

Radon Basics

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- Colorless and odorless gas



- Decays by releasing ionizing radiation
- Can damage lung tissues increasing risk of lung cancer

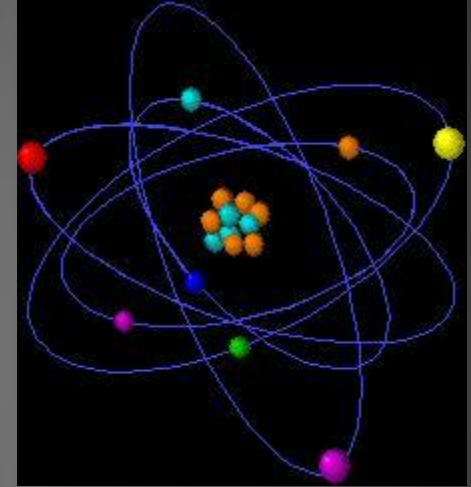
EPA estimates ~20,000 lung cancer deaths/year in US from radon



Why Are Elements Radioactive?

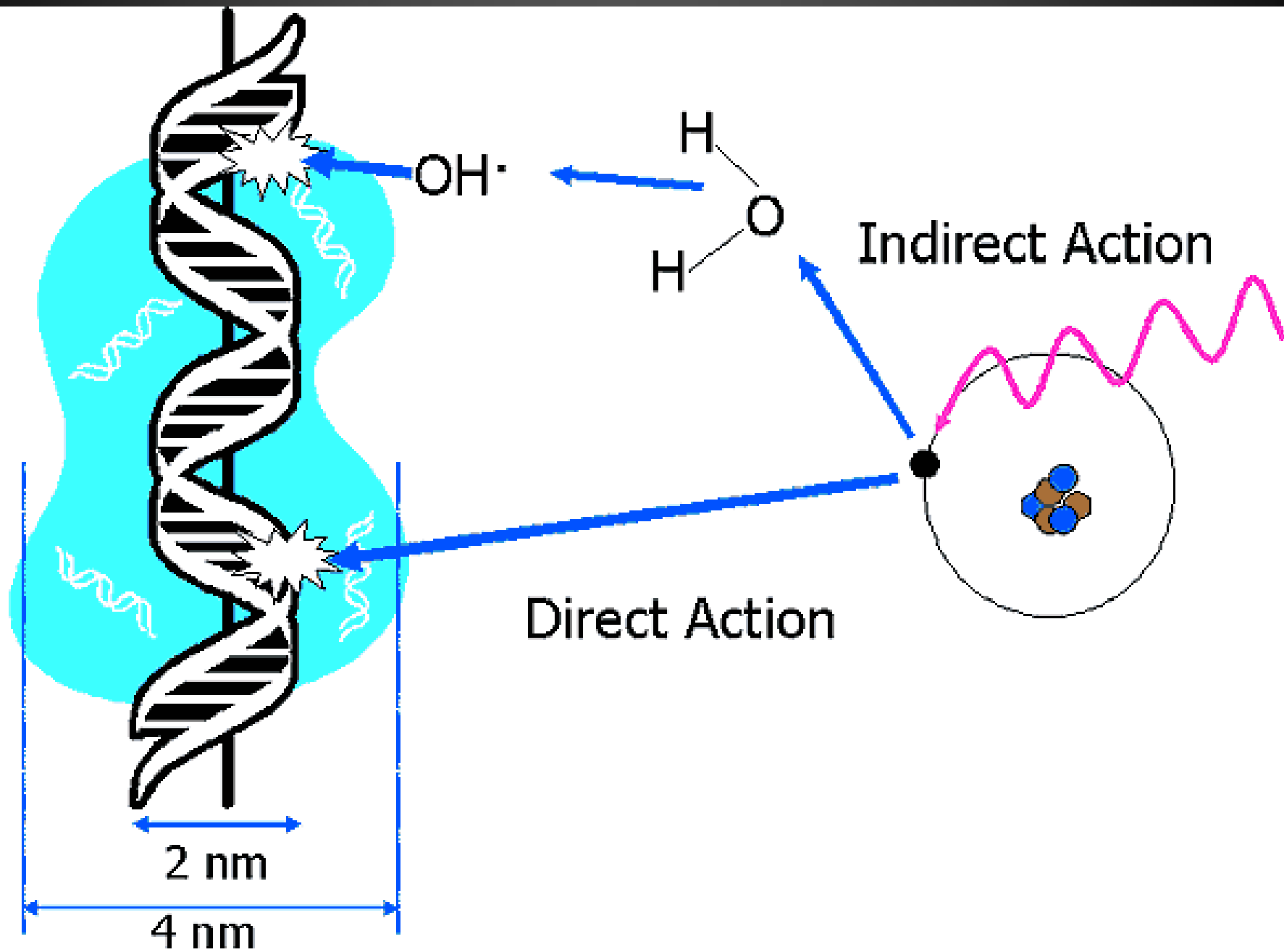
Unstable nucleus:

