

# Historical application of MNA and other technology in Superfund, and some "dos" and "don'ts" for future applications of MNA

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# Monitored Natural Attenuation at Superfund Sites

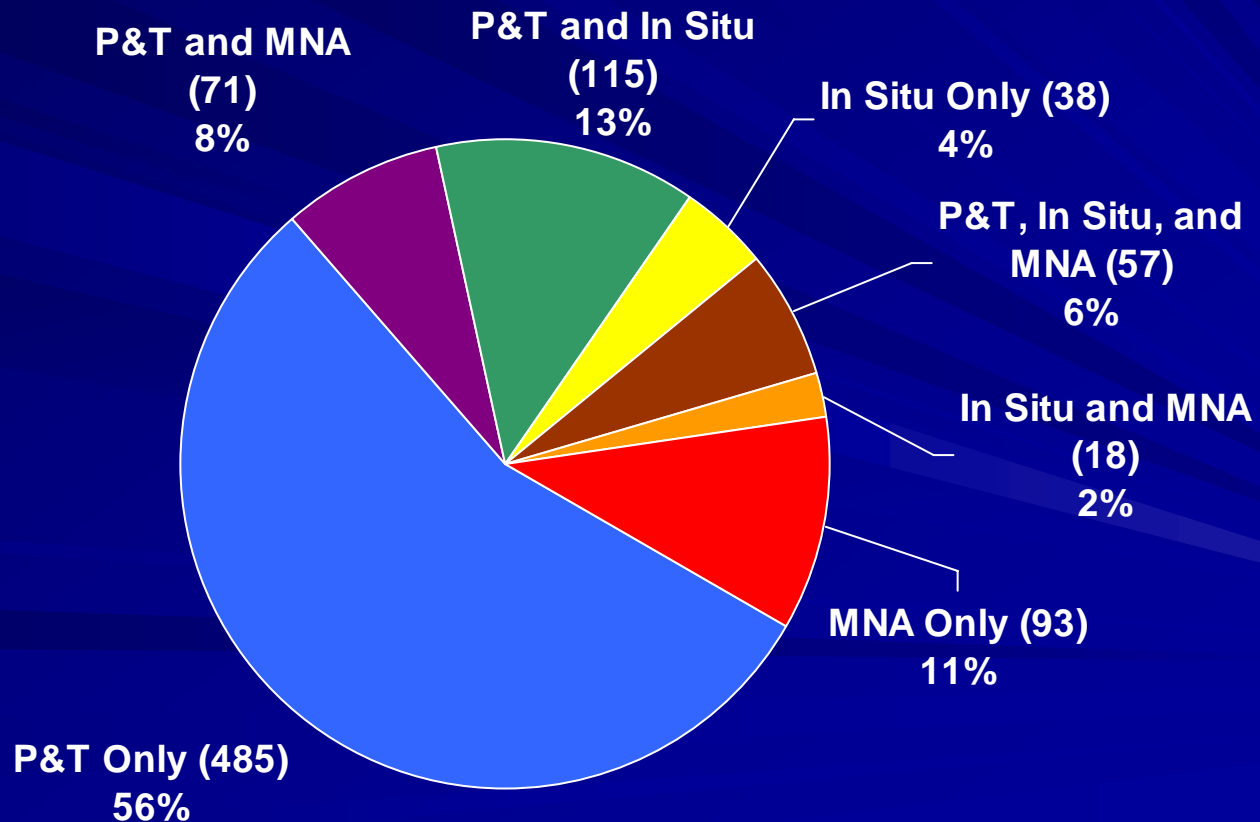


# MNA National Summary

- From FY82 – FY06, EPA has chosen MNA as the selected remedy or as part of the selected remedy to address ground water contamination at approximately 250 sites.
- At most sites, MNA is selected along with another technology (e.g., Pump & Treat).
- Current trend in selecting MNA as a remedy is rebounding in recent years compared to a leveling off after issuance of the MNA Directive.

