US chemical pollution threatens child health and development

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Billions of pounds of toxic chemicals are being released into the air and water of the United States, posing a major but little-studied threat to the health, development and learning ability of American children, according to a report issued last month by the National Environmental Trust, Physicians for Social Responsibility and Learning Disabilities Association of America.

"Polluting Our Future: Chemical Pollution in the U.S. That Affects Child Development and Learning" focuses on the conclusions of a panel convened by the National Academy of Sciences. It cites figures on the release of two types of chemicals: neurological toxins, which harm a child's nervous system; and developmental toxins, which can affect the development of a fetus (structural or functional abnormalities, retardation or death).

Most regulatory standards for allowable exposure to toxic substances consider cancer risk. However new chemicals released by industry do not have to be shown safe for children's developing bodies and brains. In 1998 US companies reported to the Toxic Release Inventory, the national database created by the 1986 Emergency Planning and Community Right to Know Act, that they released 2.3 billion pounds of toxic chemicals into the air and water. More than half of these chemicals—1.2 billion pounds—are known or suspected developmental or neurological toxins. These reported emissions are only 5 percent of all chemical releases in the country.

Toxic exposure can be exceptionally damaging to fetuses and children, taking place when biological development is occurring rapidly. Lead and mercury are well known as chemicals that damage children's development. In addition, there are 278 substances in the environment that have the potential to affect brain and nervous system development and 45 that can affect body development.

"Polluting Our Future" points out that there is too little information and research on most of these chemicals. Testing for developmental neurotoxicity is not routinely required to register pesticides, and nearly 78 percent of the 3,000 chemicals produced in the greatest quantity have no screening information on their neurological and developmental effects on children.

There is currently an increased understanding of the effects that even minute amounts of these substances can have. What had been described as safe levels of developmental and neurological toxins are now known to be hazardous. Recent animal studies of lead, mercury and PCBs show that levels as much as 100 to 1,000 times smaller than previously believed can cause serious damage to human beings.

While the majority of toxins are untested, the evidence on the dangers of some chemicals is acknowledged and staggering:

* About 1.6 million women in the US of childbearing age eat sufficient amounts of mercury-contaminated fish to risk damaging the brain development of their children.

* Prenatal exposure to PCBs at current environmental levels can potentially affect brain development.

* One million children in the US have more lead in their blood than the currently accepted level to affect behavior and learning.

* Breakdown products of chlorpyrifos, recently banned, are in the urine of 90 percent of children tested recently in a Minnesota study.

An article in *US News and World Report* ("Kids at Risk") gives some graphic examples of these substances. Organophosphate pesticides, for example, are versions of wartime nerve agents. The EPA found

that Dursban (on the market since 1965 and contained in some Raid and Black Flag brand sprays) can damage the brain. During routine household spraying, children can receive up to 100 times what they consider a safe dose. As for Diazinon, another common pesticide (on the market since 1956), during treatment in a child's home by an exterminator, exposure can be up to 250 times a “safe” amount.

Chromated copper arsenic, or CCA, is a pesticide applied to pressure treated wood, commonly found in decks and playground equipment. CCA combines three neurotoxic compounds, and as a structure ages, the compounds can leach into the dirt. Many studies show CCA can impair intelligence and memory. In 1984 the EPA moved to restrict CCA and then dropped any action after intense lobbying by the home-building industry.

“Polluting Our Future” lists the top 20 chemicals reported released to the air and water in 1998, including toluene (a common degreaser and solvent, linked to fetal toxicity), carbon disulfide (used to make synthetic fibers, linked to fetal toxicity) and benzene (used in manufacturing and in gasoline, linked to developmental delays).

The most pollution occurred in Louisiana and Texas, coming mainly from chemical manufacturing, petroleum refining and paper manufacturing. Other industries that emit these toxins are primary metal, plastics, transportation equipment, electric power-generating and printing.

The National Academy of Sciences has estimated that 25 percent of developmental and neurological problems in children could be caused by environmental pollution combined with genetic factors. It cites the increase in low birthweight births, premature births, atrial septal defects, genito-urinary defects, attention deficit hyperactivity disorder and autism.

It is difficult to establish an irrefutable connection, in part because much of the information about chemical releases is kept confidential by corporation under the guise of “business secrets.” Most releases of neurological and developmental toxins are not reported—environmental releases of only 1 percent of about 80,000 chemicals in business are required to be reported to the Toxic Release Inventory from select industries—and there are few investigations being conducted on their effects.

While there has been considerable publicity and some government action in relation to the dangers of lead exposure, with lead-based paints virtually phased out of housing construction, lead poisoning is only the tip of the iceberg as far as the effects of toxic pollution on child development are concerned.