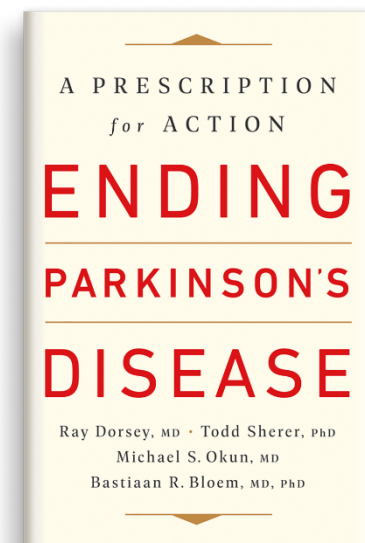
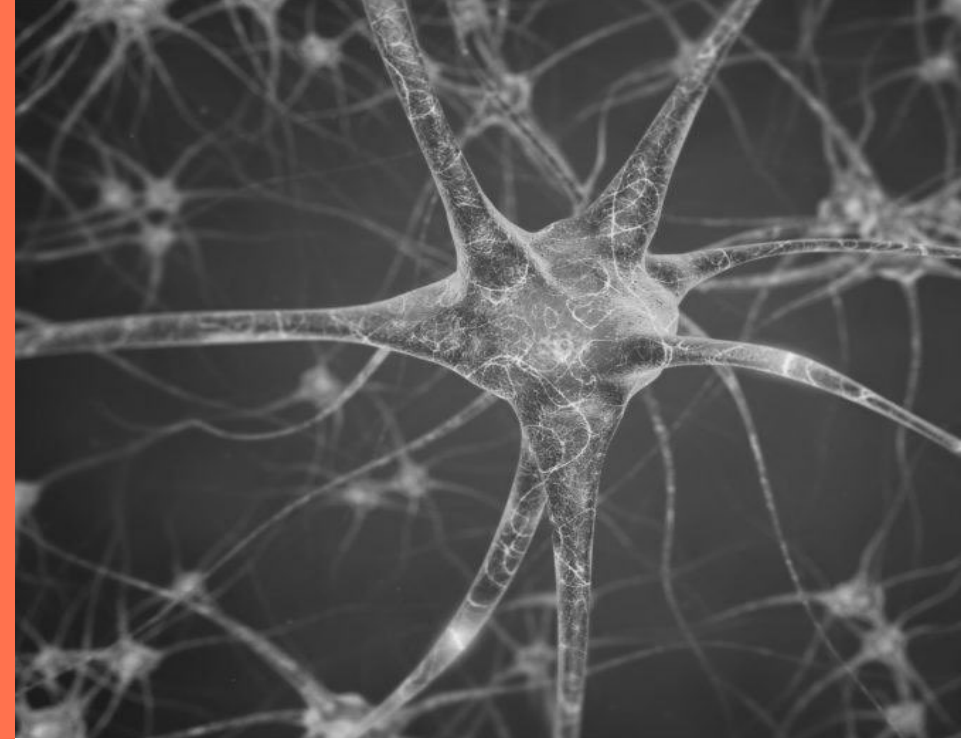

Environmental exposure and Parkinson's

Empowerment conference 12/21

Sherrie Gould MSN, NP-C

Scripps Clinic Movement Disorders Center



Join the journey to #EndingPD by signing the #ParkinsonPACT

We are asking everyone in the Parkinson Disease community to use our hashtags in your posts during the month of May to help spread the word.



