

## References & resources

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## What you need to know

More than half of all children receiving special education services in U.S. public schools are categorized as having specific learning disabilities. In recent years, the incidence of learning disabilities and attention deficit/hyperactivity disorders has been on the rise.<sup>4</sup>

Early exposure to neurotoxins (chemicals that injure cells in the nervous system) such as lead, mercury, alcohol, tobacco smoke, and some pesticides, can lead to life-long learning, behavioral and developmental problems.

Because of the gradual accumulation of neurotoxins in the body, physical and neurological characteristics may not be obvious until the child is in school.

Possible effects from exposure to neurotoxins include:

- Compromised physical growth, vision problems or hearing problems
- Hyperactivity
- Poor attention span
- Impulsiveness
- Noticeable learning difficulty
- Memory impairment
- Decreased intelligence (IQ)
- Mental retardation
- Speech or language difficulty
- Social immaturity
- Aggressiveness, irritability
- Sensory processing problems
- Poor motor coordination

## Why your child is vulnerable

Pound-for-pound, children breathe more air, drink more water and eat more food than adults. Thus, they are more exposed to air and water pollution and pesticides.<sup>1</sup>

Because the young child's body is growing and developing rapidly, chemicals that can harm development can cause maximum damage during early development and growth spurts.

Young children exhibit typical behaviors that promote exposure to toxins, such as putting hands in their mouths, mouthing dirty objects, and playing on the floor where allergens, such as dust and toxic chemicals, settle and collect.

These behaviors are a crucial part of normal development and the way a young child learns about the world around him.<sup>1</sup>



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# Important Information About Neurotoxins

Research tells us that exposure to neurotoxins such as lead, mercury, alcohol, nicotine, tobacco smoke, and some pesticides can affect the developing fetus and impair normal brain development. This can result in learning and developmental disabilities.<sup>4</sup>

We are all vulnerable, but children, and most especially developing fetuses, are highly susceptible because their systems are still developing and growing and are more easily disrupted by toxic exposures.

Parents as Teachers  
national center



## Alcohol

According to the Surgeon General, no amount of alcohol consumption can be considered safe during pregnancy. Alcohol can damage a fetus at any stage of pregnancy and result in lifelong problems.

Fetal Alcohol Spectrum Disorders (FASD) is an umbrella term describing the range of effects that can occur in an individual whose mother drank alcohol during pregnancy. These effects may include physical, mental, behavioral, and/or learning disabilities. Fetal Alcohol Syndrome is a medical diagnosis of the severest form and includes learning disabilities, growth deficiencies, abnormal facial features, and central nervous system disorders.<sup>3</sup>

When a pregnant woman drinks alcohol, her baby also drinks alcohol. Therefore, the risk of a baby being born with any of the fetal alcohol spectrum disorders increases with the amount of alcohol a pregnant woman drinks. Studies indicate that a baby could be affected by alcohol consumption within the earliest weeks after conception, even before a woman knows that she is pregnant.<sup>3</sup>

### Tips for parents

There is NO safe amount of alcohol, NO safe type of alcohol, and NO safe time that you can drink while pregnant.

- If you're pregnant, don't drink.
- If you drink, don't get pregnant.<sup>3</sup>

## Lead

An estimated 10% of preschool children have lead levels that are high enough to cause learning disabilities. Children under 6 years are most at risk.

Research suggests that the primary sources of lead exposure for most children are:

- deteriorating lead-based paint
- lead contaminated dust and soil

Additional routes of lead poisoning include water pipes, lead-glazed pottery, vinyl mini-blinds, lead solder in cans, hobby paint, stained glass, fishing sinkers, leaded gasoline, some costume jewelry, and some playground equipment.<sup>6</sup>

Even at low levels, lead exposure can cause learning disabilities, IQ loss and behavior problems.<sup>6</sup>

### Tips for parents

- Clean floors, window sills, and surfaces weekly with a wet mop, sponge or paper towel.
- Wash bottles, pacifiers, toys and stuffed animals often. Regularly wash children's hands, especially before they eat and before bedtime.
- Prevent children from chewing painted surfaces (windowsills) or sucking painted toys or pottery.
- Remove shoes before entering your home.
- Feed children nutritious meals that are high in iron and calcium.
- Contact your doctor about a lead screening.<sup>6</sup>

## Mercury

Researchers have found that high levels of methyl mercury in the bloodstreams of unborn babies and young children may harm their developing nervous systems, making these children less able to think and learn.<sup>2</sup>

Mercury is released into our air, land and water by polluting industries such as coal-fired power plants. It is found in a wide variety of products and in some fish in the toxic form of methyl-mercury. Other toxic exposure may result when an item containing mercury breaks, is thrown in a landfill or is incinerated. Such items include thermometers, dental fillings, fluorescent light tubes, amalgam, thermostats, barometers, or alkaline batteries.<sup>2</sup>

### Tips for parents

- Buy mercury-free products.
- Properly dispose of mercury-containing items.
- Participate in state/local collection programs rather than throwing away products containing mercury.
- Check the EPA's Fish Consumption Advisories web site.<sup>2</sup>
- Eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.
- Do not eat shark, swordfish, king mackerel or tilefish because they contain high levels of mercury.<sup>2</sup>

## Tobacco smoke

Smoking harms infants and young children by causing them to receive less oxygen.

Lack of oxygen has been linked to less weight gain during pregnancy, miscarriage, and preterm labor. Smoking during pregnancy is related to 10% of all infant deaths.<sup>11</sup>

### Tips for parents

Each day that you don't smoke, you help your baby grow. After just one day of not smoking, your baby will get more oxygen.

- Quit, or cut back as much as you can.<sup>5</sup> To quit smoking, you can get help at (800) QUIT-NOW.<sup>11</sup>
- Access an online step-by-step cessation guide.
- Find local and state telephone quitlines.
- Download or order helpful publications.<sup>11</sup>

## Pesticides

Pesticides are toxic substances such as herbicides, insecticides and fungicides that are intended to kill or control pests, such as weeds, insects, rodents, fungi, bacteria and mildew. Some pesticides harm humans.

Pesticides are found in products such as bug sprays, certain pressure treated woods used to build play-sets, and some waxes on fruits and vegetables.<sup>7</sup>

### Tips for parents

- Lock household pesticides and chemicals in a high cabinet.
- Wash all fruits and vegetables.
- Contact the National Pesticide Information Center for more information about pesticides.<sup>7</sup>

# What you need to know about neurotoxins

Early exposure to neurotoxins (chemicals that injure cells in the nervous system) such as lead, mercury, alcohol, tobacco smoke and some pesticides, can lead to life-long learning, behavioral and developmental problems.