

---

# **A Status Report on 40 CFR 61, Subpart H Including Recent Trends in Radionuclide Air Emissions from Department of Energy Facilities**

---

**Gustavo A. Vazquez**  
**U.S. Department of Energy**  
**and**  
**Kathleen Rhoads**  
**Pacific Northwest National Laboratory**

**NESHAPs Annual Meeting**  
**26th Nuclear Air Cleaning Conference**  
**Sept 10-12, 2000**  
**Richland, WA**

# **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 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 U.S. 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 (stack or diffuse source)**
- ◆ **DOE also reports emissions of radon and other unplanned radionuclide releases, although they are not specifically regulated under Subpart H**

# **Radionuclide Air Emissions**

## **Summary of DOE Site Reports**

---

- ◆ **DOE summarizes annual facility reports submitted to EPA**
- ◆ **Emissions are summarized by radionuclide category:**
  - **tritium**
  - **noble gases**
  - **transuranics**
  - **other radionuclides**

# **Radionuclide Air Emissions**

## **- Summary 1994-1998**

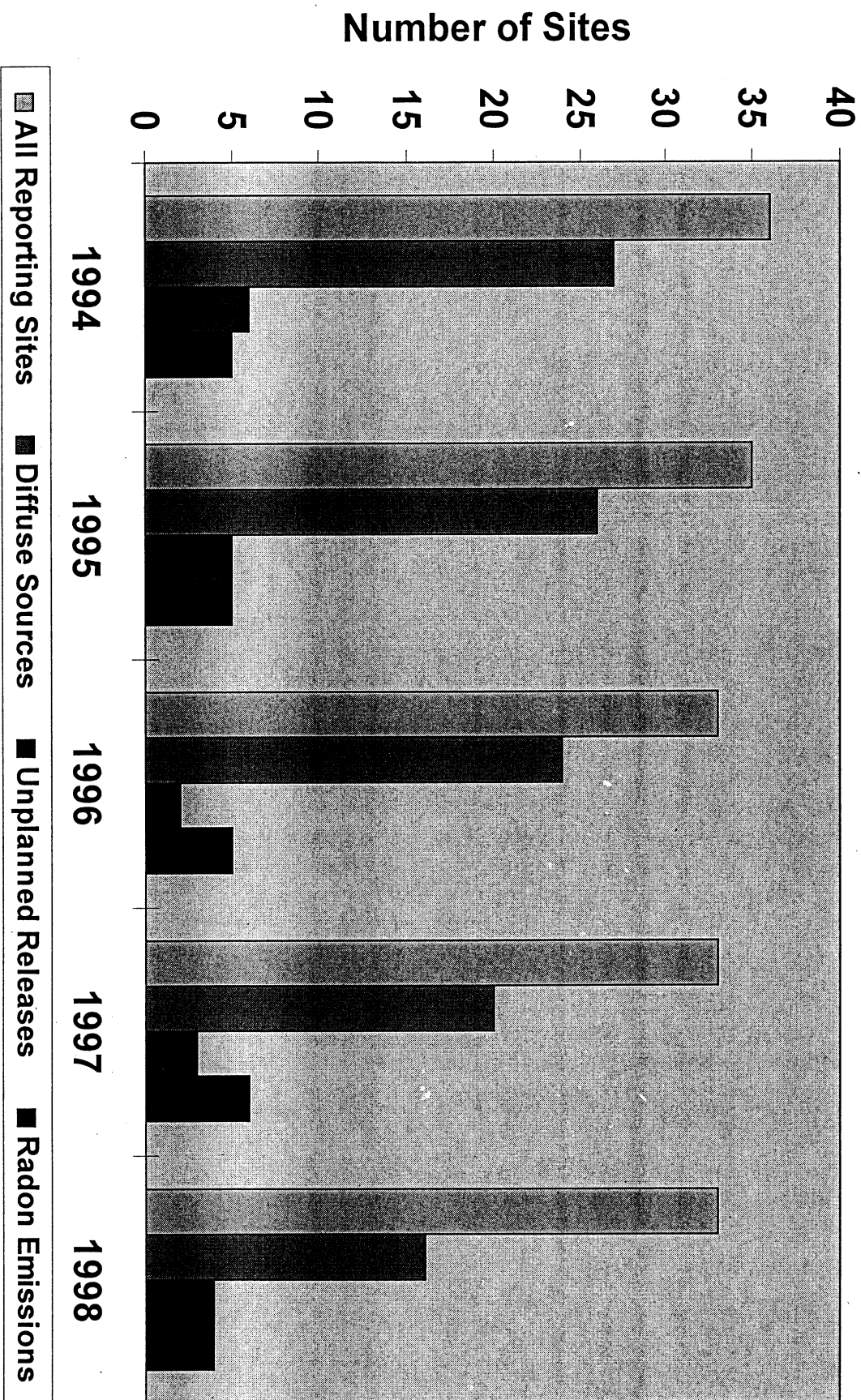
---

**◆ Trends in air emissions from 1994-1998 are summarized in the following graphs:**

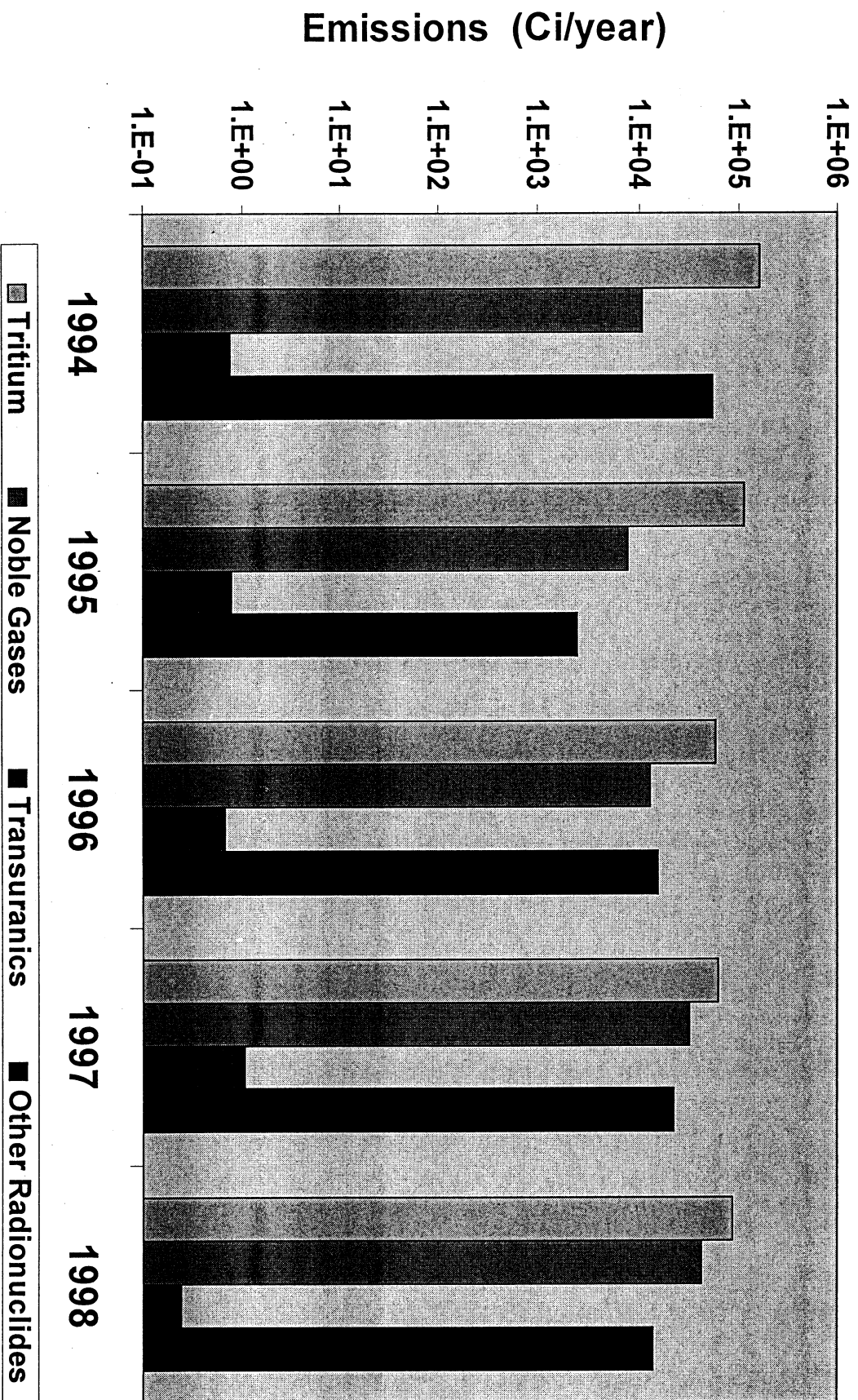
- By radionuclide category**
- By source type**



