



Dr. Landrigan Answers Back-to-School Questions

Its fall and children are back at school! Dr. Landrigan answers the latest questions about how to keep your kids healthy while in school. The 5 Q&A's cover a wide-range of potential exposures including:

- ***Lead and phthalates in PVC lunchboxes***
- ***Air Pollutants from idling cars and school buses***
- ***Pesticides outside and inside the school***
- ***Lead and recycled rubber in turf fields***
- ***Bisphenol A (BPA) in hard plastic bottles and other food containers***

The harmful effects of lead, pesticides, disinfectants and air pollutants are proven after many years of research, but we are just beginning to understand those from artificial turf, BPA and phthalates. In these instances, we recommend pursuing a precautionary approach until more research is conducted. As always, it is essential that your kids learn to keep their hands clean (with soap and warm water) in order to protect their health and reduce environmental exposures.

Q: *How can I best protect my child against the germs he/she will be exposed to in the classroom?*

A: Hand-washing is the most effective way to reduce the risk of infection and stop the spread of germs. Throughout the day, people pick up viruses and bacteria by touching surfaces tainted with germs followed by touching the eyes, nose or mouth. Young children have a high likelihood of infection because of their increased hand-to-mouth activity. In addition, they are still building their immune systems and can't fight invading germs as effectively as others.

Fortunately, good hand-washing skills are easy to teach and are founded very simply on knowing when and how to wash hands so that germs are eliminated. Hands should be washed anytime there could be contact with germs, such as after using the bathroom, before eating, and after visiting with someone who is sick. It is also a good idea to wash hands after touching animals and after playing outside.

The best method of cleaning hands is also the oldest: washing with plain soap and warm water. While antibacterial soaps and other personal care products, containing triclosan (may also be listed as Microban, Irgasan DP-300, Lexol 300, Ster-Zac, Cloxifenolium,



Biofresh), are now common, studies show they do not provide any extra health benefits in a healthy household. Also, because of the fear that bacteria will change in response to the chemicals in antibacterial soaps, contributing to the creation of a “superbug,” it is more prudent to stick with regular soap. Likewise, while hand sanitizers are very effective in reducing germs, their use by children must be closely monitored. Many of the leading brands contain large percentages of alcohol, which if ingested by young children can cause intoxication or alcohol poisoning.

See below for more information on New York State law which requires green cleaning products to be used in schools.

For the cleanest hands, remember the following tips:

- use warm water and soap to cover the entire hand;
- rub hands together 15 to 20 seconds (try teaching children to rub the length of an entire song, such as the ABC’s song or “Row, Row, Row Your Boat”); and
- rinse off all of the soap and dry hands with a clean towel or air dryer.

Sending a child off to kindergarten with good hand-washing skills is the best defense in the battle to keep him or her – and the rest of the family – healthy.

Q: *How can I make sure that my child is using the safest containers for his/her school lunch?*

A: Reusable lunchboxes and water bottles are great environmentally-friendly alternatives to single-use paper or plastic bags and individual beverage containers. However, studies have shown that some lunchboxes made from PVC (polyvinyl chloride) or vinyl may contain lead or phthalates. Rigid plastic water bottles and sippy cups may contain Bisphenol-A (BPA) or PVC.

At first glance, it may seem overly cautious to worry about an apple rolling around in a lunch box, or water in a plastic container, but all three chemicals found in certain plastics—lead, phthalates, and BPA—are cause for concern. Food and beverage containers containing lead should be avoided altogether. Those containing phthalates and BPA should be avoided as much as possible. When lunchboxes and bottles are exposed to heat, chemicals can leach out of the plastic and cause exposures to children through skin contact, inhalation, or ingestion.



Lead - Of the additives to plastic, the most thoroughly researched by health experts is lead. While the amount of lead in these products is variable, no level of lead is safe for young children. Low level lead exposures have been associated with behavioral problems and decreased intelligence in children. At higher blood lead levels, children may exhibit gastrointestinal related symptoms. These children may have difficulty with learning and school performance, in addition to behavioral problems, such as hyperactivity and ADHD. Severe lead poisoning may be associated with neurological symptoms.

Phthalates- In recent years, phthalates are often in the news, particularly due to concerns with teething babies chewing soft, vinyl toys. Most of the health information we know about phthalates comes from animal studies. The studies show that phthalates disrupt hormonal function and are toxic to the male reproductive organs. Many pediatricians are concerned about phthalates because they appear capable of causing similar effects in children's bodies.

