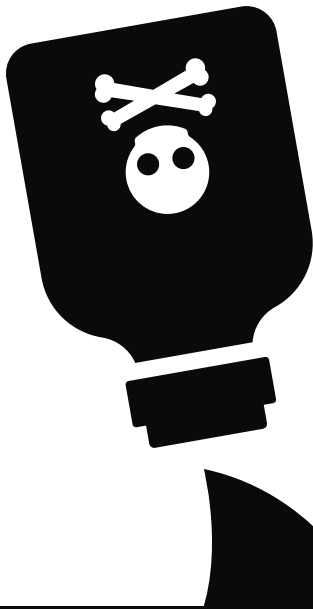


ISABEL MONTCLAIRE  
with Steven Rotter, MD

# SUPERCID



# ME

How pesticides are making us sick  
and what we can do about it

# Supercide Me



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*We write from the perspective of a concerned citizen and a medical professional who care about the health impacts of pesticides on people, pollinators and our planet. So that we may speak with truth and confidence, we have dug deep to locate credible source documents for the facts cited here. However, we do not profess to be investigative journalists or professional researchers.*

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# Supercide Me

## A Glyphosate (Roundup) Primer

*Little by little does the trick.*

AESOP

My name is Isabel Montclair. Dr. Rotter and I envision radiant health for people, pollinators, and our planet through affordable organic food. We invite you to join us and others across the globe to transform our broken agricultural system into one that promotes health for all. By the time you have finished reading this short book, you will:

- understand the severity of the contamination and adulteration in our food chain, and how this affects you
- see that unless a major shift occurs, this problem will worsen over time
- “get” why many people remain unaware of the depth and breadth of this contamination
- learn what you can do to protect yourself
- Find out how you can help raise public awareness about this situation to make a difference in our planet’s health

Much of our food is making us sick, yet few people associate their symptoms with the hidden pesticide residues they consume. That’s because the powerful multinational agribusiness corporations suppress information that sub-lethal, low dose, long-term exposure to pesticides creates ill health. The efforts of agribusiness corporations to sustain profits by keeping us in the dark about

the health impacts of pesticide residues have been remarkably effective. Worldwide, diabetes alone is an \$825 billion a year industry, making the big pharmaceutical corporations the secondary beneficiaries of this chemically induced sickness.

Many factors contribute to people developing diabetes or prediabetes. For instance, eating too many processed foods and too much sugar as well as diabetes in the family's medical history are risk factors for this disease. However, in findings presented at the 2015 meeting of the European Association for the Study of Diabetes, exposure to “any type of pesticide” was associated with a 61 percent increased risk for diabetes.<sup>1</sup> These recent findings raise important questions regarding our regulators’ ability to objectively determine the safety of pesticides. We can’t help but ask, “Can our regulatory agencies and our political leaders protect our health?”

Current industrialized farming methods that depend on heavy use of synthetic chemicals are similar to a narcotic addiction (more about this in the following pages). Just as the addict needs ever-larger doses to get the same high, more powerful pesticides in greater quantities are required to get the same yields as they lose their effectiveness over time. Then more and more pesticides end up in our food and our bodies. Returning to organic farming practices will create a more sustainable agricultural system that creates health for people, pollinators and our planet.

## A NEW WORD TO DISCUSS AN OLD PROBLEM

In order to experience radiant health, it will help to learn about the growing problem of pesticide residues in our food supply. We coined the term “supercide” to define the low dose, long-term pesticide exposure that makes

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<sup>1</sup> Maria Chondrogiorgi, Evangelos Evangelou, Evangelia Ntzani, Ionna Tzoulaki, and Foteini Kavvoura, (2015), "Association between diabetes and exposure to pesticides: a systematic review and meta-analysis". (presentation, The European Association for the Study of Diabetes, Stockholm, Sweden, 2015) accessed at [www.ncbi.nlm.nih.gov/pubmed/26909814](http://www.ncbi.nlm.nih.gov/pubmed/26909814)

us sick. This word will help us talk about this chronic poisoning so we can spread the word about it. Knowledge is power. Awareness is too.

**Supercide** (*verb*) [From the root word “cide” meaning “to kill” as in *pesticide, fungicide, insecticide, herbicide, ecocide, and biocide.*] **1.** To deliver a small and steady dose of toxic chemicals via food, air, or water. **2.** Excessive use of toxic agricultural chemicals. (*noun*) **1.** A process that accelerates the deterioration of ecological systems. **2.** The sum total of pesticide residues that lurk invisibly in food. **3.** Sub-lethal doses of pesticide residues that accumulate in the body and create ill health.

## SHINE A LIGHT ON THE OPERATIVE

Along the way, we discovered the silent workings of “*The Superciding Operative*”, a group of players who function like an organism with many tentacles that dig deep into every facet of society. The operative is funded by billions from the agribusiness war chest and uses multiple tactics, unfortunately all legal, to gain power. It fools, suppresses, influences, manipulates, discredits, distracts and spins doubt and confusion. Most importantly, it gains power by operating undetected. So, let’s shine a light on the main strategies it uses to eclipse our health. Exposing how the operative works will diminish its power.

One of the tactics agribusiness uses is to infiltrate regulatory agencies around the world with their own executives. These executives then become high-level officials in the very regulatory agencies that oversee agribusiness industries. This puts them in the position to manipulate the scientific research or skew the findings so that the results favor industry profits over the public’s health. Then when agribusiness companies answer questions about pesticide safety, they can claim that decades of scientific studies have shown the chemicals to be safe for human use and that no credible scientific evidence demonstrates otherwise. Or stated another way, the corporations own the regulators.

