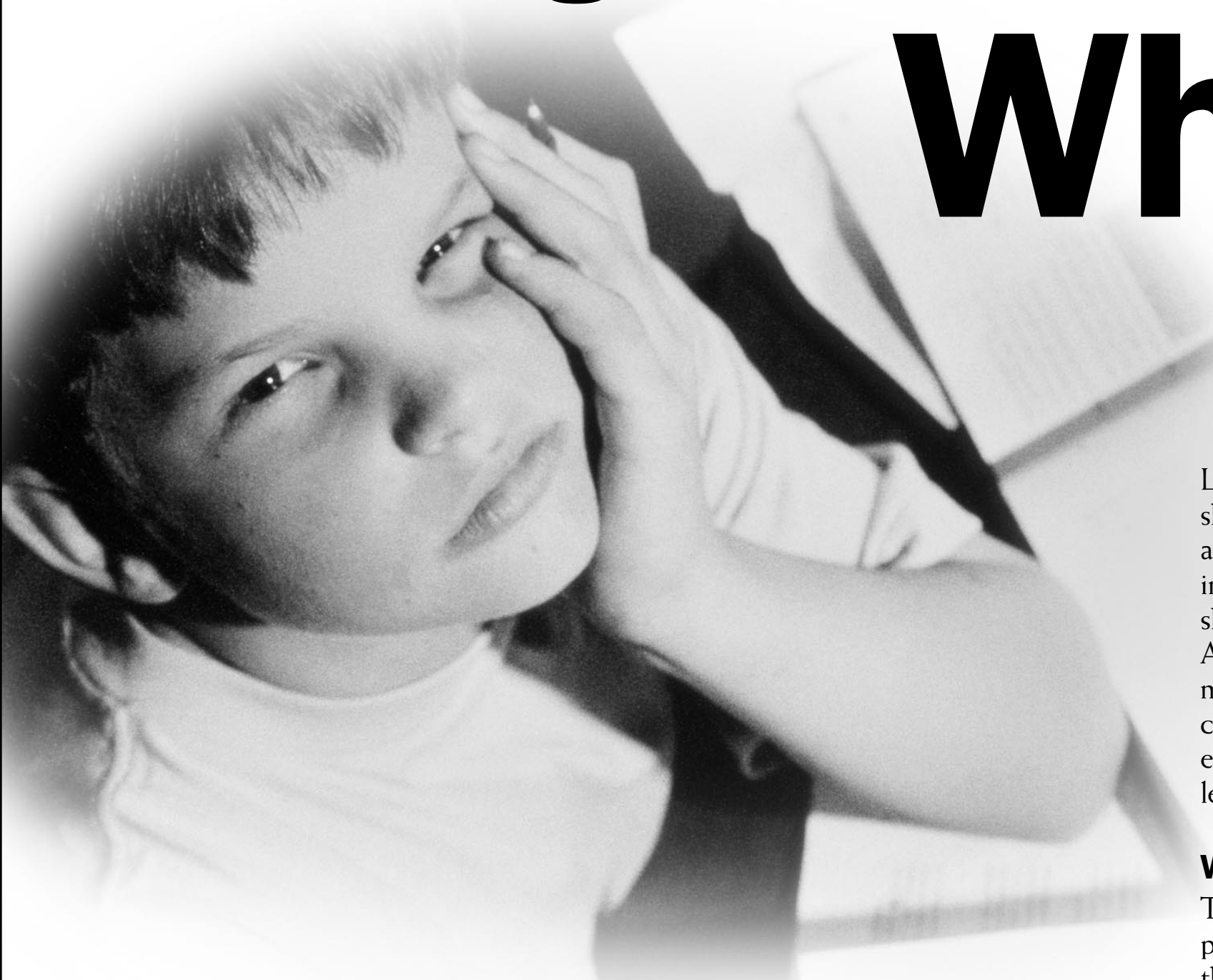


Johnny can't read, sit still, or stop hitting the neighbor's kid.

Why?



Toxic chemicals can cause learning disabilities.

We are physicians and scientists. We are deeply troubled that an estimated twelve million American kids suffer from developmental, learning, or behavioral disabilities. Attention deficit disorder affects three to six percent of our schoolchildren.

These disabilities are caused by a complex interplay of genetic, environmental, and social factors. Evidence reviewed by the National Academy of Sciences indicates that toxic chemicals contribute to these problems. Environmental factors take on great importance because they can be prevented.

