radiation Risks

- One individual in 1000 will develop cancer from 10 mSv exposure (a whole body CT scan)
  - Chest xray =0.1 mSv =10mRem
  - Average Background dose US 2-3 mSV

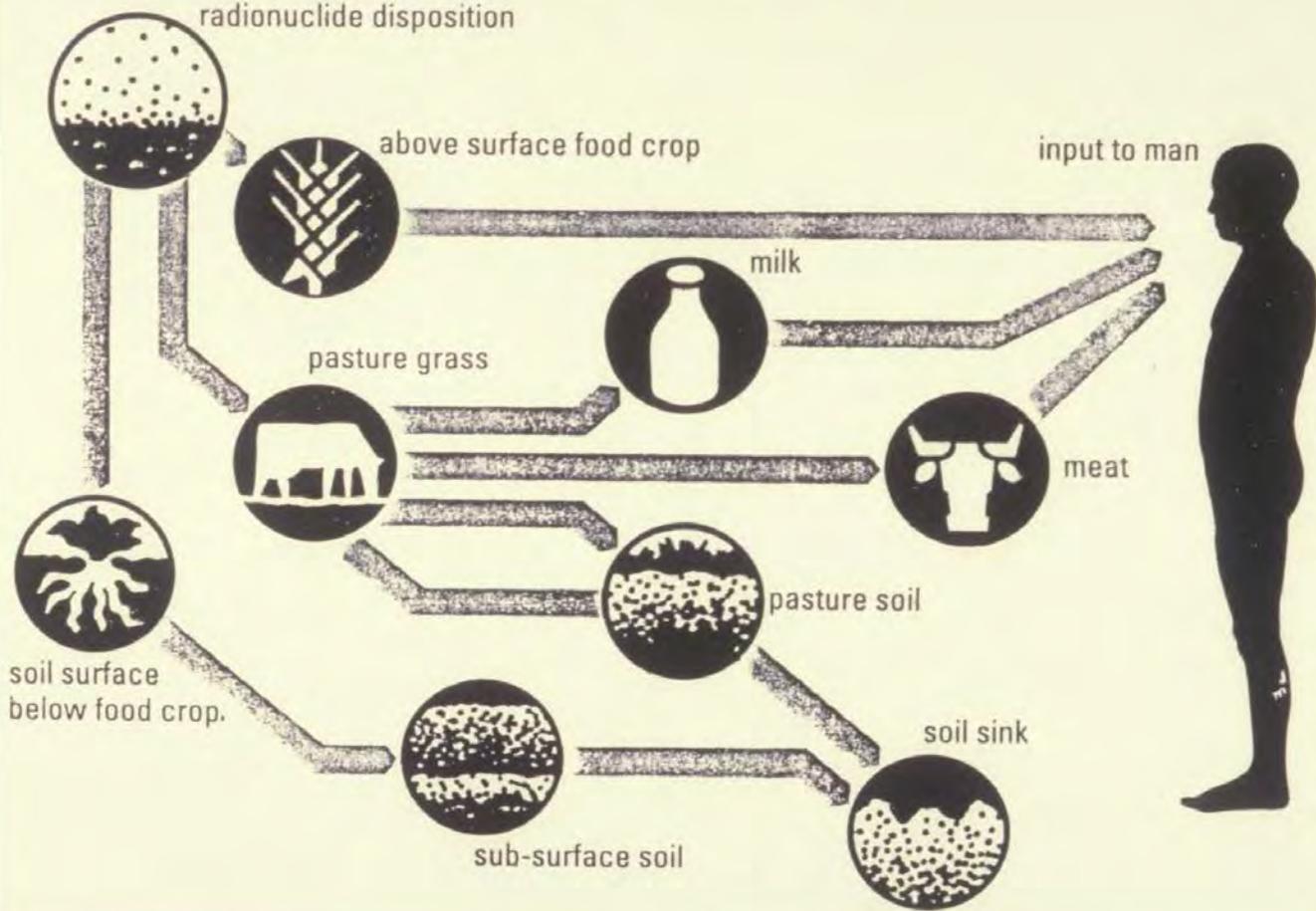
Figure 2: The Nuclear Fuel Cycle







### 3.6 ENVIRONMENTAL PATHWAYS



# Radiation disasters

Nuclear explosions 1945-1998

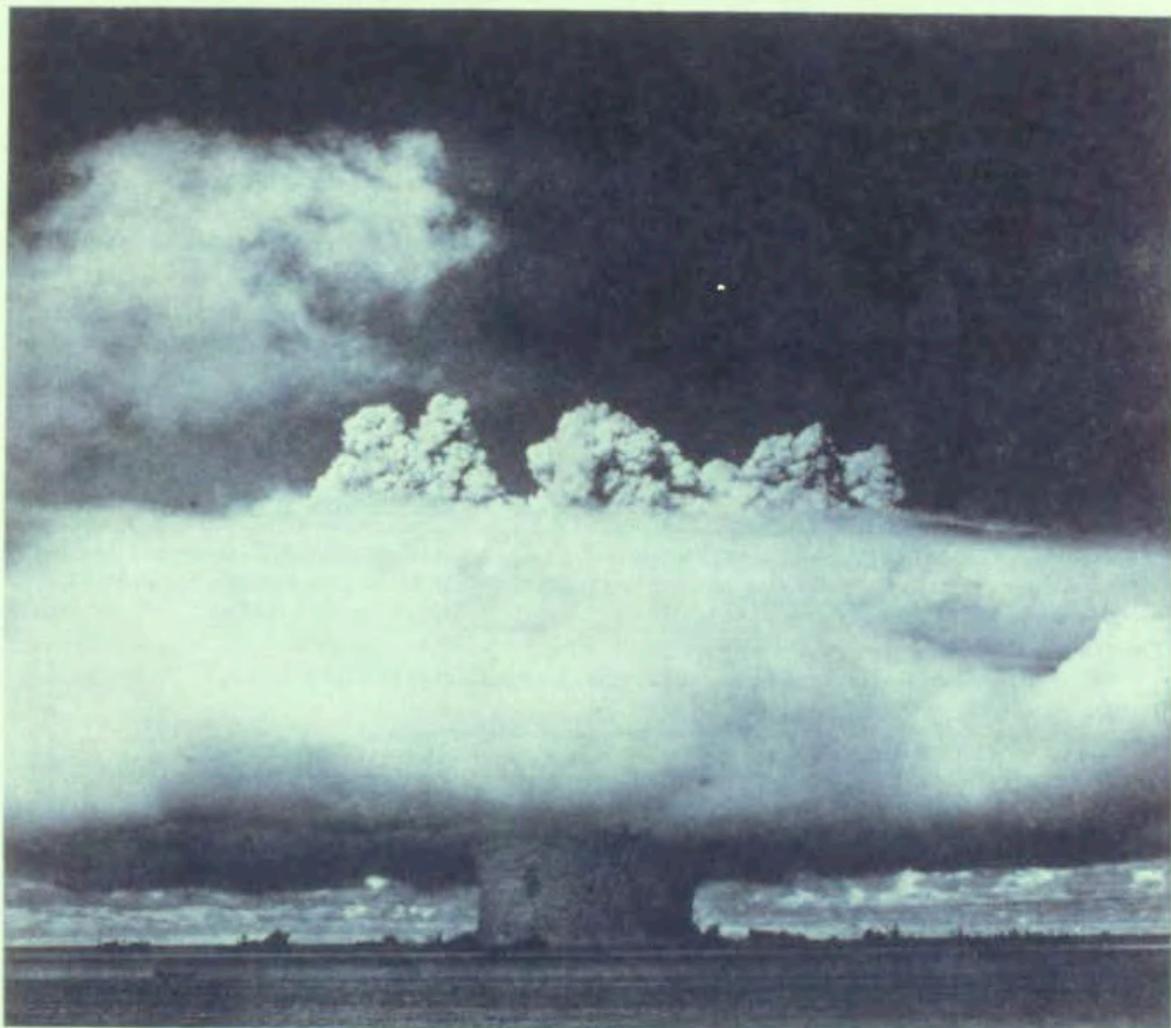
Kyshtym (Chelyabinsk) 1957

Three Mile Island 1979

Chernobyl 1986

Fukushima 2011

Mining, tailings, countless leaks, waste



4-10 BAKER DAY: NUCLEAR EXPLOSIONS GO UNDERWATER