bit.ly/signthePACT

#ParkinsonPACT

Ending Parkinson's Disease: Live



Treatment with
Michael Okun:
April 1, 2020



Care with
Bas Bloem:
April 8, 2020



Advocacy with
Todd Sherer:
April 15, 2020

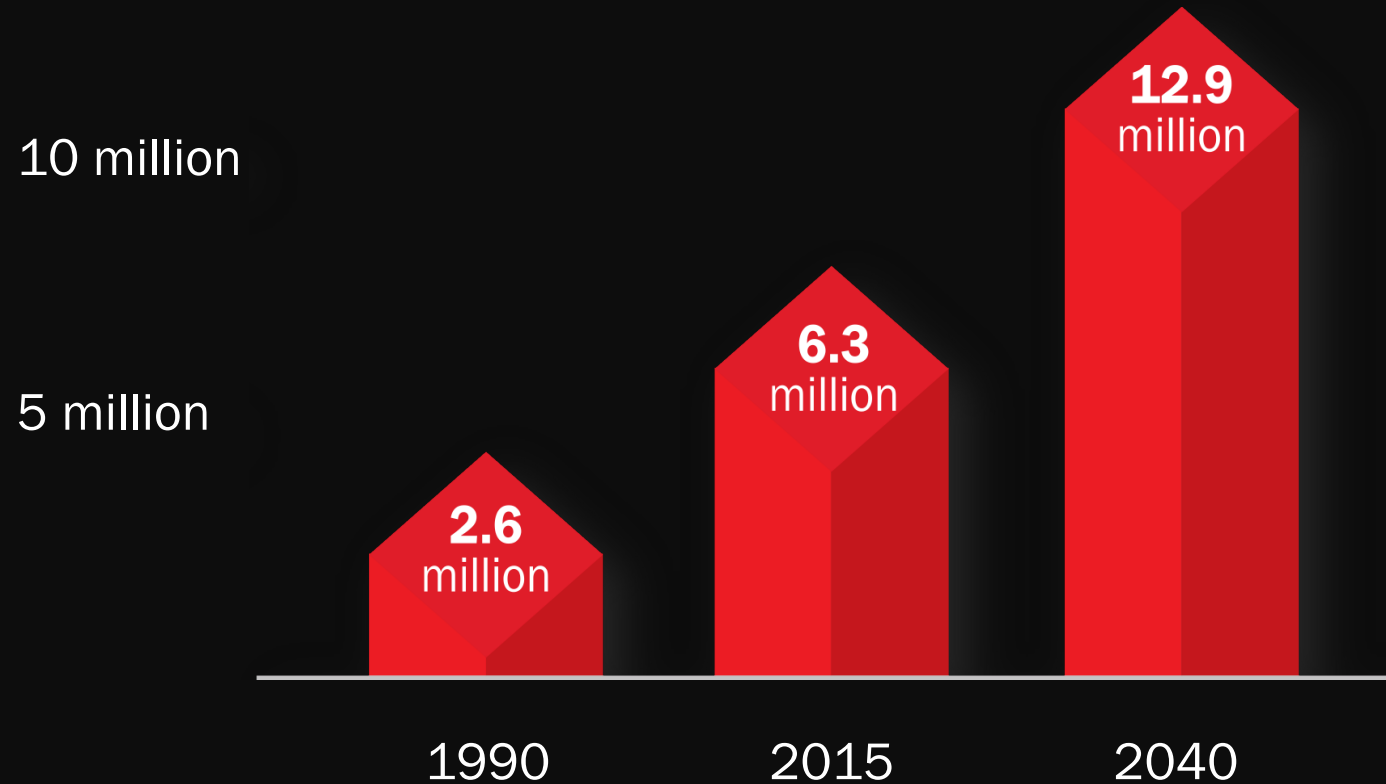


Prevention with
Ray Dorsey:
April 22, 2020



Parkinson's Disease

... is now the fastest growing brain disease in the world

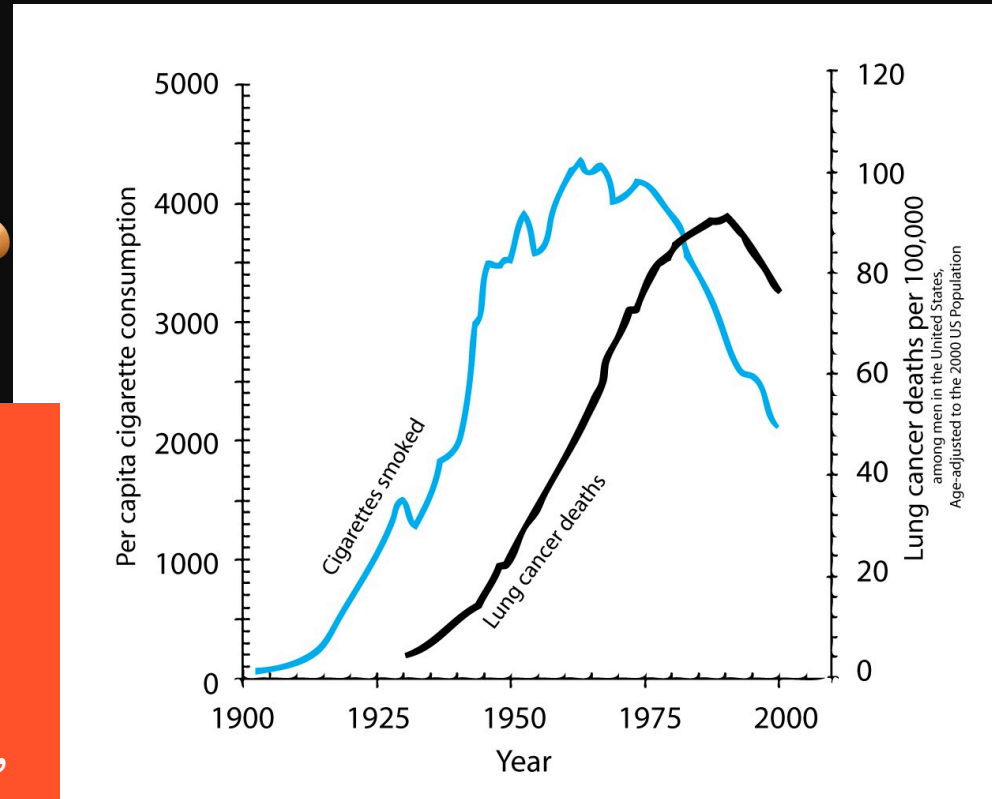


