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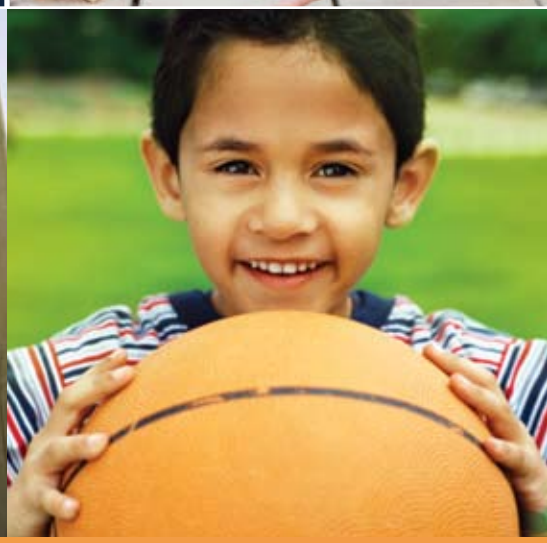

A Decade of Children's Environmental Health Research

Highlights from EPA's Science to Achieve Results Program

Office of Research and Development
National Center for Environmental Research

SUMMARY REPORT
Executive Summary

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In 1997, Federal Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandated Federal agencies to place a high priority on identifying and assessing risks affecting children and to ensure their policies, standards, and programs address disproportionate risks to children. The Executive Order stimulated a wide array of research supported by the U.S. Environmental Protection Agency (EPA), particularly through the National Center of Environmental Research's (NCER) extramural Science to Achieve Results (STAR) grant program.

In 1998, the STAR grant program, which supports human health, ecology, economics and engineering sciences through grants, centers, and fellowships, initiated a diverse portfolio focused specifically on children's environmental health research. The goal of this research is to better understand children's genetic, life stage, and behavioral susceptibilities. The research also aims to better characterize child-specific harmful chemical exposures and to demonstrate cost effective, protective interventions, particularly at the household and community level. Since 1998, the STAR grant program has issued more than 10 research solicitations and awarded over 60 grants focusing on children's environmental health, including: Centers for Children's Environmental Health and Disease Prevention Research (21 Children's Centers awards—11 currently active); Aggregate Exposure Assessment of Pesticide Exposure (3 grants); Biomarkers for Children's Risks (8 grants); Children's Vulnerability to Toxics (19 grants); Children's Valuation (7 grants); and Early Indicators of Environmentally Related Disease (5 grants). To date, NCER has funded more than a hundred individual projects resulting in more than a thousand peer-reviewed articles in a wide array of scientific publications.

Since the passage of the Executive Order 10 years ago, this research has increased scientific knowledge of many aspects of children's environmental health. For example, studies have shed light on how environmental exposures change across life stages from newborn to school-age children and some of the genetic factors that contribute to children's vulnerability. Research has also provided insight on how to appropriately assess aggregate and cumulative exposures, suggested what biological markers in children's urine or blood tell us about exposure or effects, and indicated what steps need to be taken in order to prevent harmful exposures, including which interventions are effective and sustainable. This is particularly the case for residential pesticide exposure, which was an articulated focus of the STAR grant program during the past 10 years. Some of the major research findings include the following:

- People metabolize pesticides differently based on their genotype; some faster, others slower. This finding is of particular concern during pregnancy, as many babies do not develop the ability to metabolize some pesticides during the first two years of life, putting them at greater risks of health effects.
- Children living close to major roadways in Southern California have a higher risk of asthma.
- EPA's ban on two household pesticides (diazinon and chlorpyrifos) resulted in a rapid decrease in exposures in New York City. Children born after the ban were also healthier.
- Integrated Pest Management (IPM) can be effectively implemented in urban areas to reduce both pesticide and allergen triggers.
- Community partners play a critical role in informing, implementing, and translating children's environmental health research.

While much has been discovered in the last 10 years, there is still much to learn about children's environmental health. Building on the many lessons learned in characterizing pesticide exposures during early development and in investigating the multiple impacts of indoor and outdoor air pollution on childhood asthma, NCER is now broadening its focus. Recently, the STAR grant program has increased its support for research on less characterized, though increasingly common, chemicals (for example, plasticizers and flame retardants) and chronic childhood ailments (for example, autism and other developmental disabilities). The STAR grant program will continue to work closely with Federal, state, and community partners to disseminate these and many other findings in order to create healthier environments and nurture healthier children. The STAR grant program also anticipates continuing, even broadening, Federal partnerships for future research efforts that build upon the progress that has already been made. For more information about NCER and the STAR grant program, please visit **http://www.epa.gov/ncer**. For more information on the Children's Centers, please visit **http://www.epa.gov/ncer/childrenscenters**.