



Arsenic In NH

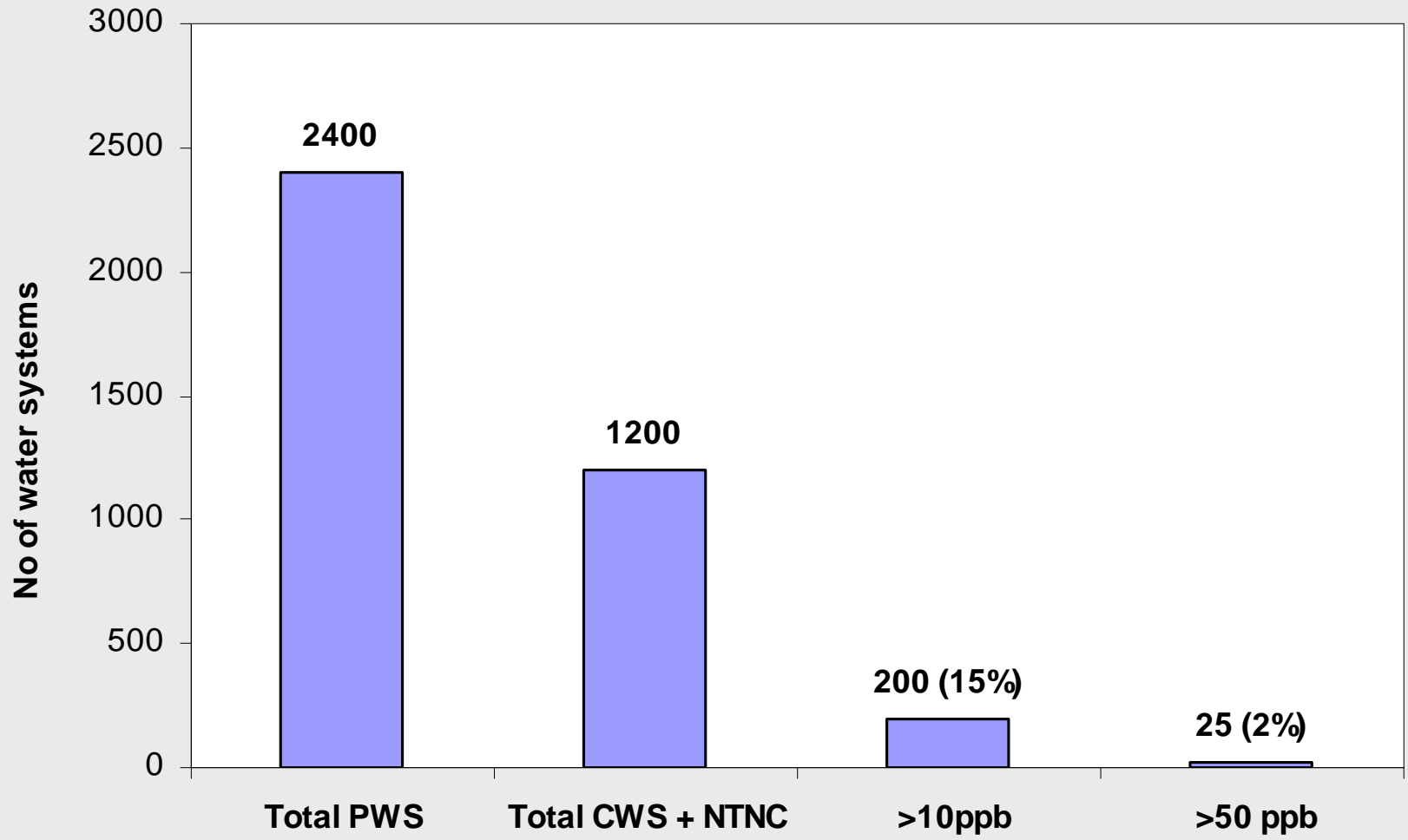
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Water Supply Engineering Bureau

