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## Environmental Burden of Disease of IQ loss attributable to lead exposure in Germany

*Tuesday, October 14, 2025 10:30 AM (15 minutes)*

**Background:** Lead is a pervasive environmental pollutant with no evidence for safe exposure levels in humans. Children represent a particularly vulnerable population due to higher absorption rates and their developing nervous system. Neurodevelopmental effects in children are the most sensitive health outcomes associated with lead exposure. This demonstrates the intricate connection between environmental and human health.

**Methods:** Environmental Burden of Disease (EBD) assessments enable the quantification of population health impacts attributable to environmental risk factors. We applied a probabilistic Monte Carlo simulation approach to EBD in order to comprehensively account for uncertainty across multiple input parameters. We used nationally representative human biomonitoring data from children and adolescents (3-17 years) in Germany to quantify neurodevelopmental effects from lead exposure.

**Results:** Our preliminary findings indicate  $\approx 20.4$  million IQ points lost (95% uncertainty interval [UI]: 12-28 million) attributable to lead exposure in German children. We estimated  $\approx 85,000$  (95% UI: 0 - 187,000) cases of mild intellectual disability (IQ <70) attributable to lead exposure. Further analyses to quantify Years Lived with Disability (YLDs) are currently ongoing.

**Conclusion:** Lead exposure in Germany remains a relevant public health concern. Our findings highlight the need for continued efforts to further reduce environmental lead concentrations and lead exposure of children.

### Keywords

Lead (Pb), Environmental Burden of Disease, IQ loss, Monte Carlo, Human Biomonitoring, Germany

### Registration ID

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### Professional Status of the Speaker

PhD Student

### Junior Scientist Status

No, I am not a Junior Scientist.

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