- Has excess energy.
- Wants to go to stable “ground state.”

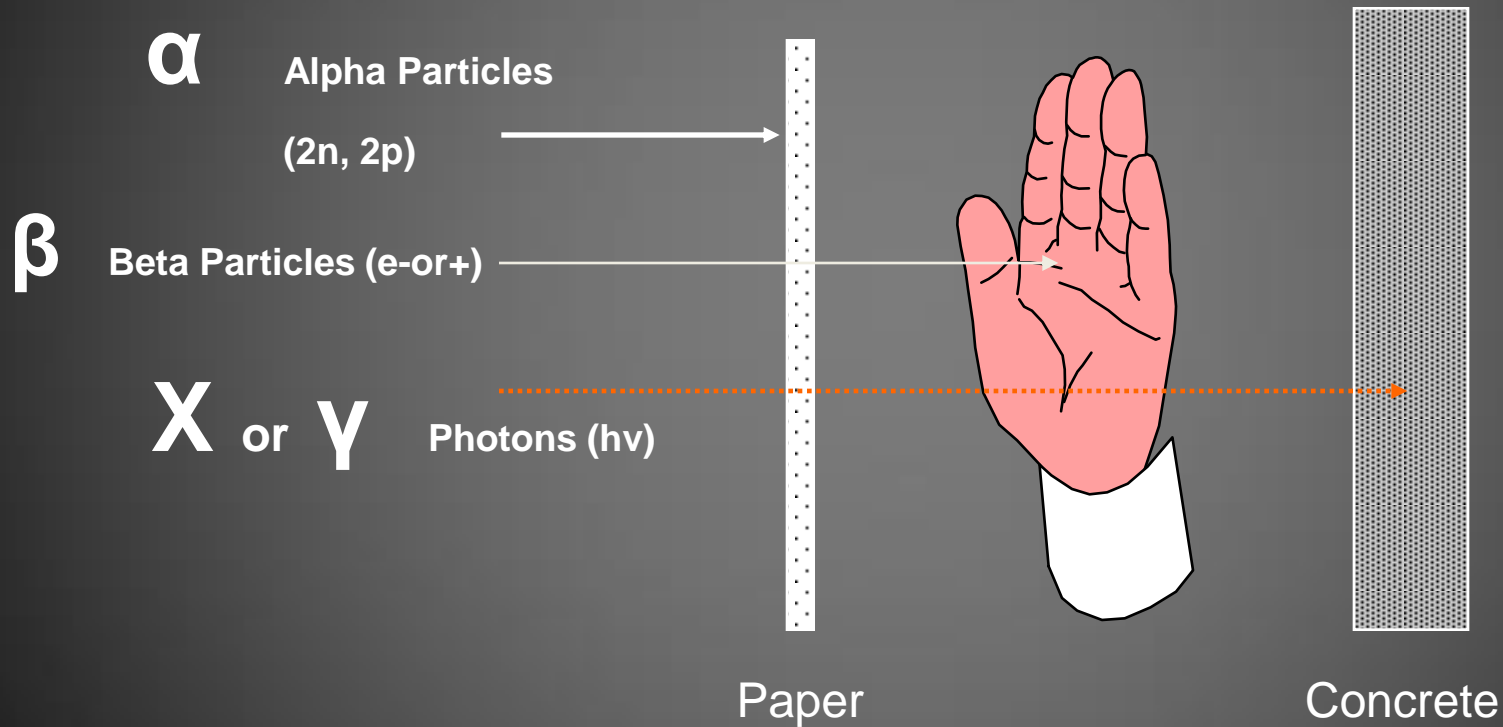


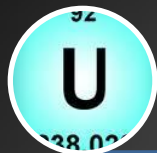
Moves toward stability by emitting ionizing radiation.

What does “ionizing” mean?

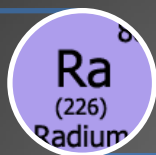


Radiation Types





