

DOE Subpart H Report

Gustavo A. Vázquez
U.S. Department of Energy

Lissa H. Staven
Pacific Northwest National Laboratory

Presented by

Carl A. Mazzola, Shaw Group

DOE Meteorological Coordinating Council Meeting
May 1, 2006

Las Vegas, Nevada

NESHAPs Requirements for Radionuclide Air Emissions

- ◆ Dose to a member of the public may not exceed 10 mrem per year
- ◆ Dose to a member of the public must be estimated using the EPA CAP-88 software, or other EPA-approved model or method.

NESHAPs Requirements (continued)

- ◆ **Continuous monitoring of emissions is required for facilities that may exceed 1% of the dose limit for a member of the public**
- ◆ **Stack monitoring methods and quality assurance requirements specified in the regulation must be implemented at each site**

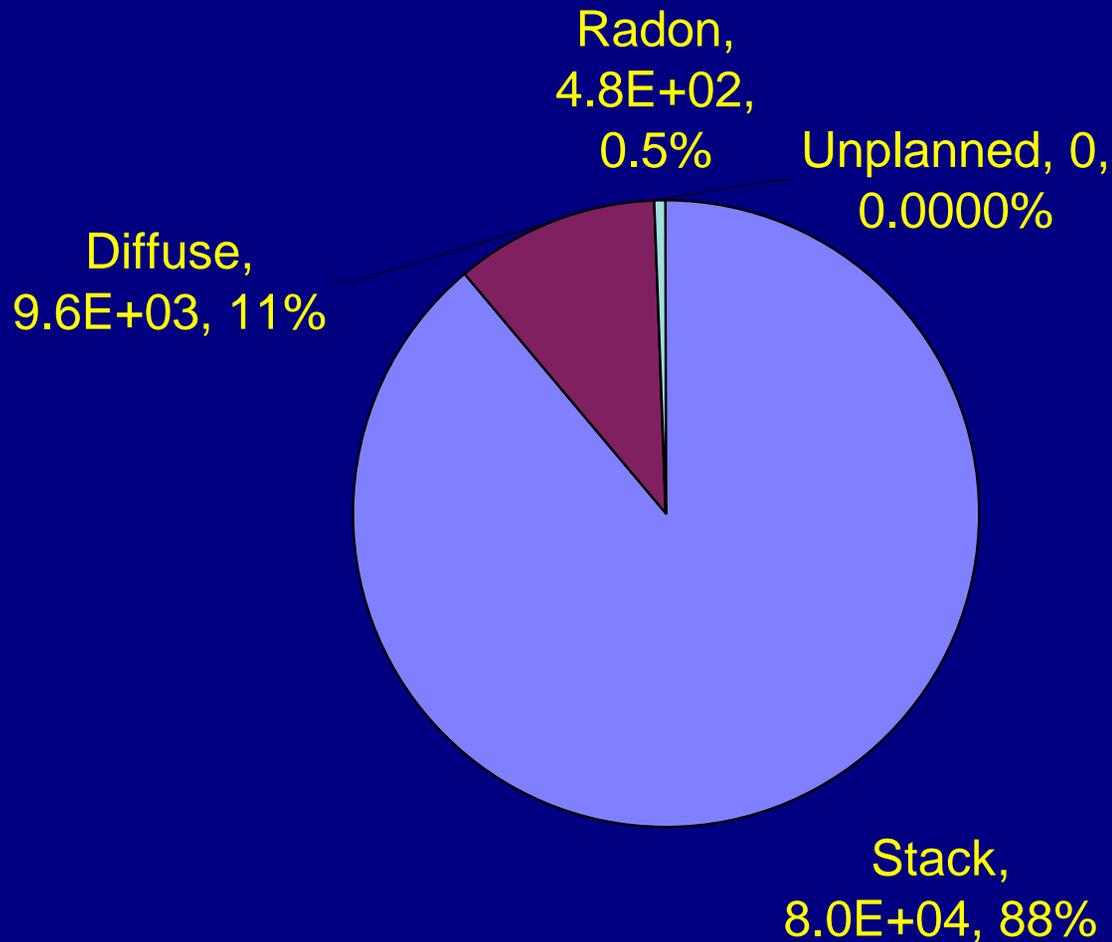
NESHAPs Requirements (continued)

- ◆ **Under Subpart H of 40 CFR 61, DOE facilities are required to report radionuclide air emissions annually to the EPA**
- ◆ **EPA has interpreted the regulation to include unmonitored and diffuse sources as well as monitored stack sources.**

Radionuclide Air Emissions Reported by DOE Facilities

- ◆ Radionuclide emissions are reported by source type (point or diffuse source)
- ◆ DOE also reports emissions of radon and unplanned radionuclide releases, although they are not specifically regulated under Subpart H