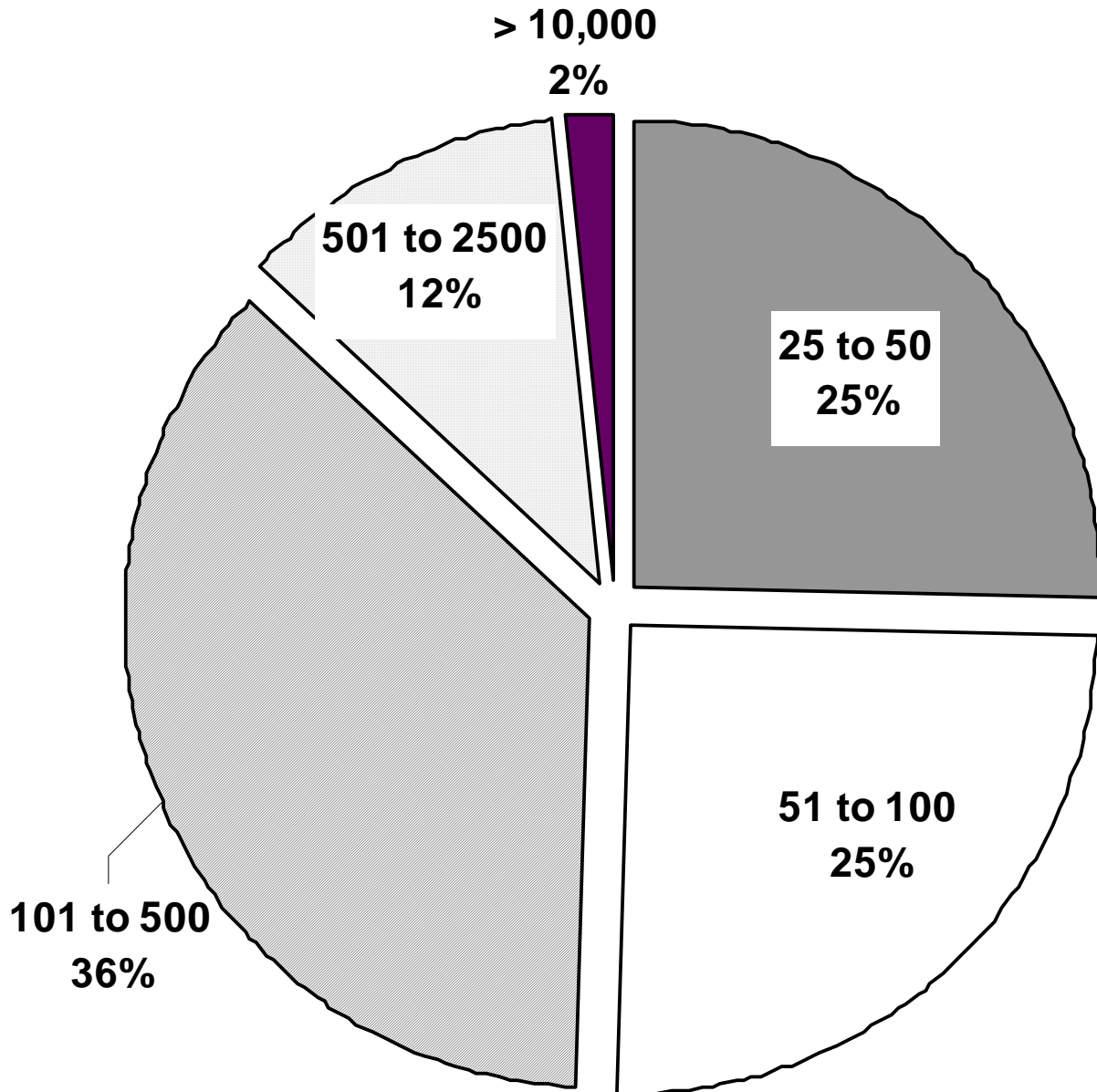
SESSION IV: Making and Managing Arsenic Residuals from Drinking Water Supplies