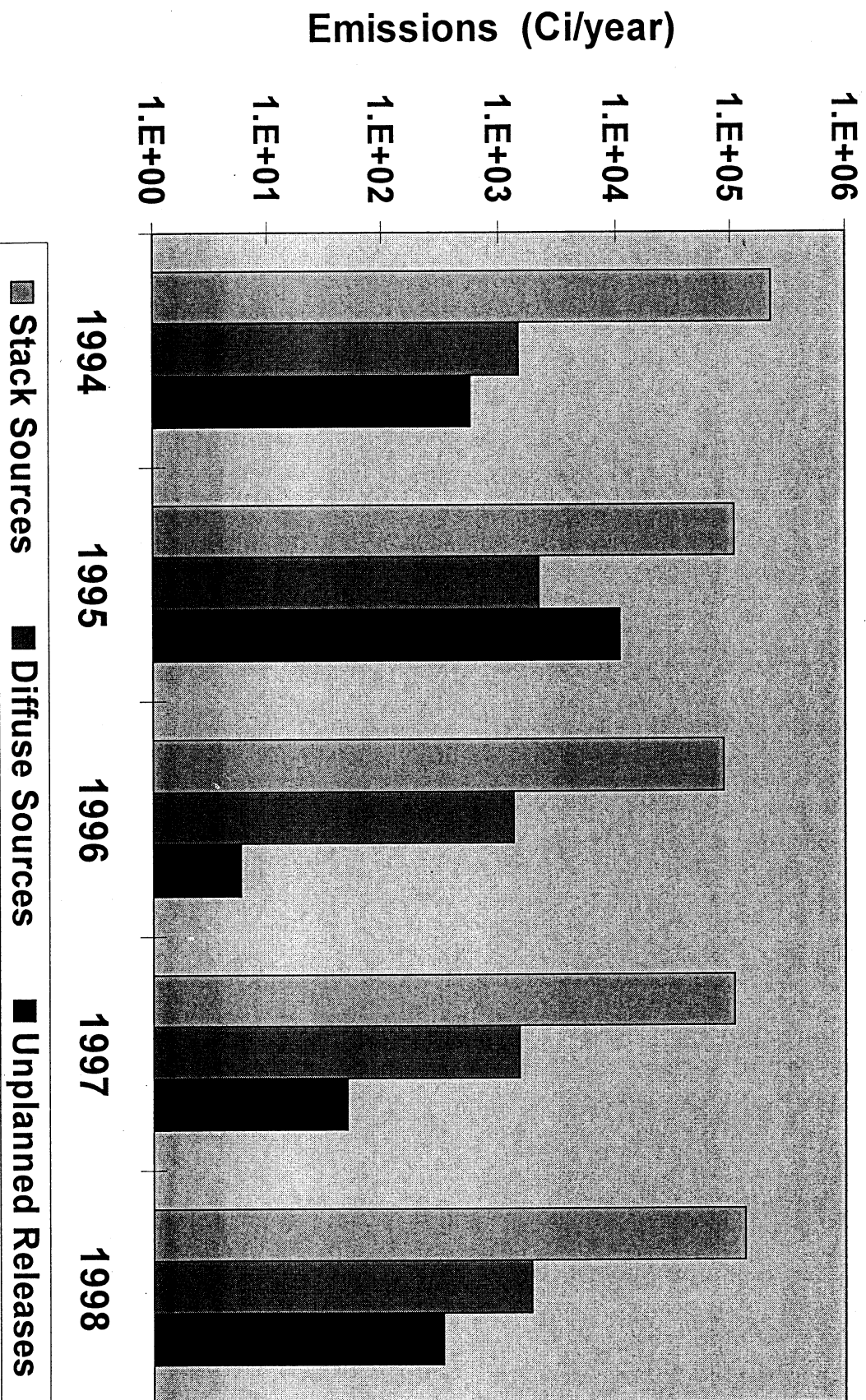
## Number of Sites Reporting Radionuclide Emissions



