Children’s Environmental Health in the United States: Indicators from America’s Children and the Environment

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Promoting Health Communities:
Developing and Exploring Linkages Between Public Health Indicators, Exposure and Hazard Data
September 26, 2011
America’s Children and the Environment

• U.S. EPA’s series of reports on key indicators of children’s health and the environment
  - 1st report: December 2000
  - 2nd report: February 2003
  - 3rd report (ACE3): in preparation

• Data updates regularly since 2006 at:
  www.epa.gov/ace
Preparing America’s Children and the Environment - 3rd Edition (ACE3)

• Indicators in three main categories:
  - Environments and Contaminants
  - Biomonitoring
  - Health

• Includes update of topics/indicators from 2003 report, and new topics/indicators

• 42 indicators for ACE3 (vs. 26 previously)
Selected criteria – ACE3 indicators

For ACE3, an indicator is defined as a quantitative depiction of an important aspect of children’s environmental health that summarizes the underlying data in a relevant, understandable, and technically appropriate manner.

- National in scope
- Population-based data
- Continuing data collection – trends
- Stratify by demographic characteristics
Topics for ACE3: Environments and Contaminants

- Criteria Air Pollutants
- Hazardous Air Pollutants
- Indoor Environments
- Drinking Water Contaminants
- Food Contaminants
- Contaminated Lands - NEW
- Climate Change - NEW
Indicator E1

Percentage of children ages 0 to 17 years living in counties in which air quality standards were exceeded, 1999-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Any standard</th>
<th>Ozone</th>
<th>PM$_{2.5}$ (24-hour standard)</th>
<th>SO$_2$</th>
<th>NO$_2$</th>
<th>PM$_{2.5}$ (annual standard)</th>
<th>Carbon monoxide</th>
<th>PM$_{10}$</th>
<th>Lead</th>
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<tbody>
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<td>1999</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>2000</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>20%</td>
<td>15%</td>
<td>9%</td>
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<td>4%</td>
<td>1%</td>
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<td>2002</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
<td>15%</td>
<td>10%</td>
<td>6%</td>
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<td>3%</td>
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<td>2004</td>
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<td>30%</td>
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<td>0.9%</td>
<td>0.05%</td>
</tr>
</tbody>
</table>

DRAFT Indicator for Third Edition of America's Children and the Environment

DATA: U.S. Environmental Protection Agency, Office of Air and Radiation, Air Quality System
Topics/Indicators for ACE3: Biomonitoring

- Lead
- Mercury
- Cotinine (ETS marker)
- Perfluorochemicals – NEW
- PCBs – NEW
- PBDEs – NEW
- Phthalates – NEW
- Bisphenol A – NEW
- Perchlorate – NEW

Note: many indicators present data for women of child-bearing age (16-49 years), based on concern for children’s health from the mother’s exposure during pregnancy.
Lead in children ages 1 to 5 years: Median and 95th percentile concentrations in blood, 1976-2008

DRAFT Indicator for Third Edition of America's Children and the Environment

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey
Perfluorochemicals in women ages 16 to 49 years: Median concentrations in blood serum, 1999-2006

DRAFT Indicator for Third Edition of America's Children and the Environment

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey

Note: To reflect exposures to women who are pregnant or may become pregnant, the data are adjusted to reflect the annual likelihood (by age and race/ethnicity) that a woman gives birth.
Topics/Indicators for ACE3: Health

- Respiratory Diseases
- Childhood Cancer
- Neurodevelopmental Effects
- Adverse Birth Outcomes – NEW
- Obesity – NEW
Percentage of children ages 0 to 17 years with asthma, 1997-2009

Current asthma prevalence

Asthma attack prevalence

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DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey
Percentage of children ages 0 to 17 years reported to have current asthma, by race/ethnicity and family income, 2006-2009

DRAFT Indicator for Third Edition of America’s Children and the Environment

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey
Indicator ND1

Percentage of children ages 5 to 17 years reported to have attention-deficit/hyperactivity disorder, by sex, 1997-2009

DRAFT Indicator for Third Edition of America's Children and the Environment

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey
Status and Next Steps

• In 2011, draft text and indicators for all 23 children’s environmental health topics in ACE3 have been peer reviewed
  - Drafts released for public comment simultaneously with the peer review
• We are continuing our review of comments and are preparing a draft report
Thank you!

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- Erica McCoy
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www.epa.gov/ace
AMERICA'S CHILDREN AND THE ENVIRONMENT
Measures of Contaminants, Body Burdens, and Illnesses

http://www.epa.gov/ace