We are living in an age of degenerative and man-made disease

Most lung cancer is clearly man-made



Before the advent of cigarettes, “doctors took special notice when confronted with a case, thinking it a once-in-a-lifetime oddity”



PD has multiple causes

Environmental hazards:

- Air pollution
- Some industrial solvents
- Pesticides

Certain genetic mutations

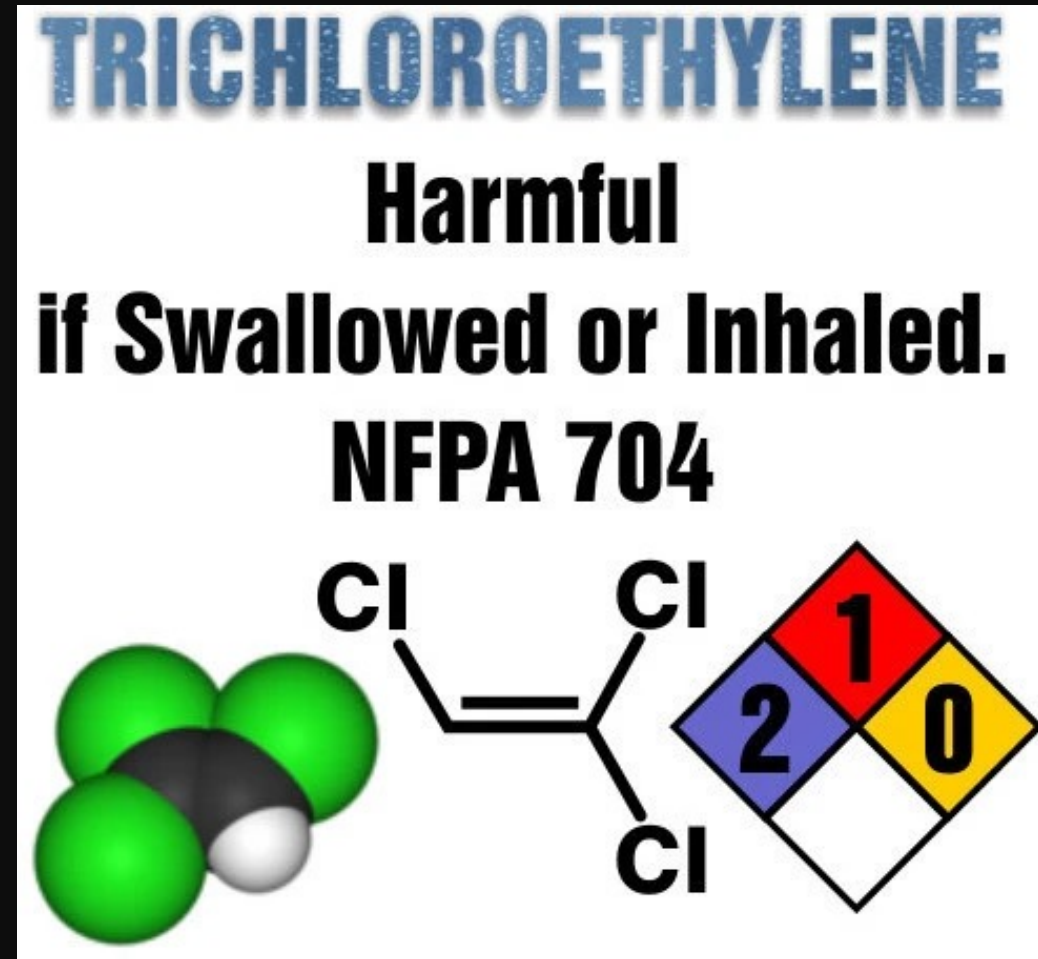
Head trauma

Lack of regular exercise (VA study)