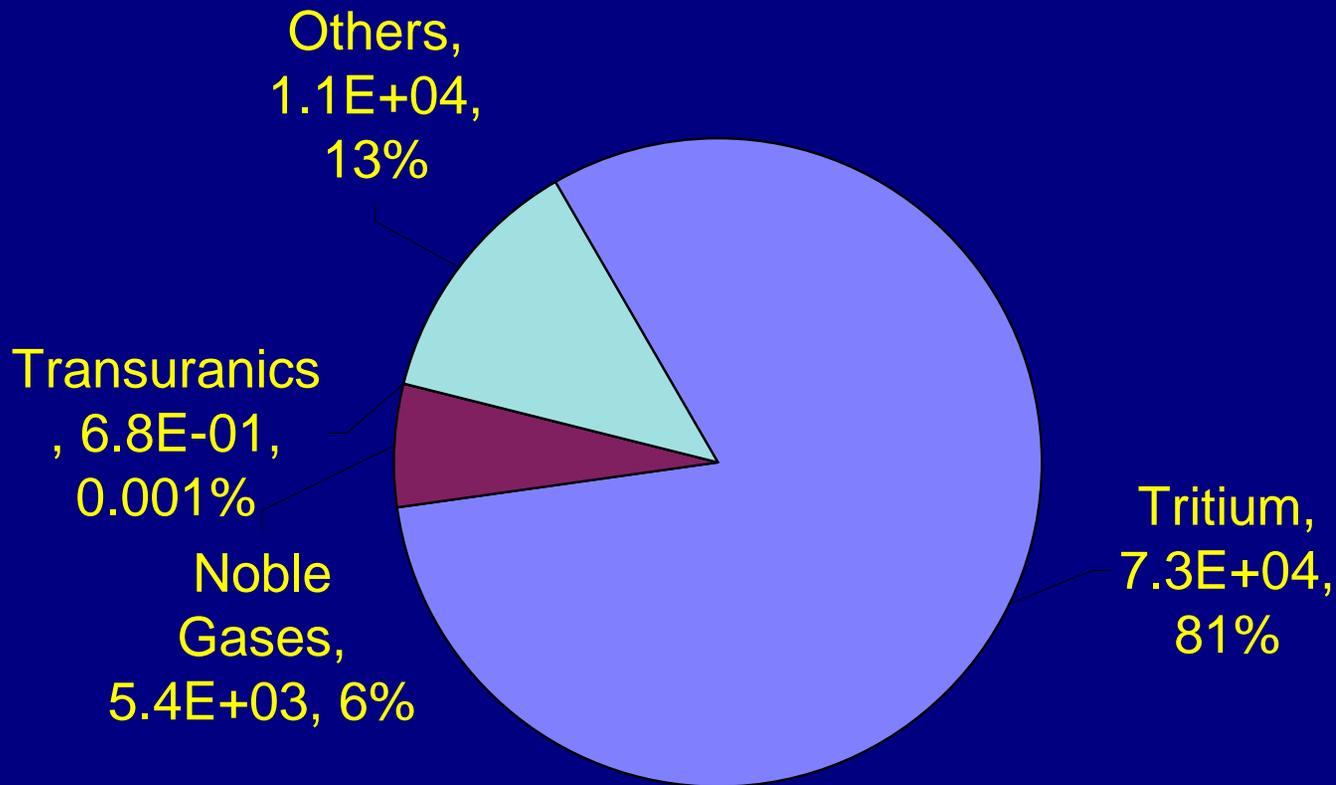
2004 DOE Air Emissions (Ci, %) by Source Type



Radionuclide Air Emissions Summary of DOE Site Reports

- ◆ Emissions are summarized by radionuclide category:
 - Tritium
 - Noble gases
 - Transuranics
 - Other radionuclides

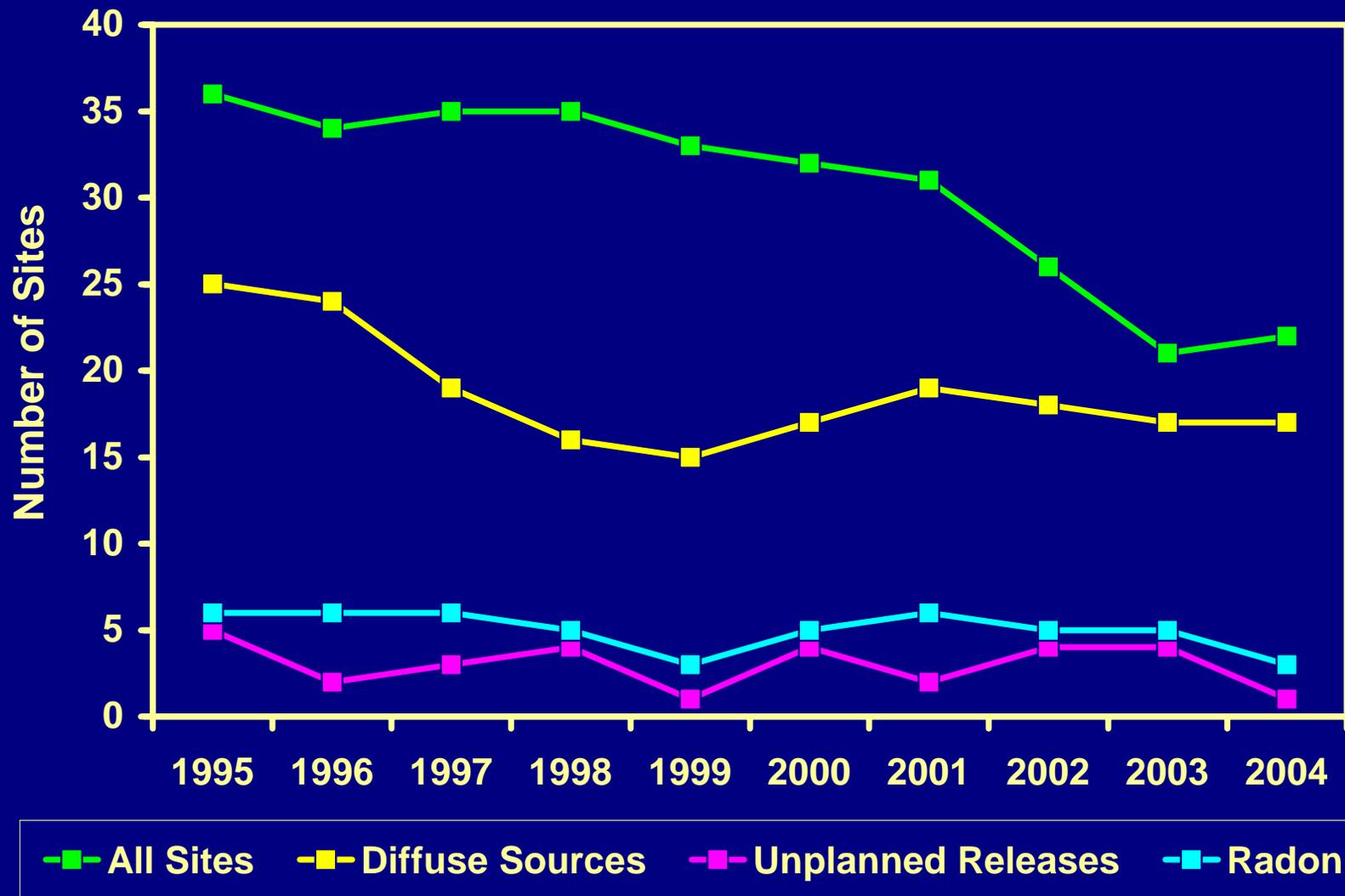
2004 Total DOE Emissions (Ci, %) by Category



