



PESTICIDE EXPOSURE & CHILDHOOD CANCER

Childhood cancer is rising

Rates of cancer incidence among people under the age of 20 have increased 41% since 1975.¹ Preconception exposures to either parent, as well as exposures during pregnancy, increase childhood cancer risk.^{8,15,16,17,18,19,20,21}

In 2020, the Childhood Cancer Prevention Initiative identified pesticides as one of three main exposures most robustly linked to childhood cancer.²



Children are uniquely vulnerable to pesticide exposure

From the fetal stage through adolescence, children's bodies are in a dynamic state of growth, with cells multiplying and organ systems developing at a rapid rate, leaving them *extremely susceptible to the impacts of hazardous chemical exposure*, which can lead to pronounced effects later in life.^{3,4}

The science is clear

Research has shown that pesticide exposure increases risks of childhood lymphomas,^{5,6,7} leukemias,^{5,8,9,10,11,12,13} and brain cancers.^{5,7,14}



Pesticides in use are not safe

More than 15 EPA registered pesticides used in the US are classified as known, likely, or probable carcinogens by the International Agency on Cancer Research (IARC).^{2,22} Over 17 EPA registered pesticides used in the US have been flagged as potential carcinogens by scientists.²³

It is vital to pass legislation to protect our children from pesticide exposures

Support the Protect America's Children from Toxic Pesticides Act (S. 3283) TODAY



To find out more and get involved, visit [Cancer Free Economy Network & Childhood Cancer Prevention Initiative](#)



PACTPA

Protect America's Children from Toxic Pesticides Act (S. 3283)

If passed, PACTPA would:

- Ban pesticides particularly harmful to children, including organophosphates, neonicotinoids, & paraquat
- Review and ban pesticides banned in the EU & Canada
- Strengthen pesticide regulation by ending delays in pesticide review & limiting conditional registrations and emergency exemptions
- Require labels in multiple languages and with increased ingredient transparency
- Protect farmworkers by establishing a reporting system for pesticide accidents and injuries

Join American Sustainable Business Network in asking your Senators to endorse PACTPA

In the meantime, reduce your, & your child's, exposure to pesticides by:

- Removing shoes at the door and/or having doormats to prevent tracking toxics inside
- Switching to non-toxic alternatives to manage pests in the home & garden
- Keeping dust levels low and vacuuming with a HEPA filter
- Eating organic whenever possible
- Asking your neighbors, schools, town, & local farmers to switch to pesticide free lawn, grounds, & crop management