Trichloroethylene

- Used as a solvent to remove grease from metal
- Absorbed through skin, inhaled or ingested
- 30% of US drinking water is contaminated
- EPA proposed banning but with heavy lobbying by chemical industry postponed the ban indefinitely



Trichloroethylene exposure is widespread

Occupational



Dry cleaners



Mechanics



Oil processors



Printers

Consumer Products



Adhesives/glue



Carpet cleaners



Paint removers



Stain removers



Metal degreaser



Decaffeinated coffee

Environmental

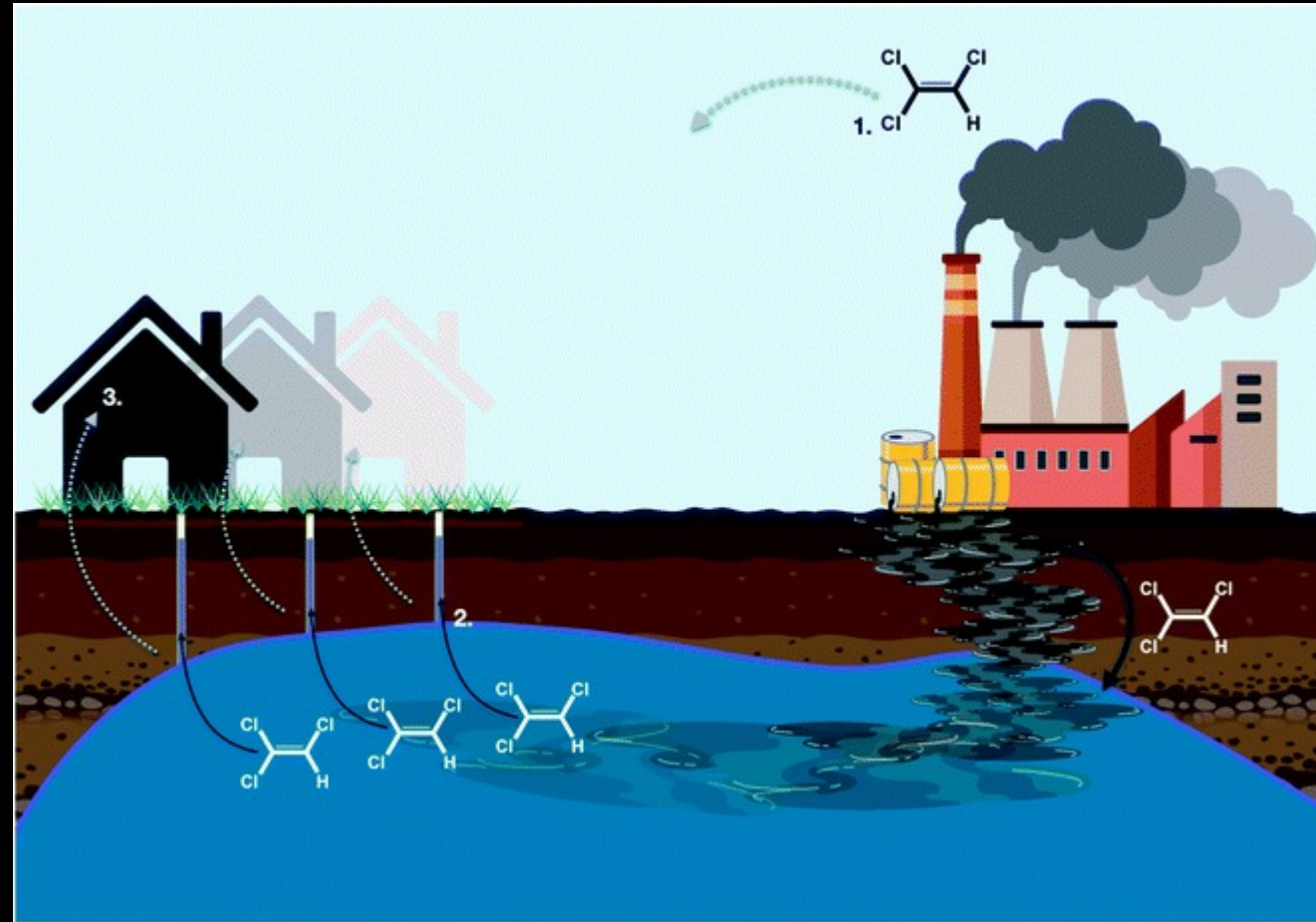


Ambient air



Drinking water