Bisphenol-A (BPA) - The use of BPA in plastics has steadily increased over the past few decades, making it one of the most commonly produced chemicals in the world. As a result of its widespread use, traces of the chemical are found everywhere from breast milk to groundwater. BPA is suspected of disrupting hormones. Preliminary animal testing points to a range of potential health threats, from interference with the male reproductive system to problems with brain development. A recent report from Yale University indicates BPA interferes with brain development in infant monkeys. This is of concern because the stages in development of the monkey brain are very similar to those in the brain of a human infant.



Legislation- Because of its high degree of toxicity, lead is federally regulated when used in children's toys. Unfortunately, federal limits on lead levels do not extend to children's products, other than toys. In early August, the President signed the Consumer Product Safety Improvement Act, which is the first of its kind to include such strong legislation on children's products, including a ban on 3 phthalates, stricter lead level guidelines and better product labeling. No legislation exists for BPA in the US, but Canada has banned BPA from baby bottles.

Refer to this check list when shopping for lunch boxes, food and drink containers:

- Seek out lunchboxes labeled "lead safe" or "lead free," "PVC-free" or "vinyl-free," and plastic bottles labeled "BPA-free." Plastics should be substituted as much as possible with glass or stainless steel or used in a safe manner (see below) where substitutes are unavailable.
- Because heat increases the release of phthalates from plastic, food or drink should never be warmed in a plastic container.
- Look to recycling numbers for help! PVC or vinyl is identifiable by the recycling #3 on the bottom of plastic containers. Recycling #6 used in Styrofoam cups and plates indicates the presence of polystyrene and #7 usually indicates the presence of BPA (Some new bio-based plastics, which are safe, may be labeled 7, as well). Finally, when purchasing any product either made of plastic or stored in plastic, remember to check the recycling number with the following rhyme: With your food and drink chose 4, 5, 1 and 2; all the rest aren't good for you! If these numbers can't be found, then you may want to take a precautionary approach and avoid using these products.

Safer Plastics



Plastics to Avoid



Q: *What can I do to promote a greener environment at my child's school?*

A: The first step in keeping children safe from chemicals while at school is to get active in your Parent's Organization and mobilize other caregivers. Next determine which products are being used and whether they present potential health risks. Labels of obvious suspects like disinfectants should be examined for harmful ingredients such as bleach, ammonia, lye and formaldehyde, or for tip off words such as "Caution," "Warning," "Danger," or "Poison." Where labels are inaccessible, refer instead to the product's Material Safety Data Sheet (MSDS), available from the school as well as the manufacturer. The school is required to have these MSDS sheets readily accessible to the staff under laws that protect their employees' health. These sheets summarize the potential hazards and assign a "Health Hazard Safety Number" ranging from 0 (insignificant risk) to 4 (extreme risk). When surveying the products used in schools, don't overlook those traditionally thought to be nontoxic, such as air fresheners, which may contain phthalates, and unleaded paint and new carpets, which may off gas harmful volatile organic compounds (VOCs).



In August 2005, New York State adopted guidelines for using environmentally sensitive cleaning products in all elementary and secondary schools, both public and nonpublic. Schools were required to only purchase green cleaners from a state provided list of products starting in September 2006. All approved products were required to effectively clean surfaces while eliminating chemical residues and minimizing the impact of harmful chemicals on children and employee health. Note that antibacterial soaps and cleaners are not approved as environmentally-preferable under the New York State Guidelines. A complete list of products can be found at:

<http://www.ogs.state.ny.us/bldgAdmin/environmental/ProductLists.html>

If potentially hazardous products are routinely used at school, begin researching less toxic alternatives. A good place to start is with "The Guide to Green Cleaning," published by Healthy Schools Network, Inc. (www.healthyschools.org), which provides information on what to look for in "greener" cleaning products as well as a list of resources on where to find them. Additionally, if the school is not one of thousands nationwide that already adhere to an Integrated Pest Management program, work on getting officials to adopt some of the measures if not the entire strategy. These programs, which have successfully reduced the use of toxic pesticides in schools, feature a long-range and comprehensive plan that combines pest prevention, monitoring, and continued evaluation with the underlying goal to use hazardous pesticides only as a last resort.



Encourage good hand washing practices (see above) at home and in school—always wash before eating or when leaving the bathroom.

Q: What issues and concerns are associated with artificial turf playing fields?

A. Artificial turf fields have multiplied over the past decade. Many questions remain as to how these fields may affect children's health. Where installation of turf fields is still under consideration, Dr. Landrigan recommends delaying the decision until the questions about the safety of artificial turf have been studied more thoroughly.