Arsenic and Landfills: Protecting Water Quality
October 3-4, 2006, Boston, MA

NH PWS Arsenic Inventory (2005 - 2006)

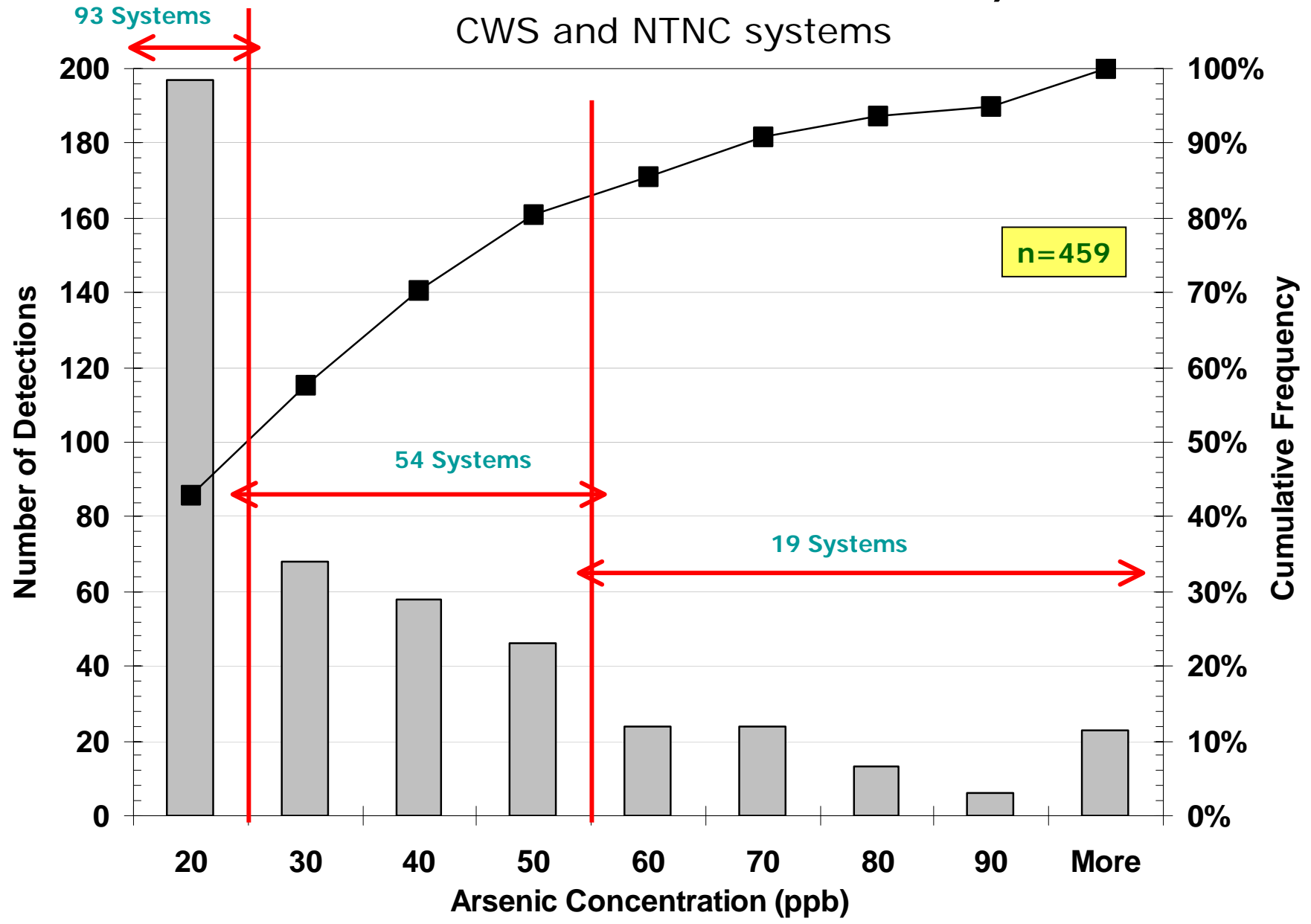