Chemicals can seep into buildings and homes, placing your health at risk



Source: De Miranda B, Greenamyre J. Trichloroethylene, a ubiquitous environmental contaminant in the risk for Parkinson's disease. 2020. *Environ. Sci.: Processes Impacts*. doi.org/10.1039/C9EM00578A

Trichlorethylene exposure is linked to PD

Those that exposed to TCE at work are six times more likely to develop PD than those that are not exposed. (2)

Readily evaporates and can be inhaled

Readily absorbed through the skin

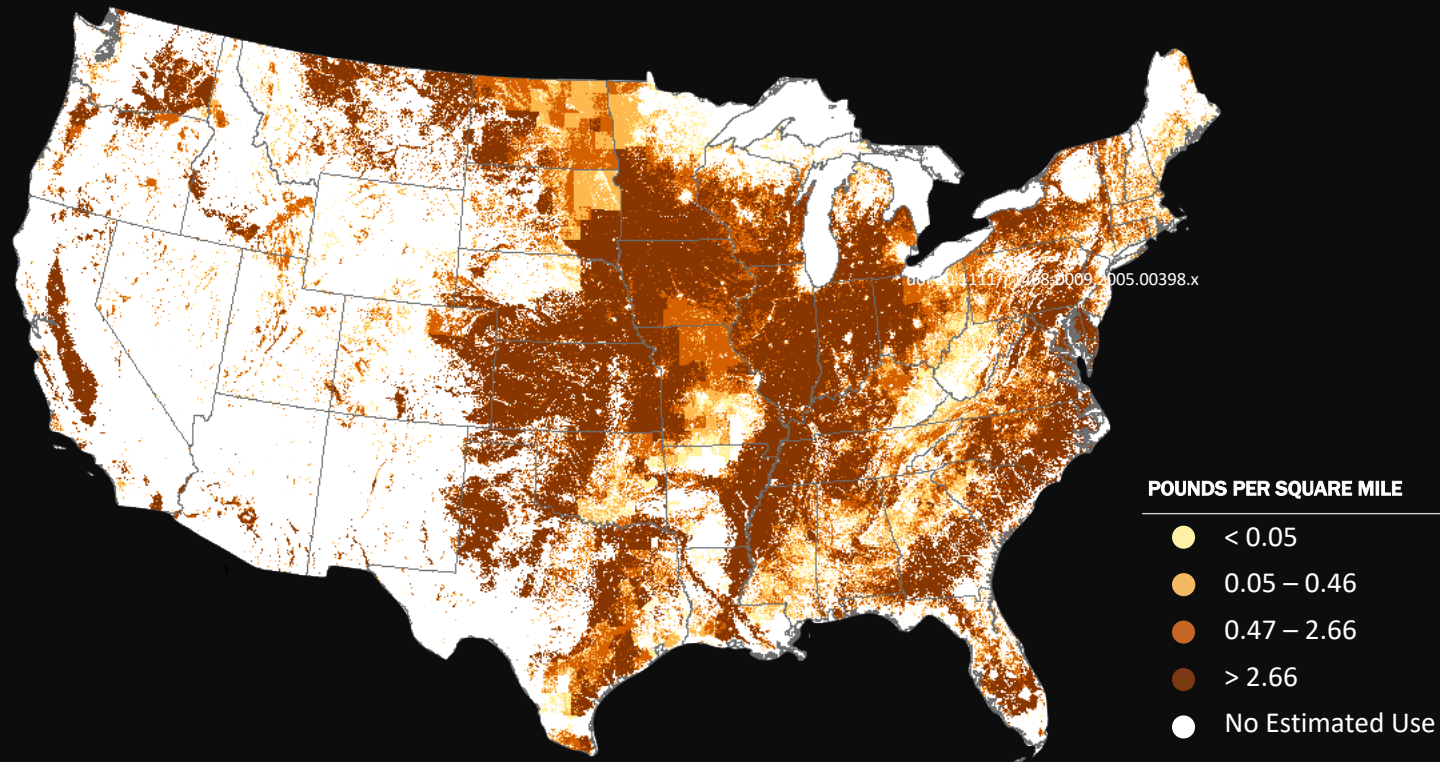
In laboratory animals fed TCE for 6 weeks lost 50% of their dopamine neurons(16)