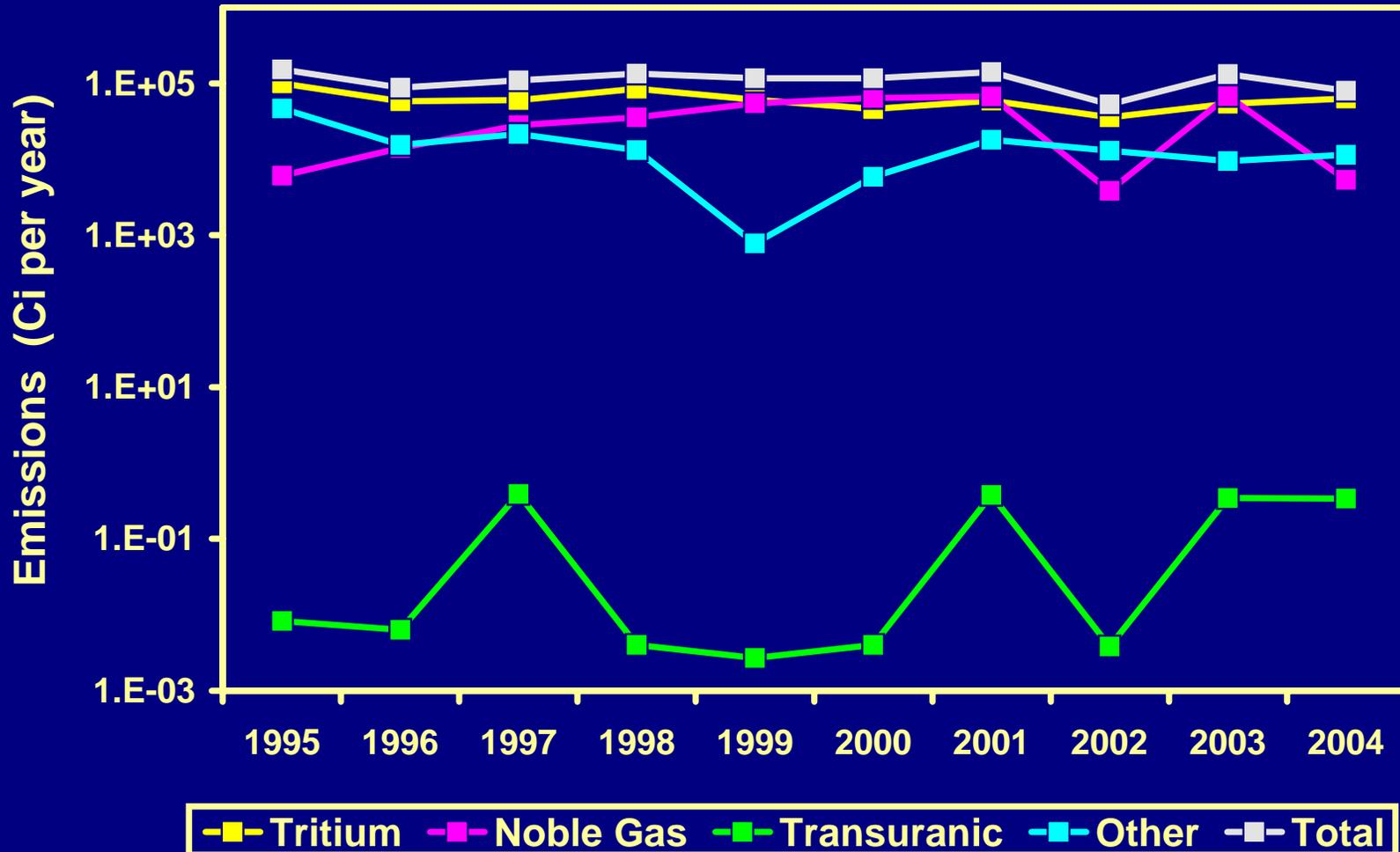
Radionuclide Air Emissions

- ◆ Trends in air emissions from 1995-2004 are summarized in the following graphs by:
 - Radionuclide category
 - Source type