Community and NTNC Systems >10ppb by Population Served

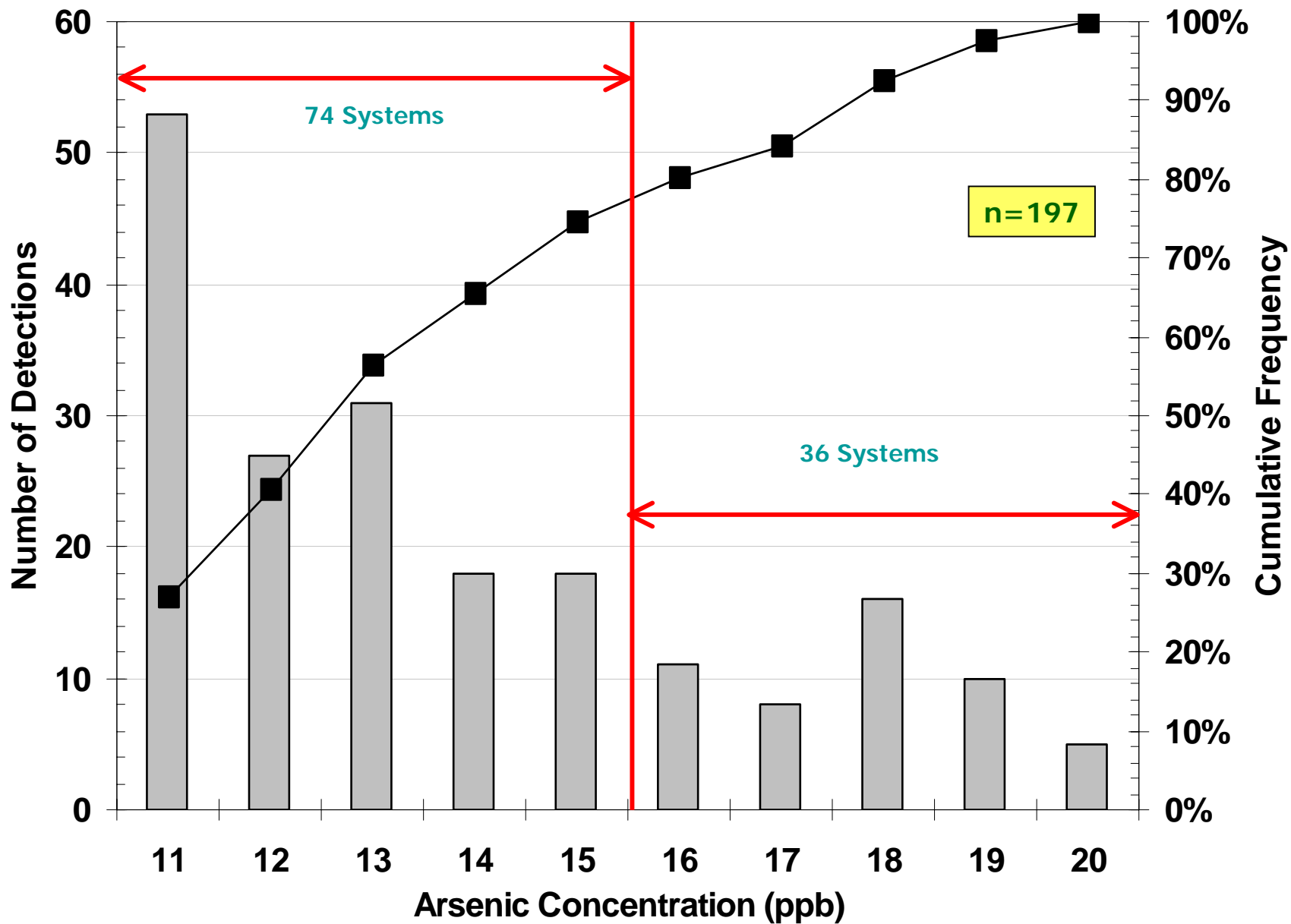


Arsenic Sampling Results (00-05)