Yet from 1981 to 1991 the production of TCE INCREASED 1000 fold. (17)



Over 20 studies have linked pesticides to Parkinson's; paraquat doubles the risk of Parkinson's disease

Estimated use of paraquat on U.S. Agricultural land, 2016



Paraquat is a pesticide

- So toxic it has been banned by 32 countries, including China
- Exposure to paraquat increases risk of PD by 150%
- Use of Paraquat on US farms has doubled in the last decade



Chlorpyrifos

*Toxicological Properties, Uses
and Effects on Human Health
and the Environment*



Caitlin Mayes
Editor

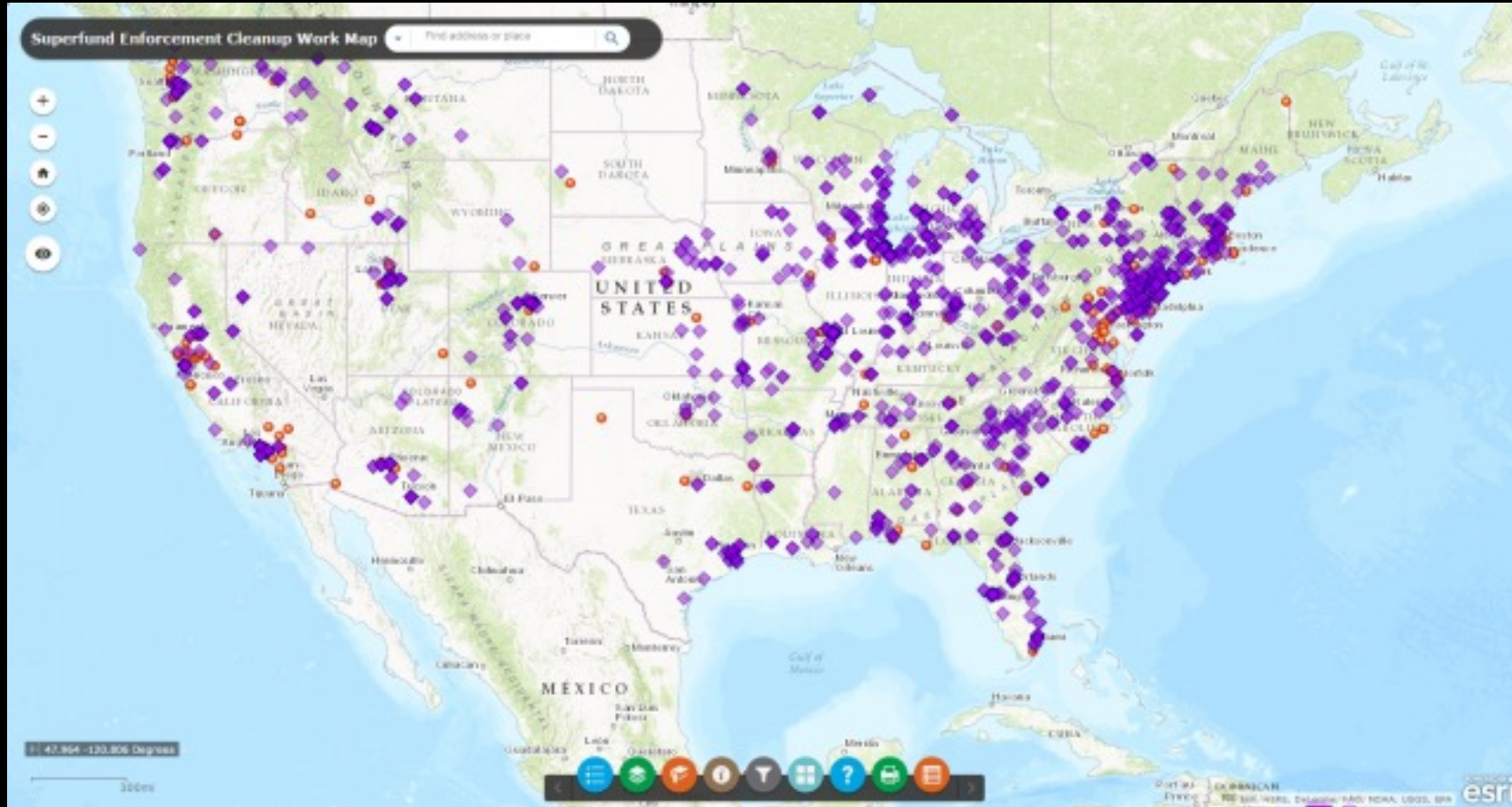
NOVA

BIOCHEMISTRY
RESEARCH TRENDS

- SUCCESS! EPA banned Chlorpyrifos on August 21, 2021!
- Was the most widely used insecticide in the country, including golf courses, in gardens and homes
- Was used in 60 different crops
- Exposure to 2.5 million children had led to a loss of 16.9 million IQ points