# Dr. Alice Stewart

## Effects of xRay on unborn fetus

1 pelvic xray increases the chance of child developing leukemia by 1.5

Pelvimetry was common 25 years ago

# Effects of early Xray on fetal development

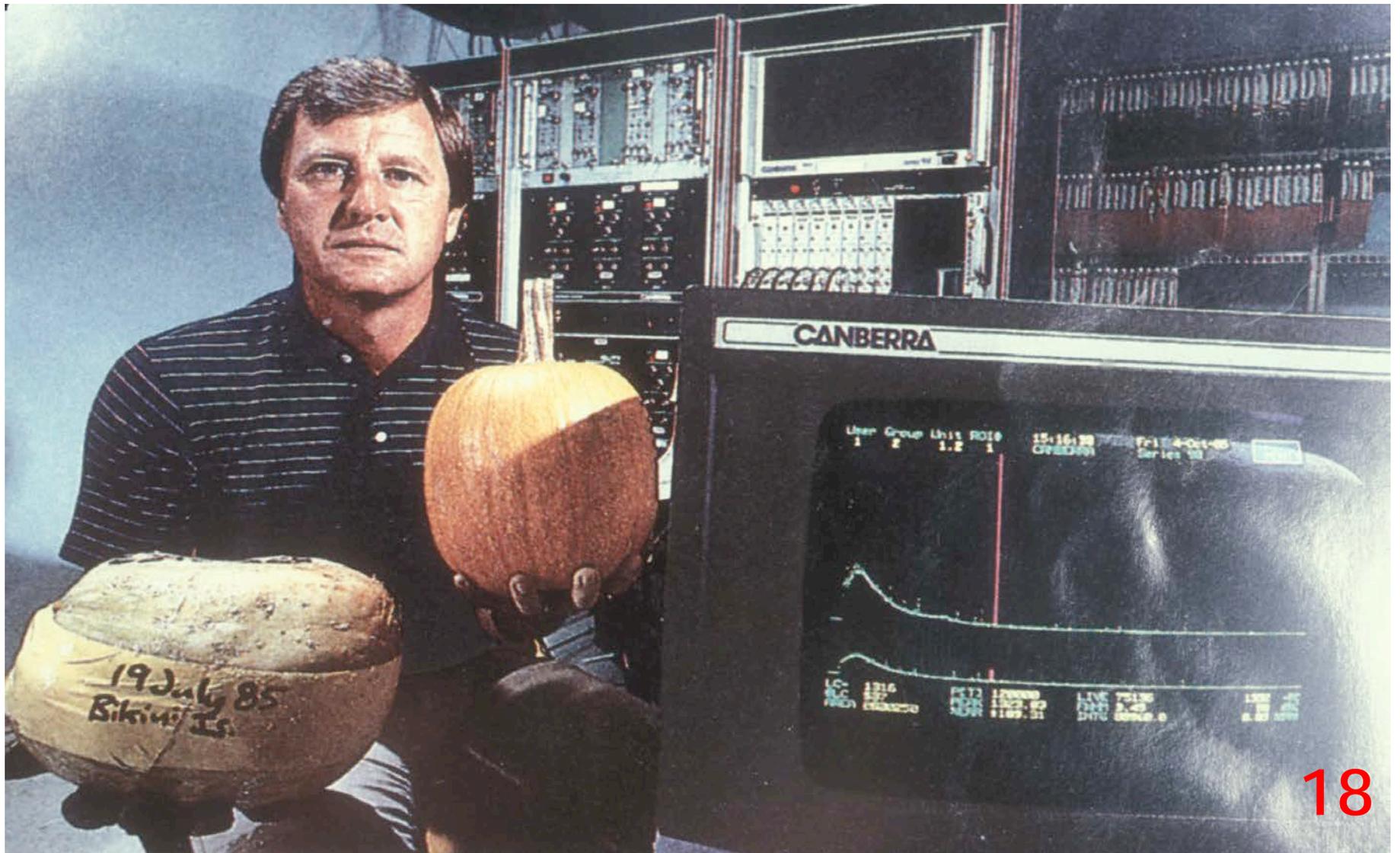
Dental Xrays early in pregnancy

Low birth weight infants

JAMA April 2004

# The amount we don't know far exceeds the amount we know

- External VS internal
- One time exposure VS constant and recurring
- Epigenetics
- Bystander affect
- Long term genetic effects



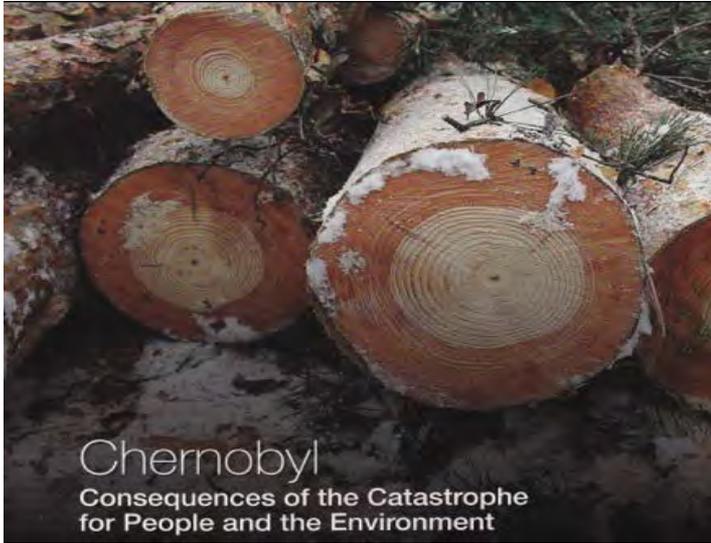
# Chernobyl ecosystem



# Radiation

- Contaminates, befouls, penetrates, pollutes
- Silent and unseen
- Frightens in new and special ways
- Dread lingers on and on

# “Don't lose sight of The Forest for the Trees”



Half of Chernobyl's exclusion zone is forest.

# Don't lose sight of the forest for the Trees

- Blanketing the earth with unmeasured amounts of radiation which will affect the environment for thousands of years

Leakage

Accidents

Waste

# Recommended CAB Actions

- Prescribe strict monitoring of radiation on and off site
- Set in place short and long term epidemiological studies of workers and the surrounding public
- Set in place long term environmental monitoring of the site