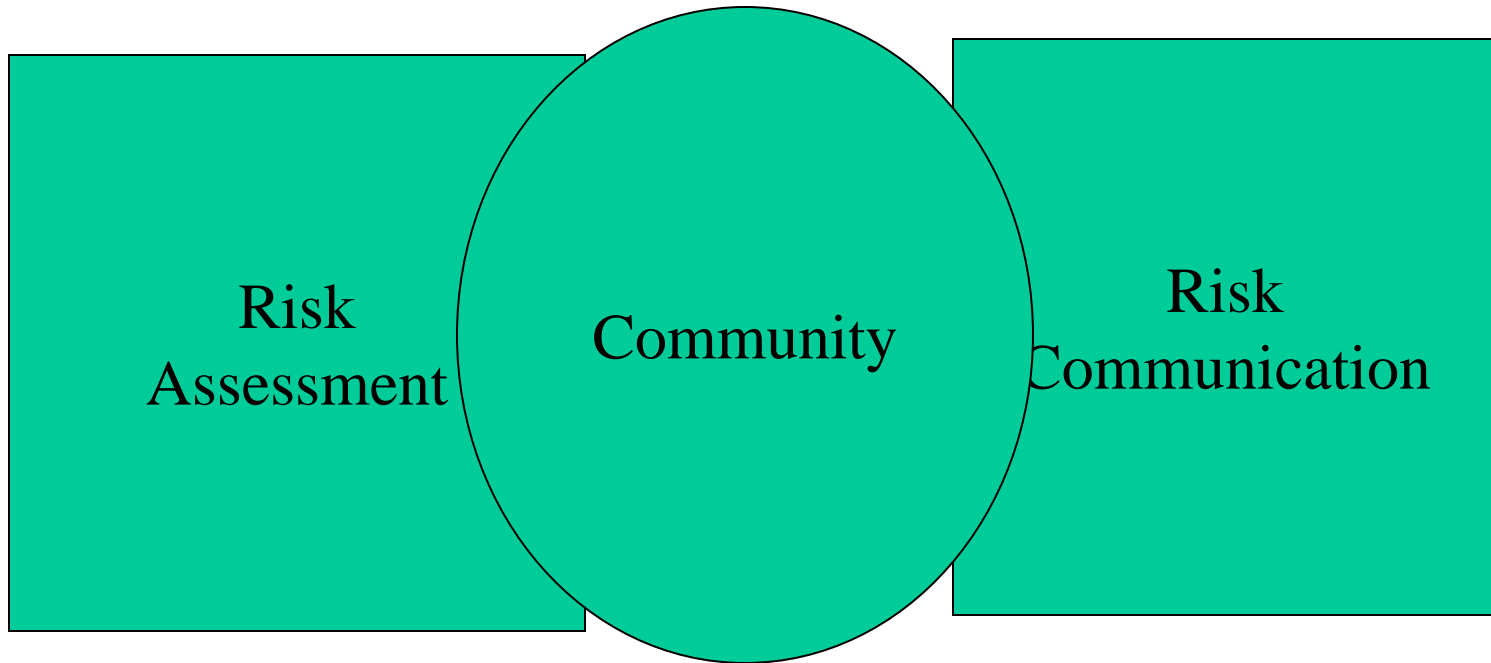


Risk Assessment/Risk Communication-Understanding the Community

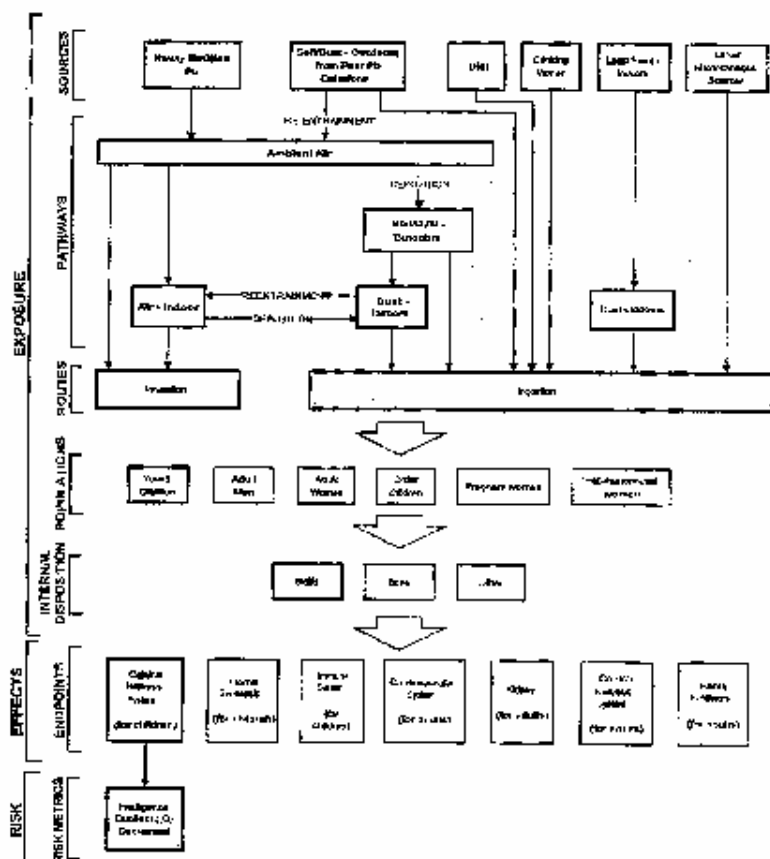
Thomas Schlenker, MD, MPH
Public Health Madison-Dane County



Lead Human Exposure and Health Risk

