

Testimony In Support of HB 5330

An Act Concerning the Application of Pesticides at Parks, Playgrounds, Athletic Fields, and Municipal Greens.

Good morning, my name is Terri Eickel and I want to thank you for the opportunity to submit testimony in support of HB 5330, An Act Concerning the Application of Pesticides at Parks, Playground, Athletic Fields, and Municipal Greens. I am the Executive Director of the Interreligious Eco-Justice Network – we are a faith-based environmental organization and on behalf of the hundreds of congregations and thousands of people of faith that I represent, I want to urge you to support this bill. Pesticides are some of the most toxic chemicals known to man and have been linked to cancer, birth defects, and developmental delays.

- A recent study published in the journal Neurology found that low-level pesticide exposure increased the risk of Parkinson's disease. <http://www.medicalnewstoday.com/articles/272097.php>
- Another study, released in the spring of 2013 by the National Institute of Health found excess cancer risk among those applying pesticides and those who were bystanders to the procedure. <http://www.ncbi.nlm.nih.gov/pubmed/23322675>
- A study by the Fred Hutchinson Cancer Research Center that was published in Nov 2013 found that women exposed to two pesticides classified as organochlorine pesticides had an increased risk of endometriosis of 50% - 70%. <http://www.medicalnewstoday.com/articles/268399.php> Both of these pesticides have estrogenic properties, which is why they are able to promote hormone-based disease. Even though these two pesticides are now banned, researchers felt that these pesticides persist in the environment so strongly that women are still at risk. I can say with certainty that these are not the only two estrogenic pesticides that are still in use. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241915/>
- According to a study by the National Toxicology Program, we are exposed to between 3,570 – 7,500 chemicals daily – and potentially all of them are within the “safe” levels as prescribed by the industry, but taken together, we are exposed to 35 times to 75 times the dose considered toxic to animals. Another study by Richard Relyea of Pittsburgh University found that pesticides and other toxic chemicals were much more damaging and carcinogenic when combined.

Pesticides are clearly unsafe for humans. It takes only 26 seconds for chemicals to enter your bloodstream. Picture this – it's the Fourth of July. You bring your baby (or your grandbaby) to the municipal green to watch the fireworks. It's hot and it's the Fourth of July, so your baby has some sort of ridiculously adorable jumper involving stars and maybe a few stripes. Your baby crawls off the blanket and on to the grass, getting their feet, legs, arms, and hands in contact with the grass. 26 seconds is all it takes for the pesticides that have been sprayed onto the grass to enter your baby's bloodstream.

We have a moral, ethical, and spiritual responsibility to take care of the planet and to take care of its inhabitants. Toxic pesticides are not in keeping with this ethic and we must phase them out now – the risk to public health is too great if we wait.

On a personal note, I am also a cancer survivor and I can tell you that avoiding toxins is a huge part of my survivorship plan. I was diagnosed three and a half years ago with advanced breast cancer. I didn't have a family history and I was a total health nut – all of my doctors were completely confused – how did someone like me end up so very, very sick? I believe that environmental toxins played a significant role.

I did every treatment under the sun – chemo, surgery, radiation – I was in active treatment for a year and a half. I also investigated alternative and integrative approaches and have read countless studies on lifestyle, diet, and toxins as they relate to cancer. All of my oncologists will tell say that toxic chemicals not only contribute to the development of cancer, but also to its growth. This process, called carcinogenesis, doesn't just trigger the disease – it continues after the disease has started. Thus, it is imperative for someone like me to avoid toxins as much as possible. And I do avoid them, but choosing what I eat and drink and clean with – very carefully. But I can't choose what toxic pesticides someone else is going to use on a park and that elevated risk seems unfair. I'm doing my best to beat this disease and it isn't fair that I should have to be exposed to the very substances that contribute to its growth.

Finally, pesticides don't contribute to healthy lawns or healthy turf. Like a candy bar that gives you a sugar rush, but ultimately leaves you depleted, pesticides provide artificial nutrients that result in shorter root systems. These short root systems make the turf less stable and the grass less able to draw nutrients and water from deep in the soil. The land becomes addicted to these toxic chemicals just to survive, which means we need to continue applying them.

We can do better. We must do better. We have to do more to protect public health and the environment from these dangerous toxic pesticides.

Terri Eickel, Executive Director
Interreligious Eco-Justice Network
Hartford, CT

Low-level pesticide exposure linked to Parkinson's disease

Tuesday 4 February 2014 - 12am PST

Parkinson's Disease

Featured Article

Water - Air Quality / Agriculture

Academic Journal

Public Health

Primary Care / General Practice

According to the Parkinson's disease foundation, more than 1 million Americans have the disease. Now, new research suggests that exposure to pesticides may increase the risk of the disease and that individuals with specific gene variants may be more susceptible. This is according to a study recently published in the journal *Neurology*.

In a previous study published in *PNAS* last year, the research team, including Dr. Jeff M. Bronstein of the David Geffen School of Medicine at the University of California, Los Angeles (UCLA), first uncovered a link between Parkinson's disease and a pesticide called benomyl.