What We Know

Studies show that lead, mercury, industrial chemicals, and certain pesticides cross the placenta and enter the brain of the developing fetus where they can cause learning and behavioral disabilities. This is true in young animals – and in young children.

Exposures to organophosphate pesticides during pregnancy can result in abnormally low brain weight

and developmental impairment in offspring. A Duke University study conducted on rodents found that hyper-activity and brain cell death can be caused by small exposures to the widely used organophosphate pesticide Dursban. That study led to the ban on the production and sale of Dursban. But similar-acting pesticides are still on the market.

A University of Arizona study found that children exposed to a combination of pesticides before birth and through breast milk exhibited less stamina, and poorer memory and coordination, than other kids.

Mercury released by coal-fired power plants contaminates waterways and accumulates in fish. Many thousands of the pregnant women in America who eat fish consume enough mercury to potentially harm their children's neurological development. Some states warn that children should not eat more than a can of tuna per week; based on EPA guidelines, a twenty-pound child may exceed a level considered safe for the most sensitive populations with just 1.3 ounces.

Though PCBs have been banned, residual PCBs still do much damage. Children whose mothers ate Great

Lakes fish contaminated with PCBs showed lowered IQs and shortened attention spans. And these effects on intelligence and behavior have been shown to persist throughout childhood. A Dutch study confirmed that increased maternal levels of PCBs can impair cognition in infants. Young monkeys exposed to PCBs at low levels show learning disabilities and hyperactivity.

What We Can Do

There is much that parents can do to protect their children, beginning with the elimination of many pesticides both outside and in the home. And the choice of a wise diet. There are more suggestions on our website, www.childenvironment.org.

But we must do more. We have enough scientific evidence to phase out those chemicals known to harm children's behavior and development. If a medicine caused these problems in kids, we'd ban it.

We don't allow food or drugs to be sold before being shown to be safe. Yet there are thousands of chemicals on the market that affect human biology and have never been tested. Most importantly, we must demand that new chemicals be tested for safety before being allowed on the market. We do not have a system that does that now.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



**Center for
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More kids are getting brain cancer. Why?

Toxic chemicals appear linked to rising rates of some cancers.

As scientists and physicians, we've seen a drop in the death rates of many adult and childhood cancers because of earlier detection and better treatment. But we are also seeing a disturbing rise in the reported *incidence* of cancer among young children and adolescents, especially brain cancer, testicular cancer, and acute lymphocytic leukemia. In fact, after injuries and violence, cancer is the leading cause of death in our children.

The increase in childhood cancers may be explained in part by better detection or better access to medical care. But evidence suggests the rise in these childhood cancers, as well as in cancers like non-Hodgkin's lymphoma and multiple myeloma among adults, may also be partially explained by exposure to chemicals in the environment, chemicals found in many products, from paints and pesticides to dark-colored hair dyes.

What We Know

Pound for pound, kids are exposed to more toxic chemicals in food, air, and water than adults, because children breathe twice as much air, eat three to

four times more food, and drink as much as two to seven times more water. Recent epidemiologic studies have shown that as children's exposures to home and garden pesticides increase, so does their risk of non-Hodgkin's lymphoma, brain cancer, and leukemia. Yet, right now, you can go to your hardware store and buy lawn pesticides, paint thinner and weed killers, all containing toxic chemicals linked to these diseases.

In both children and adults, the incidence rate for non-Hodgkin's lymphoma has increased thirty percent since 1950. The disease has been linked to industrial chemicals, chemicals found in agricultural, home, and garden pesticides, as well as dark hair dyes.

Studies have shown that Vietnam veterans and chemical workers exposed to Agent Orange, a phenoxy herbicide, are especially at risk for non-Hodgkin's lymphoma. American farmers who use phenoxy herbicides have an increased risk of the cancer. A Swedish study showed that among the general population, the risk of non-Hodgkin's lymphoma rises with increased exposure to these herbicides. And, a study in Southern California found that children of parents who use home pesticides have seven times the risk of non-Hodgkin's lymphoma. Multiple myeloma, a bone marrow cancer,

is also associated with toxic chemicals. Its incidence has tripled since 1950. Farmers are especially at risk: a recent analysis of thirty-two studies worldwide showed "consistent, positive findings" of an association between farming and multiple myeloma.

What We Can Do

There is much that parents can do to protect their children from carcinogenic chemicals, beginning with the elimination of many pesticides both outside and in the home. And, of course, the cessation of smoking. There are more suggestions on our website, www.childenvironment.org.