# Total Emissions by Radionuclide Category



# Total Radionuclide Emissions by Source Type



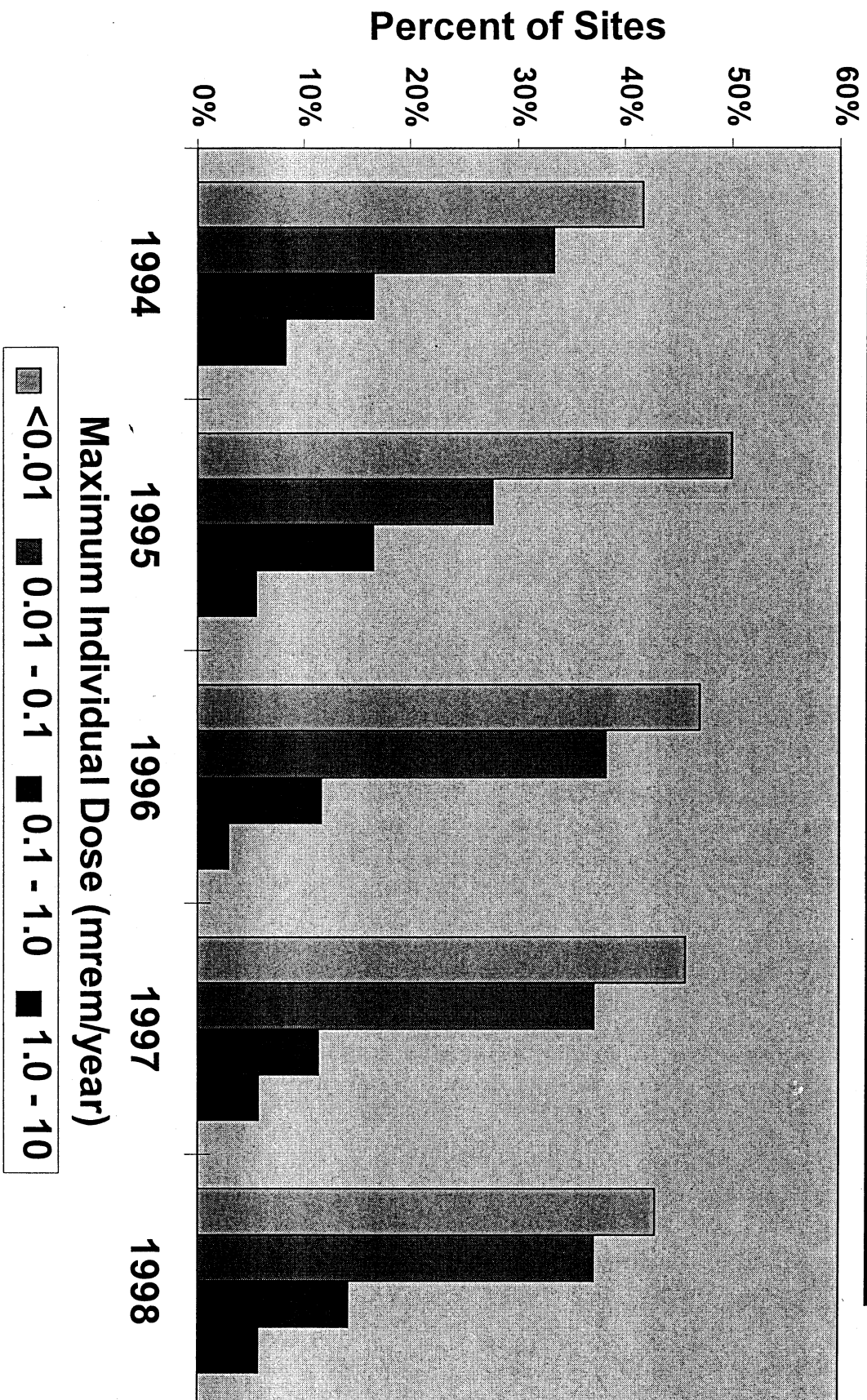
# **Dose to the Offsite Maximally Exposed Individual (MEI)**