Volume 1, July 2007

Figure 2-1. Conceptual model for Pb human health risk assessment.



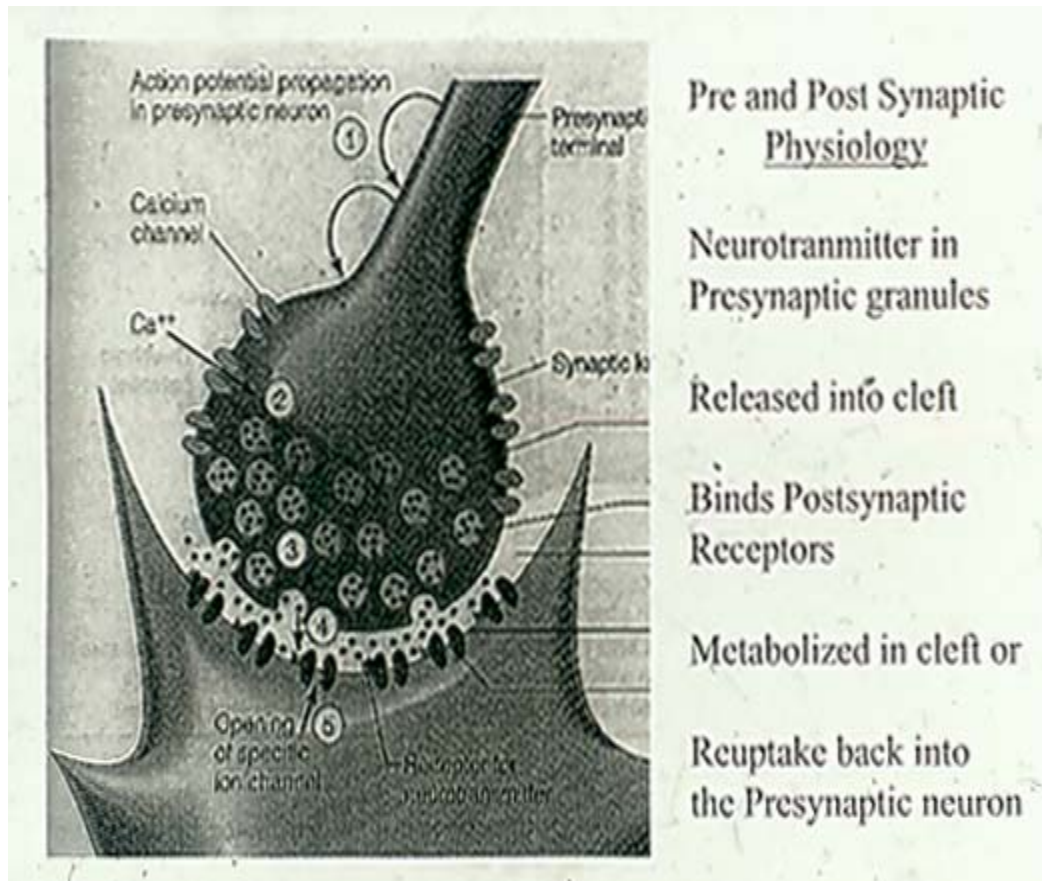
- Sources
- Pathways
- Routes
- Populations
- Internal Disposition
- Endpoints
- Risk Metrics