Number of DOE Sites Reporting Radionuclide Emissions



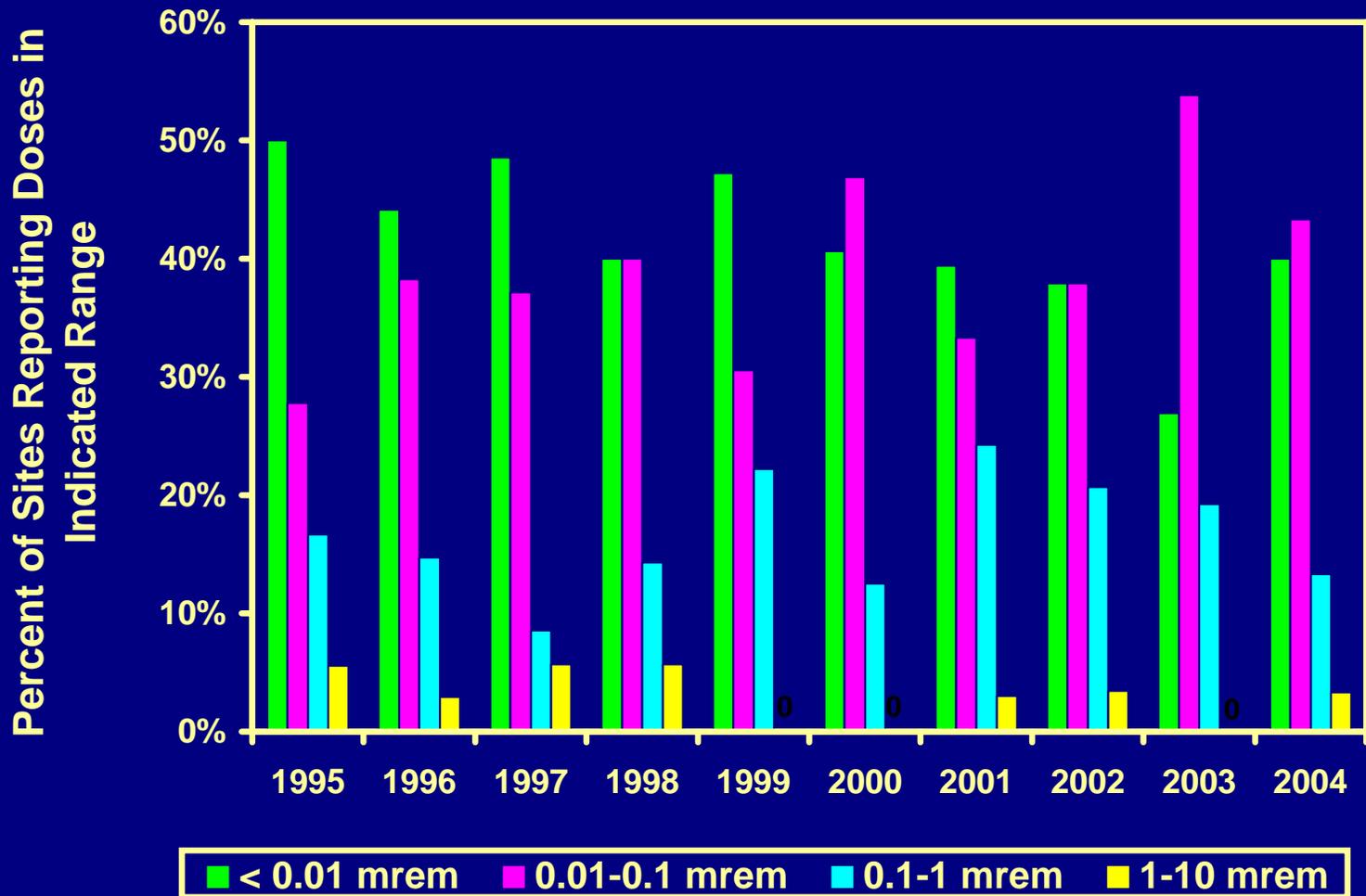
Radionuclide Emissions by Category



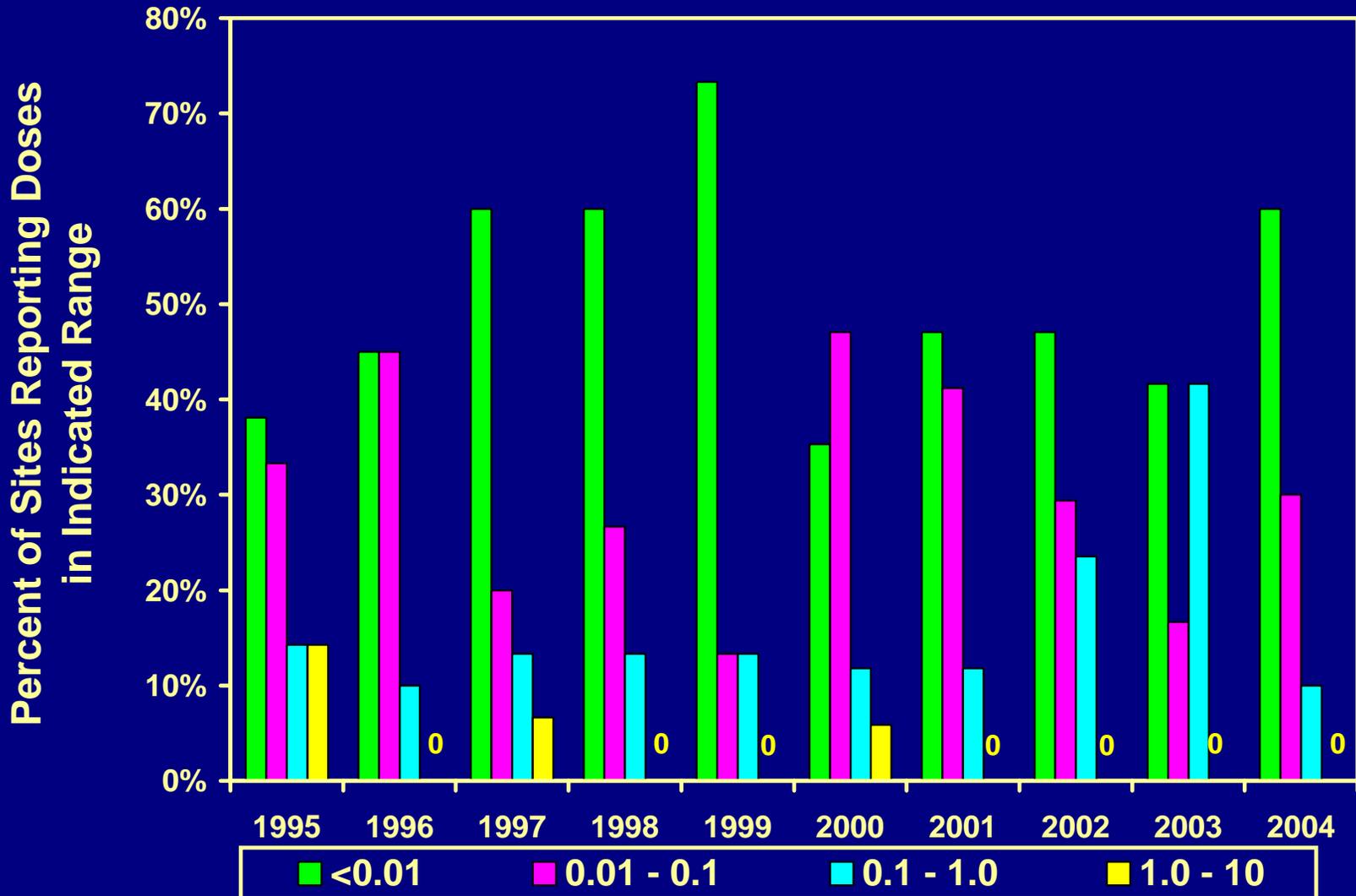
Dose to the Offsite Maximally Exposed Individual (MEI)

- ◆ Dose to the MEI is estimated separately for point sources (stacks) and for diffuse sources**
- ◆ The following graphs present dose to the offsite MEI for routine emissions from point and diffuse sources during 1995-2004**