Uranium- 238



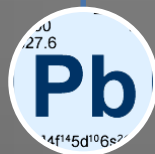
Radium - 226



Radon – 222 (3.8 days) α



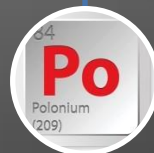
Polonium – 218 (3 min) α



Lead – 214 (27 min) β



Bismuth– 214 (19 min) β

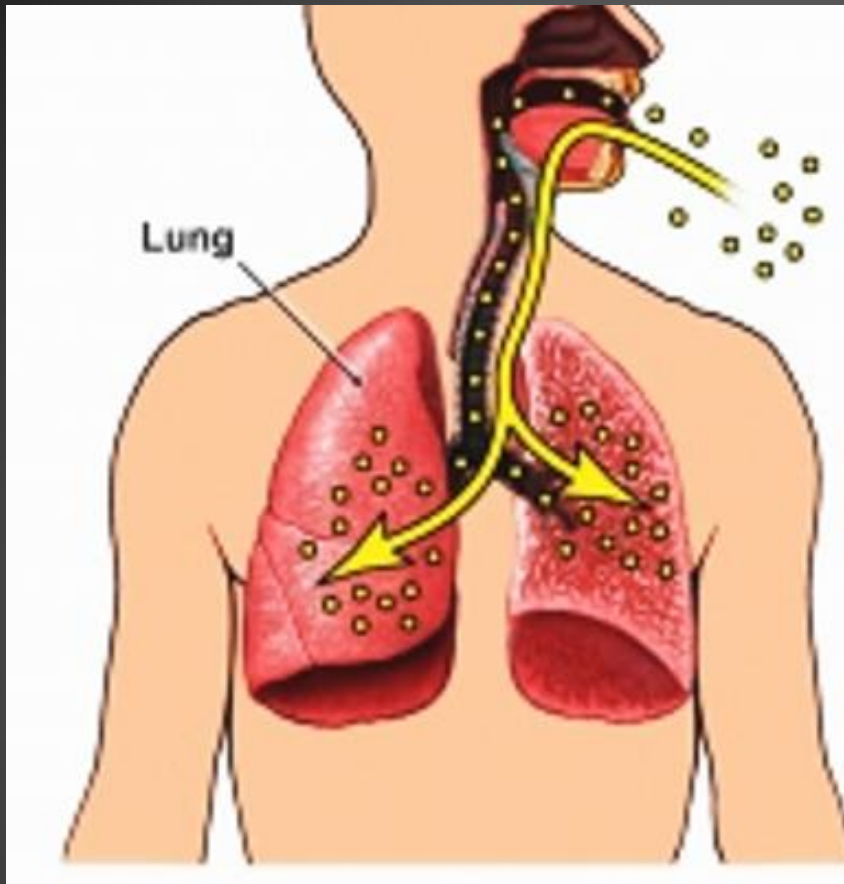


Polonium – 214 (0.17 ms)

