



Radionuclides in Food – Where Metrology Matters

William Cunningham, Ph.D.
U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Regulatory Science

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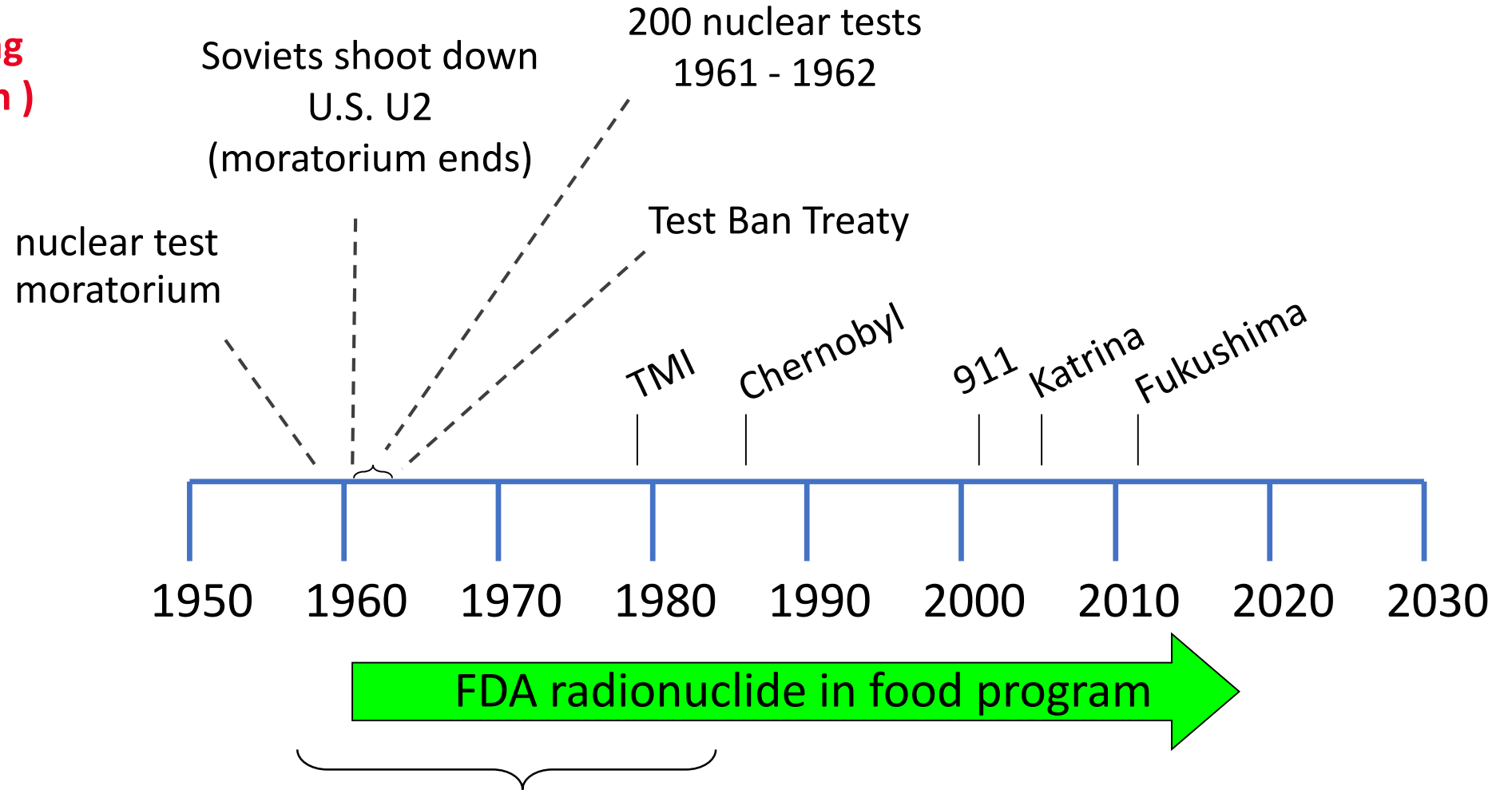
Radiological Laboratory

specialized – relatively small with strong academic influence

federal framework – DOD, DOE, NRC, EPA (MARSSIM, MARLAP)

trusting analysis results – what is role of metrology?
(for radionuclides in food)