But more needs to be done. As a society, we've done much to protect people, especially children, from the toxic chemicals in cigarettes. But too many toxic chemicals are being marketed without adequate testing. We should demand that new chemicals undergo the same rigorous testing as medicines before being allowed on the market. And we should phase out those chemicals linked with a wide range of health problems from neurological impairment to cancer in children.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



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Our most precious natural resource is being threatened. Why?

Toxic chemicals are being passed on to infants in breast milk.

We've never created a product with the effectiveness of breast milk. Breast milk is a unique source of nourishment and protection against disease. But the chemical industry has created a myriad of toxic synthetic chemicals that ultimately collect in breast milk and are passed to infants. Some of these chemicals can pose risks to the health and neurological development of our children.

As pediatricians and scientists, we are convinced that breast milk is still the best choice for mother and child. However, we see disturbing evidence that in the future, breast milk may not be as effective as it once was in guarding children against disease. Unless classes of chemicals that accumulate in breast milk are phased out, we believe the health risks to our children could increase.

What We Know

From DDT's first appearance in the 1950s to PCBs in the 1960s to pesticides on sale today, persistent

organic chemicals find their way into the fatty tissue of women's breasts. And they stay there for years until passed to infants during breast-feeding.

Today's breast milk still contains toxic remnants of DDT, passed from grandmother to mother to child. Though DDT has been banned, today's persistent organic pollutants accumulate in a similar way. A breast-fed infant can absorb in one year thirty to ninety percent of the maximum recommended lifetime dose of dioxin, a chemical known to be both hormonally-active and carcinogenic. Other toxic chemicals – heptachlor, chlordane, mirex, dieldrin, aldrin, benzene, and chloroform – are also finding their way into breast milk. So are perchloroethylene, the main chemical used to dry clean clothes, and polybrominated flame retardants. We know that during gestation and in the early months after birth, an infant's brain is particularly susceptible to harm from toxic chemicals. We don't know what the minimum safe levels of exposure are. It may be that no exposure is safe.

Although there is only limited research on how chemicals in breast milk affect children, the available facts are disturbing. A North Carolina study

of 800 nursing mothers showed that as PCB levels in breast milk increase, children have poorer motor coordination. Even more disturbing, several studies in the Netherlands show that as levels of PCBs in breast milk increased, infants had more immune impairment, evidence that toxic pollutants in breast milk can negate the milk's immunologic benefits.

There is some good news as well: a Swedish study showed that as government efforts severely limited maternal exposure to PCBs and other toxic chemicals, the levels of these chemicals in breast milk decreased.

What We Can Do

Pregnant women and those who are nursing should limit their exposure to pesticides, lead, and mercury. Fish species known to be contaminated by mercury and PCBs should be avoided. Dry cleaning should be aired out before it is brought into the house. Nursing mothers should choose a wise diet. There are more suggestions on our website.

But more needs to be done. We must phase out chemicals that pose a risk to our health, especially to our children's health, beginning with the toxic chemicals which have been detected in breast milk. We should demand that new chemicals undergo the same rigorous testing as medicines before allowed on the market. There can be no more important public health mission than ensuring the safety of mother's milk.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



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Pesticides could become the ultimate male contraceptive. Why?

Sperm defects, sex reversals and other abnormalities.

Something is happening to the reproductive system of the males of many species. It's happening to male birds of prey around the Great Lakes and male alligators in Florida. To male harbor seals in the Netherlands and male polar bears in the Arctic. And to boys and men throughout the industrialized world.

Scientists have amassed a great deal of evidence linking reproductive system abnormalities, reduced sperm motility, sperm defects, sex reversals and altered sex ratios with exposure to an array of synthetic chemicals known as endocrine disruptors. These include pesticides and certain industrial chemicals like dioxin, PCBs, and phthalates, as well as arsenic, lead, and mercury. Some of these chemicals "mimic" estrogen; others interfere with testosterone and some block the thyroid function.

As physicians and scientists, we are concerned that despite the growing scientific evidence, these chemicals are still on the market.

What We Know

Medical studies have indicated that the sperm counts of males in America and Europe have decreased over the last fifty years. Despite gaps in the data, sperm counts have clearly declined in many places and are inexplicably low in others. The most sophisticated analysis, published in *Environmental Health Perspectives*, the journal of the National Institute of Environmental Health Sciences, indicates the decline may be as great as forty percent.

We know that some chemical workers exposed to endocrine-disrupting pesticides have been made temporarily, and in some cases, permanently sterile.