Not all turf fields are constructed the same way. First generation fields, or AstroTurf, is the spongy carpet-style surface, while second generation turf fields are layered synthetic surfaces with plastic blades of grass infilled with a mixture of rubber pellets and sand or just rubber (at right). Note that each company has its own installation method and source for rubber, so there will be variation from field to field.



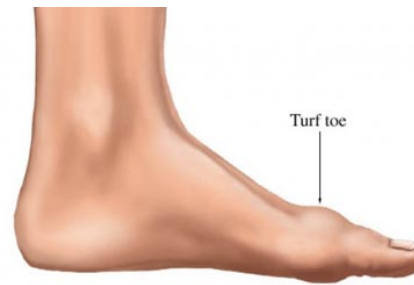
Proven hazards to children's health are three: (1) heat, (2) "turf burns" or abrasions, and (3) turf toe. In addition, recycled tires are known to contain a mix of chemicals. These chemicals include, among others, rubber chemicals, polycyclic aromatic hydrocarbons (PAHs) and heavy metals – lead, zinc and cadmium. What is not yet known is the extent to which these chemicals may get in to the bodies of children playing on turf fields, their associated health risks, or the extent to which they may leach from the fields into the surrounding environment, soil and groundwater. More recently, traces of lead have been detected in the pigment of the plastic blades of some grass and in the carpet-style AstroTurf (at left), causing further grounds for concern.



Dangerous Temperatures- Studies show that the temperatures on artificial turf fields and in the area just above where children play can reach dangerously high levels that are significantly greater than temperatures of grass fields. When the air temperature is in the 80's or 90's, temperatures above the turf can exceed 150° F. Any temperature above 122° F can injure or burn skin in less than 10 minutes. Also, heat stress and heat stroke are possible for children playing strenuously on the hot fields. Temporary measures to combat the elevated temperatures, such as watering the fields, are already being used. However, at least one study shows that the temperature rebounds very quickly after being watered.

Staph Infections- Injuries resulting from normal play—such as from sliding or falling—cause larger than normal abrasions or "turf burns" on turf fields. Links between the rise in cases of MRSA (methicillin-resistant staphylococcus aureus), an antibiotic-resistant staph infection, to artificial turf fields raise additional questions about safety. In response to the increased threat of infections, some have suggested spraying synthetic fields with antimicrobials or even including them in the plastic components that make up the fields. Increasing children's exposure to bacteria fighting chemicals, however, carries its own risk.

Turf Toe – Another proven injury is turf toe, which is so named because it often occurs in football and soccer players when playing on artificial turf. Turf toe is a sprain of the base of the big toe at the point where it meets the foot. It frequently occurs when a player hyperextends his or her foot by stopping suddenly on a playing field. One possible way of preventing injury is to wear stiff-soled athletic shoes when playing sports.



In order to reduce your child's risk of exposure:

- Do not use the turf fields on extremely hot days.
- Be sure to clean and monitor any "turf burns" obtained while playing.
- Attempt to remove the pellets from shoes and clothes prior to leaving the fields.
- At home, shake out your children's equipment and clothes in the garage or over the garbage.
- Have your child shower and wash thoroughly after playing on the field.

Q: *What benefits result from creating idling free car zones at my child's school?*

A: Turning off car engines in the school pick up line is good for 2 reasons: (1) it reduces potential health risks from inhaling exhaust fumes and (2) it conserves valuable natural resources. These are two compelling reasons to break the idling habit.



Car and bus exhaust is a complex mix of pollutants that react with heat and sunlight to form ozone. In high levels, ozone can irritate lungs and over time can trigger lung symptoms, such as asthma.

It is important to reduce or eliminate idling in school zones. Some school districts, and even a few states, have led the way by imposing restrictions on school bus and truck idling. New York State restricts idling of trucks and buses to 5 minutes at a time, except when stuck in traffic, in an emergency situation, idling for maintenance purposes or in an ambient air temperature below 25°F for more than 2 hours. But these laws and regulations are often violated and rarely go far enough, excluding cars, for example. The most immediate relief is likely to result from efforts to bring attention to the issue within the school community. One town's solution to the idling problem was posting a sign reading:

"No Idling. Children breathing here."

Longer-term goals may include initiating mandatory or voluntary bans and making grassroots appeals to legislators to regulate or enforce laws restricting idling of vehicles. Informing parents can be the most effective way to change behaviors, and improve your child's health.