Another tactic, once they've captured the regulatory agencies, is to gradually raise the allowable amounts of pesticide residues in food. Then, when the agencies test products for pesticide residues, they can honestly say the samples were found to have no pesticide residue violations – even though the actual amounts may have increased ten-fold over what was allowed just a few years ago.

Here are some more of the operative's tactics:

1. Manipulates the public with propaganda and disinformation campaigns, including paid ads disguised as news and meant to create doubt
2. Funnel billions into industry-funded trade organizations that support bipartisan lobbying efforts at the state and federal level
3. Acquires their competition to create unopposed monopolies and oligopolies
4. Funds non-profits, societies, institutes, and citizens groups that act as front organizations
5. Influences academic institutions and research scientists by funding facilities and granting perks
6. Hires public relations firms to suppress information and discredit opponents
7. Funds “think tanks” to disseminate misinformation under the guise of “official opinions”
8. Manipulates media to silence whistleblowers and suppress the truth about the side effects of pesticide residues in our food
9. Funds campaigns of candidates who will promote pro-industry legislation
10. Authors “scientific ghost studies” affirming the safety of their product, then pays scientists to publish them.

## HOW CAN WE TRANSFORM OUR BROKEN AG SYSTEM?

What's a person to do? A first step is to understand how this entity operates, then say a loud and resounding NO to its tactics by buying food grown without toxic pesticides. The government dismantles terrorist organizations by identifying their funding sources and cutting them off. We can do the same by unplugging the operative's funding, one buying decision at a time. We can refuse to buy food grown with toxic pesticides and choose to buy organic food instead. These corporations will then either have to transform to meet our demands or disappear. Voting with our dollars is a dynamic action we can take to redirect their efforts. This will help them transition to developing and manufacturing products that support organic farming methods.

Many people lack the funds to level up their diets to organic food, so we've created a way for people to affordably access the organic foods market. It's called The Plenty Method. We envision an open network enterprise called The Hive Food Network that will support all who participate. Find out more about both of these by reading "*The Joy of Plenty: How to multiply your food dollars and eat like a king or a queen*" available digitally at <https://thejoyofplenty.org/>

This movement toward organic foods is gaining momentum. We named this group of people who are working together (whether they realize it or not) The "SWARM", The Supporters of Worldwide Agricultural Reform Movement. Anyone who says **NO** to toxic pesticides in our food supply and increases their purchases of organic food is a member of this movement.

## PESTICIDES AND THE DIABETES EPIDEMIC

*Pesticide*, a broad category for herbicides, insecticides, fungicides, and miticides, comes from the Latin word *caedere*, meaning "to kill" or "killer." Or stated another way, "cides" are substances that are toxic by design.

In 2015, *The Journal of the American Medical Association (JAMA)* published a study on the rise of prediabetes and diabetes in the United States. Since 1988 the frequency of both has increased to include *just over half* of the American population.<sup>2</sup> In about the same period of time, the use of glyphosate—the most widely used herbicide in the world—increased nearly thirtyfold. Of course, correlation is not the same thing as causation but this fact is difficult to overlook. On April 6, 2016, a study published in the medical journal, *The Lancet*, found the global cost of diabetes was \$825 billion per year.<sup>3</sup>

Worldwide, 160 countries apply 1.4 billion pounds of glyphosate to crops every year.<sup>4</sup> Glyphosate is a systemic herbicide. The whole plant, including the edible portions, sucks up the poison. It is impossible to wash or peel it off. If you are unfamiliar with this chemical, you probably have some in your garage, as it is the most common active ingredient in weed killers. The most popular retail brand name is Roundup®.



The timing of these two occurrences led us to wonder about and question the safety of our food. Diabetes is a disease that affects the pancreas, a glandular organ in the endocrine system. The pancreas makes insulin, which regulates blood sugar levels. In addition to the pancreas, the endocrine system has eight glands that produce and regulate fifty or so hormones. As of this writing, a search for “pesticides + diabetes” on the National Institutes of Health (NIH)

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<sup>2</sup> Andy Menke, Sarah Casagrande, Linda Geiss, et al., “Prevalence of and Trends in Diabetes Among Adults in the United States, 1988–2012,” *JAMA* 314, no. 10, September 8, 2015: accessed at <http://jamanetwork.com/journals/jama/fullarticle/2434682>

<sup>3</sup> “Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4 million participants,” *The Lancet*, Volume 387, Issue 10027, p1513-1530, April 6, 2016, accessed at [https://doi.org/10.1016/S0140-6736\(16\)00618-8](https://doi.org/10.1016/S0140-6736(16)00618-8)

<sup>4</sup> Elizabeth Grossman, “What Do We Really Know about Roundup Weed Killer?” *National Geographic*, April 23, 2015, accessed at <http://news.nationalgeographic.com/2015/04/150422-glyphosate-roundup-herbicide-weeds/>.



and the U.S. National Library of Medicine website yields 1140 results. To narrow it down, typing in the words “endocrine disrupting pesticides diabetes” results in links to 43 full-text studies published in scientific journals (to see for yourself, visit [www.ncbi.nlm.nih.gov/pubmed](http://www.ncbi.nlm.nih.gov/pubmed)). Or, for an easy-to-read list of scientific abstracts, go to [www.greenmedinfo.com](http://www.greenmedinfo.com) and type in “glyphosate”.

## IF YOU’RE NOT DEAD YOU MUST BE OKAY

An endocrine disruptor is a chemical that interferes with endocrine system functions. Modern science shows that in some pesticides, even very low doses can have toxic effects. This is called a *sub-lethal* dose. This correlation between the rise of glyphosate use and the increase in prediabetes and diabetes warrants more scientific study to determine if glyphosate exposure is a causative factor in the disease.<sup>5</sup>

**Sub-lethal** (*adjective*) **1.** Detrimental to health but insufficient to cause death. **2.** Involving low doses of toxins ingested over a long period of time. **3.** Characterized by negative health effects that accumulate and worsen over time.