α

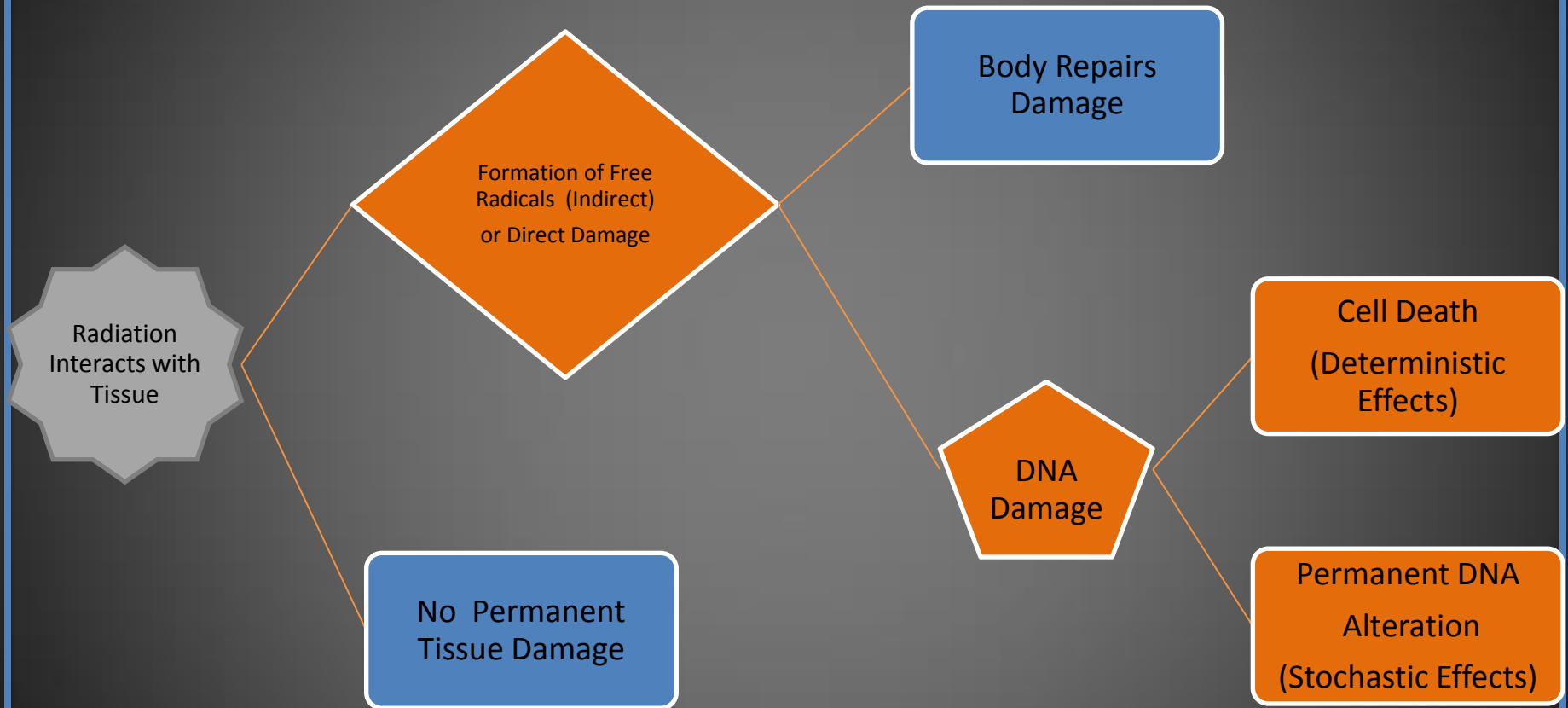
Radon
Decay
Products



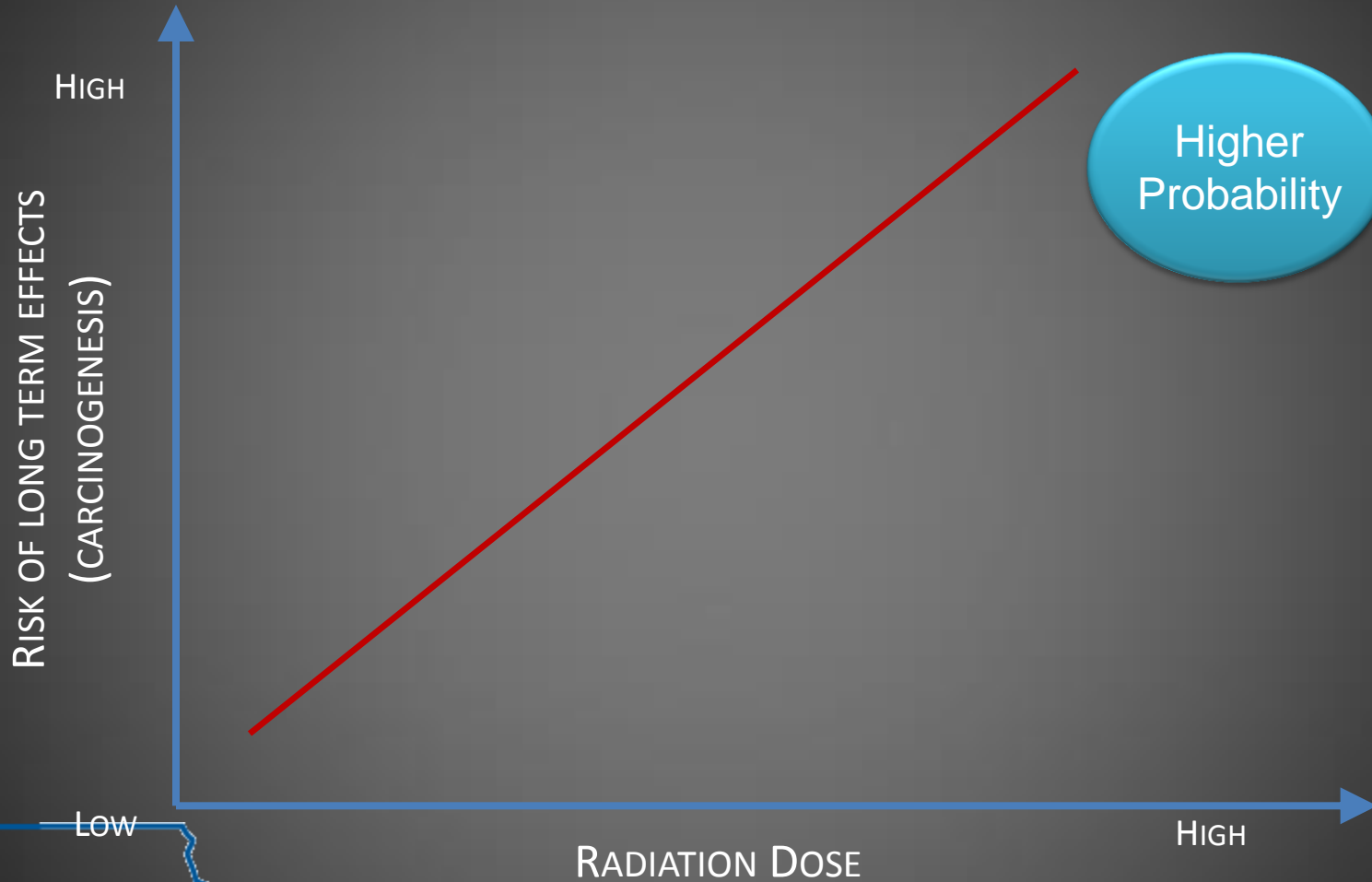


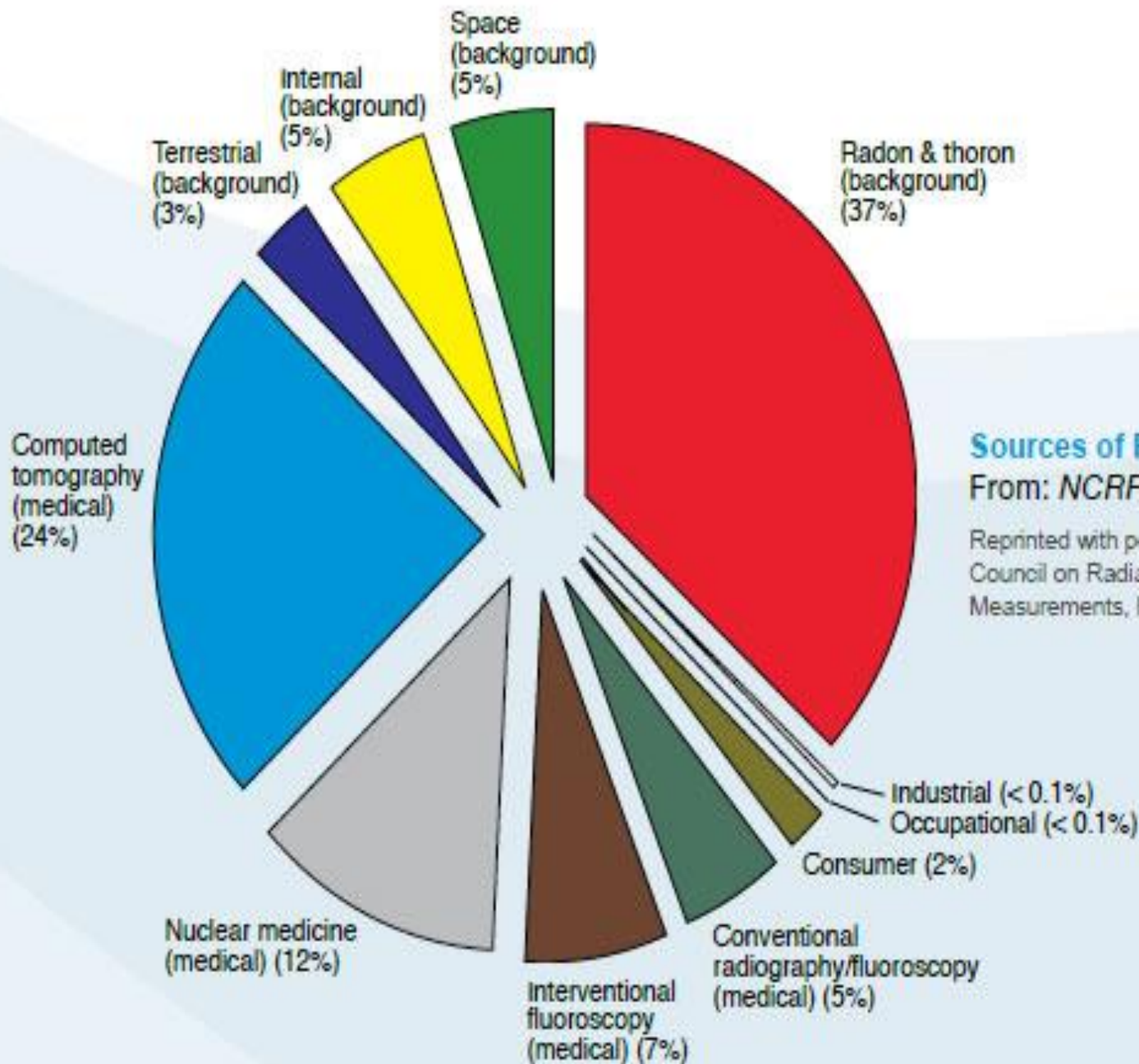
α

RADIATION BIOLOGY



LINEAR NON-THRESHOLD





Sources of Radiation Exposure
From: *NCRP Report No. 160*

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Loss of Life Expectancy

Activity or Behavior	LLE (DAYS)
Smoking 20 cigarettes per day	1,600
Being 15 percent overweight	900
Consuming alcohol (U.S. average)	230
Driving a car	200
Recreational swimming	40
Being exposed to radon in a home	35
Skydiving	25
Using pesticides at home	12
Riding a bicycle	6
Living within 10 miles of a nuclear power plant	0.4