Community-based Risk Assessment: Lead



- Benjamin Franklin
- Voluminous Research
- National Strategies
- Substantial Funding

Bone, Blood, CNS



Internal Disposition

- Harmless/harmful
- Hgb, RBCs and breast feeding
- Developing brain and synapse story

Chips vs Dust



Sources

Pathways

- Pica
- Child growth/dev
- Housing
- Weather
- Abatement
- Dust wipes

Mothers, babies, doctors and public health

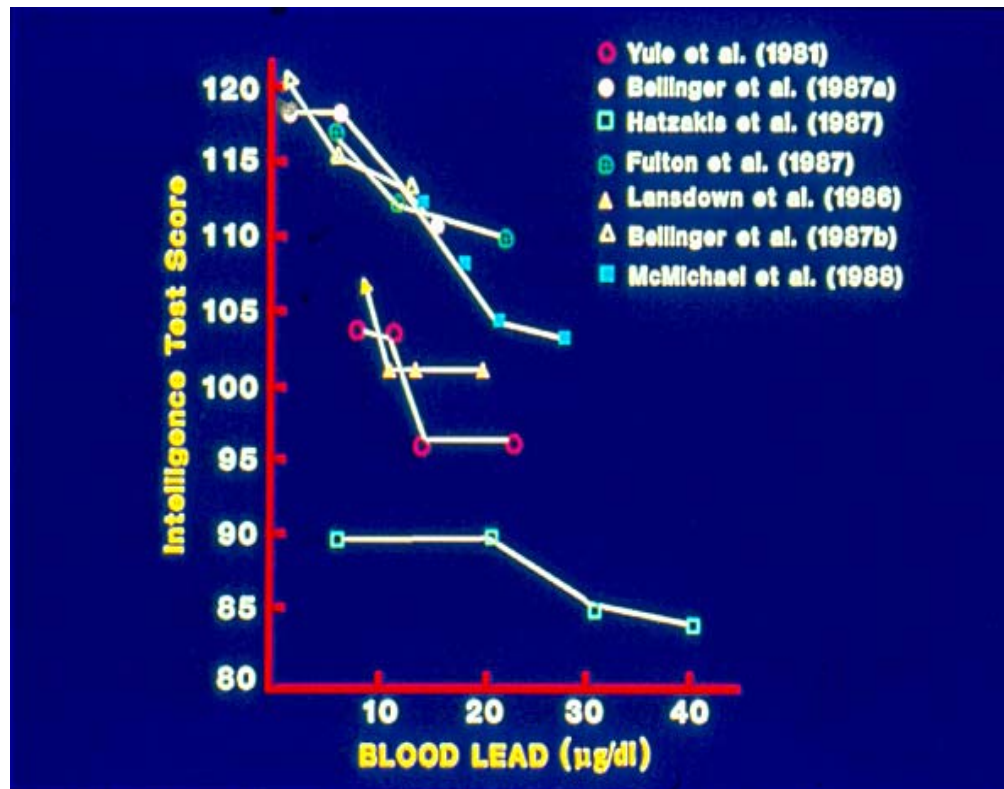


Routes

Populations

- “community-based research framework and a transparent process to instill confidence and trust among community members”
- **“Effects of Lead in Milwaukee’s Water.”** Wis Med J 1989;88:13

