Economic Burden of the Environment on Childhood Lead Poisoning in Minnesota

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Minnesota’s economic burden reports

- Childhood asthma
- Childhood lead poisoning
- Prenatal mercury exposure
Childhood lead poisoning
Elevated Blood Lead Levels (EBLLs)

- No safe level of exposure to lead
- 5 µg/dL of lead in blood currently used as reference value
- Children under 6 years and pregnant women most vulnerable
Common sources of exposure

Residential lead paint dust remains the #1 source of childhood lead exposure in Minnesota.
Burden of lead in MN

Children with confirmed elevated blood lead levels (EBLLS) in MN

- Number of Birth Cohort with EBLLS
- Percent of Birth Cohort with EBLLS

µg/dL means micrograms for lead per deciliter of blood

MDH
2004 birth cohort

- Around 70,000 children were born in Minnesota in 2004
- About 54,000 children (76%) born in 2004 had at least one blood lead test by age 6
- Followed through 2010
Economic burden of childhood lead poisoning
Cost of childhood lead exposure

Cost calculations limited to lost future income resulting from decreased IQ

- Lead exposure
- IQ deficit
- Lost income
Economic burden

Disease counts

Cost per case

Environmentally attributable fraction (EAF)
Economic burden of childhood lead poisoning

- **Disease counts**: average peak blood lead level
- **Cost per case**: lifetime earnings lost due to IQ deficit
- **EAF**: 100%
Disease counts

- Used highest (peak) blood lead level for every child born in a single year and tested at least once before 6 years of age (2004-2010)

- Mean peak BLL for birth cohort: 2.5 µg/dL
For every 1 µg/dL increase in blood lead levels, there is a corresponding IQ deficit

For every IQ point lost, there is a corresponding decrease in lifetime earnings

About 1.2 IQ points lost on average and 2.9% future income
Total cost of childhood lead poisoning

- $1.9 billion
- Lost potential income due to lead exposure
- For a single year of children born

- Disease counts
- Cost per case
- Environmentally attributable fraction (EAF)
Burden of asthma and mercury in Minnesota

- Cost attributable to the environment:
  - Asthma: $31.6 million
  - Prenatal mercury exposure: $32.6 million
Limitations

- EAFs are uncertain
- The burden is not shared equally across communities
- Costs are likely to be an underestimate
Policy implications of economic burden project

- Examples in our states:
  - Minnesota
  - California
  - New Hampshire

- National examples
Resources


- California’s burden report (asthma, cancer, lead exposures, neurobehavioral disorders): Costs of Environmental Health Conditions in California Children

- Minnesota’s burden reports (asthma, lead poisoning, prenatal mercury exposure): Economic burden of the environment on the health of children in Minnesota

- New Hampshire’s burden report (asthma, cancer, lead poisoning): Economic Burden of Environmentally Attributable Illness in Children of New Hampshire
Thank you

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