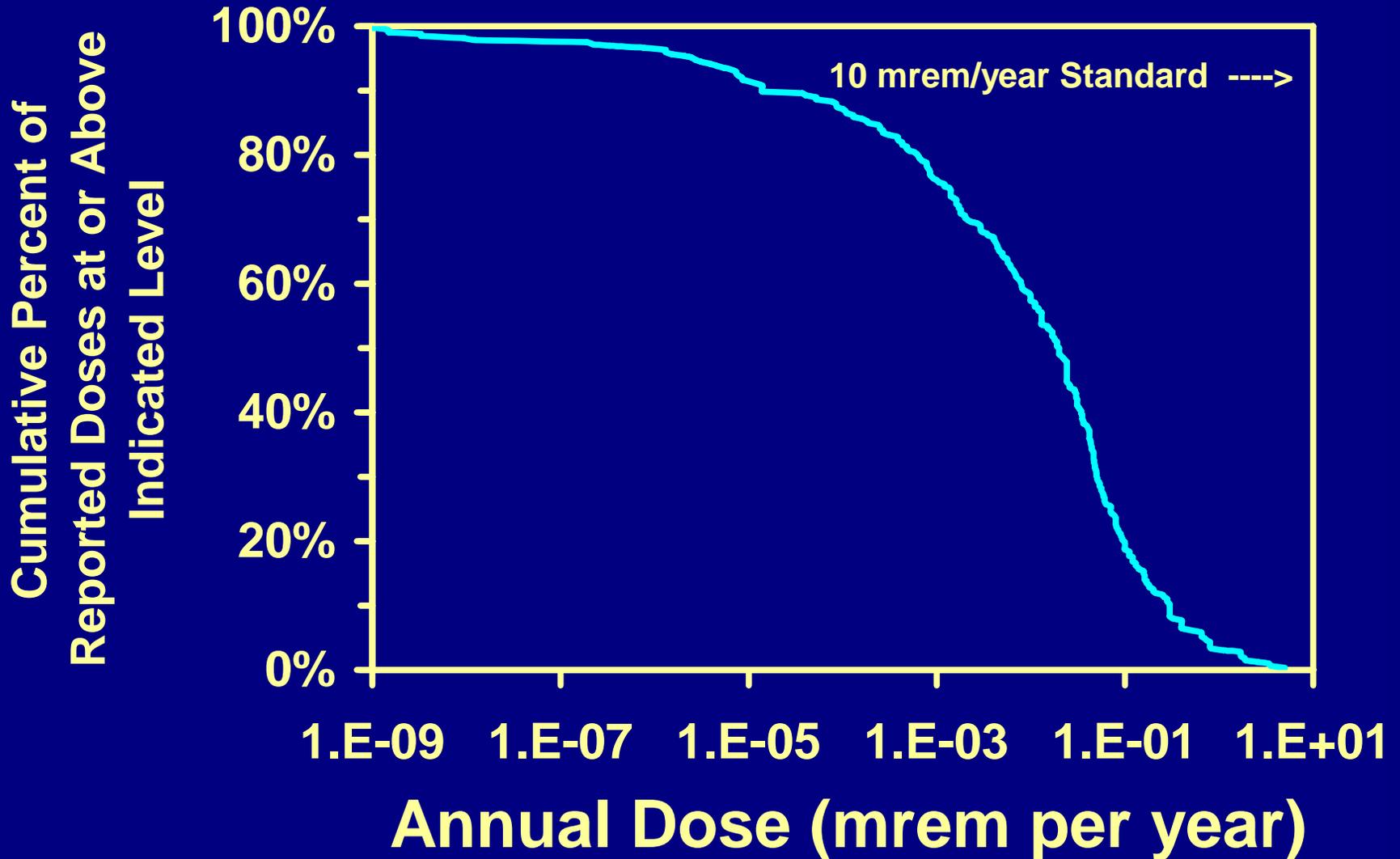
Dose from Point Sources, 1995-2004



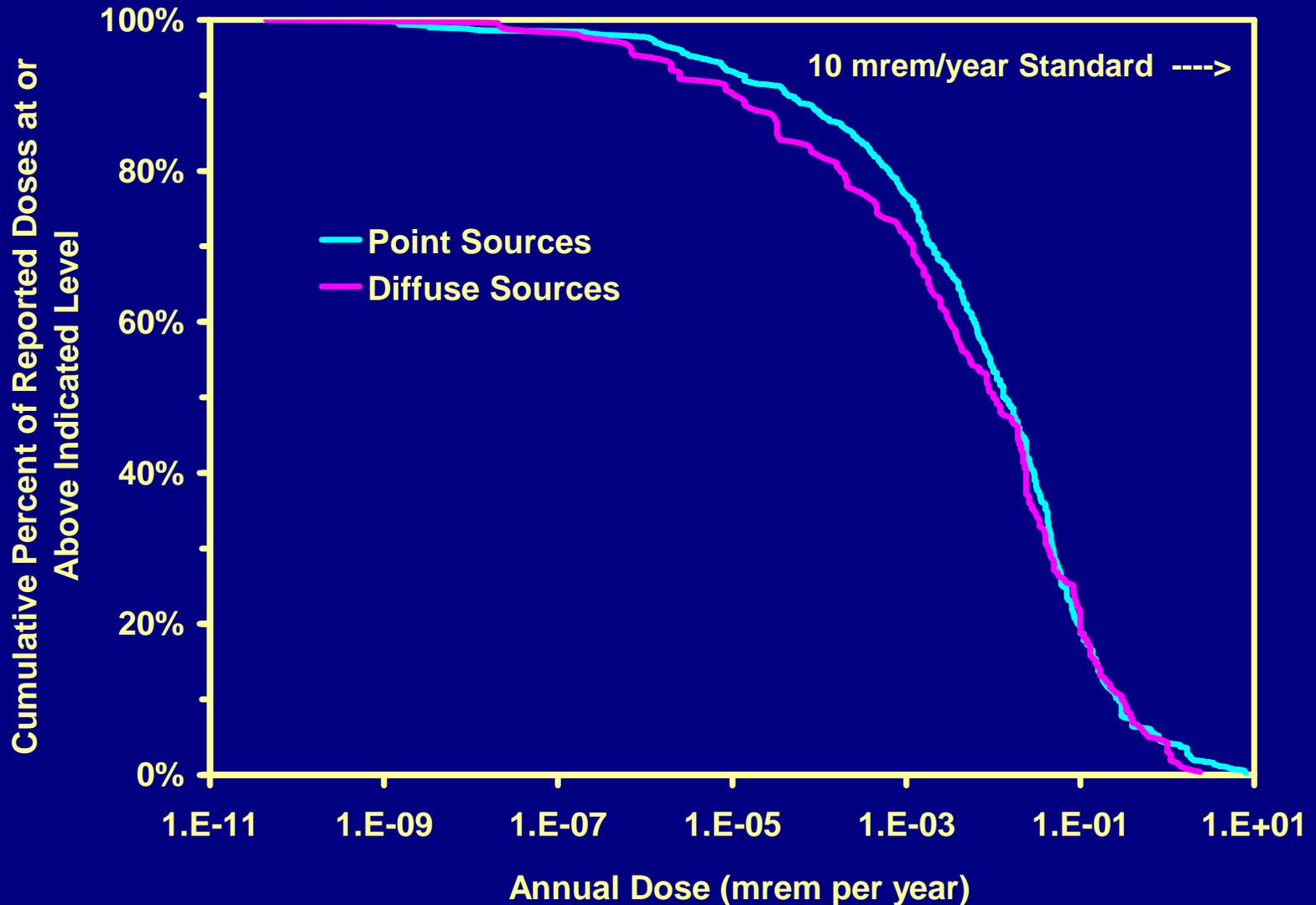
Dose from Diffuse Sources, 1995-2004



