

DEPARTMENT OF PUBLIC HEALTH
RADIOLOGIC HEALTH BRANCH



Radiologic Health Branch
Radioactive Materials
At California Landfills
2008

Barbara L. Hamrick, J.D., CHP

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Locations:

- Headquarters: Sacramento
- Field Offices: Richmond, Brea, Los Angeles County & San Diego County

■ Responsibilities:

- License
 - Inspect
 - Respond
 - Investigate
 - Enforce
-

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH

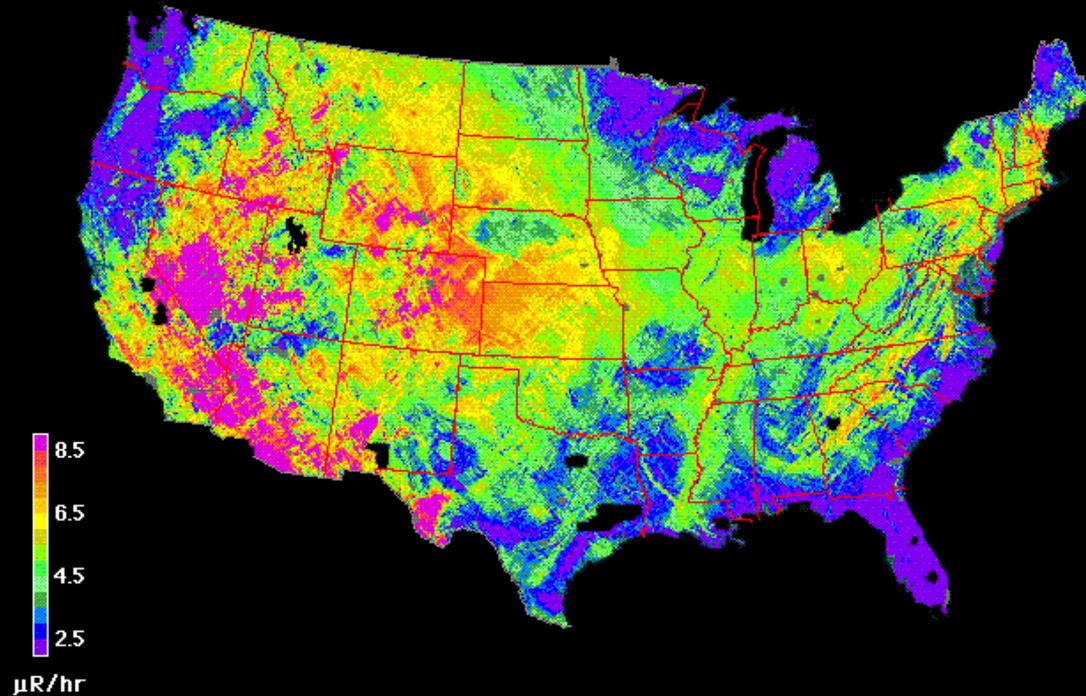


- Radioactive Materials (RAM)
 - Hospitals
 - Universities
 - Biomedical Research
 - Industry
 - Patient-Generated
 - Naturally-Occurring
-

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



Terrestrial Gamma-Ray Exposure at 1m above ground

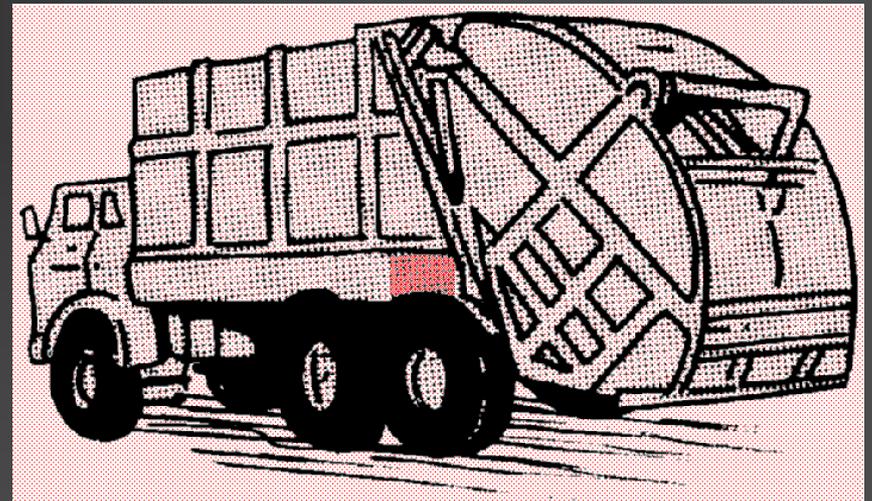


Source of data: U.S. Geological Survey Digital Data Series DDS-9, 1993

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



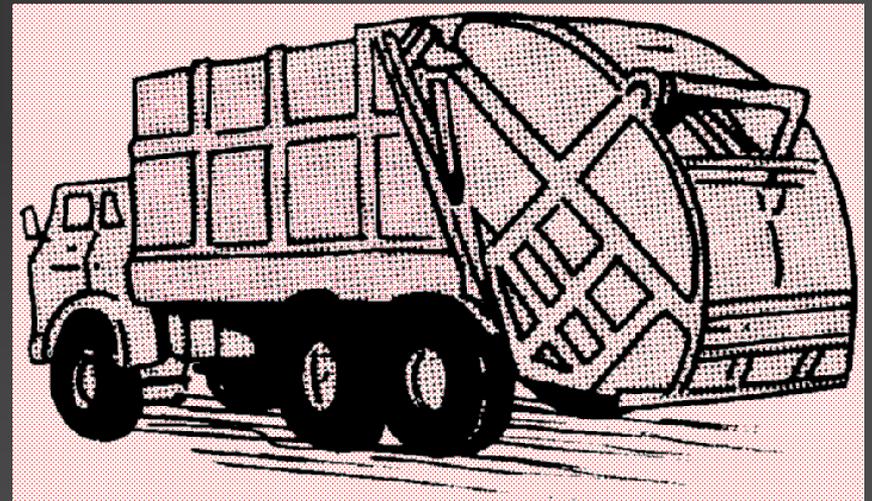
- Iodine-131 discrete source (1 millicurie)
 - 26 microR/hr at five feet (~3 – 5 times bkgd)
 - 1500 microR/hr at one foot (~15 – 30 times bkgd)



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



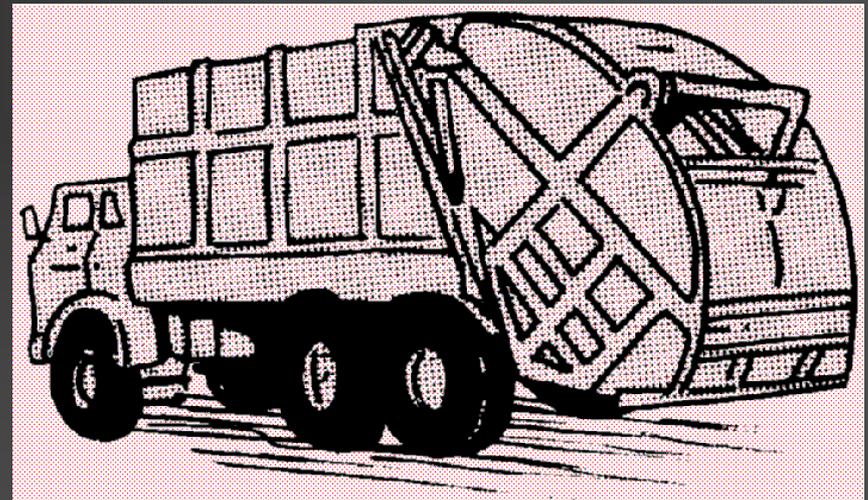
- Cs-137 diffuse concrete source (1.55 mCi)
 - 2.3 microR/hr at five feet
 - 5.6 microR/hr at one foot (< 2 times bkgd)



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



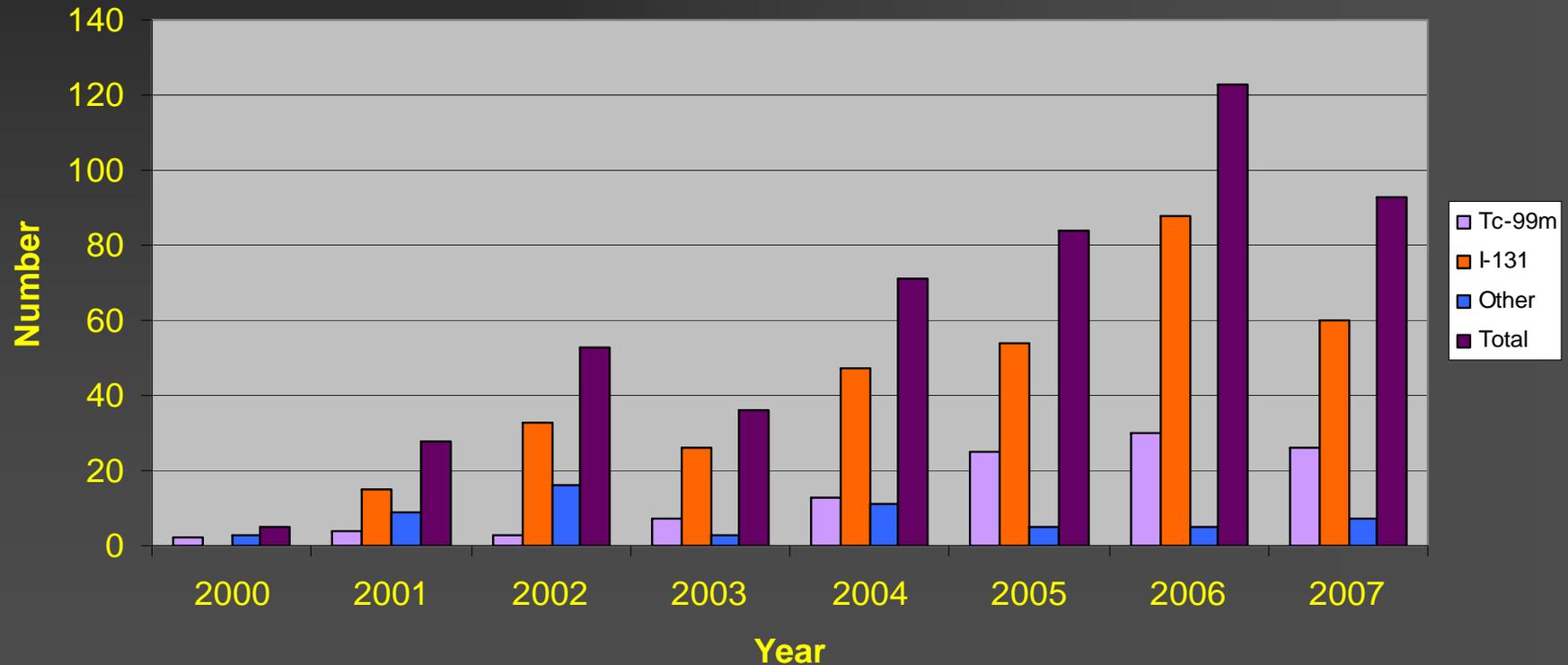
- Th-232 diffuse concrete source (0.72 mCi)
 - 0.002 microR/hr at five feet
 - 0.005 microR/hr at one foot



