Understanding Lead Poisoning in Baltimore and Maryland

Risk Targeting and Clinical Management

Relationship Among Research, Risk Assessment and Regulation

Lead: Neurodevelopmental Toxicant and Multimedia Pollutant

Developed Capillary Screening Technique

Handheld XRF Analyzer

New units
10 μg/dL = 100 ppb

Dust testing
Components of a Health Risk Assessment

3. Case-specific exposure characterization

Traditional Understanding of the Risk Of Lead in Drinking Water

1. "A two year old child needs to drink 2 gallons of lead contaminated water a day for a week to raise blood lead level 1 μg/dL."
2. Drinking water believed to account for 10-20% of an elevated blood lead level
3. Lacej's study in Glasgow Scotland in 1985 showed lead in drinking water used to reconstitute infant formula for 13 week old infants had blood lead levels over 10 μg/dl (100 ppb).
4. Rabnowitz's study in Boston of child 24 months old with elevated blood lead found a high correlation with lead in dust and paint but not water

Potential Sources of Lead in School Drinking Water
Sampling Error With Current Technique

Case Studies of Lead in Water in US Schools

Predicted Blood Lead Level in 2 Year Old Child After Drinking 250 cc (~1 cup)
Recommendations

1. Need enforceable and tougher standards for water in schools and daycare centers
2. Concise remediation guideline
3. Improved sampling protocol
4. Re-evaluation of public health risk from lead in water

AAP Policy Recommendations
For Baltimore and Maryland Pediatricians

- Work with public health officials on:
  - Prevent random surveys to identify trends in BLL concentration
  - Advocate for strict legal standards for allowable levels of lead in paint, toys, water, soil, and air.
  - Advocate for environmental screening of homes where a child has a BLL > 5 pg/dL (50 pg/dL).
- Test asymptomatic children who:
  - Are 12 months and 24 months old
  - Immigrant, refugee, and internationally adopted
  - Fail lead questionnaire
  - Learn how to read and understand a lead risk assessment report for a child with an elevated BLL.
- Case management through investigation of potential sources of lead poisoning in a child's environment

Barriers to Implementation of Policy Recommendations

- Parental non-compliance with their child's BLL testing
- Pediatricians lack familiarity with:
  - Detailed research on lead exposure and toxicity
  - Clinical management guidelines for children with elevated BLL
  - Informing parents of clinical implications of their child's elevated BLL
  - Site effects when pediatricians, public health officials, agencies direct.
  - Advocacy groups, and law makers infrequently communicate with each other.
- Lack of funding at local, state, and federal level to implement lead initiatives, training programs, enforcement, etc.