Cumulative Dose Distribution for Point Sources, 1995-2004



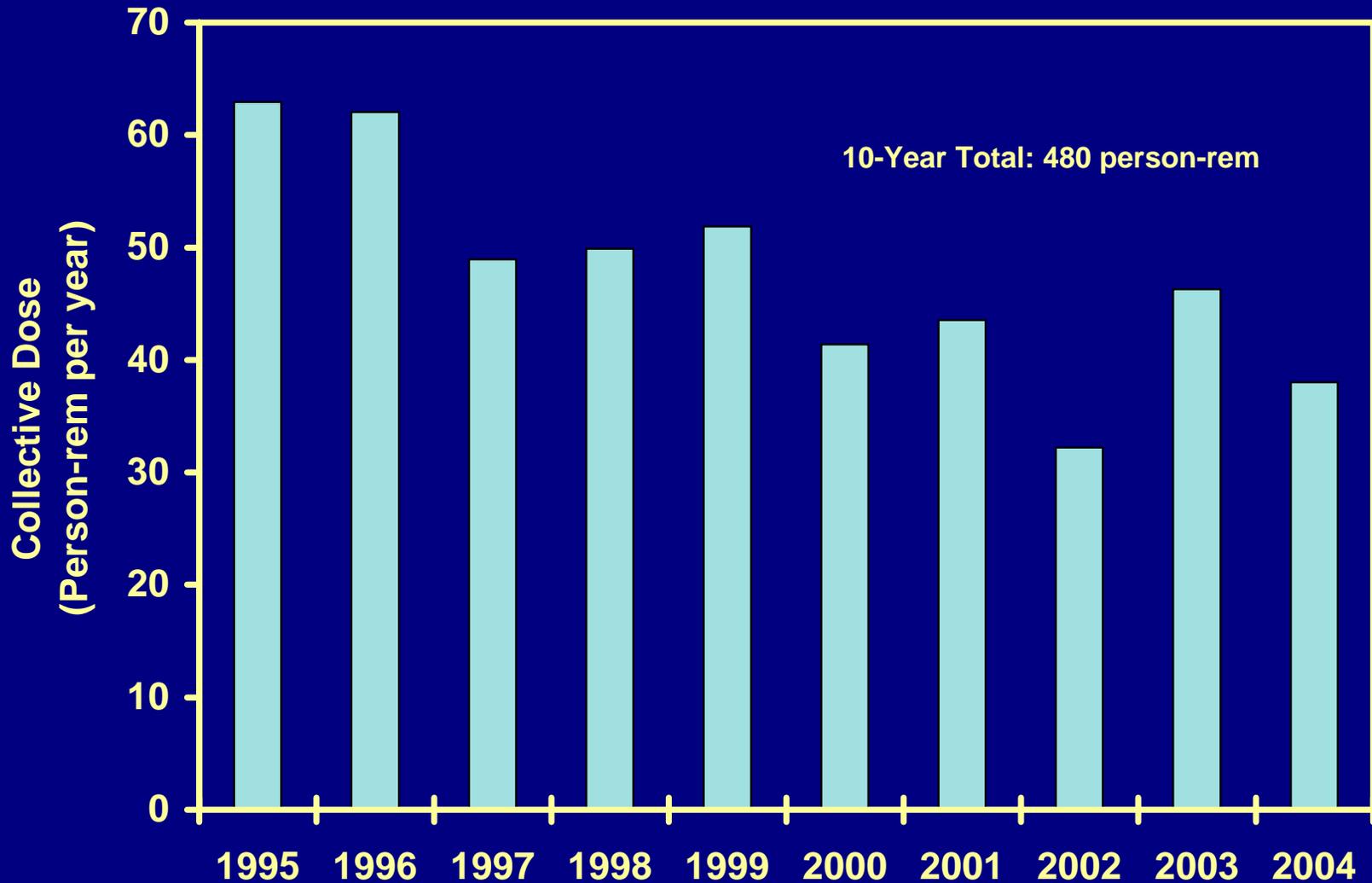
Cumulative Dose Distribution for Point and Diffuse Sources, 1995-2004