REFERENCES

- 1 National Cancer Institute. 2021. Annual Report to the Nation 2021: Overall Cancer Statistics. Surveillance Epidemiologic End Results (SEER) Program. https://seer.cancer.gov/report_to_nation/statistics.html
- 2 Childhood Cancer Prevention Initiative. 2020. *Childhood Cancer: Cross-Sector Strategies for Prevention*. <https://www.cancerfreeeconomy.org/childhood-cancer-prevention-report-download2020/>
- 3 US Environmental Protection Agency. Children are not little adults! Available from: <https://www.epa.gov/children/children-are-not-littleadults>
- 4 Terry MB, et al. 2019. Environmental exposures during windows of susceptibility for breast cancer: a framework for prevention research. *Breast Cancer Research*, 21(1), 96. <https://doi.org/10.1186/s13058-019-1169-2>
- 5 Chen M, et al. 2015. Residential Exposure to Pesticide During Childhood and Childhood Cancers: A Meta-Analysis. *Pediatrics*, 136(4), 719-729. <https://doi.org/10.1542/peds.2015-0006>
- 6 Buckley JD, et al. 2000. Pesticide exposures in children with non-Hodgkin lymphoma. *Cancer*, 89: 2315-2321. [https://doi.org/10.1002/1097-0142\(200012\)89:11<2315::AID-CNCR21>3.0.CO;2-G](https://doi.org/10.1002/1097-0142(200012)89:11<2315::AID-CNCR21>3.0.CO;2-G)
- 7 Zahm SH, Ward MH. 1998. Pesticides and childhood cancer. *Environmental health perspectives*, 106(suppl 3): 893-908. <https://doi.org/10.1289/ehp.98106893>
- 8 Karalaxi MA, et al. 2021. Exposure to pesticides and childhood leukemia risk: A systematic review and meta-analysis. *Environmental pollution (Barking, Essex: 1987)*, 285, 117376. <https://doi.org/10.1016/j.envpol.2021.117376>
- 9 Nguyen A, et al. 2021. Residential proximity to plant nurseries and risk of childhood leukemia. *Environmental research*, 200, 111388. <https://doi.org/10.1016/j.envres.2021.111388>
- 10 Van Maele-Fabry G, Garnet-Payrastra L, Lison D. 2019. Household exposure to pesticides and risk of leukemia in children and adolescents: Updated systematic review and meta-analysis. *International journal of hygiene and environmental health*, 222(1), 49-67. <https://doi.org/10.1016/j.ijheh.2018.08.004>
- 11 Bailey HD, et al. 2015. Home pesticide exposures and risk of childhood leukemia. Findings from the childhood leukemia international consortium. *International journal of cancer*, 137(11), 2644-2663. <https://doi.org/10.1002/ijc.22631>
- 12 Turner MC, Wigle DT, Krewski D. 2010. Residential pesticides and childhood leukemia: a systematic review and meta-analysis. *Environmental health perspectives*, 118(1), 33-41. <https://doi.org/10.1289/ehp.0900582>
- 13 Metayer C, et al. 2013. Exposure to herbicides in house dust and risk of childhood acute lymphoblastic leukemia. *Journal of Exposure Science & Environmental Epidemiology*, 23. <https://doi.org/10.1038/jes.2012.115>
- 14 Lombardi C, et al. 2021. Residential proximity to pesticide application as a risk factor for childhood central nervous system tumors. *Environmental research*, 197, 111078. <https://doi.org/10.1016/j.envres.2021.111078>
- 15 Patel DM, et al. 2019. Parental occupational exposure to pesticides, animals and organic dust and risk of childhood leukemia and central nervous system tumors: Findings from the International Childhood Cancer Cohort Consortium (I4C). *International journal of cancer*, 146(4), 943-952. <https://doi.org/10.1002/ijc.32388>
- 16 Park AS, et al. 2020. Prenatal pesticide exposure and childhood leukemia - A California statewide case-control study. *International journal of hygiene and environmental health*, 226, 113486. <https://doi.org/10.1016/j.ijheh.2020.113486>
- 17 Vinson F, et al. 2011. Exposure to pesticides and risk of childhood cancer: a meta-analysis of recent epidemiological studies. *Occupational and environmental medicine*, 68(9), 694-702. <https://doi.org/10.1136/oemed-2011-100082>
- 18 Wigle DT, Turner MC, Krewski D. 2009. A systematic review and meta-analysis of childhood leukemia and parental occupational pesticide exposure. *Environmental health perspectives*, 117(10), 1505-1513. <https://doi.org/10.1289/ehp.0900582>
- 19 Van Maele-Fabry G, et al. 2010. Childhood leukaemia and parental occupational exposure to pesticides: a systematic review and meta-analysis. *Cancer causes & control: CCC*, 21(6), 787-809. <https://doi.org/10.1007/s10552-010-9516-7>
- 20 Van Maele-Fabry G, Hoet P, Lison D. 2013. Parental occupational exposure to pesticides as risk factor for brain tumors in children and young adults: a systematic review and meta-analysis. *Environment international*, 56, 19-31. <https://doi.org/10.1016/j.envint.2013.02.011>
- 21 Rudant J, et al. 2007. Household Exposure to Pesticides and Risk of Childhood Hematopoietic Malignancies: The ESCALE Study (SFCE). *Environmental health perspectives*, 115(12), 1787-1793. <https://doi.org/10.1289/ehp.10596>
- 22 International Agency for Research on Cancer. 2019. List of Classifications by cancer sites with sufficient or limited evidence in humans, Volumes 1 to 124. https://monographs.iarc.fr/wp-content/uploads/2019/07/Classifications_by_cancer_site.pdf
- 23 Cardona B, Rudell RA. 2020. US EPA's regulatory pesticide evaluations need clearer guidelines for considering mammary gland tumors and other mammary gland effects. *Molecular and Cellular Endocrinology*, 518, 110927. <https://doi.org/10.1016/j.mce.2020.110927>



CHILDHOOD CANCER PREVENTION INITIATIVE