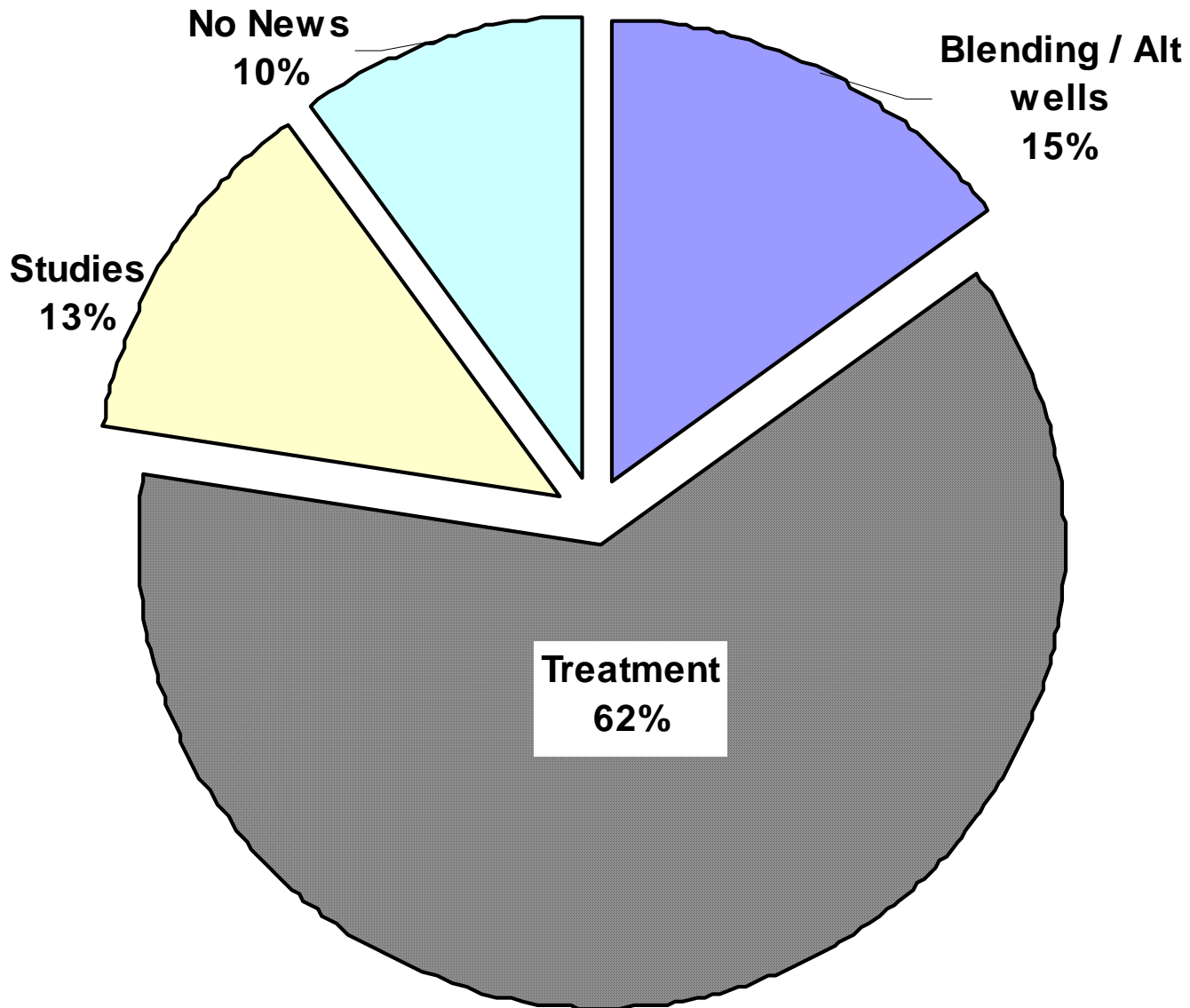
CWS and NTNC systems



A Closer Look : Detections < 20 ppb



Compliance Strategies



Treatment Technologies

Oxidation / Filtration	4
POU - RO or Adsorption	5
Anion Exchange	8
Adsorption	95
ArsenXnp	63
Aledge E-33	17
Activated Alumina	5
ATS Complex	5
Resintech	2
Isolux	1
ARM 200	1
ADI G2	1