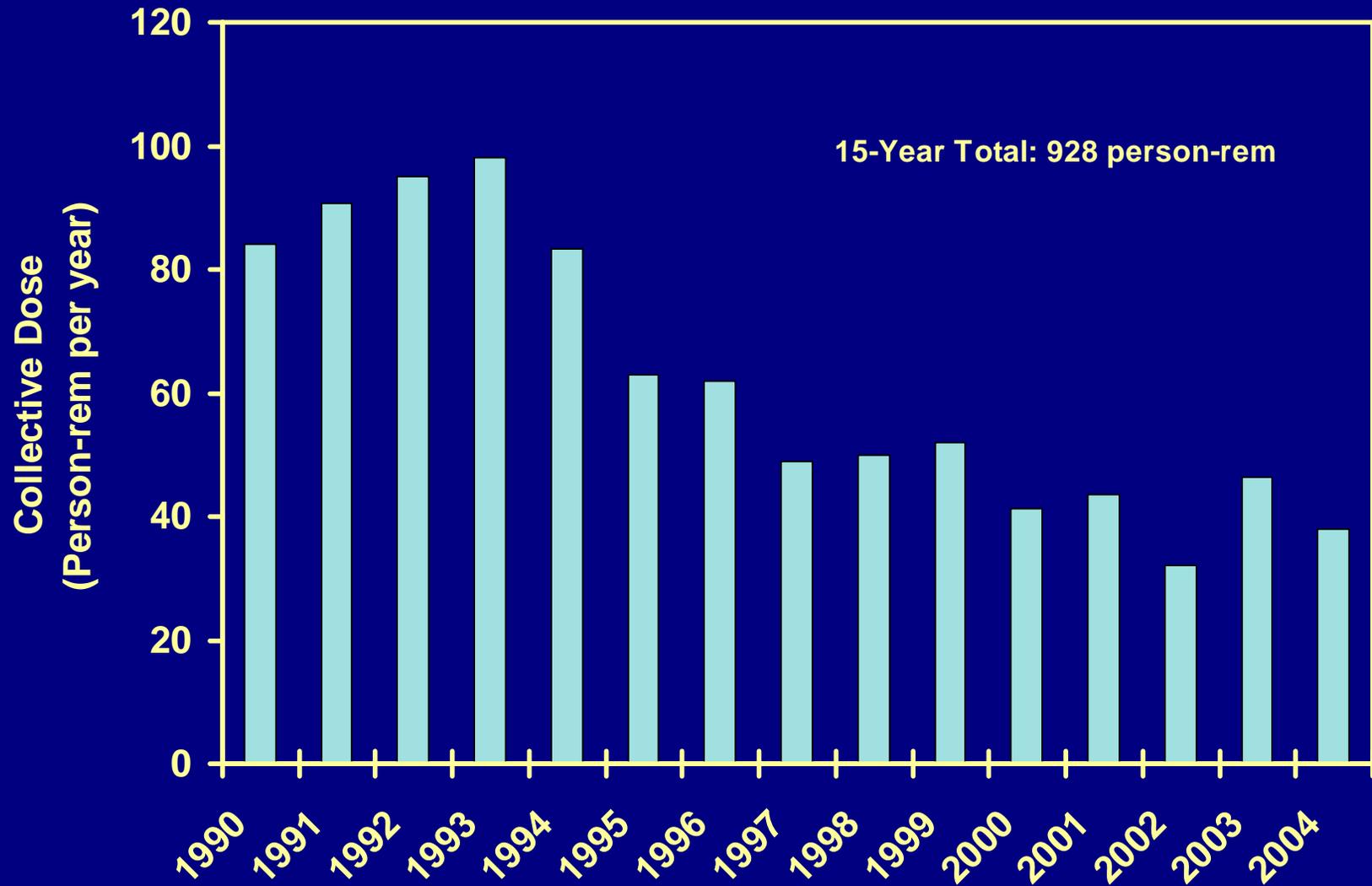
Dose to the Offsite Public - Supplemental Information

- ◆ In addition to the dose from routine emissions, DOE provides information on dose to individual members of the public from radon and unplanned releases**
- ◆ Collective dose to the population within 50 miles of DOE facilities is also provided in DOE sites' annual reports**

Total Dose to the Population from DOE Site Emissions, 10 Years



Total Dose to the Population from DOE Site Emissions, 15 Years



Compliance Status

- ◆ In CY 2004, all DOE facilities were well below the 10 mrem-per-year standard for dose to the offsite MEI
- ◆ DOE facilities are currently in compliance with radionuclide NESHAPs emissions monitoring requirements

Current Radionuclide NESHAPs Issues

Current Issues

- ◆ **Implementation of '02 Subpart H Amendment Requirements**
- ◆ **Subpart H Dose Models**
- ◆ **Delisting DOE Sites**
- ◆ **Other Subpart H Program Issues**

Implementation '02 Subpart H Amendment Requirements

- ◆ **New ANSI standard for sampling radionuclide emissions applies to newly constructed and modified major stacks**
- ◆ **But new maintenance, QA/QC provisions also apply to existing stacks**

Alternate Compliance Methods

◆ Ambient air monitoring

- Used at sites where primary emissions are from fugitive and diffuse sources (ponds, contaminated soil sites, scrap piles)
- Applied at Fernald and Rocky Flats for demonstrating compliance since around 1997
- Sampling systems must meet criteria specified in 40 CFR 61.93
- Systems may require both particulate and gas samplers
- May require monitoring at onsite, offsite, and background locations

Alternate Compliance Methods (cont)

◆ Combined approach

- Examples: Oak Ridge Reservation, Hanford
- Both point sources (stacks, vents) and diffuse sources are present at these sites
- Sites conduct both stack sampling and ambient air monitoring
- Modeled stack emissions compared with ambient air concentrations to determine potential contributions from diffuse and fugitive sources

Subpart H Dose Models

◆CAP88-PC

- V 1.0 – DOS-based
- V 2.0 – Windows-based
- V 2.1 – Updated Beta version
- V 3.0 – issued for use in 2006

◆COMPLY

◆GENII NESHAPs-soon to be issued

Delisting DOE Sites

- ◆ **Examples: LEHR, Rocky Flats**
- ◆ **Issue: Subpart H has no *de minimis* or exemption provisions**
- ◆ **One approach: Certify Subpart H no longer applies because either,**
 - Site is no longer owned or operated by DOE or
 - radionuclides are not being emitted by DOE operations
- ◆ **Another approach: Regulatory;**
 - DOE petition EPA to amend Subpart H to include Subpart I reporting exemption