Dioxin, produced in the incineration of trash containing polyvinyl chloride plastic and chlorine-treated paper, has been shown to be responsible for birth defects and other reproductive problems in birds of prey around the Great Lakes. Dioxin is extremely toxic, and exposure as low as 25 parts per trillion causes feminizing effects in animals. A dioxin accident in Seveso, Italy, was followed by a decrease in the number of boys being born. The ratio of boys to girls is also decreasing in the U.S., Canada, and Denmark. A Danish study found a link between endocrine disruptors and the increasing incidence of undescended testicles in boys.

Endocrine disruptors affect women as well. Several animal studies link small exposures to dioxin with endometriosis.

What We Can Do

Parents should limit their children's exposure to pesticides, both outside and in the home. Organically produced foods should be purchased whenever

possible. And care should be taken to see that no fish from contaminated waters are consumed. There are more suggestions on our website, www.childenvironment.org.


But we must do more. Though not the sole cause, it's clear that exposures to endocrine disruptors can be contributors to reproductive problems in both animals and humans. Some synthetic chemicals already shown to adversely affect animals and humans are still being sold today. And other chemicals in the same chemical families have not been tested. Wouldn't we all be better off if chemicals had to be tested for safety before they were put on the market? Certainly males would be better off.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



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Medicines are the only chemicals that have to be proven safe. Why?

A double standard threatens our health.

Before a chemical can be marketed as a drug, it must go through extensive testing, on animals and humans. It must pass a series of safety tests before it can be sold. There's a well-established FDA process in place if a drug manufacturer wants to sell a hormonal medication like a birth control pill, or post-menopausal hormone replacement therapy.

But if a company wants to sell an industrial chemical that may bind to the same cells as these hormonal medications and acts identically or very similarly – there is no regulatory agency or governmental oversight to ensure the product is safe. Unlike chemicals sold as medicine, industrial and commercial chemicals are presumed safe until proven hazardous.

What We Know

Hundreds of synthetic chemicals that affect human biology, including known carcinogens, chemicals that cause birth defects, and chemicals that can disrupt the endocrine system are being sold

and widely dispersed today. These toxics can be found in everything from pesticides, paints and paint thinners, to industrial detergents and hair dyes. You know them as PCBs and phthalates and dioxin. Many accumulate over time. These chemicals now permeate our water, soil and food. You can find them in the tissue of humans in every area of the world. And you will likely find them in your body and in your children's bodies.

Some endocrine disrupting chemicals mimic the female sex hormone estrogen; others block testosterone; some interfere with the thyroid function. In the animal world, scientists have linked exposure to these chemicals with reproductive abnormalities including feminization of males, hermaphroditism, birth defects, and high infant death rates.

Toxic chemicals are threatening the future effectiveness of human breast milk. Breast milk now contains small but biologically active amounts of scores of industrial chemicals. Some of these chemicals are known to cause neurological impairment in the very young.

Some exposure to certain chemicals is now associated with an increase in the incidence of some cancers among children and of non-Hodgkin's lymphoma and multiple myeloma in adults.

What We Can Do

There is much that parents can do to protect their children against endocrine disrupting chemicals, beginning with the elimination of many pesticides both outside and in the home. Organic foods should be purchased wherever possible. There are more suggestions on our website.

But more needs to be done. Like medicines, industrial chemicals that affect human biology must be tested and regulated. We have good experience when we do regulate chemicals. Removing lead from gasoline resulted in a 90% reduction in lead poisoning. But most of the chemicals being sold today have never been fully tested for safety. We need to phase out those that are unsafe. And we must move to a regulatory system that fully tests all chemicals, no matter how they are to be used, before they are sold.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



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Chemicals combine in our bodies, but are rarely tested that way.

Why?



Multiple exposures pose unknown risks.

A good pharmacist will alert you that a newly-prescribed medicine may adversely interact with some other medicine you're already taking. That is, two medications that are individually benign can cause problems in combination. Careful studies have been undertaken to identify those drug interactions.

But when it comes to toxic chemicals in everyday products, there is surprisingly little information available about how they behave in combination. How, for example, are our bodies affected when the chemicals in paint thinners interact with those in dark hair dyes, or when we are exposed to one pesticide on a fruit, and another from our neighbor's lawn?

What We Know

Here is an analogy: Compared with non-smokers, cigarette smokers have ten times the risk of contracting lung cancer. We also know that workers exposed to asbestos have five times the lung cancer risk compared with those never exposed. You might think,

therefore, that smokers exposed to asbestos would have 15 times the risk of getting lung cancer. In fact, they face 55 times the risk. A powerful interaction.

