# How Noise Affects Children

***By: Sophie J. Balk, MD, FAAP***

Many parents know that very loud noise can hurt kids' hearing. With more kids and teens using personal listening devices like headphones and earbuds for music, videos and classes, it's especially important to be aware of sound that's too loud. It's also important to know that too-noisy environments can have harmful effects that go beyond hearing. Read on to learn more.

### What is noise pollution (environmental noise)?

Environmental noise—also known as "noise pollution"—comes from sources around us. These include road traffic, airplanes and airports, railroad trains and wind farms. Indoor sources of noise such as TVs and appliances can also be too loud.

### What are the effects of environmental noise?

Environmental noise is less likely to cause hearing problems than loud noise from personal devices and activities such as concerts, dances and celebrations. Still, environmental noise can have harmful effects on children's learning, behavior and sleep.

Compared to adults, children usually are more vulnerable to noise effects because they are growing and developing. They may also have less control over where they spend time. Children living in less wealthy environments are more likely to be exposed to higher environmental noise levels.

Some of the ways environmental noise can affect children include:

### Learning

Too noisy classrooms and child-care settings can affect how children learn. Reading, remembering, and doing well on tests can be difficult when there is too much background noise or noisy conversations. Planes flying overhead can make it hard to understand what the teacher is saying. Teachers may need to interrupt lessons to wait for planes to pass. Feeling annoyed by noise can cause kids to lose focus on lessons.

For infants and children learning how to talk, a noisy environment can make it harder for them to understand speech.

### Play

Environmental noise can influence how children play, which is important for their development. Many children are exposed to background noise from TVs left on even if the child isn't actively watching. When TVs are left on, babies and toddlers don't focus as much or as long on playing with toys.

## Sleep

Noise often interferes with sleep. According to the World Health Organization, millions of people suffer worse sleep caused by nighttime noise from road traffic and other sources. Research done mainly in adults shows that even low levels of nighttime environmental noise cause more body movements, awakenings and other sleep disturbances. These happen even though the sleeping person is not aware of them. Poor sleep can cause daytime sleepiness and affect children's learning.

## Stress

Too much noise can cause a person's body to have a stress response. We can see this in premature babies in neonatal intensive care units (NICUs), for example. When these babies are exposed to alarms, telephones, ventilators, pumps, monitors and incubators, there can be changes in their breathing, heart rates and oxygen levels. Noise can increase children's blood pressure, and in adults, long-term noise exposure even raises the risk of having a heart attack.

### How does noise affect children with Autism Spectrum Disorder?

Some children with special sensitivities—such as Autism Spectrum Disorder (ASD), Attention-Deficit Hyperactivity Disorder (ADHD), sensory processing disorders or learning differences—may be disturbed by sounds or noises that usually don't bother children without these conditions.

### How to reduce environmental noise

More research is needed to learn more about how the effects of noise build up over a lifetime. In the meantime, we know enough to take steps to decrease children's exposures. Many NICUs, hospitals, schools and child-care settings have worked to lower noise levels.

As a parent, you can also take steps to lessen the family's exposure to environmental noise. Some tips:

- Reduce the volume on TVs, computers and radios. Turn off devices when they're not in use.
- Quiet is important for health and learning. Create a quiet room at home for play and other family activities.
- If your family is moving to a new home, consider the neighborhood's noise level. Look into nearby airport flight path or wind turbine, for example, when deciding where to live.
- If your family goes out to eat, choose a quieter restaurant to make it easier to talk to each other.
- If your child has a condition such as ASD or ADHD, consider using noise-cancelling headphones or hearing-protection earmuffs, which reduce harmful outside noises.
- Infant sleep machines ("white noise" machines) sometimes are used to drown out environmental noise. Some machines can produce hazardous noise levels. If you use a sleep machine, place it as far away from the baby's head as possible and use it for a short time only.

Also remember that headphones, earbuds, and other personal devices can be sources of harmful loud noise. If your kids are nearby, they should be able to hear what you're saying even when using their devices. If not, have then turn down the volume.

### About Dr. Balk

Sophie J. Balk, a general pediatrician, is a member of the American Academy of Pediatrics (AAP) Executive Committee of the Council on Environmental Health and Climate Change. Dr. Balk is Associate Editor of *Pediatric Environmental Health*, 4th Edition, the AAP handbook for pediatricians. She is the lead author of an upcoming AAP technical report and policy statement on noise.

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