Benomyl is a fungicide. Its use was banned by the US Environmental Protection Agency in 2001 after being deemed a possible carcinogen.

The investigators discovered that benomyl blocks an enzyme called aldehyde dehydrogenase (ALDH). This enzyme changes aldehydes that are toxic to dopamine cells into those that are less toxic. If ALDH is blocked, this can play a part in the development of Parkinson's disease.

For this most recent study, the researchers set out to determine whether other pesticides may have a similar effect.

They analyzed 360 individuals with Parkinson's disease from three Californian counties and compared these with 819 people in the same areas who were free of the disease.

The investigators monitored the participants' exposure to pesticides both at work and home. This was done using a geographic computer model based on data from the California Department of Pesticide Regulation.

The researchers also created a laboratory test to determine what pesticides block ALDH in participants.

Pesticides 'increase Parkinson's risk at low concentrations'

The investigators discovered a further 11 pesticides that block ALDH and increase the risk of Parkinson's disease.

They also found that these pesticides increased Parkinson's risk at significantly lower levels than what were being used.

Commenting on the findings, Dr. Bronstein says:

"We were very surprised that so many pesticides inhibited ALDH and at quite low concentrations, concentrations that were way below what was needed for the pesticides to do their job.

These pesticides are pretty ubiquitous, and can be found on our food supply and are used in parks and golf courses and in pest control inside buildings and homes. So this significantly broadens the number of people at risk."

Individuals with genetic variant 'at greater risk'

Furthermore, the researchers discovered that participants who possessed a common genetic variant of the ALDH2 gene were more susceptible to the ALDH-blocking effects of the pesticides, and were two to six times more likely to develop Parkinson's, compared with pesticide-exposed individuals who did not have the genetic variant.

However, the investigators note that individuals who had the genetic variant who were not exposed to pesticides did not demonstrate increased risk of Parkinson's disease.

"ALDH inhibition appears to be an important mechanism by which these environmental toxins contribute to Parkinson's pathogenesis, especially in genetically vulnerable individuals," says Prof. Beate Ritz of the Fielding School of Public Health at UCLA and co-author of the study.

"This suggests several potential interventions to reduce Parkinson's occurrence or to slow its progression," she adds.

The investigators conclude that therapies involving modulating ALDH enzyme activity or eliminating toxic aldehydes should be created. They say these interventions could potentially reduce the occurrence of Parkinson's disease or slow its progression for individuals exposed to pesticides.

Medical News Today recently reported on a study suggesting that exposure to a byproduct of the pesticide DDT may increase the risk of Alzheimer's disease.

Written by Honor Whiteman



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CA Cancer J Clin. 2013 Mar-Apr;63(2):120-42. doi: 10.3322/caac.21170. Epub 2013 Jan 15.

Increased cancer burden among pesticide applicators and others due to pesticide exposure.

Alavanja MC¹, Ross MK, Bonner MR.

Author information

Abstract

A growing number of well-designed epidemiological and molecular studies provide substantial evidence that the pesticides used in agricultural, commercial, and home and garden applications are associated with excess cancer risk. This risk is associated both with those applying the pesticide and, under some conditions, those who are simply bystanders to the application. In this article, the epidemiological, molecular biology, and toxicological evidence emerging from recent literature assessing the link between specific pesticides and several cancers including prostate cancer, non-Hodgkin lymphoma, leukemia, multiple myeloma, and breast cancer are integrated. Although the review is not exhaustive in its scope or depth, the literature does strongly suggest that the public health problem is real. If we are to avoid the introduction of harmful chemicals into the environment in the future, the integrated efforts of molecular biology, pesticide toxicology, and epidemiology are needed to help identify the human carcinogens and thereby improve our understanding of human carcinogenicity and reduce cancer risk.

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Comment in

Increased cancer burden among pesticide applicators and others due to pesticide exposure. [CA Cancer J Clin. 2013]

Reply to Increased cancer burden among pesticide applicators and others due to pesticide exposure. [CA Cancer J Clin. 2013]

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Pesticide exposure linked to increased endometriosis risk

Tuesday 5 November 2013 - 8am PST

Women's Health / Gynecology

Featured Article

Fertility

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Endometriosis is a common condition that affects around 10% of women in their reproductive years. New research has found that two organochlorine pesticides - once widely used in the US for pest control and agriculture but now banned - are linked to an increased risk of the chronic condition.

Researchers from Fred Hutchinson Cancer Research Center in Seattle, WA, published the results of their study in *Environmental Health Perspectives*, a journal of the National Institute of Environmental Health Sciences (NIEHS).

They note that though endometriosis is noncancerous, it is characterized by tissue - which normally lines the inside of the uterus or womb - growing outside and attaching to other areas or organs, affecting the ovaries, fallopian tubes and lining of the pelvic cavity.

Common symptoms typically include painful menstrual periods, pelvic pain and infertility.

Kristen Upson, PhD, a study author who is now a postdoctoral fellow at the Epidemiology Branch of the NIEHS, says:

"For many women, the symptoms of endometriosis can be chronic and debilitating, negatively affecting health-related quality of life, personal relationships and work productivity."