Glyphosate probably causes cancer. In 2015, the World Health Organization’s International Agency for Research on Cancer (IARC) declared glyphosate to be “probably carcinogenic to humans.”<sup>6</sup> The IARC is a seventeen-member group of scientists that is widely recognized as the world’s

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<sup>5</sup> Nancy L. Swanson, Andre Leu, Jon Abrahamson, and Bradley Wallet, “Genetically Engineered Crops, Glyphosate and the Deterioration of Health in the United States of America,” *Journal of Organic Systems* 9, no.2, 2014, accessed at <http://www.organic-systems.org/journal/92/abstracts/Swanson-et-al.html>

<sup>6</sup> “IARC Monographs Volume 112: Evaluation of Five Organophosphate Insecticides and Herbicides,” International Agency for Research on Cancer, March 20, 2015, [www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf](http://www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf)

leading authority on cancer. The scientists voted unanimously to classify the herbicide in this way.

## WHAT YOU DON'T KNOW WON'T HURT YOU

Since regulators around the world consider it unethical to test pesticides on humans, scientists conduct studies on laboratory animals to certify that the substances are safe. To compensate for this shortfall, common sense suggests that the regulatory agencies responsible for keeping our food safe would also closely monitor and evaluate data taken from our bodies, our food, and the environment to ensure our safety. But do they?

In the United States the regulatory agencies in charge of ensuring the safety of the American food supply are the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), and the United States Department of Agriculture (USDA). The Centers for Disease Control (CDC) monitors the health of the general population, including detecting pesticide residues in humans. We were surprised to learn that most of these agencies, even the CDC, do not measure the levels of glyphosate in our bodies or our food, despite the fact that it is the world's most widely used pesticide. In other countries, most regulators overlook it too.

The FDA conducts tests for the residues of hundreds of pesticides via its Pesticide Residue Monitoring Program. But prior to 2016, they didn't test for glyphosate residues (and only did so then due to enormous public pressure).<sup>7</sup> The USDA annually tests thousands of food commodities for pesticide residues through their Pesticide Data Program. But as of 2017, they do not test for glyphosate residues.<sup>8</sup>

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<sup>7</sup> Monitoring Program, Fiscal Year 2016 Pesticide Report," US Food and Drug Administration, page 26, accessed at [www.fda.gov/downloads/Food/FoodbornellnessContaminants/Pesticides/UCM618373.pdf](http://www.fda.gov/downloads/Food/FoodbornellnessContaminants/Pesticides/UCM618373.pdf)

<sup>8</sup> "Pesticide Data Program, Annual Summary, Calendar Year 2017," Appendix B, page 53,

The CDC monitors toxicity levels via their “National Report on Human Exposure to Environmental Chemicals.” In the most recent report compiled in 2018, the CDC takes blood and urine samples from a wide cross-section of the population and tests them for hundreds of pesticides. However, they don’t test for...you guessed it, glyphosate.<sup>9</sup>

Under enormous public pressure, in December of 2017 the EPA evaluated the carcinogenic potential of glyphosate.<sup>10</sup> But the objectivity of the evaluation is in question. The EPA relied mostly on registrant-commissioned, unpublished regulatory studies, 99% of which were negative, to reach their conclusion that glyphosate is “not likely to be carcinogenic to humans”.<sup>11</sup> How can anyone be confident that glyphosate is safe if it is not fully and objectively monitored? Seeing this gap in the public’s knowledge, many private and nonprofit organizations and independent researchers at educational institutions now use FDA-registered labs to test for glyphosate residues in order to track how humans are exposed to it – from using it in gardens to living near farms or eating foods from treated fields. Canada is also doing extensive testing.<sup>12</sup>

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US Department of Agriculture, accessed at <https://www.ams.usda.gov/sites/default/files/media/2017PDPAnnualSummary.pdf>

<sup>9</sup> "Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, January 2019 Volume One," Centers for Disease Control, accessed at [https://www.cdc.gov/exposurereport/pdf/FourthReport\\_UpdatedTables\\_Volume1\\_Jan2019-508.pdf](https://www.cdc.gov/exposurereport/pdf/FourthReport_UpdatedTables_Volume1_Jan2019-508.pdf)

<sup>10</sup> "Revised Glyphosate Issue Paper: Evaluation of Carcinogenic Potential," EPA’s Office of Pesticide Programs, December 12, 2017 accessed at: [https://cfpub.epa.gov/si/si\\_public\\_record\\_Report.cfm?dirEntryId=337935](https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=337935)

<sup>11</sup> Charles Benbrook, “How did the US EPA and IARC reach diametrically opposed conclusions on the genotoxicity of glyphosate –based herbicides?,” Environmental Sciences Europe, January 15, 2019 <https://enveurope.springeropen.com/articles/10.1186/s12302-018-0184-7>

<sup>12</sup> "Safeguarding with Science: Glyphosate Testing in 2015-2016." Canadian Food Inspection Agency, accessed at [https://usrtk.org/wp-content/uploads/2017/04/CFIA\\_ACIA-9123346-v1-FSSD-FSSS-Glyphosate-Final-Report-15-16\\_018410-1.pdf](https://usrtk.org/wp-content/uploads/2017/04/CFIA_ACIA-9123346-v1-FSSD-FSSS-Glyphosate-Final-Report-15-16_018410-1.pdf)

In November 2016, the nonprofit Food Democracy Now! and The Detox Project, a research and certification organization, released a twenty-nine-page report titled “Glyphosate: Unsafe on Any Plate.” The organizations used an FDA-registered lab to test many common brand-name foods and found concentrations of glyphosate in alarmingly high levels in some of them, most notably Cheerios.<sup>13</sup>

Recently The Detox Project, announced plans for international “Glyphosate Residue Free” and “Glyphosate in Transition” certification/labeling programs. This knowledge will allow food shoppers to limit their risk of exposure to glyphosate in the foods they eat. The programs will also encourage farmers to reduce their reliance on glyphosate-based herbicides.

