

CDC/ATSDR's Role in Children's Environmental Health

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EPA/NIEHS Children's
Environmental Health
Centers Webinar

July 8, 2015



National Center for Environmental Health
Agency for Toxic Substances and Disease Registry



Overview

- **Children are uniquely susceptible to environmental health threats**
- **Children's health is affected by**
 - Water they drink
 - Air they breathe
 - Food they eat
 - Places where they learn, play, and live
- **Early exposures to environmental hazards can trigger diseases and disrupt development, learning, and behavior**



Low-Income and Minority Children

- More likely to live where particulate matter and ozone levels exceed air quality standards
- Highest odds of living in inadequate housing that contains toxic substances
- May be disproportionately afflicted with chronic diseases, including asthma, obesity, and cancer



Children's Environmental Health – Priority at NCEH/ATSDR

- **Protect children from health risks of harmful exposures by**
 - Implementing a national strategy to protect children from harmful exposures related to daycare and early learning centers
 - Implementing a nationwide education campaign to protect children from exposures to mercury and recover mercury from schools, homes, and abandoned facilities
 - Using lab testing, modeling, and data systems to collect and analyze data describing children's exposure



Children's Environmental Health – Priority at NCEH/ATSDR

- **Protect children from health risks of harmful exposures by**
 - Preventing children's exposure to environmental health concerns such as lead, vapor intrusion, and carbon monoxide
 - Building the skills of health care providers and emergency responders regarding children's vulnerability children to harmful exposures
 - Ensuring that children are considered in land-use and transportation health impact assessments



Learning More Each Day

■ Traffic Pollution Associated with Autism

- Volk et al., JAMA Psychiatry. 2013;70(1):71-77.

■ Traffic-related Air Pollution Associated with Obesity and Metabolic Disorders

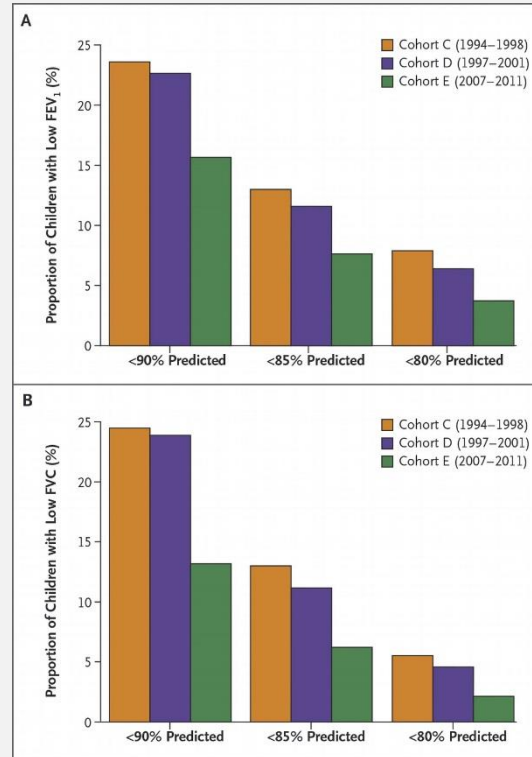
- McConnell et al., Environmental Health Perspectives; DOI:10.1289/ehp.1307031

■ Traffic Pollution Associated with Behavioral Problems

- Perera et al., Environmental Health Perspectives; DOI:10.1289/ehp.1104315



Proportions of Children with Low Lung Function in Each Cohort



Gauderman WJ et al. N Engl J Med 2015;372:905-913

Indoor PM Concentrations, Asthma Symptoms, and Rescue Medication Use

Outcomes	Course PM (per 10 $\mu\text{g}/\text{m}^3$)		Fine PM (per 10 $\mu\text{g}/\text{m}^3$)	
	IRR	P-value	IRR	P-value
Cough/wheeze/chest tightness	1.06	0.03	1.03	0.18
Slow/stop activities	1.08	0.01	1.04	0.06
Limited speech from wheeze	1.11	<0.01	1.07	0.04
Nocturnal Symptoms	1.08	0.02	1.06	0.01
Symptoms with running	1.00	0.81	1.07	<0.01
Beta agonist use	1.06	0.01	1.04	0.05

Adjusted for age, sex, race, parent education level, season, indoor PM, ambient PM

Prevent and Address Illness

- **Ensure all children in US have**
 - Healthy homes
 - Healthy communities
 - Healthy environment