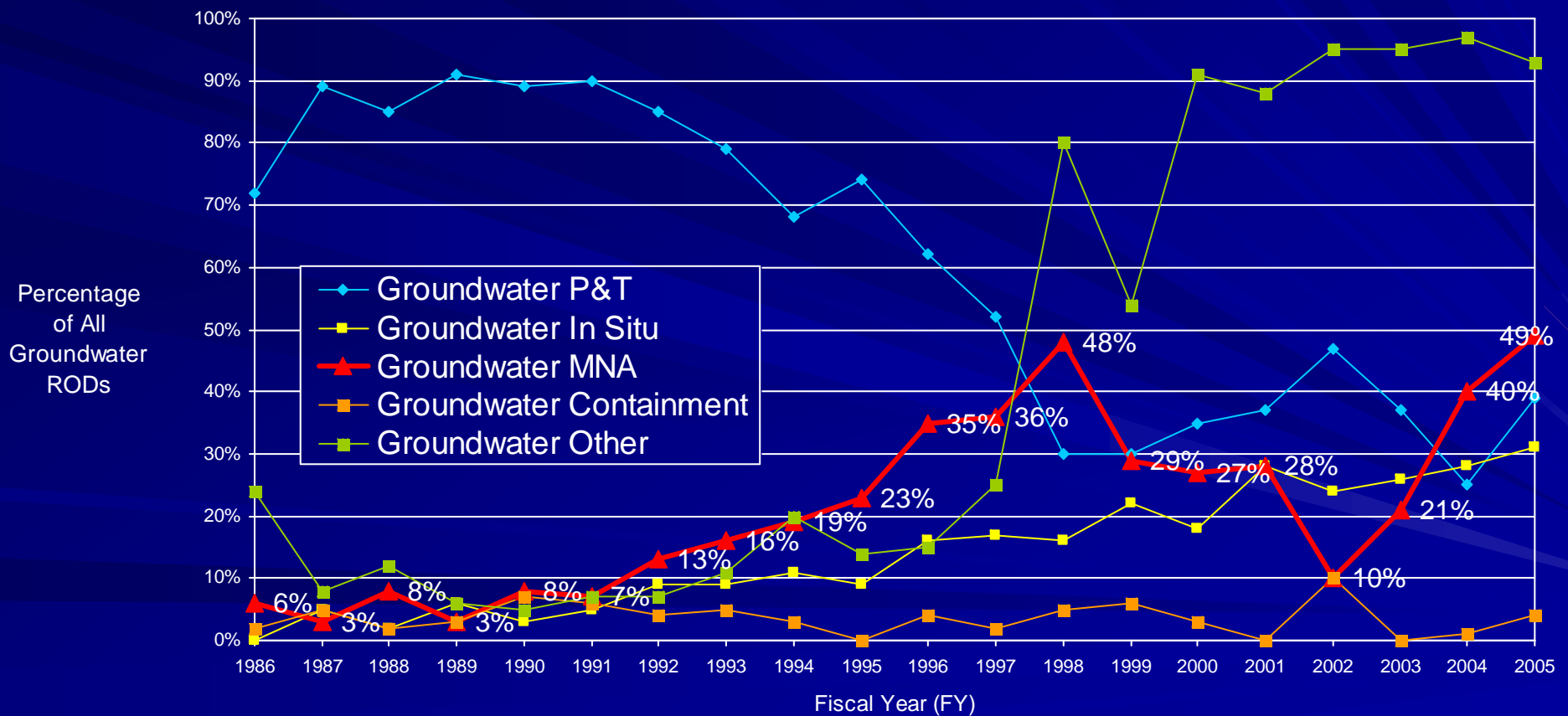
# NPL Sites with P&T, In Situ Treatment, or MNA as Part of a Groundwater Remedy (FY 1982 – 2005)

Total Number of Sites = 877



# Trends in RODs Selecting Groundwater Remedies (FY 1986 – 2005)

Total Number of Groundwater RODs = 1,458



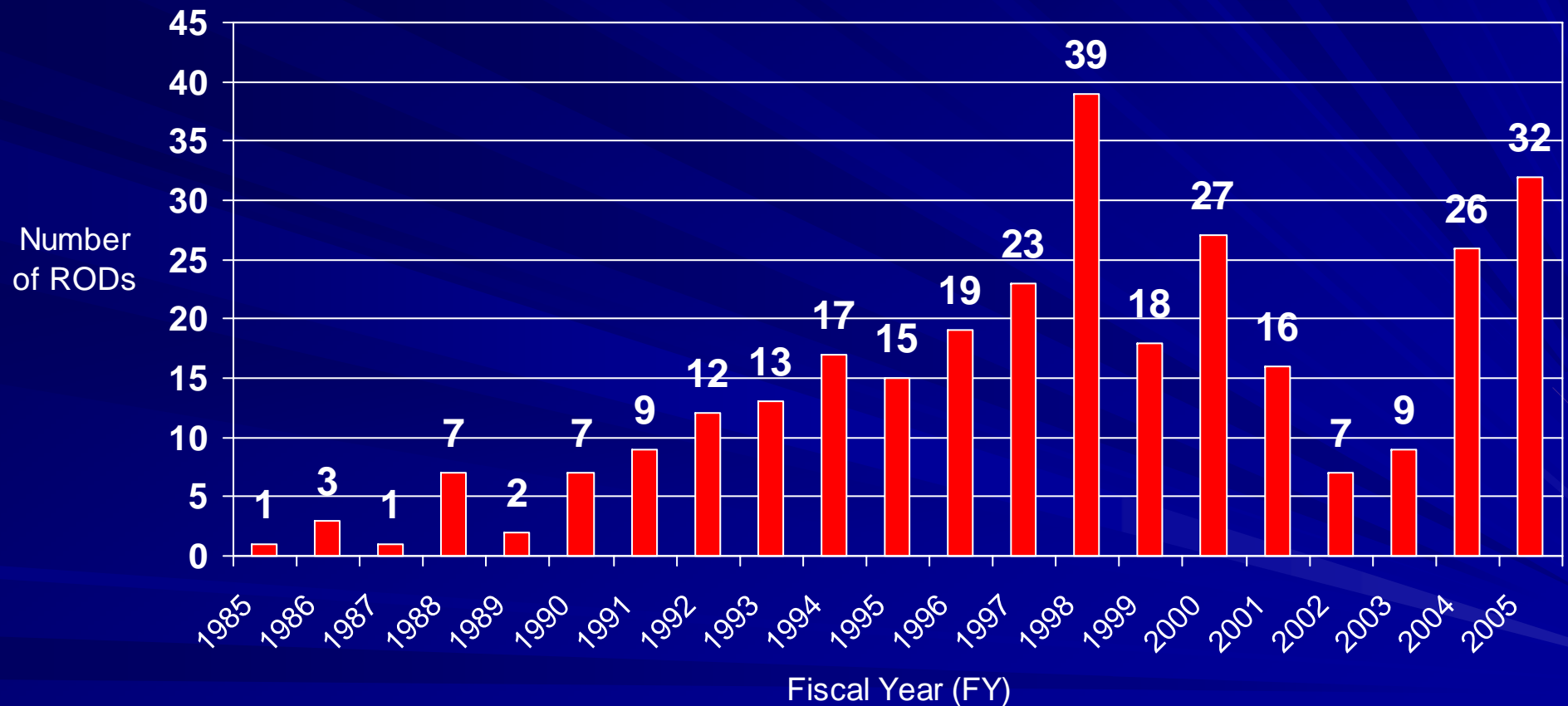
# RODs Selecting Groundwater Remedies (FY 1982 – 2005)

Total Number of Groundwater RODs = 1,509

Remedy Type	Number of RODs
Groundwater Pump and Treat	958
In Situ Treatment of Groundwater	195
MNA of Groundwater	303
Groundwater Containment	60
Other Groundwater	579

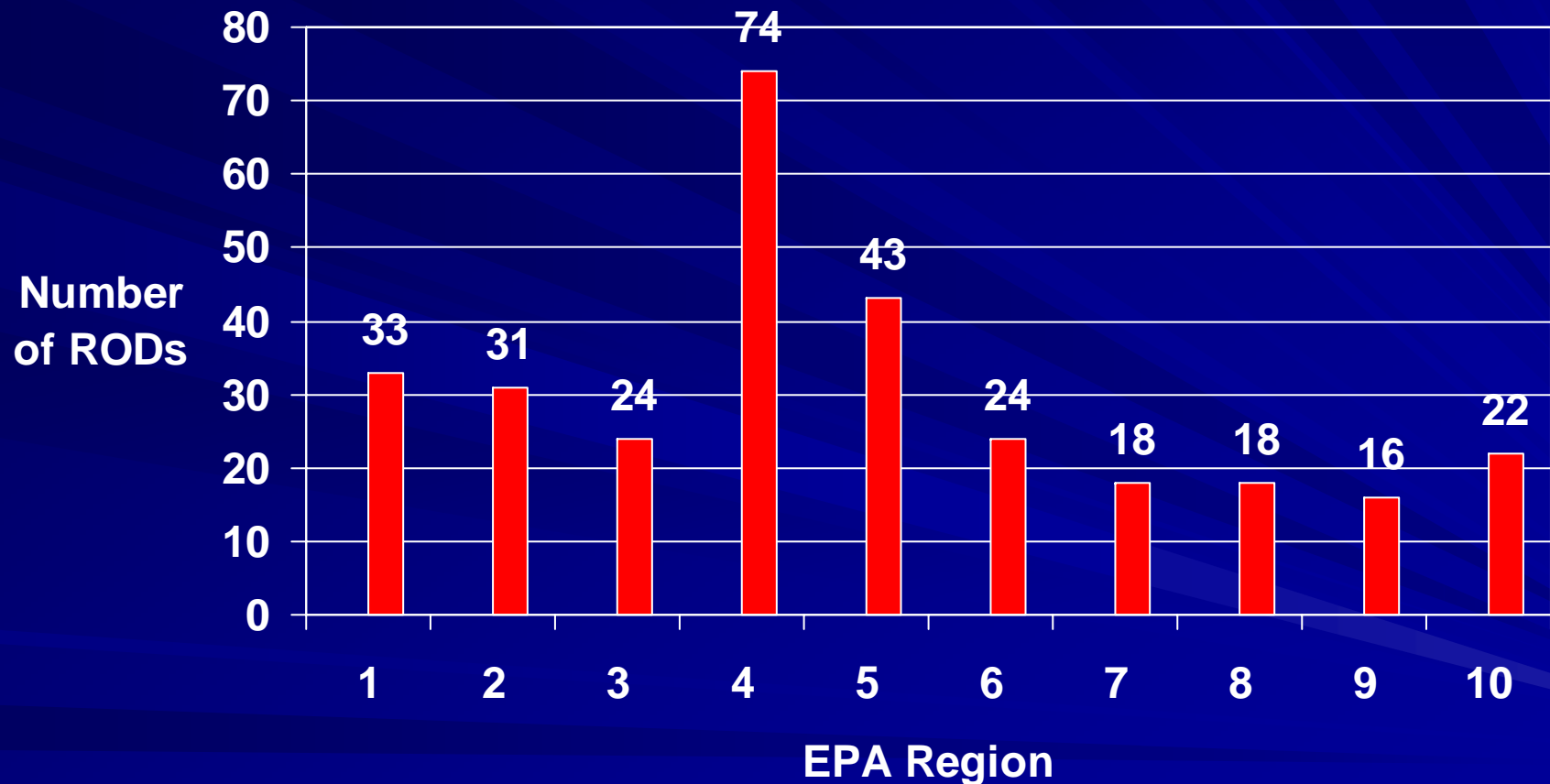
# MNA RODs by Fiscal Year

Total Number of MNA RODs = 303



# MNA RODs by EPA Region

Total Number of MNA RODs = 303



# Do's and Don'ts for Monitored Natural Attenuation



# Do...

- Have supporting data for selecting MNA
- Adhere to lines of evidence in the 1999 Directive
- Consider the use of active remediation first, if appropriate
- Evaluate performance monitoring to determine if wells and/or frequency can be reduced
- Reconsider the response action if concentrations are not decreasing or behaving as expected

## Do... (cont'd)

- Assess the response action during the 5 year review process (at a minimum)
- Realize that MNA can be a restoration response action and can be part of a long term response action (LTRA)
- Refer to guidance documents and web sites (see later slides)
- Consider using a screening tool such as the natural attenuation software (NAS), developed by USGS and Virginia Tech, or BIOCHLOR developed by U.S. EPA and the U.S. Air Force.
- Have a contingency or backup plan if MNA doesn't work

# Don't...

- Use at every site or contaminant type
- Use without supporting evidence
- Call it MNA, when it's really something else (e.g., enhanced bio)
- Select MNA if there's an unreasonable timeframe
- Select MNA when concentration levels are too high

# Documents

- Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, EPA 1999
- Guidance on Long-Term Monitoring for Remedies Using Monitored Natural Attenuation, EPA 2004
- Performance Monitoring of MNA Remedies for VOCs in Ground Water, Ada 2004
- Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA 1998

# Web Links

## **Superfund**

[epa.gov/superfund/resources/gwdocs/monit.htm](http://epa.gov/superfund/resources/gwdocs/monit.htm)

-click on policy & guidance and key OSWER GW Guidances

## **UST**

[epa.gov/swerust1/cat/mna.htm](http://epa.gov/swerust1/cat/mna.htm)

-click on remediation technologies

## **RCRA**

[epa.gov/epaoswer/hazwaste/ca/index.htm](http://epa.gov/epaoswer/hazwaste/ca/index.htm)

-query on MNA