## THE RISK OF EATING CONVENTIONALLY GROWN FOOD

In the decades that glyphosate has been in use, weeds have become very resistant to it, leading farmers to use an ever-increasing amount of the chemical to kill them. These higher doses of the herbicide can kill the crop, too. In response to this, the biotech companies have genetically modified food plants to withstand higher levels of glyphosate, a cycle resulting in increased herbicide residues in our food, our bodies, and the environment.<sup>14</sup>

In *The End of Plenty*, author Joel Bourne Jr. states, “Studies also continue to surface suggesting that glyphosate may not be as benign as was once thought, which is particularly troubling given that the EPA has allowed significant increases in glyphosate residues in food.”<sup>15</sup>

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<sup>13</sup> “Glyphosate: Unsafe on Any Plate,” Food Democracy Now! and the Detox Project, November, 2016, accessed at <http://www.fooddemocracynow.org/blog/2016/nov/14>

<sup>14</sup> “A Chemical Meant to Save Plants is Actually Killing Them and – and it’s Spreading”. Popular Science, September 8, 2017, accessed at <http://www.popsci.com/chemical-herbicide-dicamba-drift>

<sup>15</sup> Joel K. Bourne Jr., *The End of Plenty: the race to feed a crowded world* (New York: Norton, 2015), 233.

The EPA calls the allowed amounts of pesticide residues on food—which are deemed as safe—“maximum residue levels” or limits. The acronym is MRL and is also known as a “tolerance”. In response to concerns about these increasing concentrations, the EPA simply increases the MRL.<sup>16,17</sup> *These requests for increases come from the chemical manufacturers themselves, and are not based on any new scientific studies on safety.*<sup>18,19</sup>

The most recent increase occurred on May 1, 2013, when the EPA substantially raised the MRL for glyphosate on many foods and animal feed crops. The allowable amount in carrots, for example, went from 0.2 ppm (parts per million) to 5 ppm, a twenty-five-fold increase from previous levels. The EPA also doubled the allowable amount in oilseed crops which include sesame and flax, and soybeans which are the most common livestock feed.<sup>20</sup> Since 1993, the EPA has approved a two-thousand-fold increase in the MRL of glyphosate on alfalfa grown for animal feed.<sup>21</sup> Given the amount of glyphosate used on the crops to feed livestock, how much is present in the animals we eat? These increases occur even though recent studies—peer-

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<sup>16</sup> "Food Safety: FDA and USDA Should Strengthen Pesticide Residue Monitoring Programs and Further Disclose Monitoring Limitations," GAO Report no. 15-38, US Government Accountability Office, October 2014, 26 and 72, accessed at <https://www.hsdl.org/?view&did=759250>

<sup>17</sup> "Human contamination by glyphosate", Friends of the Earth Europe, June, 2013, accessed at [https://www.foeeurope.org/sites/default/files/press\\_releases/foee\\_4\\_human\\_contamination\\_glyphosate.pdf](https://www.foeeurope.org/sites/default/files/press_releases/foee_4_human_contamination_glyphosate.pdf)

<sup>18</sup> John Peterson Myers, Michael N. Antoniou, Bruce Blumberg, et. al, "Concerns over Use of Glyphosate-Based Herbicides and Risks Associated with Exposures: A Consensus Statement," *Environmental Health* 15, no. 19 February 17, 2016, accessed at <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-016-0117-0>

<sup>19</sup> Charles M. Benbrook, "Trends in Glyphosate Herbicide Use in the United States and Globally," *Journal of Environmental Sciences Europe* 28, no. 3, February 2, 2016, table 7: accessed at <https://enveurope.springeropen.com/articles/10.1186/s12302-016-0070-0>

<sup>20</sup> "Federal Register, Glyphosate; Pesticide Tolerances, May 1, 2013, accessed at <https://www.federalregister.gov/documents/2013/05/01/2013-10316/glyphosate-pesticide-tolerances>

<sup>21</sup> Charles M. Benbrook, "Trends in Glyphosate Herbicide Use in the United States and Globally," *Journal of Environmental Sciences Europe* 28, no. 3, Table 7, February 2, 2016, accessed at <https://enveurope.springeropen.com/articles/10.1186/s12302-016-0070-0>

reviewed by independent scientists—demonstrate the detrimental effects of this herbicide on the public’s health and the environment. But does this even matter? *Unless the EPA and other regulatory agencies in the world stop raising the maximum residue levels, none of this makes any difference.* Furthermore, the MRLs have not been established for many common foods and staple ingredients, so no one will ever know if a limit has been exceeded.<sup>22</sup>



## CHILDREN ARE NOT SMALL ADULTS

To further exacerbate matters, amounts deemed safe for an adult do not necessarily apply to a child. Children are significantly more susceptible to toxic exposures than adults. Their nervous systems, skeletons, and organ systems are all rapidly developing. Their detoxification systems are not fully developed. Pesticide exposure puts developing bodies at much higher risk for altering that development. As we learned in the Flint water crisis, lead exposure levels that may have minimal impacts on adults can be devastating to a child’s growing brain. In addition, because of their rapid growth and higher metabolism, children eat and drink more than adults, relative to their