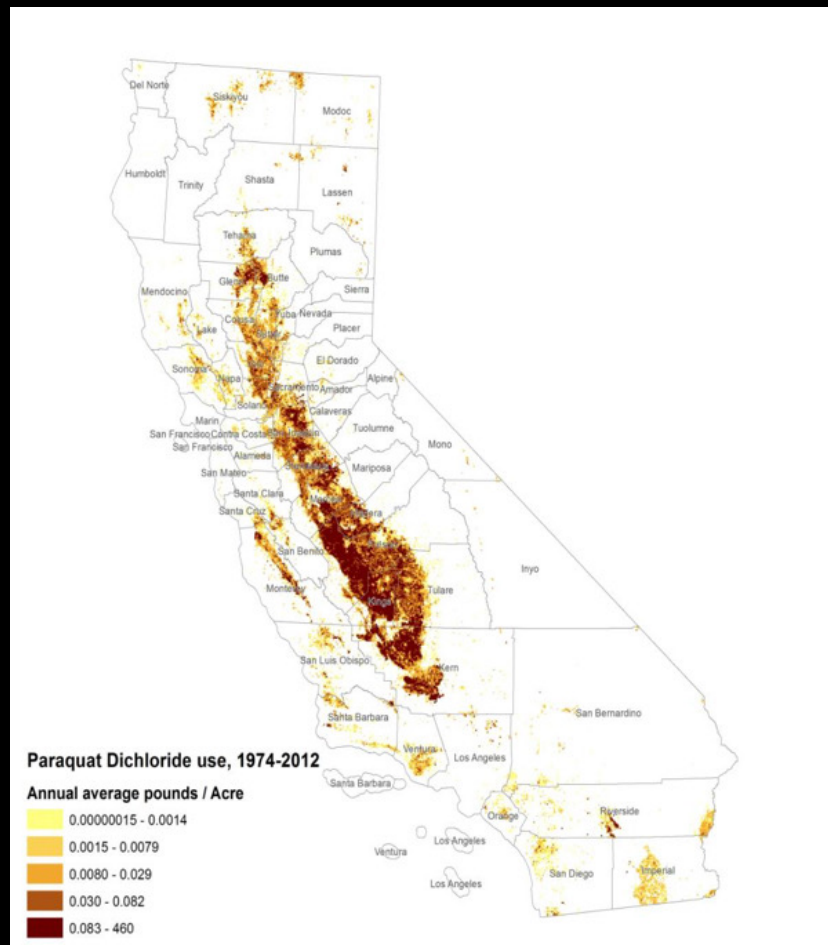
Superfund sites

40,000 sites in the US, 1600 on National Priority List
94 sites in California



The Story of “Parkinson’s Alley”

300-mile-long string of Central Valley farm towns
between Bakersfield and Sacramento



Central Valley residents under age 60 who lived near fields where the pesticides paraquat and maneb had been used between 1974 and 1999 had a Parkinson's rate nearly five times higher than other residents in the region.



“Within Our Reach” How We can End Parkinson’s



1. Ban Paraquat: Contact **Michael Regan (administrator of the EPA)** at Regan.Michael@epa.gov

Contact the US House Committee on Energy and Commerce (202-225-2927)

Advocate.michaeljfox

2. Ban Chlorpyrifos : August 21, 2021 this nerve toxin was banned from all food (success!)

3. Ban Trichloroethylene: direct link to email US senators

<https://membership.onlineaction.org/site/Advocacy?cmd+display&page+UserAction&id=3254>

“Within Our Reach”

How We can End Parkinson’s

- Accelerate the cleanup of contaminated sites (we need polluting parties to pay!)
 - If you live near a contaminated site have your indoor air tested, well water tested
- Use a water filter
- Protect workers (farmers factory workers need protective gear)
- Eat like the Greeks: fruits and veggies, beans and nuts, whole grains, fish, olive oil, coffee
- Wash fruits and veggies, buy organic if possible.
- SWEAT! Helps alleviate sx's in PWP's, 20% reduction of getting PD



