

## **Healthy Environment, Healthy Children, and Healthy Future: Essential Resources**

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A great deal of research is being devoted to environmental factors that impact the health of children. This column introduces this topic with two purposes in mind. First, you are invited to suggest resources related to how environmental factors affect the health of children. Submit your suggestions via e-mail to the author at [ted.johnson@ci.chandler.az.us](mailto:ted.johnson@ci.chandler.az.us). This information will be coupled with research conducted over the next few months to construct a bibliographic essay discussing the current state of research devoted to an examination of how environmental factors impact children's health. Second, this resource list serves to narrow the focus of the forthcoming bibliographic essay to the respiratory impact of air pollution, the developmental impact of pesticides, and the educational role of sustainable, organic agriculture in an urban setting. The bibliographic essay will be presented in the spring 2001 issue of the *Electronic Green Journal*.

### **Air Pollution, Respiratory Health, and Asthma**

Respiratory health problems and related allergies have increased around the world in recent years. While various components of industrial air pollution have been implicated as being, at least, partially responsible, more research is needed to better understand the relationships between pollution, pollen, and people. Various solutions have been proposed, such as allergy-free gardening, but until more definitive information is forthcoming, such suggestions are premature. The interactions between airborne pollutants, meteorological systems, community ecology, and human sensitivity are quite complex. The human component alone is an area in need of much greater research, especially the response of children to environmental hazards.

A number of research centers have been established to focus on the difference between children and adults in how they respond to pollutants. The Environmental Protection Agency is also involved, releasing a major report to establish a strategy for research on environmental risks to children. The report has six objectives:

- Establish direction for a long-term, stable core research program in children's environmental health that leads to sustained risk reduction through more accurate, scientifically based risk assessments for children.

- Identify research to answer the key questions about children's environmental health risks and increase our understanding of when children

respond differently from adults to toxic agents and why.

- Identify research that will help to reduce children's risks.

- Provide a research agenda that identifies research priorities for the ORD (EPA Office of Research and Development) intramural and extramural research programs.

- Inform EPA scientists, risk assessors, and risk managers of the research related to children at EPA and other Federal agencies.

- Provide guiding principles for implementation.

The following research priorities seek to achieve these objectives:

Development of data to reduce uncertainties in risk assessment

- Mode-of-action research

- Epidemiology and clinical studies

- Exposure field studies

- Activity pattern and exposure factor studies

Development of risk assessment methods and models

- Methods and models for assessing dose-response relationships in children

- Methods and models for using exposure data in risk assessments for children

Experimental methods development

- Methods for hazard identification and studying mode of action

- Methods for measuring exposure and effects in children and to aid in extrapolations between animals and children

Risk management and risk communication

- Multimedia control technologies

- Reduction of exposure buildup of contaminants indoors

- Communication of risk

Cross-cutting research

- Variation in human susceptibility

## **Pesticides**

Artificial chemicals designed to kill pests frequently impact organisms, including humans, which are not among the target species for the chemical

under consideration. In spite of every effort to prevent children from coming into contact with pesticides, exposure occurs via any number of routes such as inhalation, casual contact, and ingestion. Given enough time, a child's exposure to these substances could cause allergies, behavioral disorders, cancer, or birth defects.

Due to the cumulative effects of exposure to pesticides, medical treatment for these problems is often costly, complicated, and less than effective. Often, no clear treatment exists. A proactive strategy of using organic alternatives should be encouraged whenever possible. Substances that provide adequate pest control at a reasonable price will be the most successful. No doubt, political hurdles and personal biases must also be overcome to achieve a standard of utilization that will reduce our dependence upon artificial pesticides.

### **Educational Role of Sustainable, Organic Agriculture**

In addition to better understanding how children become sick from substances in the environment, a few individuals are working on long-term, proactive, and practical solutions. They are teaching children and families how to produce healthy foods via sustainable, organic agriculture in an urban setting. In essence they are taking the country farm to city dwellers to create future farmers and a sense of appreciation for the land in America. The recent loss of personal contact with our food supply is simply unhealthy and this trend must be reversed.

These visionaries are uniting the precious resources of children and soil to create a unique synergy with a mutually beneficial impact—soil conservation, improved nutrition, and children who see themselves as active participants in making the world a better place to live. It is a race against time. Will enough of today's children get the hands-on experience needed with the land and grow up in time to lead an environmental movement that balances concern for the earth with a concern for its human inhabitants?

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