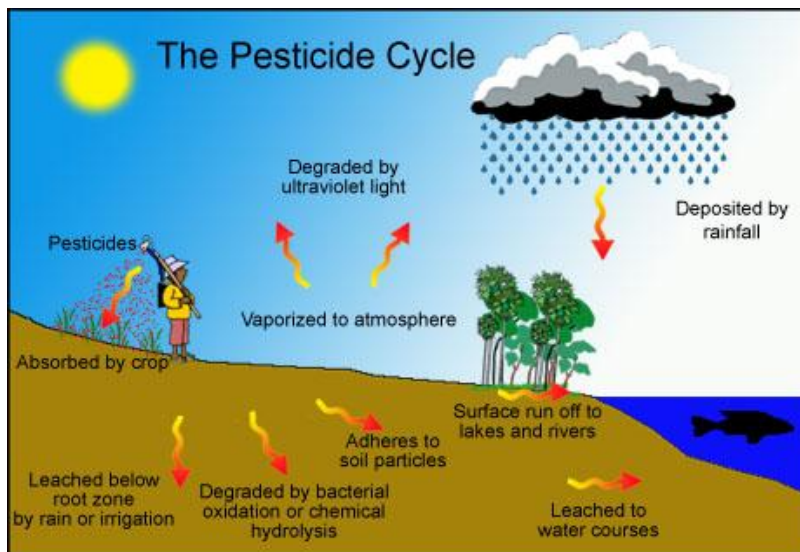
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<sup>22</sup> "e-CFR: Electronic Code of Federal Regulations," US Government Publishing Office, [http://www.ecfr.gov/cgi-bin/text-idx?SID=3ff2029883dad1577f3583aedef7520c6&mc=true&node=se40.26.180\\_1364&rgn=div8](http://www.ecfr.gov/cgi-bin/text-idx?SID=3ff2029883dad1577f3583aedef7520c6&mc=true&node=se40.26.180_1364&rgn=div8) . See Title 40, Chapter 1, Subchapter E, Part 180, Subpart C, 180.364, Glyphosate, tolerances for residues

size. This combination results in higher toxic exposure for a population that is also much more vulnerable to its negative effects.

## GLYPHOSATE, GLYPHOSATE EVERYWHERE

The US Geological Survey published a study in 2011 designed to determine if glyphosate could travel from soil to the surrounding environment. Samples were taken from rain, streams, and groundwater near agricultural areas in the Mississippi Basin, a region where large concentrations of genetically modified corn, soy, and cotton are grown. Glyphosate was present in many of those samples, most notably 70 percent of rainfall samples.<sup>23</sup> Glyphosate is used in almost all agricultural and urban areas of the United States. We've had decades of pesticide accumulation now, and pesticides are becoming difficult to avoid.



<sup>23</sup> "Technical Announcement: Widely Used Herbicide Commonly Found in Rain and Streams in the Mississippi Basin," US Geological Survey, August 29, 2011, accessed at <https://archive.usgs.gov/archive/sites/www.usgs.gov/newsroom/article.asp-ID=2909.html>

Some farmers spray their wheat crops with glyphosate just three to five days before harvest as a drying agent. They also use it on feed barley, oats, canola, flax, peas, lentils, soybeans, and dry beans.<sup>24</sup>

## "HERE'S A PESTICIDE COCKTAIL, HONEY"

Drugs are made of combinations of chemicals. We know that some drugs interact with others and cause adverse effects. This is known as *drug interaction*. When we pick up a prescription at the pharmacy, the pharmacist warns us to be careful about the other drugs we take. Likewise, common sense suggests that the combination of pesticides put in our food and ingested all at once might adversely affect the body in unforeseen ways.

What happens when a person eats a food crop sprayed with a variety of insecticides, fungicides, and herbicides? When we were growing up, food allergies were unheard of. Now, many people are afflicted with them. We wonder if people are actually allergic to the chemical cocktail on the food and not the food itself. The allergic reaction might be the body simply saying *no* to toxic chemicals.



Scientists are now studying pesticide formulations to determine if the active ingredient becomes more toxic when combined with the inert ingredients in those formulations. The active ingredient might enhance the inactive ingredients, making the formulas more toxic than previously thought.<sup>25</sup>

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<sup>24</sup> "Preharvest Staging Guide," Monsanto Canada, Inc., 2012, accessed at <http://roundup.ca/uploads/documents/MON-Preharvest%20Staging%20Guide.pdf>

<sup>25</sup> I. Székács, et al. "Environmental and Toxicological Impacts of Glyphosate with its Formulating Adjuvant," *International Journal of Biological, Biomolecular, Agricultural, Food, and Biotechnological Engineering* 8, no. 3, November 2014, accessed at <http://scholar.waset.org/1999.1/9997659>



## REFORMING THE REGULATORY PROCESS

The agribusiness companies hire scientists to do the research necessary to get pesticides approved by regulators.<sup>26</sup> This is called an *industry-submitted study*. Regulatory agencies say that industry-owned and submitted studies are classified information, so they conceal them from the public.<sup>27</sup> Keep in mind that the purpose of our regulatory agencies is to protect the public interest. Making decisions based primarily on concealed industry-submitted studies funded by the companies themselves is a clear conflict of interest. This reveals clear deficiencies in our regulatory process.

Our regulatory agencies could foster public trust by promoting unbiased, transparent, and credible science. They could do this by disclosing industry-owned and submitted studies to the public. The studies could be published in scientific journals and peer-reviewed by independent scientists and could include critical information such as who contracted and paid for the study and who determined the research procedures. This would enhance objectivity and prevent studies from being designed to achieve a desired result. Further, conflicts of interest that can result in data manipulation would be minimized. These guidelines should apply to all studies, whether they have private, public, or nonprofit sponsors.

All this could be a first step toward getting politics out of science and protecting the public interest. In order to finance these publicly available studies, the agribusiness companies could establish and pay into a pool that funds independent research. Grassroots support is fundamental to transforming the regulatory process.

