

Living Near a Golf Course Puts Your Brain Health at Risk

Analysis by [Dr. Joseph Mercola](#)

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STORY AT-A-GLANCE

- › Residents within a mile of golf courses have 126% higher chance of developing Parkinson's disease compared to those living farther away
- › Golf course chemicals infiltrate groundwater supplies and drift through the air, creating multiple exposure pathways for nearby residents
- › Stricter pesticide regulations in Europe result in dramatically lower chemical hazard scores compared to American golf courses, especially in southern states
- › Dense residential areas near golf courses lack natural barriers, concentrating airborne pesticides and increasing your vulnerability to chemical exposure
- › Regular exercise helps eliminate accumulated pesticides, while water filtration and air purifiers reduce ongoing chemical exposure at home

In the United States, Parkinson's disease currently affects around 1.5 million people, with about 60,000 new cases diagnosed each year.¹ While age and genetics are believed to be risk factors for this condition, research shows that where you live also plays a role. Specifically, people living right next to golf courses have a higher risk.

Living Closer to Golf Courses Puts You at Risk for Parkinson's Disease

In a study published in JAMA Network Open, researchers investigated how your proximity to golf courses influences your risk of developing Parkinson's disease. For their experiment, the team compared locations of Parkinson's cases with distances to golf courses, tapping into medical records of 419 Parkinson's disease patients and matching them against 5,113 healthy controls across 139 golf courses throughout southern Minnesota and western Wisconsin.²

- **Eye-opening results** – After analysis, the team concluded that the closer you live to a golf course (especially within a mile), the greater your likelihood of developing Parkinson's. Specifically, your odds nearly double – a whopping 126% – when residing less than a mile from these chemically maintained spaces compared to living farther away.
- **Even modest increases in distance help reduce your exposure** – For example, at around 3 miles away, Parkinson's risk still existed but dropped more notably, about 13% for every extra mile. However, the highest risk zone consistently hovered at the shortest distances, which, again, highlights the finding that proximity matters most.
- **Drinking water drawn near golf courses heightened the risk** – Residents dependent on groundwater within these contaminated zones also experienced nearly doubled risk of developing Parkinson's. The researchers strongly believe that pesticide residues infiltrate local water supplies, becoming a direct threat to residents who consume this resource daily, unaware of the invisible chemical burden they face.
- **Pesticides sprayed onto golf courses frequently drift in the air** – This is particularly observed in densely populated areas. Apartment complexes and homes built close to golf courses effectively trap these airborne toxins, concentrating exposure around residential spaces. If the urban or suburban community you live in is near a golf course, your vulnerability increases not just through water, but via inhalation as well.

- **The strongest effects are linked to urban communities** — In relation to the point above, this specific demographic faces the highest increase in Parkinson's risk. Such populations typically have fewer natural barriers like trees or open spaces to block pesticide drift, making them more susceptible to inhalation-based exposure and chemical residues settling in and around their homes.
- **How pesticides exert their harmful effects** — Pesticides commonly applied on golf courses, including chlorpyrifos and the weed killer 2,4-D, disrupt critical energy processes inside cells. These substances cross the protective blood-brain barrier, harming neuron health and function.³ As noted by the researchers:

"Pesticides such as paraquat and rotenone have been shown to induce Parkinson-like neurodegeneration in the substantia nigra, primarily through mechanisms involving oxidative stress, mitochondrial dysfunction, and dopaminergic neuron apoptosis."⁴

All Golf Courses Pose Risks, but Not All of Them Are Equal

In a related study published in Social Science Research Network (SSRN), researchers noted that pesticide risk on golf courses varies significantly based on where you live. This research specifically compared pesticide hazards across eight regions in the United States and Europe, investigating why some areas seem safer than others.⁵

By focusing on differences in regulation, budget, and climate, the analysis identified what determines the toxicity level of golf courses in each area. The difference here is that the population of this study wasn't individual people, but rather golf courses themselves.

- **Europe has lower golf course pesticide use** — Researchers looked at numerous courses from different countries, including the United States, Denmark, Norway, and other European nations. After calculating the pesticide risk using a special model, the study found massive discrepancies.

Courses in Florida had median pesticide risk scores topping out at 40,806. Meanwhile, courses in Denmark scored as low as 64, highlighting a shocking disparity based on the two continents.

- **Pesticide risks in American courses dwarfed those of their European counterparts** – As noted in the findings above, the median hazard-quotient score in Florida was hundreds of times greater than the score in Denmark.