---

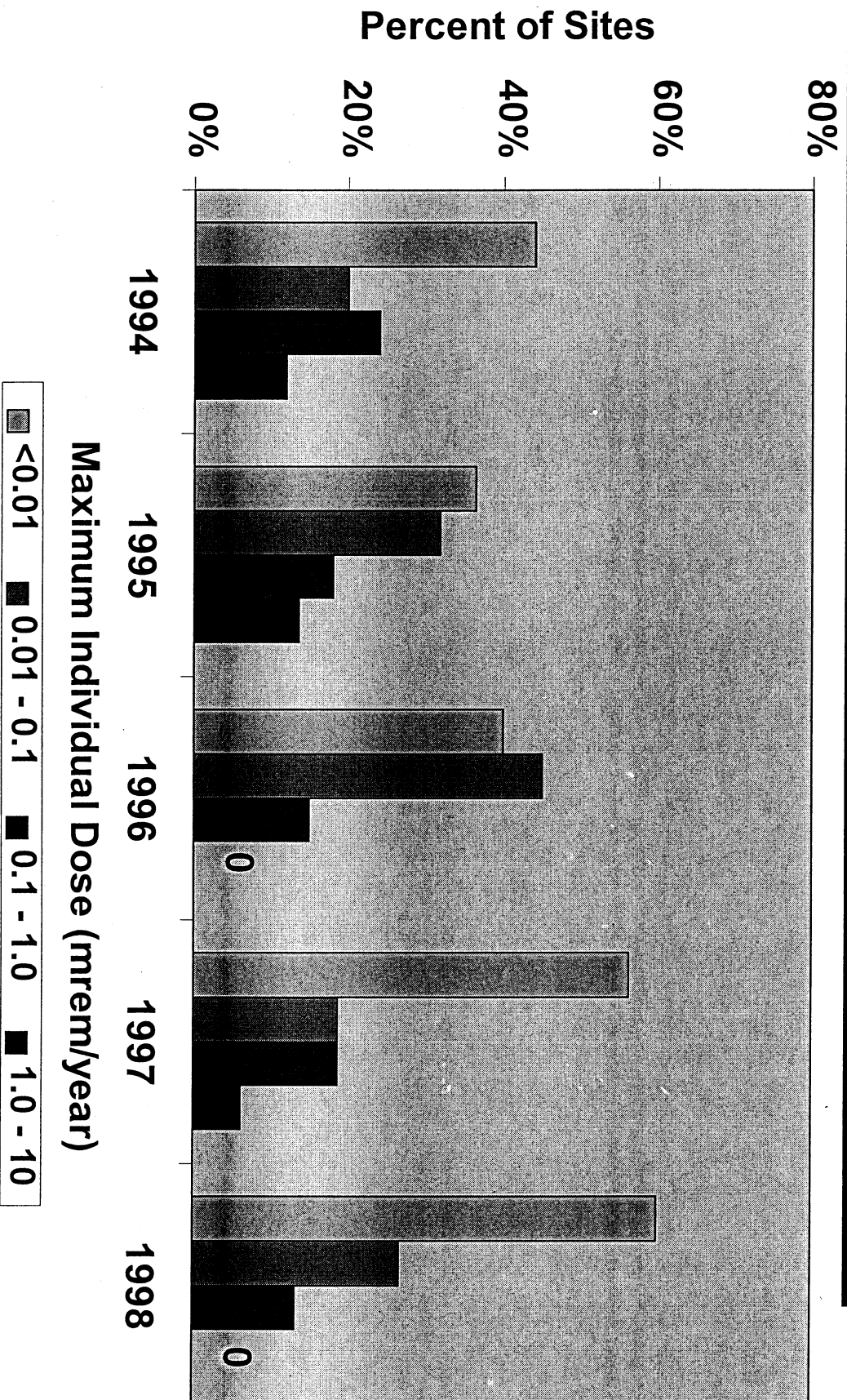
- ◆ **Dose to the MEI is estimated separately for point sources (stacks) and diffuse sources (contaminated soil areas and other non-point sources)**
- ◆ **The following graphs present dose to the offsite MEI for routine emissions from point and diffuse sources during the years 1994-1998**