IQ and high school graduation



Risk Metrics

- Herb Needleman in Somerville, Mass



Community-based Risk Assessment: Manganese



Sources

Pathways

Routes

Populations

Internal

Disposition

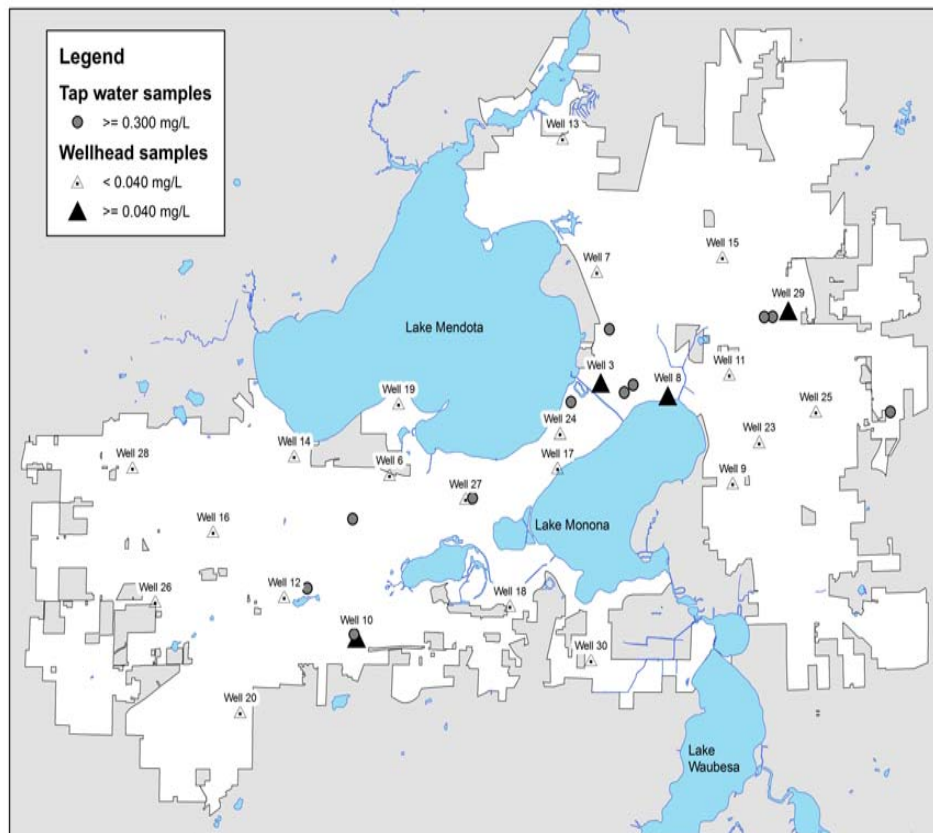
Endpoints

Risk Metrics

EPA Resources

- **Health Effects Support Document for Manganese, 2003:** HRL = 0.30 mg/L
- **Drinking Water Health Advisory for Manganese, 2004:** lifetime health advisory value
- **Teach (Toxicity and Exposure Assessment for Children's Health) Manganese Chemical Summary, 2007:** infant formula
- **Occurrence of Manganese in Drinking Water and Manganese Control (EPA/Awwa Research Foundation):** “aesthetic problem...relates more to consumer complaints rather than protecting health.”