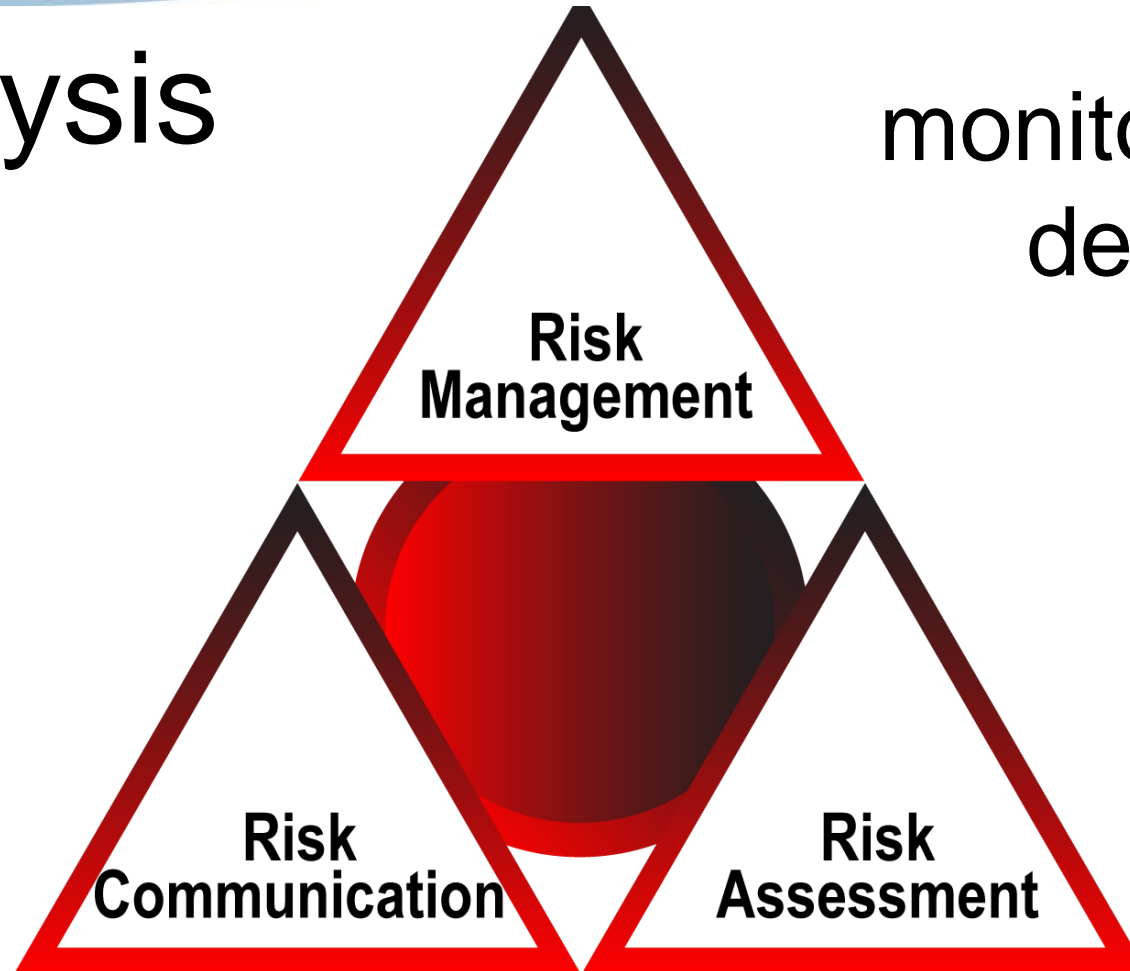
early 1950's cold war
nuclear weapon testing
(international concern)



nuclear power plants 1st in 1957, ~100 by mid-1980's

Risk Analysis

monitor, evaluate,
decide, act



collect & study
data &
information

share info,
address concerns of “stakeholders”

acute

(e.g., salmonella poisoning)

a specific "event"

symptoms (come fast)