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<sup>26</sup> Danny Hakim, "Scientists Loved and Loathed by an Agrochemical Giant," *New York Times*, December 31, 2016, accessed at <https://www.nytimes.com/2016/12/31/business/scientists-loved-and-loathed-by-syngenta-an-agrochemical-giant.html>

<sup>27</sup> "EU Glyphosate Rebellion Gathers Strength as Health Commissioner Shocks Pesticide Industry," *Sustainable Pulse*, March 8, 2016, accessed at <http://sustainablepulse.com/2016/03/08/eu-glyphosate-rebellion-gathers-strength-as-health-commissioner-shocks-pesticide-industry>



## DOUBLING DOWN ON PESTICIDES

Concentrations of glyphosate in the environment are likely to escalate in the future. To combat resistant weeds, the chemical companies are now combining glyphosate with other pesticides, notably the herbicides 2,4-D and dicamba. The long-term synergistic effects of these are unknown. Seeds are being genetically engineered to withstand these pesticide combinations—the green light for the introduction of more toxic chemicals into our food, our bodies, and the environment.

The chemical 2,4-D was a key ingredient in the “Agent Orange” formula, a toxic defoliant used during the Vietnam War for ten years. In 1991 the Agent Orange Act was passed in Congress to compensate soldiers who suffered from toxic exposure. If glyphosate is already detected in our breakfast cereal, one can assume it won’t be long before 2,4-D is detected there also.

Genetically modified turf—Kentucky bluegrass, a major component of commercial grass seed—is on the horizon. This grass resists glyphosate, so the chemical will likely become even more ubiquitous in our environment. The USDA exempted this grass from their regulatory approval process<sup>28,29</sup> after

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<sup>28</sup> Federal Register Dockets No. APHIS-2011-0080 and 0081 (2016), accessed at [https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases/sa\\_weeds/sa\\_noxious\\_weeds\\_program/ct\\_newregs](https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases/sa_weeds/sa_noxious_weeds_program/ct_newregs)

<sup>29</sup> Brandon Keim, “Genetically Modified Grass Could Make Superweed Problem Worse,” *Wired*, July 11, 2011, <https://www.wired.com/2011/07/engineered-bluegrass>

Scotts found a loophole in the regulations. It's since been discovered that the seeds can't be contained, spreading to surrounding areas.<sup>30</sup>

This bluegrass will create more superweeds resistant to glyphosate. Superweeds are a major threat to US agriculture, virtually uncontrollable except by hand pulling or a return to toxic, decades-old herbicides.<sup>31</sup> Some of



them are six feet tall with stems the size of baseball bats.<sup>32,33</sup> How do we unplug from this damaging cycle of ever-increasing dependence on toxic agricultural chemicals?

Over the past few years, corporate power has concentrated further. Bayer merged with Monsanto, Dow with Dupont, and China National Chemical Corporation (ChemChina) with Syngenta. These mega-mergers drastically reduce competition, placing the global food supply in the hands of a few multinational corporations whose power is growing unchecked. They control an estimated 70% of the world's pesticide market, over 60% of commercial seed sales, and 80% of the US corn seed market. The higher cost of inputs could put many farmers out of business.

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<sup>30</sup> Jeff Manning, "GMO Grass That 'Escaped' Defies Eradication, Divides Grass Seed Industry," *The Sunday Oregonian*, January 8, 2017, accessed at [http://www.oregonlive.com/business/index.ssf/2017/01/grass\\_seed\\_industry\\_fearful\\_ab.html](http://www.oregonlive.com/business/index.ssf/2017/01/grass_seed_industry_fearful_ab.html)

<sup>31</sup> Andrew Pollack, "USDA Ruling on Bluegrass Stirs Cries of Lax Regulation," *New York Times*, July 6, 2011, accessed at <http://www.nytimes.com/2011/07/07/business/energy-environment/cries-of-lax-regulation-after-usda-ruling-on-bluegrass.html>

<sup>32</sup> "The Rise of Superweeds—and What to Do about It," Union of Concerned Scientists, December 2013, accessed at [http://www.ucsusa.org/food\\_and\\_agriculture/our-failing-food-system/industrial-agriculture/the-rise-of-superweeds.html#.WlqtnFww3EY](http://www.ucsusa.org/food_and_agriculture/our-failing-food-system/industrial-agriculture/the-rise-of-superweeds.html#.WlqtnFww3EY)

<sup>33</sup> "Navigating a Critical Juncture for Sustainable Weed Management", January 1, 2012, accessed at <https://academic.oup.com/bioscience/article/62/1/75/295845/Navigating-a-Critical-Juncture-for-Sustainable>

## TRANSFORMATION IS ON ITS WAY

In October 2014, the US Government Accountability Office (GAO) released a report titled “FDA and USDA Should Strengthen Pesticide Residue Monitoring Programs and Further Disclose Monitoring Limitations.”<sup>34</sup> The GAO audits, evaluates, and investigates the performance and accountability of the federal government for Congress and the American people. After they complete their investigations, they make recommendations to Congress. They investigated all the regulatory agencies responsible for ensuring our food safety because of the clear lack of oversight of glyphosate and some other widely used agricultural chemicals. The GAO had a difficult task in sorting out this complex issue with a long history, involving many agencies. The investigators asked thoughtful, probing questions, and their report is a positive start in getting to the bottom of this complex issue.

The concern over glyphosate is rampant in the European Union. In 2017, citizens were able to gather over 1,300,000 signatures in a European Citizen's Initiative that asked member states of the European Union to ban glyphosate.<sup>35</sup> The European Parliament requested that the European Commission not renew glyphosate's license, which was due to expire at the end of 2017.<sup>36</sup> This uprising resulted in glyphosate's license being renewed for only five years, versus the usual fifteen. Several countries have announced their intention to ban it altogether in the coming years.