HOW RADON ENTERS A HOUSE

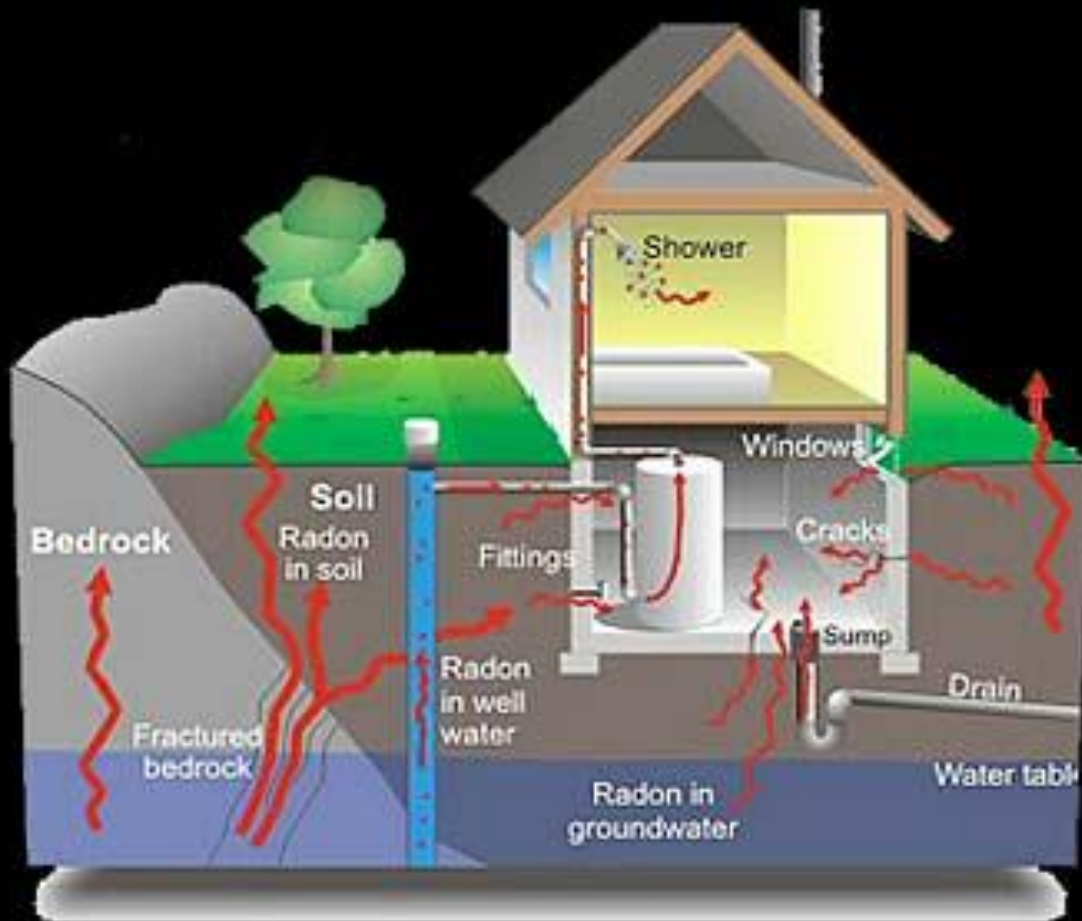


CONCENTRATION



RISK

4 pCi/liter
of air



Naturally found in the environment

Odorless and Colorless



Goal - reduce concentration to reduce risk

ONLY WAY TO DETECT IS TO MEASURE



Thank you for your time!