To the extent Parkinson's is man-made, it can be human-ended

Air Pollution

Nationwide emissions of common air pollutants decreased by >50% between 1990 and 2012

Pesticides

Between 1968 and 1986, when tested in patient adipose tissue, levels of Dieldrin, DDT, and their metabolites dropped between 75 and 90%

Trichloroethylene

In 1981, levels of airborne TCE levels were among the lowest in Europe



Substantial decrease in incidence of Parkinson's disease in the Netherlands, 1990-2000





DEAR MR. PRESIDENT,
 IN 1938, FDR AND MILLIONS OF
 AMERICANS LED A MARCH OF DIMES TO
 END POLIO.

TODAY, PARKINSON'S IS THE WORLD'S
 FASTEST GROWING BRAIN DISEASE,
 AFFECTING 1.2 MILLION AMERICANS.

WE GIVE A DIME ABOUT
 PARKINSON'S, AND TOGETHER
 WE CAN END IT.

HOW?

1. BAN PARAQUAT, CHLORPYRIFOS AND TRICHLOROETHYLENE

These chemicals all increase the risk of Parkinson's.
 Like other countries, the U.S. should ban these substances.

2. MAKE MEDICARE'S COVERAGE OF TELEMEDICINE PERMANENT

COVID-19 has shown us that telemedicine is feasible, effective
 and convenient. Let's keep it accessible.

3. INCREASE PARKINSON'S RESEARCH FUNDING TEN-FOLD

Over the past decade, inflation-adjusted NIH funding for
 Parkinson's has decreased, while the number of Americans with the
 disease has increased 35%.

WHY I GIVE A ABOUT PARKINSON'S



THE WHITE HOUSE
 1600 PENNSYLVANIA AVE NW
 WASHINGTON, DC 20500

#giveadime
 endingpd.org



[Join PD Avengers](#)

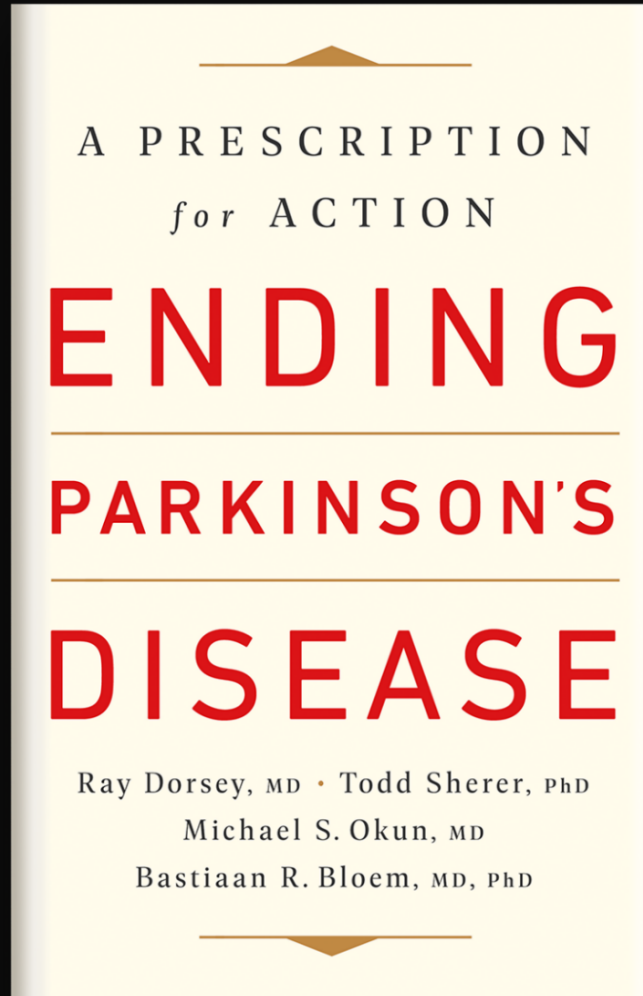
PDavengers.com

Parkinson's Matters Now

Join our global alliance to end Parkinson's.



Let's make our voices heard



endingPD.org

available at 

BARNES & NOBLE

discounted
bulk orders at



All the authors' proceeds will support efforts to stop Parkinson's

Questions? Comments? info@endingpd.org