must act quickly

- vs -

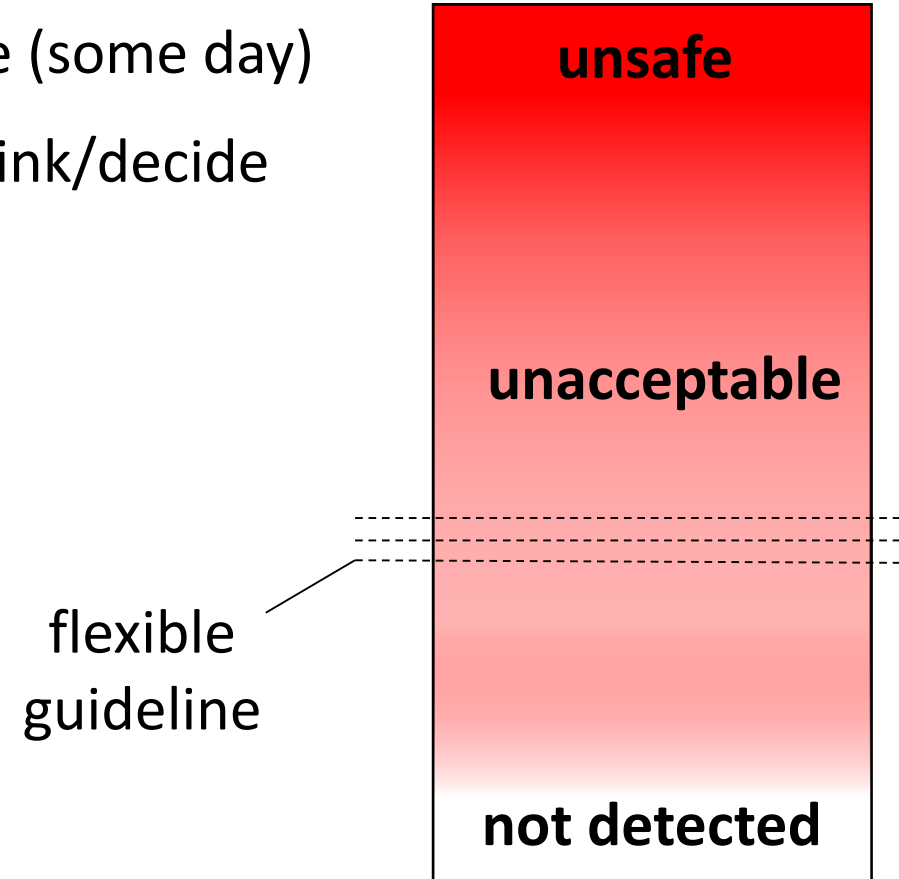
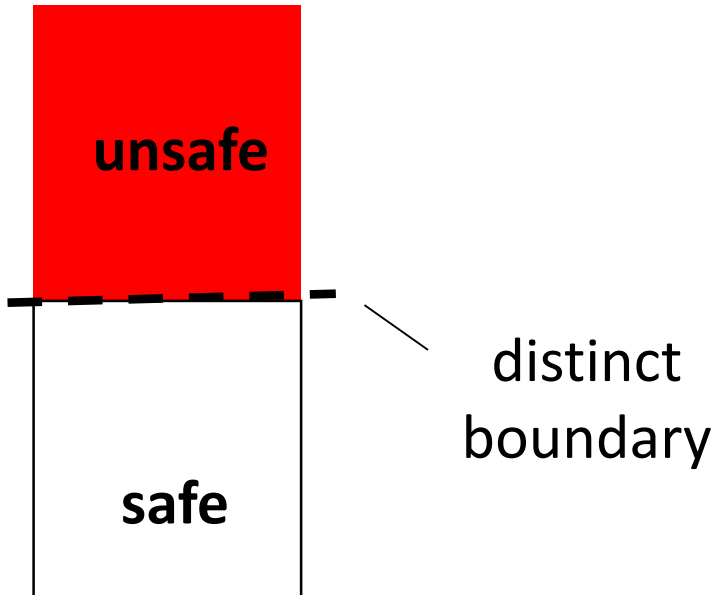
chronic

(e.g., atherosclerosis)

years of exposure

may get disease (some day)

have time to think/decide



radionuclides in food

"Flexible Guideline"

$$DIL = \frac{PAG}{f \cdot Intake \cdot DC}$$

where

DIL = derived intervention level (Bq/kg)

PAG = protective action guide (mSv)

f = fraction of intake assumed to be contaminated (unitless)

DC = Dose Coefficient (mSv/Bq)

How much food would I have to eat this year to reach the PAG?

cesium-137

level (Bq/kg)	intake (kg)
1,000	380
500	770
250	1,500
100	3,800
25	15,000
10	38,000

Intkake
(kg)