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<sup>34</sup> "Food Safety: FDA and USDA Should Strengthen Pesticide Residue Monitoring Programs and Further Disclose Monitoring Limitations," US Government Accountability Office, October 2014, 26 and 72, accessed at <https://www.hsdl.org/?view&did=759250>

<sup>35</sup> <https://stopglyphosate.org/en/>

<sup>36</sup> "Glyphosate Herbicide: Don't Renew Its Authorisation, Urge MEPs," European Parliament News, March 22, 2016, accessed at <http://www.europarl.europa.eu/news/en/newsroom/20160321IPR20296/glyphosate-herbicide-don%E2%80%99t-renew-its-authorisation-urge-meps>

In early 2017, the United Nations released a compelling report<sup>37</sup> calling out the adverse impact of pesticides on human rights and outlining the causes of rapid deterioration of the world's agriculture. The authors point to "the oligopoly of the chemical industry that has enormous power". The report calls for an immediate transition from industrialized agricultural to agroecological farming practices. *If you read only one reference cited in this expose, make it this one.* If you would like to know more about agroecology, the best summary we have read was a paper delivered to the United Nations General Assembly by Olivier De Schutter. Check it out; it's a good read. The link to it is below.<sup>38</sup>

In August of 2018, a jury in a California federal court awarded a former school groundskeeper \$289 million dollars in damages (later reduced to \$78.5 million by the judge) after it found that products containing Monsanto's Roundup weed killer were responsible for his diagnosis of Non-Hodgkin Lymphoma, a cancer of the lymph system. In early 2019, in a second, similar trial against Bayer/Monsanto, a US jury awarded \$80 million to a man who developed Non-Hodgkin Lymphoma after prolonged exposure to Roundup. The jury found glyphosate/Roundup to be a substantive factor in causing the cancer. They also found Bayer/Monsanto to be negligent by failing to warn the public of the weedkiller's cancer risk and by failing to properly vet the safety of its product. The trial is thought to be a bellwether case, helpful in determining the fate of the now 11,200 similar, pending cases. These awards are indications that the American judicial system has now taken on the role of regulator. These are historic and precedent-setting cases.

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<sup>37</sup> "Report of the Special Rapporteur on the Right to Food," United Nations General Assembly, January 24, 2017, accessed, section 86 at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/017/85/PDF/G1701785.pdf?OpenElement>. (I wonder if this report gets censored; sometimes the above hyperlink works and sometimes it doesn't. You may have to search other ways to access this, but it will be worth your time). Or, you can purchase it at: <https://www.scribd.com/document/341419022/UN-Right-to-Food2017-pdf>

<sup>38</sup> "Report submitted by the Special Rapporteur on the right to food," Olivier De Schutter, December 17, 2010, accessed at <http://www2.ohchr.org/english/issues/food/docs/A-HRC-16-49.pdf>

## NEW SCIENCE TO THE RESCUE

Glyphosate is just one of many *hundreds* of pesticides in the chemical cocktail poured on our overstressed planet. We emphasize glyphosate because it is the most widely used herbicide in the world, and it's puzzlingly exempt from regulatory oversight. There are many other pesticides on our food that regulators do not monitor. Let's not forget all the other sub-lethal pesticides used in agriculture; they don't cause immediate death, but the low dose and continuous exposure makes them toxic over time.

Fortunately, scientists are now beginning to study the effects of low dose, long-term pesticide exposure, especially glyphosate. A recent study revealed that exposure to an ultra-low dose of glyphosate resulted in nonalcoholic fatty liver disease in rats.<sup>39</sup> Before 1980, fatty liver disease was nearly always associated with regular alcohol intake. An estimated 20 to 25 percent of American adults now have nonalcoholic fatty liver disease (NAFLD).

NAFLD is thought to be caused by insulin resistance. Insulin resistance is also a cause of prediabetes and diabetes. Overconsumption of sugar is a common cause of insulin resistance, but this recent scientific discovery suggests that a contributing cause could be the glyphosate present in those sugars. This especially applies to high fructose corn syrup and sugar made from corn and beets that have been genetically modified to withstand high levels of glyphosate. This new research urgently calls for further study to confirm whether or not glyphosate causes organ toxicity at real-world levels of ingestion.

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<sup>39</sup> Robin Mesnage, George Renney, Gilles-Eric S eralini, Malcolm Ward, Michael N. Antoniou, "Multiomics Reveal Non-Alcoholic Fatty Liver Disease in Rats Following Chronic Exposure to an Ultra-Low Dose of Roundup Herbicide," *Nature*, January 9, 2017, accessed at [www.nature.com/article/srep39328](http://www.nature.com/article/srep39328)

Another growing concern is the effect of glyphosate on the bacteria in our guts, also known as the gut microbiome. Scientists have established the role that the gut microbiome plays to create radiant health in the human body. Regulators approved glyphosate on the assumption it would kill weeds and not harm humans. However, we now know that the mechanism through which glyphosate kills plants, may have harmful effects on our delicate gut microbes.

Scientists studied chickens to understand the effects of glyphosate on their gut microbiome.<sup>40</sup> The bad bacteria (i.e., those that cause salmonella and botulism) were resistant to it and the good bacteria (e.g., lactobacillus acidophilus) were suppressed. Stated another way, glyphosate upset the delicate balance of the chicken microbiome. Since the same types of bacteria inhabit the human intestinal tract, we can assume that glyphosate disrupts the delicate balance of our gut microbiome, too. This makes sense, given that glyphosate is also patented as an antibiotic. The medical community calls this condition dysbiosis and it can cause many chronic diseases, such as inflammatory bowel disease, obesity, cancer and autism.<sup>41</sup>

The EPA approved glyphosate in 1974, using what are now outdated scientific approaches. We have had ample time to evaluate glyphosate's long-term effects on our health and on the environment. However, making changes to regulations can be extremely slow.

## POISONED NECTAR

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<sup>40</sup> Shehata CuAA, Schrodler W, Aldin AA, Hafez HM, Kruger M., "The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro." *Current Microbiology*, December 9, 2012, accessed at <http://www.popsoci.com/chemical-herbicide-dicamba-drift>

<sup>41</sup> Zhang YJ, Li S, Gan RY, Zhou T, Xu DP, Li HB, "Impacts of gut bacteria on human health and diseases," *International Journal of Molecular Sciences*, April 2, 2015, accessed at <https://www.ncbi.nlm.nih.gov/pubmed/25849657>

Pollinators are getting weakened from the fallout of pesticide use. In the United States, beekeepers lost 44% of their bees from 2015-16.<sup>42</sup> In addition to science, common sense says that if low dose, sub-lethal toxic pesticide cocktails harms us, they probably harm our pollinators, too. In fact, the damage is probably far worse because they are thousands of times smaller. They work in the fields and have more direct exposure to pesticides.

A recent scientific study raised questions about bees' ability to metabolize multiple toxins simultaneously as well as other insects. Studying what happens to bees, eggs, and larva after they are exposed to multiple pesticides would shed some much needed light on this subject. Currently, there is a dearth of studies in this area. "Crop chemicals' effects on bees are usually studied one at a time, while the tremendous numbers of combinations to which bees are exposed go unexamined."<sup>43</sup>

In the biggest field trial ever performed, scientists mimicked real world conditions to learn more about neonicotinoid insecticides' impact on bee health. The results indicated that "neonics" diminished bees' ability to survive the winter and also diminished their reproductive success. In addition, the studies discovered in hives the presence of neonics that were *not* used in the study which indicates that the insecticides linger for a long time in the environment.<sup>44</sup>

In a landmark decision in May of 2018, the European Commission banned three neonicotinoid insecticides linked to bee deaths. This is an encouraging

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<sup>42</sup> "Colony Loss 2015-2016: Preliminary Results," Bee Informed Team, BeeInformed.org, May 4, 2016, accessed at <https://beeinformed.org/results/colony-loss-2015-2016-preliminary-results>

<sup>43</sup> Economist Explains: The decline of bees Sept. 7, 2015, accessed at <http://www.economist.com/blogs/economist-explains/2015/09/economist-explains-2>

<sup>44</sup> Ashley P. Taylor, "Field Studies Confirm Neonicotinoids' Harm to Bees," The Scientist, June 29, 2017, accessed at <http://www.the-scientist.com/?articles.view/articleNo/49768/title/Field-Studies-Confirm-Neonicotinoids--Harm-to-Bees/>



sign that people are finally becoming aware of the need to protect our pollinators and it's a huge win for the bees.

Unfortunately, it's not only the bees that are affected by overuse of pesticides. In 2019, researchers in Australia and China released a study showing the dramatic decrease in the overall insect population. If this decrease continues at the current rate, in 100 years all the insects will be extinct. *In our opinion, chemically intensive agricultural practices are one of the greatest threats our society faces.*<sup>45</sup>

## PROVIDE YOUR OWN PROTECTION

No one is at fault, and everyone is at fault. The system holds regulators in a vicelike grip of science versus politics, and economics versus health. *The public's demand for inexpensive food and the government's desire to decrease hunger by making cheap food available contributes to the problem.* This, along with ethical considerations that prohibit testing on humans, and enormous pressure from the superciding operative, *results in a fundamentally flawed regulatory system.* Instead of lamenting over the situation or pointing fingers, we can take matters into our own hands and make the changes necessary to protect our health and environment. Educate yourself: ask questions, be your own authority, and advocate. Go from clueless to clued-in. It's time to become sovereign over our own selves and take control of our food and our health. Provide your own safety and protection by buying more organic food. It's that simple.

## UPGRADE YOUR DIET TO ORGANIC AND SUPPORT THE BEES

We imagine a world where everyone can buy organic food for about the same cost as conventional food. Our vision is *“to create radiant health for people, pollinators, and our planet through affordable organic food.”*

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<sup>45</sup> “Worldwide decline of the entomofauna: A review of its drivers,” The Journal of Biological Conservation, January 25, 2019, accessed at <http://www.rosspiper.net/wp-content/uploads/2019/02/10.1016@j.biocon.2019.01.020.pdf>

You are not too small, powerless, or insignificant to help transform our broken agricultural system. Isabel wrote a guide called *The Joy of Plenty: How to multiply your food dollars and eat like a king or a queen* that shows you how to upgrade your diet to organic food without spending more than you usually do. Yes, you can afford to do this. You will be surprised when you find out how much further your food dollars can go and how much better you can eat after you have read *The Joy of Plenty*. A diet of organic food has been proven to significantly reduce pesticide levels in children and adults<sup>46</sup> after only one week.

You can transform agriculture by participating in The SWARM: Supporters of Worldwide Agricultural Reform Movement. You join this movement by simply proclaiming that you are in it. If everyone who joins increases their organic food purchases by only ten percent we become a formidable force that could improve our planetary condition. *Let's travel in this direction now.*

We like to say “big is just a whole bunch of little.” Or, as Vincent van Gogh said, “Great things are done by a series of small things brought together.” We invite you to view our website at <https://thejoyofplenty.org/>, download a copy of *The Joy of Plenty*, get a few new ideas, share these ideas with friends, and increase your organic food purchases by ten percent. Together we can make a big difference!

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<sup>46</sup> Carly Hyland, Asa Bradman, Roy Gerona, Sharyle Patton, Igor Zakharevich, Robert B. Gunier, