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RADIOLOGIC HEALTH BRANCH



Radioactive Materials At California Landfills

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■ Locations:

- Sacramento, Richmond, Brea, Los Angeles County & San Diego County

■ Responsibilities:

- License
- Inspect
- Respond
- Investigate
- Enforce

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- Radioactive Materials (RAM)
 - Hospitals
 - Universities
 - Biomedical Research
 - Industry
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■ RHB and Landfills

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

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■ 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.)

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■ 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?

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■ 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
- Short-lived medical isotopes may be buried without regard to radioactivity

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■ Landfill Responses

■ Decay

- Short-lived medical isotopes
 - Residential loads
 - Commercial loads from nursing homes or rehabilitative facilities
- Will decay within 1 – 90 days (no longer detectable)

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- Problems with sorting and isolation
 - Time
 - Activities are not funded
 - Inadequate staffing
 - 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.))

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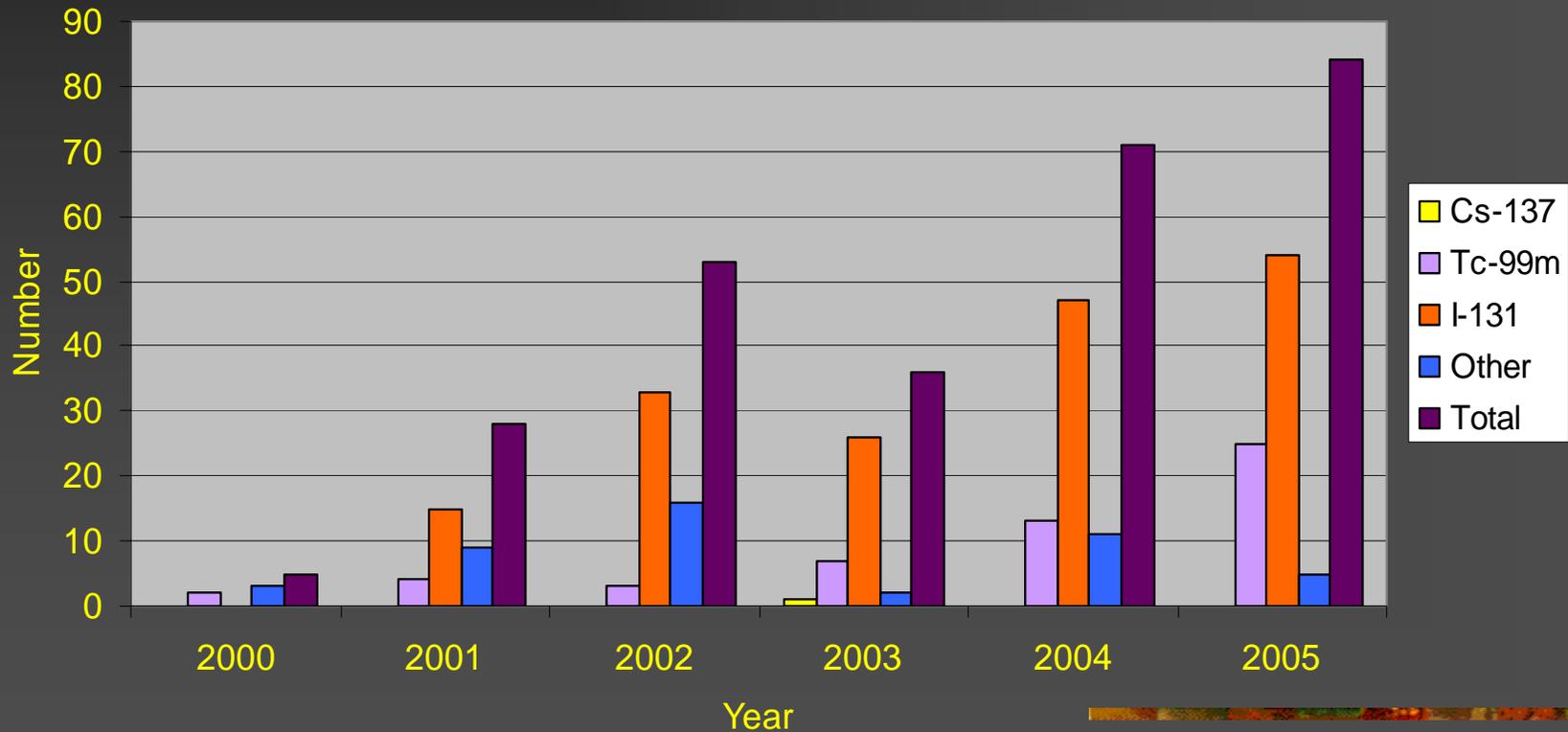
■ Solutions

- Landfills purchase handheld isotope identifiers and dose rate instruments
- 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

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Landfill Responses



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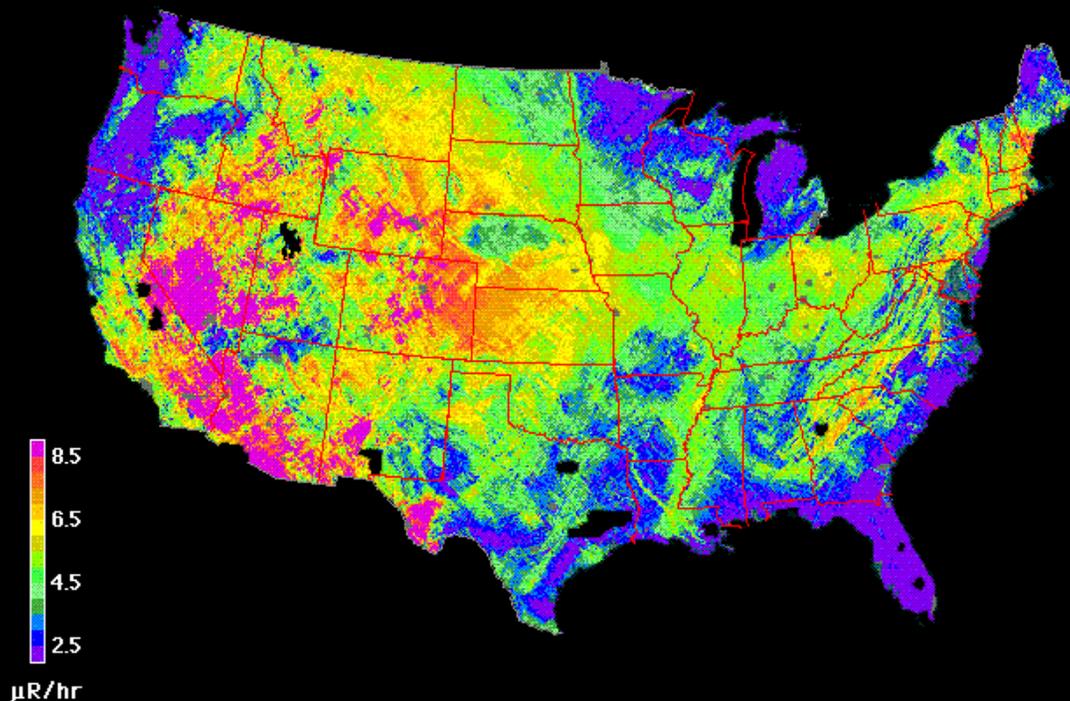
- Non-medical RAM
 - Ir-192 sand "beads" from well logging operations
 - Five GL static eliminators with 11 mCi of Am-241 each
 - Eleven flexible tubes with Ra-226 (0.5 mCi), apparently belonging to the Navy



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Terrestrial Gamma-Ray Exposure at 1m above ground

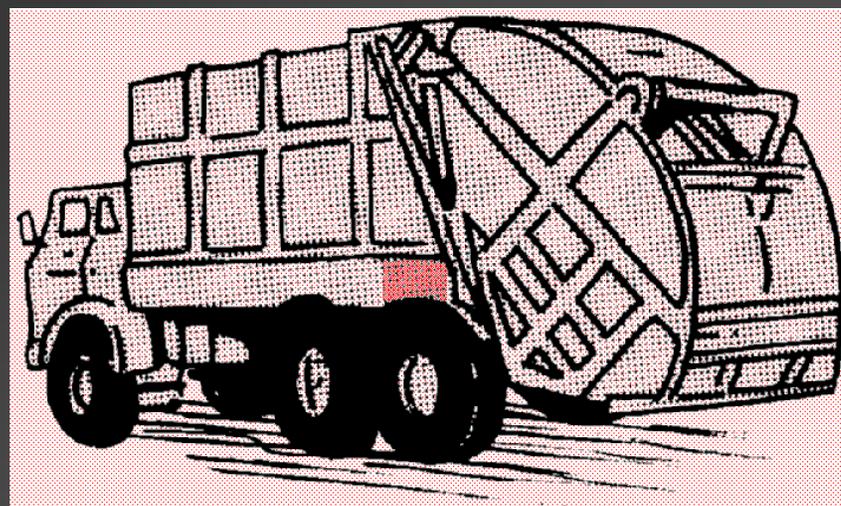


Source of data: U.S. Geological Survey Digital Data Series DDS-9, 1993

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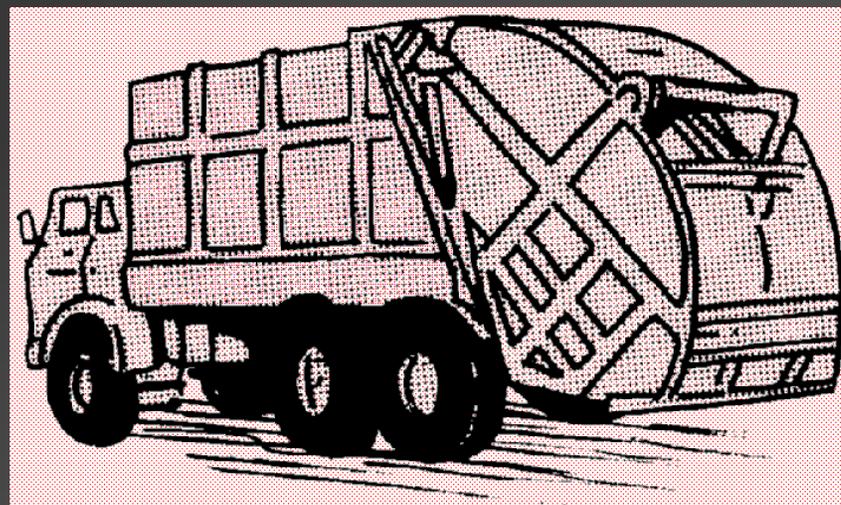
- Iodine-131 discrete source (1 millicurie)
 - 26 microR/hr at five feet (~3 – 5 times bkgd)
 - 1500 microR/hr at one foot (~15 – 30 times bkgd)



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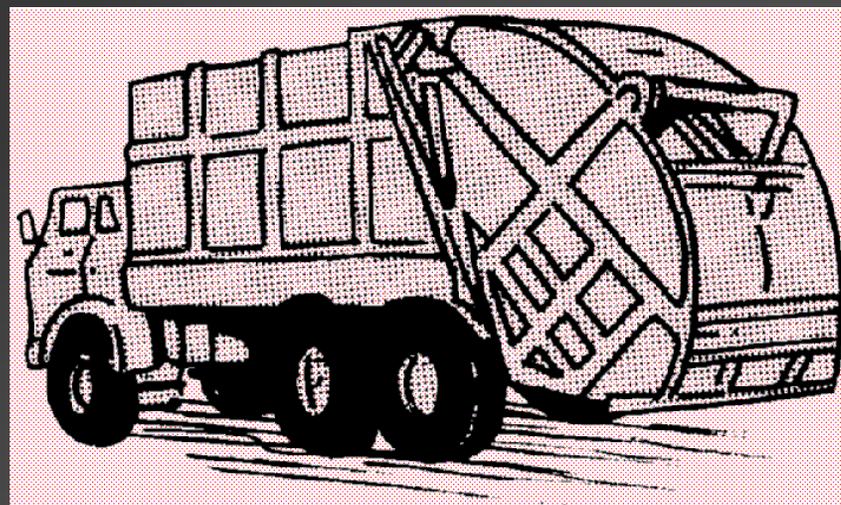
- Cs-137 diffuse concrete source (1.55 mCi)
 - 2.3 microR/hr at five feet
 - 5.6 microR/hr at one foot (~2 times bkgd)



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



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- Emits only very low energy beta – no gamma
- Contains 20 – 25 Ci
- Generally-licensed
- Can't be detected with “field” instruments



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- Other Sources of RAM in Landfills
 - Laboratory Waste
 - P-32
 - C-14
 - H-3
 - Cr-51



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- Other Sources of RAM in Landfills
 - Exempt Sources
 - Fiestaware™
 - Smoke Detectors



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- Up to 5 millirem/hr at one foot when shielded
- Easily identified by stationary monitors
- Unshielded source extremely dangerous



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■ Conclusions

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

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■ Conclusions

- CDHS/RHB not funded for landfill responses
- CDHS/RHB not adequately staffed for landfill tasks
- Landfills/LEAs can assist by:
 - Obtaining dose-rate meters and isotope identifiers and receiving training in use of these instruments
 - Burying household or personal items contaminated with short-lived medical isotopes

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The End

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