Because endometriosis is a condition led by estrogen, Upson notes that they "were interested in investigating the role of environmental chemicals that have estrogenic properties, such as organochlorine pesticides, on the risk of the disease."

Pesticides raise endometriosis risk to 30-70%

According to the US Geological Survey (USGS), organochlorine pesticides are man-made chemicals that were used in the recent past for agricultural and household pest problems.

Dichlorodiphenyltrichloroethane (DDT) is one of the most well-known organochlorines, and it

was "heavily applied in agricultural regions," says the USGS. Although these types of pesticides are no longer used in the US, the organization notes that they are still present in the environment.

To conduct their study, the researchers used data from the Women's Risk of Endometriosis study, which is a population-based case-control study of endometriosis in women aged 18- to 49-years-old.

There were 248 women who had recently been diagnosed with endometriosis and 538 women without the condition who served as controls.



In the US, certain pesticides that are no longer in use are still in blood samples of women today, and this recent study links the chemicals to an increased risk of endometriosis.

Results of the research showed that women who had higher exposures to two organochlorine pesticides - beta-hexachlorocyclohexane and mirex - had a 30-70% increased risk of endometriosis.

The study authors say they found it interesting that these types of chemicals were found in the blood samples of women from the study, despite the fact that organochlorine pesticides have been banned in the US for several decades.

"The take-home message from our study," says Upson, "is that the persistent environmental chemicals, even those used in the past, may affect the health of the current generation of reproductive-age women with regard to a hormonally driven disease."

'Another piece of the puzzle'

This research is important, say the authors, because the medical community still does not entirely understand why some women develop endometriosis while others do not.

Study co-author Prof. Victoria Holt adds that their study "provides another piece of the puzzle."

They point to other lab studies of human tissue that have shown organochlorine pesticides display "estrogenic properties" and "adverse reproductive effects," which can alter the uterus, ovaries and hormone production.

"Given these actions," says Upson, "it's plausible that organochlorine pesticides could increase the risk of an estrogen-driven disease such as endometriosis."

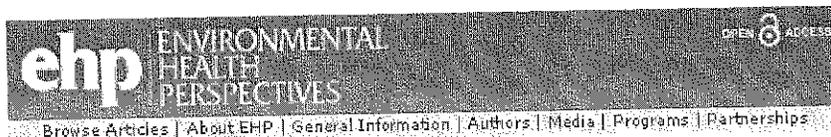
Medical News Today recently reported that pesticides have been linked to type 2 diabetes.

Written by Marie Ellis



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Environ Health Perspect. Apr 2004; 112(5): 524-531.

PMCID: PMC1241915

Research Article

Screening for estrogen and androgen receptor activities in 200 pesticides by in vitro reporter gene assays using Chinese hamster ovary cells.

Hiroyuki Kojima, Eiji Katsura, Shinji Takeuchi, Kazuhito Niiyama, and Kunihiko Kobayashi

Hokkaido Institute of Public Health, Kita-19, Nishi 12, Kita-ku, Sapporo 060-0819, Japan. kojima@iph.pref.hokkaido.jp

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Abstract

We tested 200 pesticides, including some of their isomers and metabolites, for agonism and antagonism to two human estrogen receptor (hER) subtypes, hERalpha and hERbeta, and a human androgen receptor (hAR) by highly sensitive transactivation assays using Chinese hamster ovary cells. The test compounds were classified into nine groups: organochlorines, diphenyl ethers, organophosphorus pesticides, pyrethroids, carbamates, acid amides, triazines, ureas, and others. These pesticides were tested at concentrations < 10⁻⁵ M. Of the 200 pesticides tested, 47 and 33 showed hER- and hERbeta-mediated estrogenic activities, respectively. Among them, 29 pesticides had both hERalpha and hERbeta agonistic activities, and the effects of the organochlorine insecticides beta-benzene hexachloride (BHC) and delta-BHC and the carbamate insecticide methiocarb were predominantly hERbeta rather than hERalpha agonistic. Weak antagonistic effects toward hERalpha and hERbeta were shown in five and two pesticides, respectively. On the other hand, none of tested pesticides showed hAR-mediated androgenic activity, but 66 of 200 pesticides exhibited inhibitory activity against the transcriptional activity induced by 5alpha-dihydrotestosterone. In particular, the antiandrogenic activities of two diphenyl ether herbicides, chlornitrofen and chlomethoxyfen, were higher than those of vinclozolin and p,p-dichlorodiphenyl dichloroethylene, known AR antagonists. The results of our ER and AR assays show that 34 pesticides possessed both estrogenic and antiandrogenic activities, indicating pleiotropic effects on hER and hAR. We also discussed chemical structures related to these activities. Taken together, our findings suggest that a variety of pesticides have estrogenic and/or antiandrogenic potential via ER and/or AR, and that numerous other manmade chemicals may also possess such estrogenic and antiandrogenic activities.

Full Text

The Full Text of this article is available as a [PDF](#) (180K).

Selected References

These references are in PubMed. This may not be the complete list of references from this article.

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