Healthy Homes

■ Essential characteristics of a healthy home

- Dry
- Clean
- Safe
- Well ventilated
- Pest free
- Thermally controlled
- Contaminant free



■ NCEH/ATSDR programs and activities help create healthy homes

- Lead poisoning prevention
- Drinking water safety
- Indoor air quality
- Poisoning prevention
- Food safety

Protecting Children from Environmental Lead Exposure

- **NCEH provides expertise and analysis at national, state, and local levels**
 - Surveillance system support
 - Epidemiological support
 - 34 states and D.C.
- **2008–2010: helped reduce number of children who have been exposed to lead by almost 3 million (BLLs $\geq 1\mu\text{g}/\text{dL}$)**



Electronic Cigarettes

- **Recent Poison Control Center data show**
 - Over half (51.1%) of e-cigarette exposure calls involved young children (under age 5)
 - Compared with traditional cigarette exposure calls, e-cigarette exposure calls were nearly twice as likely to have adverse health outcomes (57.8% versus 36.0%)
 - The most common reported adverse health effects were vomiting, nausea, and eye irritation



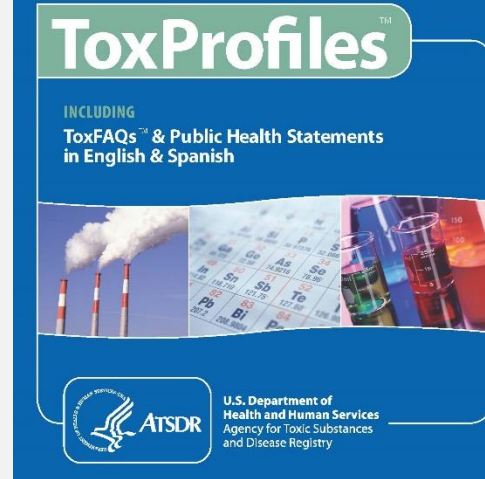
Healthy Communities

- **NCEH/ATSDR protects children from hazardous exposures in their communities by providing educational materials, reference documents, data, technical assistance, and other support**
 - Toxicology
 - Tracking
 - Pediatric environmental health specialist units (PEHSUs)
 - Newborn screening



Toxicology

- **ATSDR scientific reference documents (e.g., ToxProfiles™, ToxFAQs™, ToxGuides™)**
 - Examine special health risks of children
 - Inform efforts to clean up hazardous chemical sites, respond to emergencies, and treat children and adults exposed to chemicals
- **ATSDR Toxic Substances Portal**
 - www.atsdr.cdc.gov/substances



National Environmental Public Health Tracking Network

- Data used to plan, apply, and evaluate actions to prevent and control environmentally related diseases
- Tracks and reports broad environmental public health concerns that impact children
 - Asthma
 - Cancer
 - Developmental disabilities
 - Lead poisoning
 - Birth defects



PEHSUs

- Advise pediatricians and families on treating and protecting children potentially exposed to harmful chemicals
- Address health risks children face from environmental hazards
- 12 regional units serve US
 - Two other North American PEHSUs (Canada and Mexico)
- Staffed by environmental medicine and health experts



Newborn Screening

- **NCEH's environmental health lab ensures accurate testing and identification of congenital diseases for more than 98% of US babies**
- **Provides quality assurance materials, proficiency testing, and technical assistance to nearly 500 laboratories in all 50 states and 67 countries**
- **Nearly 6,000 newborns diagnosed with treatable disease each year**



Healthy Environment

- **Environmental factors affect children's health**
 - Air quality
 - Water safety
 - Unsafe chemical exposures



Air Quality

- Indoor and outdoor air pollution can trigger asthma episodes
- NCEH National Asthma Control Program helps the 10 million children diagnosed with asthma control their disease
 - Increase asthma awareness
 - Educate people on how to avoid environmental triggers
 - Help residents manage health



Water Safety – Drinking and Recreational Water

■ CDC's safe water programs

- Create and enhance surveillance and tracking systems
- Generate hypotheses about environmental contaminants and health effects
- Conduct studies to improve scientific understanding of waterborne contaminants
- Build state, tribal, local, and territorial drinking water program capacity
- Promote safe water guidance and recommendations



Unsafe Chemical Exposures

■ Biomonitoring

- Assess US exposure to >350 environmental chemicals
- Examine exposure in vulnerable populations, including newborns, children, and pregnant women
- Measure and report on chemicals in children such as lead, mercury, and cotinine
- Publish national biomonitoring report every six months





For more information, contact NCEH/ATSDR

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