Moreover, even comparing states within the U.S., northern golf courses (located in New York and Oregon) typically carried lower risks than southern states (located in Florida and Texas), again due to variations in pesticide regulation and choice of products rather than simply weather or budget considerations.

- **The main driver of the differences was the strictness of pesticide regulations** – Among U.S. courses, especially in Florida, maintenance staff tend to use pesticides far more due to relaxed or limited regulation. "Golf courses in Florida averaged over 60 fungicide area treatments on greens each year," the researchers said. This is in contrast to Denmark, which has stricter regulations agreed upon by various stakeholders:⁶

"In 2005, an agreement to phase out the use of pesticides on Danish golf courses was signed by the Danish Golf Union (DGU), the Danish Ministry of Environment (MoE), and the Municipalities Organization in Denmark ...

According to the MoE, pesticide risk on golf courses has been reduced 97% since the agreement was signed in 2005. Ninety-eight percent of golf courses are compliant in tracking their pesticide risk with values below the maximum allowable. To remain under this threshold, golf course superintendents must tolerate higher levels of disease, weeds, and insects."

- **Budget did have some impact, but it was less influential than regulations** – Courses with lower budgets in colder northern U.S. states sometimes had reduced risk scores, but these findings were minimal compared to those achieved by robust

regulatory measures. Essentially, even if a golf course spends less money on pesticides, if the chemicals allowed are particularly harmful or poorly regulated, the overall health risks for nearby residents remain high.

- **The type of pesticides matters more than the amount** — For instance, fungicides, which are chemicals used to prevent fungal growth on grass, turned out to be particularly problematic, with golf courses using more potent varieties drastically increasing their overall risk scores.

In regions where powerful fungicides are heavily regulated or outright banned, such as much of northern Europe, the courses showed far lower hazard scores. In short, it isn't necessarily about how frequently pesticides are applied, but rather what specific pesticides are used.

- **Pesticides stay in the environment for a long time** — The researchers discussed that the reason fungicides and certain herbicides (weed killers) are harmful is their ability to persist in the environment and interact with wildlife, groundwater, and ultimately humans. These chemicals stay active long after application, leaching into groundwater and becoming airborne, presenting continuous and chronic health risks to anyone exposed over time.
- **Stronger regulations will help curb pesticide overuse** — One key point raised by the researchers is that improving your local environment **requires stricter regulations**. European models show clearly how legislative action drastically reduces pesticide exposure.

If you live near a golf course and worry about chemical exposure, advocating for better local and national regulations could significantly decrease your personal health risks. Policy changes represent one of the most effective and immediate ways to improve community safety from harmful pesticides.

Overall, this research paints a clear picture that not all golf courses are equally dangerous. But still, if you live near one, your risk for Parkinson's is higher. Furthermore, understanding how local policies influence pesticide use gives you an insight into your

personal risk level. Knowledge of these specifics will empower you to advocate effectively for safer environments.

Practical Steps to Protect Yourself from Pesticide Exposure

If you live near a golf course and moving to a new home isn't feasible for your current situation, limiting your pesticide exposure is your top goal. As noted earlier, these chemicals harm your neurological health and increase your risk for Parkinson's. To protect yourself, here are my recommendations:

1. **Exercise regularly to sweat out chemicals** — Engaging in activities that make you sweat, such as [interval walking training](#) (IWT), cycling, or sauna sessions, is one of the most powerful tools for eliminating pesticides and heavy metals that have accumulated in your body.

Furthermore, there's plenty of evidence showing that regular exercise [boosts overall health](#), so there's no downside to sweating. Best of all, exercise is essentially free and available any time you want to do it.

2. **Filter your drinking water** — Because pesticides easily contaminate groundwater, [filtering your tap water](#) becomes crucial if you live near a golf course. There are many water filters available on the market, so choose one that fits your budget and needs. Just remember that the filters need to be able to have the capability to remove toxins such as pesticides, fluoride, and heavy metals.
3. **Support stricter local regulations** — Getting involved at the community level matters. Advocate for tougher pesticide policies with local legislators. Stricter rules on pesticide use, like those in Europe, translate into safer neighborhoods and less exposure for you and your family.
4. **Improve your indoor air quality** — Airborne pesticides can drift indoors, settling in your home. [Use air purifiers](#) equipped with high-efficiency particulate air (HEPA) filters, keep windows closed when pesticide spraying is scheduled, and frequently

clean surfaces. Cleaner indoor air reduces direct exposure, protecting your respiratory system and your brain health.

- 5. Choose organic food whenever possible** – Switching to organic fruits and vegetables greatly reduces your body's pesticide burden, helping you detoxify effectively. Nonorganic produce often contains residues from the same pesticides golf courses use, increasing your total chemical load.

