

**Subcommittee on Early Childhood, Elementary and Secondary Education
Committee on Education and Labor, U.S. House of Representatives
Hearing on “Environmental Education: Teaching our Children to Preserve our Future”
Earth Day: Tuesday, April 22, 2008
National Wildlife Visitor Center, Patuxent Wildlife Research Refuge, Laurel, Maryland**

Testimony of Robert S. Lawrence, MD

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“Nature-deficit disorder is not an official diagnosis but a way of viewing the problem, and describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. The disorder can be detected in individuals, families, and communities.”

Richard Louv, Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder

The key messages for policy makers in supporting the Sarbanes-Reed No Child Left

Inside Act are:

- 1. Support programs for environmental education and teacher training;*
- 2. Provide additional funding to states that develop environmental literacy plans for grades K-12;*
- 3. Re-establish the Office of Environmental Education within the U.S. Department of Education to provide leadership and oversight of environmental education activities; and*
- 4. Authorize the Secretary of Education to award competitive matching grants to nonprofit organizations, states, and local education agencies for activities to improve and support*

environmental education that include: 1) advancing content and achievement standards, 2) developing or disseminating innovations or model programs, 3) research, and 4) creating new funding sources.

Introduction

I am very pleased to be here today in this beautiful setting and on the 38th anniversary of the first Earth Day to speak about the promise of the *No Child Left Inside Act*. My name is Robert Lawrence, and I am a professor of Environmental Health Sciences at the Johns Hopkins Bloomberg School of Public Health. I also serve as the director of the Center for a Livable Future, an interdisciplinary center devoted to research, education, advocacy, and community engagement to address the interactions among the environment, food production, diet, and human health that are all elements of a single complex ecosystem. Our mission is “...to advance an ecological perspective in reducing threats to the health of the public and to promote policies that protect health, the global environment and the ability to sustain life for future generations.”

Nothing is more critical to achieving this mission than the education of our children to become stewards of the environment, to develop a healthy relationship with the natural world, to stimulate their minds and bodies through physical activity, exposure to the wonders of nature, and opportunities for creative and spontaneous play in safe, natural outdoor settings, and for some to be inspired to seek careers related to protecting and preserving our natural world for future generations. The *No Child Left Inside Act* will provide the resources necessary to develop and support programs of environmental education and help reconnect our children with nature.

Public Health Aspects of Environmental Education

Childhood obesity epidemic:

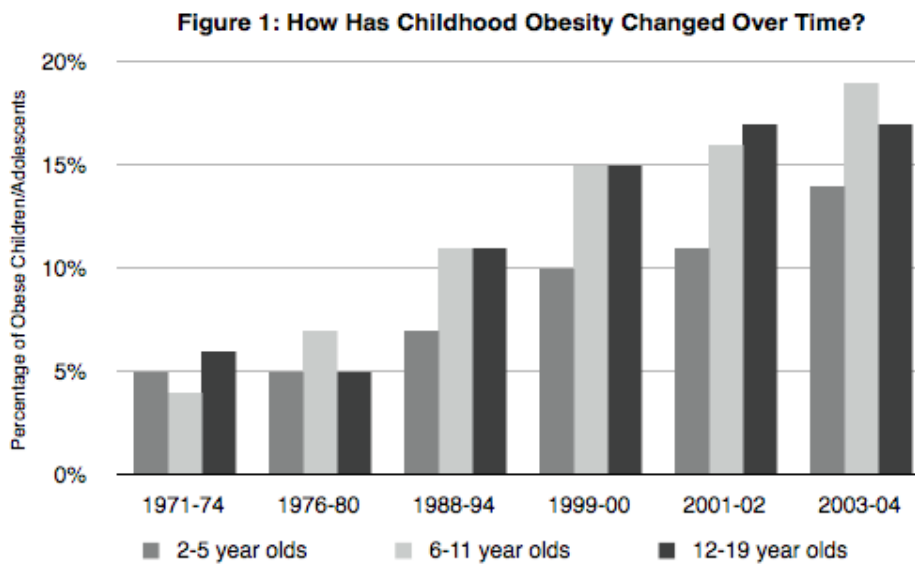
We are in the midst of an epidemic of childhood obesity that threatens to produce a generation of Americans who will, for the first time in our history, have a shorter life expectancy than their parents. There are many factors contributing to this epidemic of overweight and obesity among our children and youth and in the adult population. The normal healthy balance of energy consumed in food and drink and energy expended in physical activity has been interrupted by sharp decreases in physical education and outdoor play in our education system, alterations in the built environment, the increasing reliance on labor-saving devices, concerns about safety for children walking or biking to school that places them in buses and cars, increase in time spent watching television or playing computer games, increased consumption of processed foods high in fats and sugars, and the dramatic increase in high fructose corn syrup in soft drinks and juices.

