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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 Radiation

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
Radiation disasters

Nuclear explosions 1945-1998
Kyshtym (Chelyabinsk) 1957
Three Mile Island 1979
Chernobyl 1986
Fukushima 2011
Mining, tailings, countless leaks, waste
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”
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