## Dose from Stack Sources



## Dose from Diffuse Sources

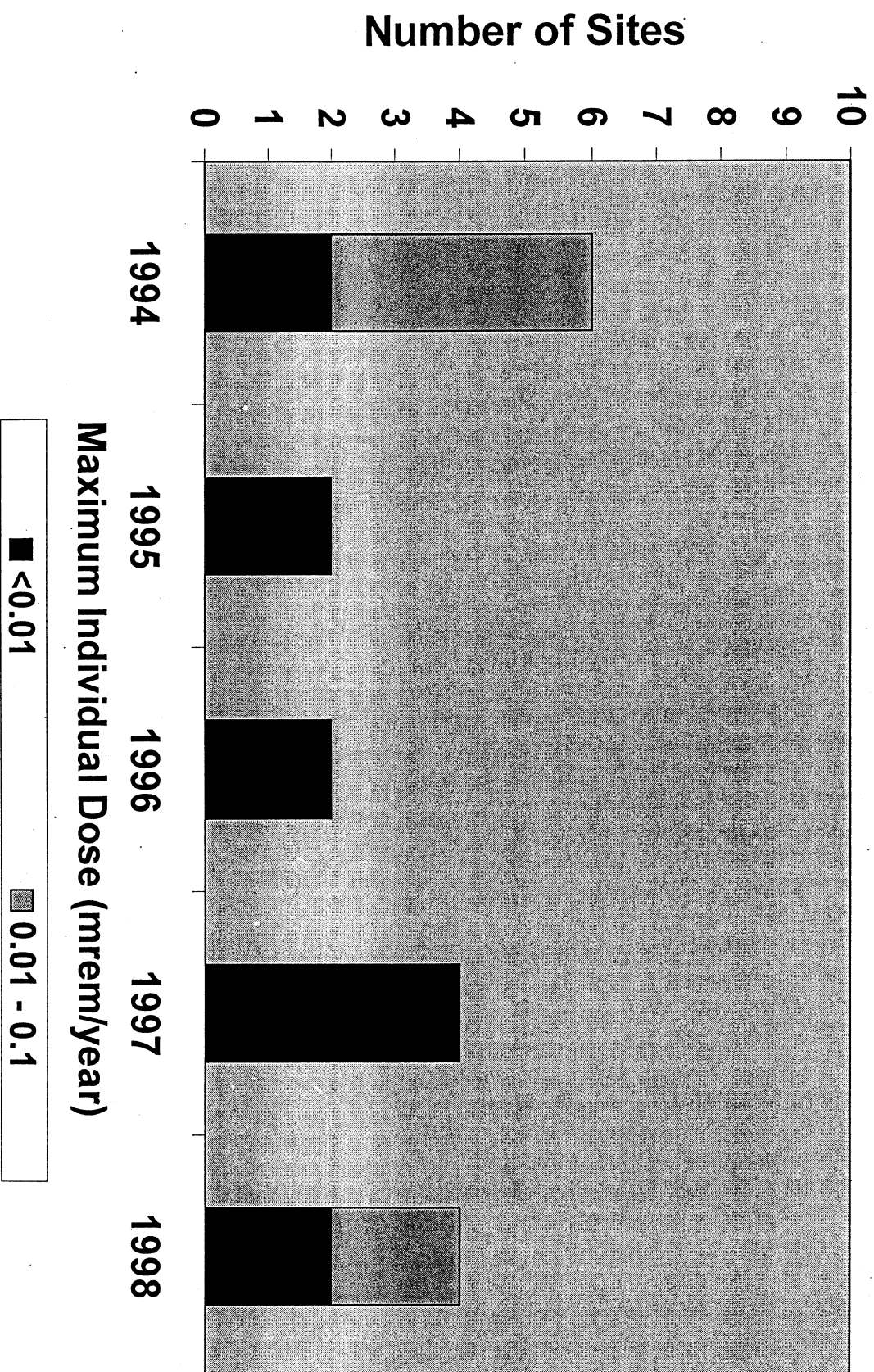


# **Dose to the Offsite Public - Supplemental Information**

---

- ◆ 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

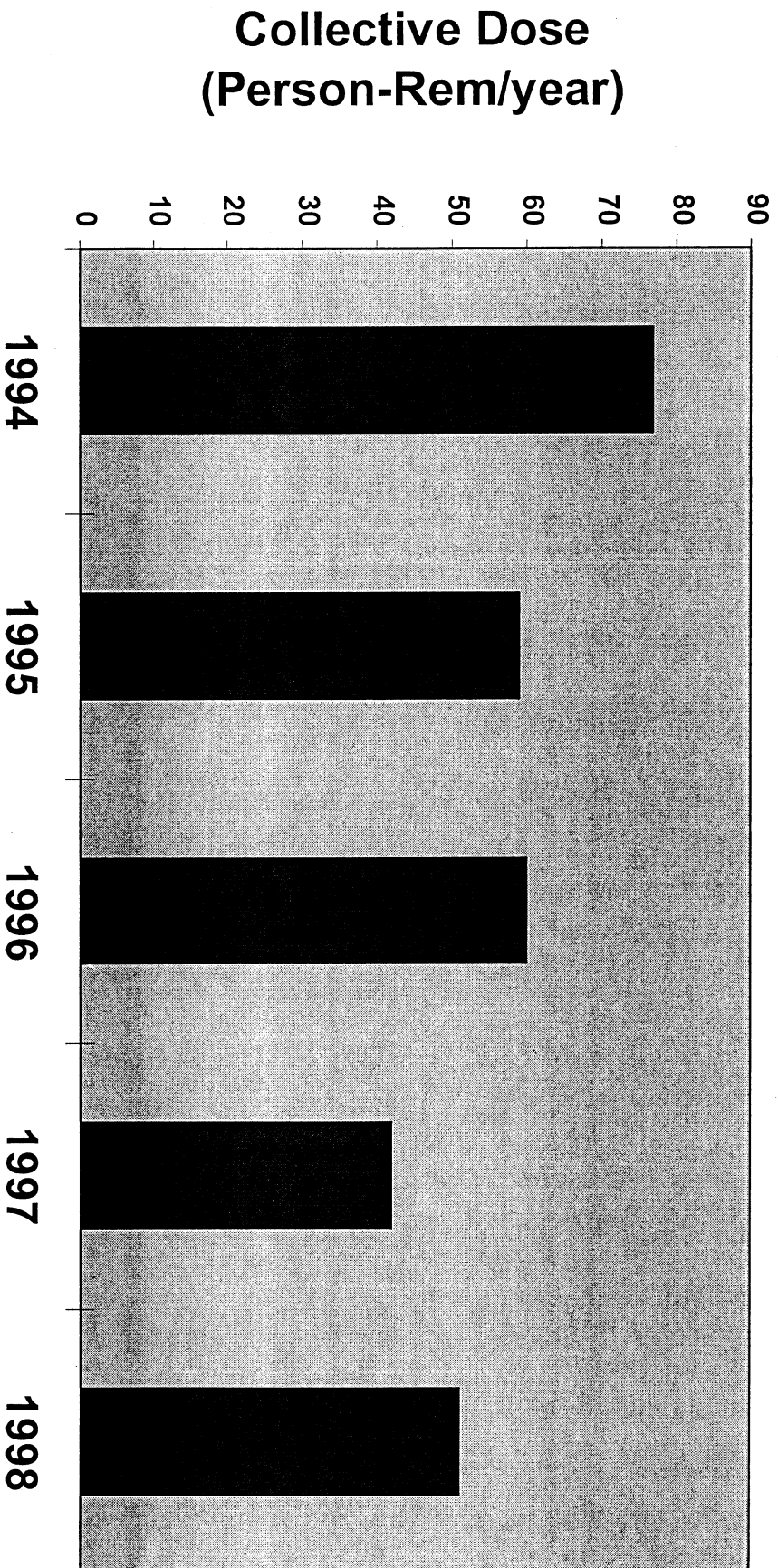
## Dose from Unplanned Releases





## **Total Dose to the Population within 50 miles of DOE Sites**

---



# Compliance Status

---

- ◆ All DOE facilities are below the 10 mrem/year standard for dose to the offsite MEI
- ◆ Most DOE facilities are currently in compliance with radionuclide NESHAPs emissions monitoring requirements

---

# **Current Issues Related to Radionuclide NESHAPs at DOE Facilities**

# **Implementation of ANSI Standard N13.1-1999**

---