Measures directed at increasing caloric expenditure through regular exercise are crucial elements to preventing childhood obesity and helping children who are currently overweight or obese achieve a healthy weight as measured by age-adjusted body mass index (BMI). One of the benefits of *No Child Left Inside* will be the additional physical activity associated with nature walks, outdoor play, and participation in environmental stewardship learning exercises such as those sponsored by the Chesapeake Bay Foundation and other environmental groups.

The dramatic and alarming increase in the rate of childhood obesity started soon after the first Earth Day and shows no signs of leveling off. As illustrated in Figure 1 and summarized in Table 1, the percentage of obese 2- to 19- year olds has more than doubled in the past 30 years (as defined by the 95th percentile for body mass index or BMI by age).

Table 1: What percentage of children in the U.S. are obese?

What percentage of children in the U.S. are obese? (CDC, Overweight Prevalence, 2007)			
YEAR			
Age	1971-1974	2003-2004	Percent Change
12-5 years	5.0%	13.9%	+8.9%
6-11 years	4.0%	18.8%	+14.8%
12-19 years	6.1%	17.4%	+11.3%



Source: Centers for Disease Control, *Prevalence of overweight among children and adolescents*

A number of factors contribute to the energy imbalance responsible for these dramatic increases in childhood obesity. About 62 percent of children do not participate in any organized physical activity and 23 percent do not participate in any free-time physical activity. (CDC, 2003) The percentage of children who live within a mile of school and who walk or bike to school has declined nearly 25 percent in the past 30 years. Barely 21 percent of children today live within one mile of their school. (Ogden, 2006) While 71 percent of adults report that they walked or rode a bike to school when they were young, only 22 percent of children do so today. (Beldon 2003)

Suburban sprawl has been accompanied by the design of developments that frequently lack sidewalks or open green spaces for free-time play, and the very nature of the street design with curving roads, lollipop cul-de-sacs, and no sidewalks makes parents feel compelled to transport their children by car for play dates and other social interactions. Gone are the acres of woodlot at the end of the road where children once explored the natural environment, built tree-houses, and engaged in hours of spontaneous play. This year for the first time in human history half of the world's population will live in urban environments, and it is the rare cityscape that has adequate parkland and natural settings for children to explore. (UNFPA, 2007) Over 90 percent of parents say that safety is their biggest concern when making decisions about whether to allow their children to engage in free play outside. (Bagley, 2006) The result of these changes in the built environment and parental concerns about safety is that children now play predominantly at home where their activities are monitored and controlled by adults in contrast to the play of children a generation ago. Only 3 percent of children today have a high degree of mobility and freedom in deciding how and where to play. (Tandy, 1999)

More and more of the time children once spent playing outdoors is now spent in front of a television set or a computer game. In 2003 the Kaiser Family Foundation found that 65 percent of children ages 8 and older had a television set in their bedroom, and 42 percent of children lived in a home where "the TV set is on...most of the time, even when no one is watching." (Kaiser Family Foundation, 2003) In 58 percent of U.S. homes, the TV is usually on during mealtimes.

Integrating environmental education linked to subject matter in the classroom to exploration of the natural environment can serve as an important stimulus to increase physical activity. A combination of playground or gymnasium physical activity with expanded

opportunities for active exploration of nature on field trips and in the school environment will increase energy expenditure while providing other benefits discussed later. A recent review of childhood obesity prevention co-sponsored by the Center for a Livable Future and the Department of Health, Behavior and Society at the Bloomberg School of Public Health lead to the following recommendations about the school environment:

- Engage students in at least 30 minutes of moderate to vigorous physical activity each day.
- Encourage the consumption of healthy foods by increasing the number of healthy options, pricing those options competitively, and reducing the number of unhealthy foods offered.
- Provide high-quality health education in areas such as nutrition and physical fitness.

Changes are needed for the built environment and for neighborhoods as well. Again, environmental education is an essential component of helping children appreciate nature and find pleasure and stimulation in active play and exploration of the outdoors. The following recommendations address changes needed at the neighborhood level:

- Make communities more walk-able and bike-able.
- Increase access to healthy foods. (Center for a Livable Future, 2007)

The *Meatless Monday* and *Eat Healthy Monday* campaigns of the Center for a Livable Future are part of a broader *Healthy Monday* campaign to use the first day of the week as a motivator to change behavior and lower risk by eating healthier foods, exercising more, quitting the use of tobacco, and adopting other health promoting behaviors. School lunch programs (and in a growing number of schools, breakfast programs) are ideal venues for introducing *Eat Healthy Monday* menus and linking these to respect for the land and the environment. The rise of industrial agriculture since World War II has had a profound impact

on the number of animals raised in factory settings or Confined Animal Feeding Operations (CAFOs). The concentration of animals and their waste in these CAFOs has a devastating impact on the environment through the discharge of excess nutrients into watersheds; the emission of ammonia, sulfur dioxide, odors; and the induction of antibiotic resistant bacteria. These aspects of environmental education can help reinforce the value of eating a healthy diet composed of foods produced in a sustainable way.

