

Summary of 2003 Ground Water Data Analysis of Demolition Landfills

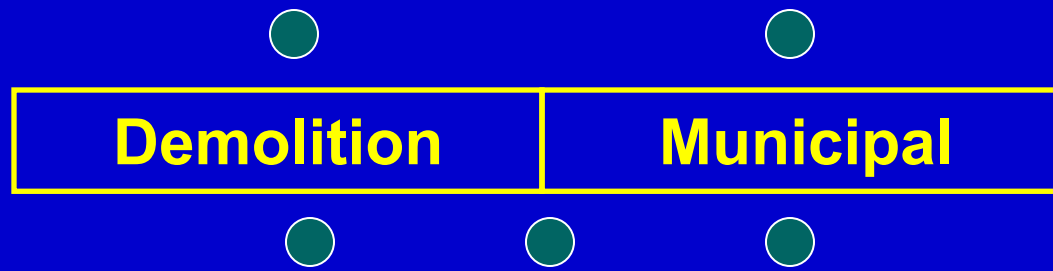
Objectives

- Determine if demolition landfills impact ground water - concentrations in down-gradient wells are statistically greater than in up-gradient wells
- Compare concentrations in ground water to water quality standards – only applies if impacts are evident. **Note that standards have changed since 2003.**



Study characteristics

- 43 sites with ground water data
- Interviewed staff
 - positively identify up- and down-gradient wells
 - divided all sites into one of three categories
 - Demolition only
 - Demolition + industrial
 - Demolition + industrial + municipal



Data

- About 400000 data points, but much was not of sufficient quality to use in analysis
- Information was inadequate for analysis at 11 sites
- Data concerns
 - Inconsistent sampling
 - Variable analyte lists
 - Inconsistent lab analysis
 - Couldn't identify ground water flow direction

Number of sites with impacted ground water

Type of site	No Ground water impacts	Ground water impacts
Demolition	2	5
Demolition + industrial	0	9
Demolition + industrial + municipal	2	14

Number of sites with impacted ground water – by chemical

Chemical	Demolition	Demolition /industrial	Demolition /industrial/ municipal
VOCs	2	3	8
Inorganics: Non-health based	4	9	12
Inorganics: Health-based	3	8	9

Percentage of samples exceeding a standard

Chemical	Water quality standards	Intervention limits
VOCs	0.24	0.47
Inorganics: Non-health based	17.55	39.3
Inorganics: Health-based	3.61	11.1

VOCs

- About 0.25% of all samples exceeded water quality standards
- Down-gradient concentrations exceeded up-gradient:
 - At 13 sites for CFCs
 - At 7 sites for chlorinated solvents
 - At 10 sites for other hydrocarbons
- Detection rate increased w/ amount of waste
- Detection rate increased with facility age

Inorganics: Health-based

- About 3.6% of all samples exceeded water quality standards
- Down-gradient concentrations exceeded up-gradient:
 - At 11 sites for metals
 - At 3 sites for nitrate
- No effect of amount of waste or facility age
- Manganese, Arsenic, Boron

Inorganics: Non-health-based

- About 17.6% of all samples exceeded water quality standards
- Down-gradient concentrations exceeded up-gradient:
 - At 15 sites for metals (Ca, Na, K, Mg)
 - At 18 sites for sulfate
 - At 12 sites for chloride
- No effect of amount of waste or facility age