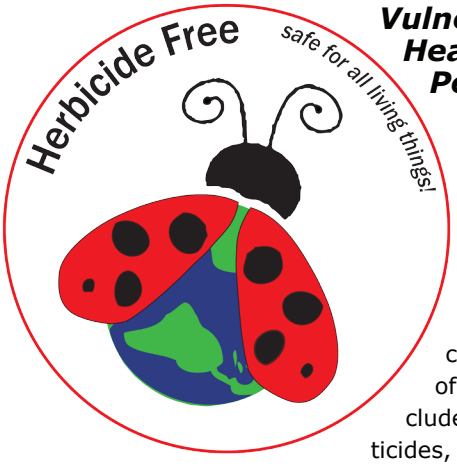
Child Friendly Lawns and Gardens

Fact Sheet #4
June 2013

Lawns, gardens and athletic fields are important resources for children's well being: spaces for vigorous exercise, refuges from stress, gathering places for family and friends, entries to the natural world. For these reasons, an international movement to "Leave No Child Inside" is gathering momentum; but the outdoors must be safe from serious risks that children cannot see and negotiate—including free from herbicides, insecticides and other pesticides to which children are especially vulnerable. Landscaping with children in mind can protect young people from these risks while providing opportunities for creative play and access to nature.

Children Are Especially Vulnerable to the Health Risks of Pesticides



From the fetus in the womb through adolescence, developing bodies and brains are especially at risk from exposure to pesticides: a broad class of chemicals that includes herbicides, insecticides, insect repellants, fungicides, rodenticides and bactericides. In a Policy Statement and review on "Pesticide Exposure in Children," the American Academy of Pediatrics noted robust evidence linking pesticide exposure to pediatric cancers and adverse neurodevelopment, including reductions in IQ, attention/hyperactivity disorder, and autism. Chronic exposures are also associated with preterm birth, low birth weight, congenital abnormalities, and asthma. Potential herbicide effects include cancer and endocrine disruption.[1] Minute doses can set children's developing endocrine systems on an altered course, with consequences for their neurodevelopment, reproductive development and metabolism.[2] Risks begin before birth. The umbilical cord blood and meconium of newborns already contain toxic loads.[3]

Small children crawl and play on the ground and put objects in their mouths. They take in more exposure through air, food, drink, and skin contact relative to their body weight than adults, and have less developed organs and immune systems to detoxify contaminants. School age children and teenagers often spend long hours on athletic fields. Even small exposures to herbicides can disrupt developing bodies with potentially lasting effects, and children have long lifetimes ahead to develop delayed effects.[4]

Children Are Indirectly Impacted by Risks to Adults, Pets and Ecosystems

Pesticides don't only impact children. In adults, they are associated with several forms of cancer, reproductive disorders, immune system disorders, and neurological effects like Parkinson's Disease.[5] When parents and other important people in children's lives sicken or die, children are hurt too. Children often develop deep bonds with family pets, who face many similar risks from exposure. Carried in wind and water and accumulating as they move up the food chain, these chemicals damage wildlife and ecosystems, diminishing the beauty and viability of the natural world which is children's rightful inheritance.

Current Regulations Are Inadequate

Synthetic chemicals, including herbicides and insecticides, undergo limited testing that assumes that an organism is exposed to this chemical alone. In fact, all people now carry many synthetic chemicals in their bodies, with the combined effects unknown. Risks are primarily estimated for adults, not children with their greater paths of vulnerability. Warning labels on herbicides and insecticides give time limits for keeping children and pets off the grass that fail to reflect wide variation in the half-life of ingredients, depending on weather and soil conditions or the fact that once these chemicals come indoors on shoes, clothes or through windows, they may remain active for years. Unspecified ingredients labeled "other" or "inert" may include known toxins. Not least, regulations lag behind the science of toxicity, as new evidence shows that products that were labeled "safe" may have serious adverse effects. Even after the evidence becomes compelling, it may take years to take a product off the market.[6]

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Protection Begins at Home and in the Community

Although parents, school administrators, parks and recreation managers, and other local officials may not control the national and international politics of chemical exposure, they may take steps to significantly improve the safety of children's environments. Don't use herbicides, insecticides or other pesticides around homes, schools or parks. Don't store pesticides in homes. Purchase organic products and apply Integrated Pest Management practices. When schools or residential areas are near farm fields, enact broad buffer zones to protect children and families from pesticide drift.