To find the best organic food, it's important to carefully read and understand the labels printed on the food you're buying. For an in-depth explanation of this topic, read "[Organic Food Safety – Navigating Labels and Finding Local Sources](#)."

Find Organic, Chemical-Free Produce Here

If you live in a dense, urban location in the U.S. that doesn't have any local farmers markets, don't worry. There are plenty of ways to connect with reputable organic farmers who employ sustainable practices that deliver to your home. Below is a list of websites I recommend:

- [American Grassfed Association](#) – The goal of the American Grassfed Association (AGA) is to promote the grass fed industry through government relations, research, concept marketing, and public education.

Their website also allows you to search for AGA-approved producers certified according to strict standards that include being raised on a diet of 100% forage; raised on pasture and never confined to a feedlot; never treated with antibiotics or hormones; born and raised on American family farms.

- [EatWild.com](#) – EatWild.com provides lists of farmers known to produce raw dairy products as well as grass fed beef and other farm-fresh produce (although not all are certified organic). Here you will also find information about local farmers markets, as well as local stores and restaurants that sell grass fed products.

- [Weston A. Price Foundation](#) – The organization has local chapters in most states, and many of them are connected with buying clubs in which you can easily purchase organic foods, including grass fed, raw dairy products like milk and butter.
- [Grassfed Exchange](#) – The Grassfed Exchange has a listing of producers selling organic and grass fed meats across the U.S.
- [Local Harvest](#) – This website will help you find farmers markets, family farms and other sources of sustainably grown food in your area where you can buy produce, grass fed meats and many other goodies.
- [Farmers Markets](#) – A national listing of farmers markets.
- [Eat Well Guide: Wholesome Food from Healthy Animals](#) – The Eat Well Guide is a free online directory of sustainably raised meat, poultry, dairy and eggs from farms, stores, restaurants, inns, hotels, and online outlets in the U.S. and Canada.
- [Community Involved in Sustaining Agriculture \(CISA\)](#) – CISA is dedicated to sustaining agriculture and promoting the products of small farms.
- [The Cornucopia Institute](#) – This website maintains web-based tools rating all certified organic brands of eggs, dairy products and other commodities, based on their ethical sourcing and authentic farming practices separating CAFO (concentrated animal feeding operation) "organic" production from authentic organic practices.
- [RealMilk.com](#) – If you're still unsure of where to find raw milk, check out Raw-Milk-Facts.com and RealMilk.com. They can tell you what the status is for legality in your state, and provide a listing of raw dairy farms in your area. The Farm to Consumer Legal Defense Fund also provides a state-by-state review of raw milk laws.⁷ California residents can also find raw milk retailers using the store locator available at RAW FARM.⁸

Frequently Asked Questions (FAQs) About Pesticides in Golf Courses

Q: Why does living near a golf course increase my Parkinson's disease risk?

A: Living close to golf courses significantly raises your exposure to pesticides used to maintain grass, which drastically increases your Parkinson's risk if you live within a mile. These chemicals contaminate groundwater and drift into the air, directly affecting nearby homes and communities.

Q: How far away should I live from a golf course to reduce Parkinson's risk?

A: The closer you live, the higher your risk. Even at about 3 miles away, risk exists but starts dropping notably, around 13% for each additional mile further away from the course.

Q: Are golf courses in Europe safer than those in the United States?

A: Yes. European golf courses generally pose less pesticide risk because of stricter regulations. For example, median pesticide hazard scores in Denmark are hundreds of times lower than in states like Florida.

Q: Does filtering my drinking water help lower Parkinson's risk if I live near a golf course?

A: Yes. Filtering your drinking water effectively removes pesticide residues from local groundwater, significantly reducing your daily exposure and protecting your neurological health.

Q: What else can I do to lower my pesticide exposure risk from living near a golf course?

A: Besides filtering your water, regularly exercising to sweat out toxins, eating organic foods, improving indoor air quality, and advocating for stricter local pesticide regulations all significantly lower your risk.

Sources and References

- ¹ AANS, "Parkinson's Disease"
- ^{2, 4} JAMA Network Open, 2025;8;(5):e259198
- ³ Chemosphere. 2023 May:324:138251
- ^{5, 6} SSRN, "Analyzing Golf Course Pesticide Risk Across the US and Europe" November 2, 2022
- ⁷ The Farm-to-Consumer Legal Defense Fund, State by State Review of Raw Milk Laws
- ⁸ Raw Farm, "Find Raw Dairy Products Near You"