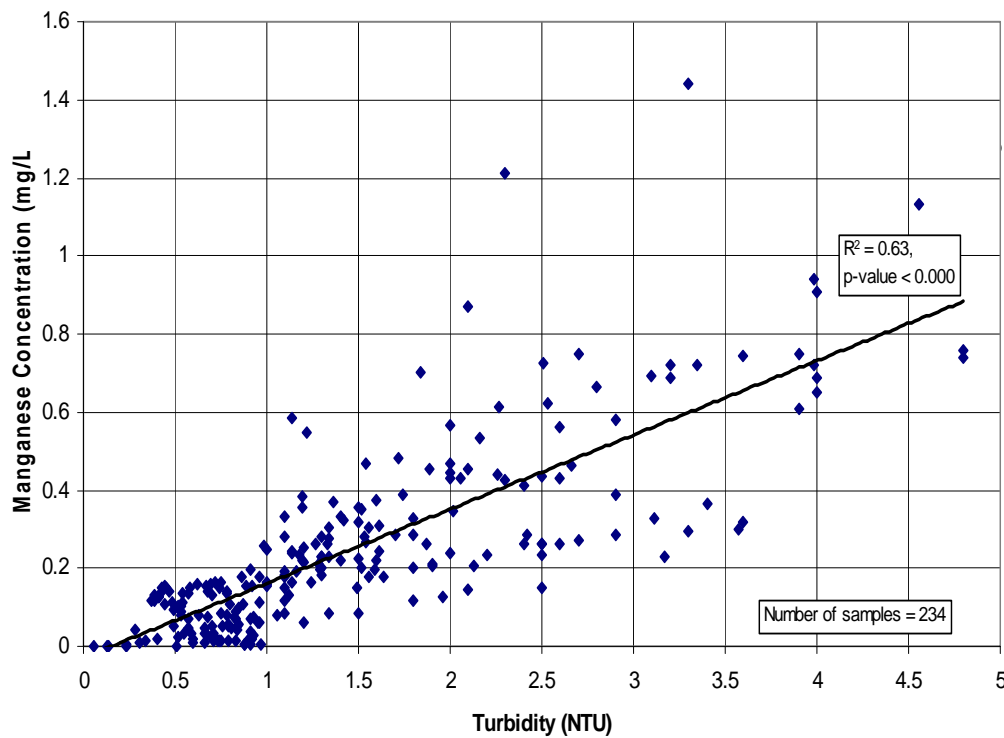
Sludge vs Sediment



Pathways

- Wells
- Mains
- Laterals
- Hose bibs

Food, Drink, Osteo-Bi-Flex



Sources

- Concentrations
- Bioavailability
- Volume
- Consumer Products

Figure 1. Regression of turbidity against manganese concentration in end-of-flush samples from hydrants.

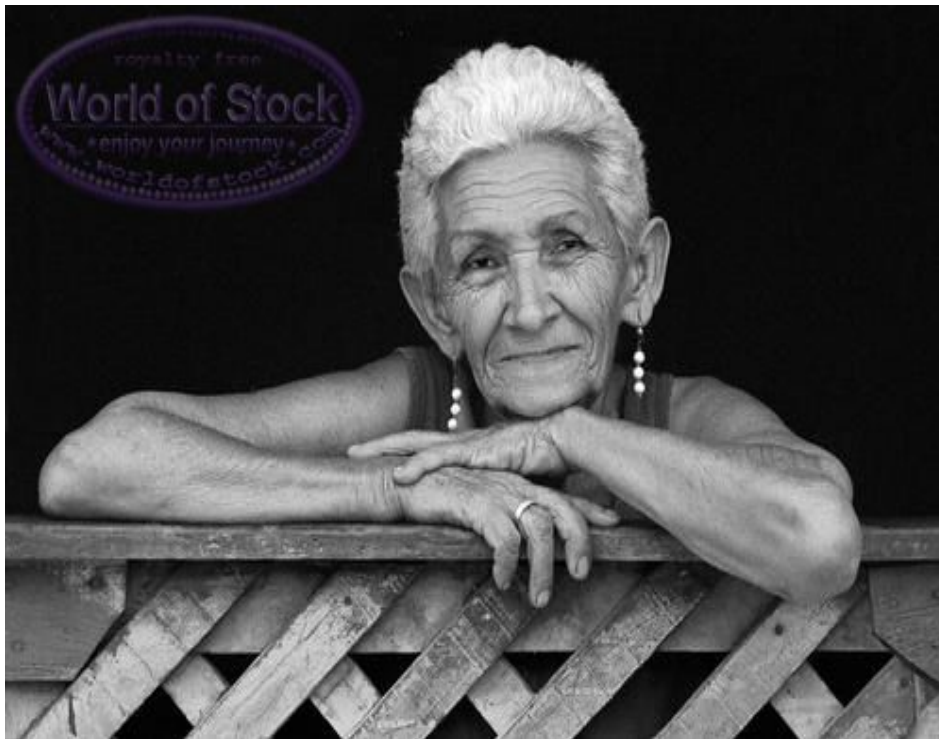
At Risk vs Worried Well



Populations

- “Population factors that differentially affect exposure or toxicity, and in some cases, resiliency to environmental contaminants.”
- Infant formula: “contains 50 to 300 ug/L of manganese” (Collipp et al, 1983)

Human Impact



Endpoints

Risk Metrics

- Parkinson's Syndrome
- ADHD
- Hair analysis?

It must be the water!



Risk Communication