Advocate the precautionary principle, which says that if a product poses potential serious threats to human beings or ecosystems, those seeking to bring the product to market must prove its safety beyond doubt or else the wisest path is to avoid its use.[7] Given the evidence against herbicides, more than 170 municipalities and several provinces in Canada have acted on the precautionary principle to ban their use in residential areas. New York, Massachusetts and Connecticut have taken the lead in enacting Child Safe Playing Fields acts that ban their use around schools and on playgrounds and athletic fields.[8]

There Are Healthy Lawn and Garden Alternatives

Companies that manufacture and apply herbicides and insecticides have marketed the myth that property values and responsible home ownership depend on their products' application. Historically, lawns first appeared around palaces and estates of the wealthy, when all lawns and gardens were organically maintained. Synthetic systems of lawn and garden care are by-products of modern warfare: nitrogen fertilizers began with the nitrogen wastes of bomb making, insecticides descend from formulas for nerve gas, herbicides from plans to defoliate the crops and forest covers of enemy nations.[9] Chemical manufacturers sought new markets by targeting private homeowners.[10] Healthy alternative approaches depend on restoring soil systems through natural fertilizers and composting and choosing grasses and plants that are appropriate for the region. Healthy soils grow dense turf that outcompetes weeds, and organically grown, well chosen plants resist pests.[11]

Include Areas Where Children Can Garden, Play Creatively and Discover Nature

Children need grassy lawns for some games and sports, but they also need areas where they can discover nature and freely apply their imagination. They can be absorbed for hours by dirt to dig, water to channel, grasses and branches to construct forts and play houses. If the results look messy, put these areas in the back yard or behind a screen of bushes. Make garden nooks where children can find quiet retreats alone or with friends. With native species, create habitats for birds and small animals to bring nature near. Let your children have space for a garden of their own if they want. When selecting plants for the yard and garden, avoid poisonous varieties and choose species that can withstand children's uses.[12]

1. Council on Environmental Health. (2012). Policy statement: Pesticide exposure in children. *Pediatrics,* 130(6)(December): e1757-e1763; Roberts, J.R., Karr, C.J. & Council on Environmental Health. (2012), Technical report: Pesticide exposure in children. *Pediatrics*, 130(6)(December): e1765-e1788. Also see articles by Bouchard, Bellinger et al. (2010), Bouchard, Chevrier et al. (2011), Engel et al. (2011), Marks et al. (2010) and Rauh et al. (2011) in the Pesticide-induced Diseases Database, Learning/Developmental disorders (www. beyond.pesticides.org/health/index). Related article links can be found through the fact sheet on "Children" at www.panna.org/your-health/children.

2. For additional reviews of studies that focus on children, see: Infante-Rivard, C. & Weichenthal, S. (2007). Pesticides and childhood cancer. *Journal of Toxicology and Public Health,* Part B, 10, 81-99; Rogan, W. & Ragan, N. (2007). Some evidence of effects of environmental chemicals on the endocrine system in children, *International Journal of Hygiene and Environmental Health,* 210(5), 659-667; Sears, M., Walker, C., van der Jagt, R. & Claman, P. (2006). Pesticide assessment: Protecting public health on the home turf, *Pediatrics and Child Health*, 11(4), 229—234.

3. Houlihan, J., Kropp, T., Wiles, R., Gray, S., Campbell, C. & Greene, A. (2005). Body burden: The pollution in newborns. *Environmental Working Group*: www.ewg.org/research/body-burden-pollution-newborns; Woodruff, T.J., Zota, A. R. & Schwartz, J. M. (2011). Environmental chemicals in pregnant women in the United States. E*nvironmental Health Perspectives*, 119(6)(June): 878-885.

4. Etzel, R. A. & Balk, S. J. (eds.) (2012). Pesticides, in *Pediatric Environmental Health*, 3rd edition (pp.515-548). Elk Grove Village, IL: American Academy of Pediatrics.

5. For reviews that cover adults and children, see: President's Cancer Panel. (2010). *Reducing Environmental Cancer Risk.* Bethesda, MD: National Cancer Institute; Sanborn, M., Cole, D., Kerr, K., Vakil, C., Sanin, L. H. & Bassil, K. (2004). *Pesticides Literature Review,* also *OCFP 2012 Pesticides Review* update. Toronto: Ontario College of Family Physicians, www.ocfp.on.ca; The Endocrine Disruption Exchange, www.endocrinedisruption.org.

6. For efforts to reform outdated U.S. laws, see www.saferchemicals.org. Schapiro, M. (2007). *Exposed: The toxic chemistry of everyday products and what's at stake for American power.* White River Junction, VT: Chelsea Green Publishing.

7. Etzel & Balk, Precautionary Principle, in *Pediatric Environmental Health*.

8. Mann, M., Landrigan, P., Galvez, M. and Sheffield, P. (2011). *Testimony in Support of the Child Safe Playing Fields Act.* New York: Children's Environmental Health Center, Mount Sinai School of Medicine.

9. Fagerness, M. & Johns, R. (2004). Introduction to turf grass chemicals and pesticides, in *Turf Grass Chemicals and Pesticides* (1-28). New York: McGraw-Hill.

10. Jenkins, V.S. (1994). *The Lawn.* Washington, DC: Smithsonian Institution Press; Robbins, P. (2007). *Lawn People*. Philadelphia: Temple University Press.

11. Bormann, F., Balmori, D.,& Geballe, G. (2001). *Redesigning the American Lawn*, 2nd ed.. New Haven: Yale University Press; Little, S. (2011). *Organic Land Care Program.* Stevenson, CT: Northeast Organic Farming Association, www.organiclandcare.net; Tukey, P. (2007). *The Organic Lawn Care Manual.* North Adams, MA: Storey.

12. Moore, R. C. (2002). *Plants for Play*. Berkeley, CA: MIG Communications.

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