- ◆ **EPA proposed amendment to 40 CFR Part 61, Subparts H and I (May 2000)**
- ◆ **Requires use of new ANSI standard for sampling radionuclide emissions**
- ◆ **Proposed application to newly constructed and modified major stacks**
- ◆ **Public and other input being considered**

# **EPA Approval of CAP88-PC, Version 2.0**

---

- ◆ **Approval by EPA - October, 1999**
- ◆ **Windows user interface**
- ◆ **Improved management of site data**
- ◆ **Added radionuclide decay chains**
- ◆ **Updated Users' Guide Available**

# **Onsite Members of the Public**

---

- ◆ **NESHAPS MEI in 40 CFR Part 61,  
Subpart H is “...any member of the  
public at any off-site point where there is  
a residence, school, business or office.”**
- ◆ **Onsite MEI location is being evaluated  
as a result of DOE site reindustrialization**
  - **Less restrictive access to DOE sites**
  - **Non-DOE businesses or facilities located  
within DOE site boundary**

# Modeling Dose to an Onsite MEI

---

- ◆ EPA models developed for offsite residential-agricultural exposure scenario
- ◆ Need new methods to model onsite receptors
  - account for part time occupancy
  - model atmospheric dispersion for receptors near the DOE facility

# **Methods for Modeling Dose from Elemental Tritium Emissions**

---

- ◆ **CAP88-PC software models tritium as water vapor**
- ◆ **Dose from elemental tritium gas is substantially lower than from vapor in equilibrium with environmental media**
- ◆ **Need EPA approval of alternative methods for modeling elemental tritium dose at some DOE facilities**