NHDES Arsenic Studies

- ◆ EPA Demonstration Projects
 - Adsorption / Iron Oxide Media
 - 3 sites, 2004 to present
- ◆ Borehole modification – 3 sites
- ◆ Total vs. Soluble ~25 sites to date
- ◆ As III speciation ~20 sites to date
- ◆ Actual Bedlife vs. Vendor Projections
- ◆ Backwash characterization ~12 sites, adsorption (2 medias), oxidation-filtration
- ◆ RSSCT setup (anticipated Nov-Dec 2006)

Rollinsford Demo Project #1

- ◆ Oct '04 to Mar '06
- ◆ Adedge E33 media
- ◆ 27 CF/vessel x 2
- ◆ 3 changeouts /
abandoned technology!
- ◆ Oxid-Filtration 2-month trial
- ◆ Greensand piloting / install
4Q06
- ◆ Weekly Backwash, estim.
2000 gal per event
- ◆ Backwash settling tanks /
onsite sup't discharge



Bow, White Rock - Demo Project #2

- ◆ Oct 2004 to present
- ◆ ADI G2 media
- ◆ 85 CF/vessel x 2
- ◆ First Changeout @
6000 BV, TCLP < 5 mg/L
- ◆ Backwash every 6 months, onsite infiltration ditch
- ◆ 1,700 gal backwash per vessel



NH Arsenic Residuals Policy

- ◆ UIC Registrations all
- ◆ Backwash or salt regenerant sample for total arsenic
 - Backwash study 4Q06 to characterize total vs. filtered arsenic in onsite discharges
- ◆ Additional requirements depending on treatment technology

Discharge Requirements, cont'd

◆ Adsorption

- Low backwash frequency
- Onsite discharge to drywell or infiltration ditch
- TCLP spent media prior to landfill

◆ Anion Exchange

- Centralized leachfield or Sanitary Sewer
- Same mass loading, all water returned to central septic or sewer
- Weekly or biweekly regeneration cycle

◆ Oxidation / Filtration

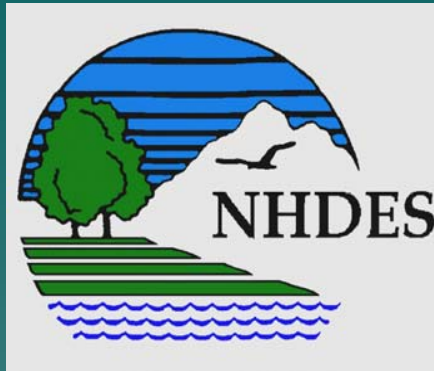
- Backwash settling tank or inline bag filter
- Solids TCLP prior to landfill

Operational Problems...oh yeah!

- ◆ Short bedlife adsorption medias
 - 6,000 to 30,000 BV observed
 - 50,000 to 250,000 BV promised
 - Silica, Phosphate, pH, Manganese interferences
- ◆ Competition Installers / Operators
- ◆ Small Systems not used to process monitoring, sampling for compliance only
- ◆ Public Notice each O&M hiccup, schools in shock sending arsenic letters home!
- ◆ Need more Outreach, Funding, Field Data

Private Homes – No State Regulation

- ◆ Assume similar occurrence ~15%
- ◆ Central / Southern / Seacoast NH
- ◆ POU (one sink) vs. POE (whole house)
 - POU 30 to 70% depending on vendor, single contaminant target
 - POE if co-contaminants Iron, Manganese, Sulfide, Radon
- ◆ Liquid Residuals to home septic (salt, RO reject, filter backwash)
- ◆ Solid Residuals to regular trash



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