The linkage to access to healthy foods includes learning how our food is produced. Now that less than 2 percent of the U.S. population works in the agricultural sector, most children are ignorant of the sources of the food they eat. Environmental education can include learning about the natural cycle of plants and animals, including those that we consume in our diet. The role of community gardens, school gardens, and kitchen gardens should be integrated in environmental education to help children understand the source of healthy foods in contrast to processed foods and snacks while they expand their knowledge of the living world.

Other public health benefits of environmental education:

As important as the benefits of physical activity associated with environmental education and increasing time spent in natural settings are the emotional, social, and cognitive benefits for children. Many studies conducted in recent years show a range of benefits for children when they spend more time outdoors. Taylor and her colleagues found that children with attention-deficit disorder (ADD) benefited from more exposure to nature – the greener a child’s everyday environment, the more manageable are the symptoms of ADD. (Taylor, 2001) Taylor also observed that access to green spaces for play, and even having views of green settings, enhances peace, self-control, and self-discipline among inner-city youth, especially among girls.

For children living in rural areas Wells and Evans observed that exposure to green plants and natural vistas reduces stress. The reduction in stress was greatest in the settings where there are the greatest number of plants, green views, and access to natural play areas. (Wells, 2003) In an earlier study Wells observed that proximity to nature, access to views of nature, and daily exposure to natural settings increases the ability of children to focus and improves cognitive abilities. (Wells, 2000) In other words, by expanding environmental education and increasing exposure to natural settings, *No Child Left Inside* has the promise of improving learning in all subject areas such as those emphasized by current provisions of the No Child Left Behind legislation.

Nature is important to healthy development in children in every major area of growth – intellectual, social, spiritual, and physical. Play and learning in nature is especially important for developing capacities for creativity, problem-solving, and intellectual development. We need, therefore, to alter our modern built environment to maximize opportunities for children to have contact with nature. (Kellert, 2005) Other investigators describe the benefits of free and un-structured play in the out-of-doors, noting that children will be smarter, better able to get along with others, healthier, and happier. (Burdette, 2005) Environmental education provided by schools can and should be supplemented by the child experiencing nature in the company of a family member or trusted adult. Chawla states that a positive, direct experience with nature and sharing that experience with a parent, grandparent or trusted adult are the two factors that most contribute to individuals choosing to take action to benefit the environment as adults. (Chawla, 2006)

At the school environment level Bell and Dymont observed that children who experience school grounds or play areas with diverse natural settings are more physically active, more aware of good nutrition, more creative, and more civil to one another. (Bell,

2006) Outdoor experiences for teens result in enhanced self-esteem, self-confidence, independence, autonomy, and initiative with persistence of these traits through many years. (Kellert, 1998) After excluding other variables, a study of students in California and nationwide demonstrated that schools that use outdoor classrooms and other forms of nature-based experiential education produce significant student gains in social studies, science, language arts, and math. One recent study found that students in outdoor science programs improved their science testing scores by 27 percent. (American Institutes for Research, 2005)

Bell and Dymont observed that children in schoolyards with both green areas and manufactured play areas engaged in more creative forms of play in the green areas and also played more cooperatively. (Bell, 2006) They also show more advanced motor fitness, including coordination, balance, and agility. (Fjortoft, 2001) Play is more diverse in natural environments with imaginative and creative play that fosters language and collaborative skills. (Moore, 1997; Fjortoft, 2000) Play in diverse natural environments reduces or eliminates anti-social behavior such as violence, bullying, vandalism, and littering and reduces school absenteeism. (Coffey, 2001; Malone, 2003; Moore, 2000) A number of other studies confirm these benefits of having children spend more time out-of-doors. These benefits of better psychological well being, superior cognitive functioning, fewer physical illnesses, and more rapid recovery from illness apply to adults as well. But the benefits of experience in nature for children are more profound because of the greater plasticity and vulnerability of the young. (Wells, 2003)

Fostering Environmental Stewardship:

The world that our children will inherit contains enormous environmental challenges. Among the most important ones are global climate change; sufficient supplies of water to meet the needs of people, agriculture, and industry; adequate food supply; and preservation

of biodiversity. Our children must learn the knowledge and skills and develop the proper attitudes to be good stewards of our endangered natural world. Without raising a new generation of environmentally literate citizens it is hard to imagine that we will be able to maintain the fragile web of life, as we have known it. The Paleolithic record shows an average species loss of 3-4 per year. The distinguished socio-biologist, E.O. Wilson, estimates that we are now losing about 1000 species per year, a number that is likely to rise with continued destruction of natural habitats and global climate change. The need is urgent for our children to benefit from *No Child Left Inside* – not just for the immediate health benefits described above but for the long term benefits of raising a new group of intelligent, curious, and committed stewards of the natural world.

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