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



Landfill Responses



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Medical RAM
 - Short-lived diffuse waste in diapers, etc.
 - Therapy sources
 - Ir-192 seeds
 - Sr-90 Eye Applicator
- Non-medical RAM
 - Five GL static eliminators with 11 mCi of Am-241 each
 - Eleven flexible tubes with Ra-226 (0.5 mCi), apparently belonging to the Navy



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Exempt
- Generally-Licensed
- Specifically-Licensed
- Licensed or Permitted by NRC, DOE, or DOE



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Exempt Sources
 - Fiestaware™
 - Smoke Detectors
 - Uranium or Thorium compounds less than 0.05% by weight U+Th
 - Self-luminous products
 - Tritium
 - Krypton-85
 - Promethium-147



Copyright © 2001 Thomson HealthCare

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Generally-licensed
- Tritium Exit Signs
 - No gamma
 - Contains 20 – 25 Ci
 - Can't be detected with most "field" instruments
- Uranium or Thorium > 0.05% U+Th and less than 15 lbs.



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Specifically Licensed Materials
 - Sr-90 Eye Applicator
 - Ir-192 Tracer Beads from Well-Logging
 - Moisture-Density Gauge



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Potentially dangerous sources
 - Up to 5 millirem/hr at one foot with shielding
 - Easily identified by stationary monitors
 - Unshielded source extremely dangerous



DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ RHB and Landfills

- RHB regulates disposal of licensed materials
 - No RHB regulations specific to landfills
 - No requirements regarding monitoring
-

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Landfill Responses

■ Initial Call and Surveys

- Call Regional ICE Office (see handout)
- Be prepared to provide survey information
 - Background Reading
 - Survey results at “hot spot”
 - Surface of truck and at one meter
 - Must have units (kcpm, mr/hr, etc.)

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Landfill Responses

■ DOT Exemption (see handout)

- Who is calling?
 - Who transported the material?
 - Where did it come from?
 - Is this residential or industrial waste, or a combination of both?
-

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Landfill Responses

■ Sorting

- May be sorted and isolated at the waste facility
- May be returned to a waste transfer station for sorting and isolation
- May be retrieved by licensee
- May be Decayed - Short-lived medical isotopes
 - Residential loads
 - Commercial loads from nursing homes or rehabilitative facilities
 - Will decay within 1 – 90 days (no longer detectable)

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



- Problems with sorting and isolation
 - Time
 - Activities are not funded
 - Extremely low health and safety significance
 - Health Risk
 - Risks from biological wastes – i.e., various human and animal wastes (primarily diapers, cat litter, and other wastes with excretion (saliva, etc.))

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Solutions

- Landfills purchase handheld isotope identifiers
 - Bury short-lived medical isotopes
 - Continue to contact RHB for advice
 - Continue to contact RHB for assistance on alarms that are not due to short-lived medical isotopes
-

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Summary

- Radioactive material currently going to landfills poses little or no hazard to the workers or the public.
- Sources that pose an actual threat to health and safety will generally be easily detected.
- Neither stationary detectors, nor hand-held detectors will be able to identify all radioactive sources entering the landfills.

DEPARTMENT OF PUBLIC HEALTH RADIOLOGIC HEALTH BRANCH



■ Summary

- Landfills can assist by:
 - Obtaining dose-rate meters and isotope identifiers
 - Burying household or personal items contaminated with short-lived medical isotopes
-

DEPARTMENT OF PUBLIC HEALTH
RADIOLOGIC HEALTH BRANCH



The End

Contact: Barbara L. Hamrick 714-257-2031
Robert Greger 714-270-0368
