

# Health Effects of PCE- Contaminated Drinking Water

## Interdisciplinary Team of Investigators

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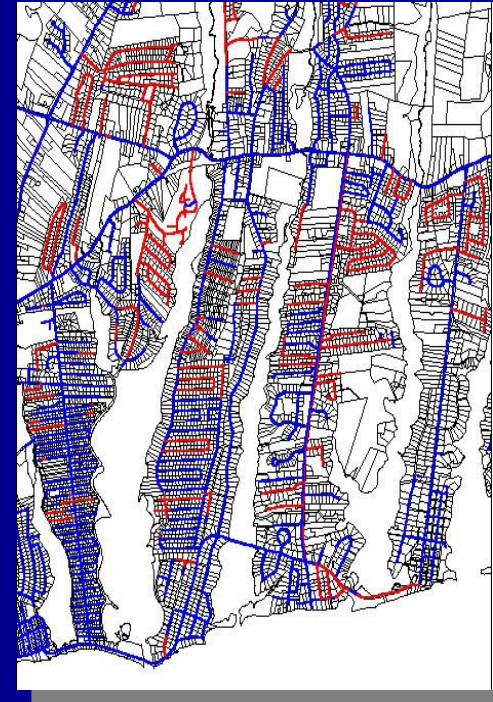
# PCE in Cape Cod Waters



- Commercially important solvent and common contaminant
- PCE leached into drinking water supplies of Cape Cod from vinyl lining in water distribution pipes
  - ~400 miles installed 1968-1980
  - Problem discovered in 1980
  - Concentrations up to 7,750 ug/l

# Unique Exposure Scenario

- Large population was exposed (15%)
- Wide range of exposure levels in an environmental setting
- Irregular contamination pattern
- Little confounding by other contaminants and population characteristics

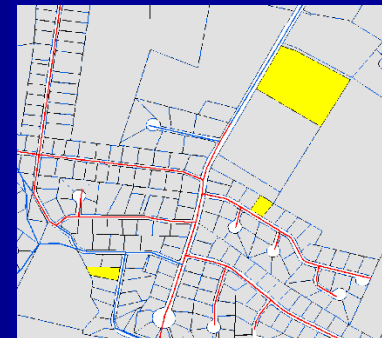


# Superfund Research

- I. Case-control Study of Breast Cancer
- II. Cohort Study of Reproductive and Developmental Outcomes
- III. Cohort Study of Neurotoxic Effects

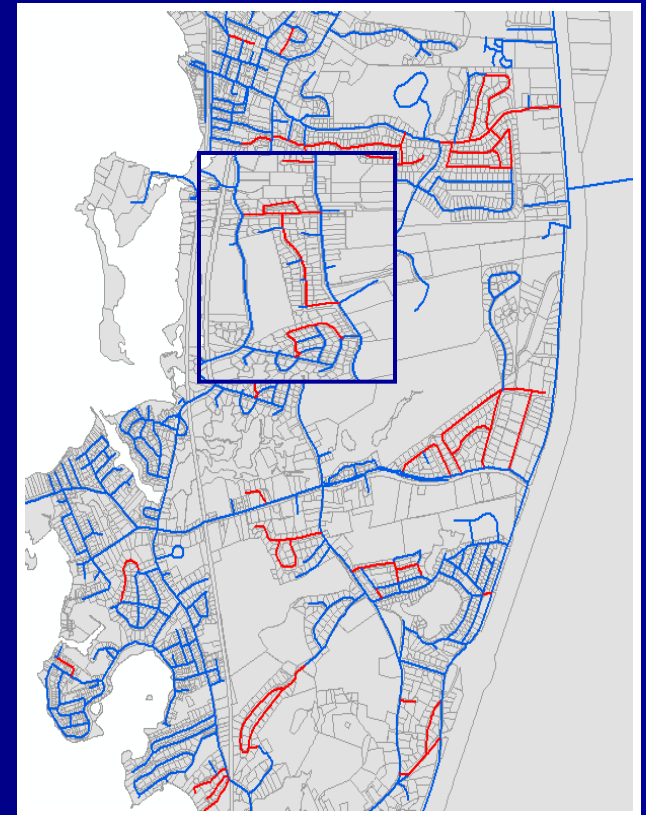
Mature epidemiological research program

- Extensive subject data
- Geographic Info System
- Project 2 collaboration



# Refined Exposure Assessment

- Validation Study
- EPANet software
- Personal Dose Estimates
- Method Papers and Reanalysis



# PCE Cohort Study, Parts 1 and 2

- Large number of exposed and unexposed families, including parents and children (n=5,000)
- Variety of Exposures
  - Prenatal and postnatal combined
  - Postnatal only
  - Adult mothers and fathers

# PCE Cohort Study, Part 1

- Questionnaire data on “gross” reproductive and developmental effects
  - Low birth weight
  - Premature birth
  - Miscarriage/stillbirth
  - Birth defects
  - Developmental disorders of learning and attention

# PCE Cohort Study, Part 2

Focus on “subtle” neurological effects

- Neuropsychological testing (n=300)
- Vision exams (n=300)
- Structural (n=120) and functional MRIs (n=60)
- Many disease outcomes from mail questionnaires (n=5,000)



# Future Plans

- Analyze collected data
- Follow-up positive associations in **smaller, focused** investigations
  - Nested case-control studies
  - Neurotoxic effects, esp. NP and vision tests, imaging data
  - Other outcomes: cancer, birth defects