We know that the tissue of nearly every human on earth contains detectable levels of a range of chemicals called persistent organic pollutants or POPs. We find POPs in pesticides, industrial chemicals, indeed in a broad range of products introduced over the past sixty years. We know that occupational exposure to PCBs, dioxin, and other POPs has been linked to several cancers and to a broad range of reproductive problems, including birth defects in offspring. Clinical and epidemiological studies suggest that non-occupational exposures to POPs at much lower levels may also cause significant harm, especially to developing fetal organs. And the little we know of exposure to a multiplicity of these chemicals should cause concern.

Dutch scientists have documented that when PCBs, at a non-toxic level, are mixed with dioxin, at a level that produced only minor liver damage, the combination produced 400 times the damage of the dioxin alone.

A study at Tufts University tested the effects of 10 pesticides which mimicked estrogen in the body. At low levels, none of the pesticides alone had an effect on human tissue. But in various combinations, there was a strong estrogen-mimicking effect ... even at low levels.

In a study at the University of Wisconsin, mice showed no effect when exposed to atrazine or aldicarb, two pesticides commonly found in drinking water in the Midwest. When mice were exposed to both chemicals, as humans often are, the combination produced immune system impairment.

What We Can Do

Parents should limit their children's exposure to pesticides, both in and outside the home. Organically produced foods should be purchased whenever possible. The use of paints, solvents, and cleaning products containing toxic and volatile chemicals should be limited. There are more suggestions on our website.

But we must do more. Of the thousands of synthetic chemicals on the market, relatively few have been tested for safety. And even fewer have been tested in combination with other chemicals. For our health, for our children's health, such testing should be in place for all chemicals.

A summary of the supporting scientific evidence, and a list of scientific endorsers, can be found at www.childenvironment.org.



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She's the test subject for thousands of toxic chemicals. Why?

Industry falsely discredits current animal testing.

In previous ads in this series, we physicians and scientists have presented a body of scientific evidence linking toxic chemicals to a wide range of health problems in humans, from learning disabilities and brain injury in children to certain cancers in both children and adults.

We have emphasized that these health problems are preventable. We have stressed that thorough pre-market testing of chemicals is a critical component of disease prevention.

There is a well-established and respected FDA approval process that a company must follow before it can market a chemical as a medicine. That process includes testing at various doses on animals. Only if the medicine is shown to be safe for animals is it approved for tests on humans.

America's pharmaceutical industry acknowledges, indeed embraces, these animal testing regimes for medicines. At the same time, however, certain segments of the chemical industry are making false claims about similar pre-market testing for chemicals other than medications.

They claim that testing has little value "because at a high enough dose all chemicals cause cancer." That's not true. The National Cancer Institute and the National Toxicology Program find that only 5-10% of commercial chemicals cause cancer at any dose. The industry also claims that animal testing bears little connection to human risk. That's not true either – the Human Genome Project has shown that laboratory animals and humans have very great genetic similarity and share very similar endocrine, immune and nervous systems.

The industry claims that testing has little value unless it involves tens of thousands of animals at low dose levels. Not true – the National Toxicology Program has developed sophisticated

technologies for testing chemicals at a range of doses in small numbers of animals and then predicting human risk.

Inaccurate and false as all these claims are, they have found a certain audience in government and the press. These claims have paralyzed the regulatory process. They are preventing whole classes of chemicals from being properly tested. And that puts everybody's health at risk, especially the health of our children.

What We Know

- Every known human carcinogen causes cancer in animals.
- Every chemical known to cause brain damage in humans causes damage to the brain and nervous system in animals.
- Every chemical known to interfere with reproductive function in humans interferes with reproduction in animals.
- Almost every known cause of birth defects in humans also causes birth defects in animals.
- And, with few exceptions, when toxic chemicals harm animals, they almost always cause similar harm in humans.

What We Can Do

Parents should limit their children's exposure to synthetic chemicals. They should minimize use of pesticides outside and inside the house. They should choose safe cleaning products. Wherever possible, they should purchase organically produced food. Fish from contaminated waters should be avoided. There are more suggestions at www.childenvironment.org.

We must do more. The evidence is incontrovertible. We must move quickly to phase out those toxic chemicals that are known to pose a danger to human health. And we must institute a system of regulation that tests new synthetic chemicals and proves them safe before they are allowed to be sold, before our children are exposed. Isn't that the system you thought we already had?



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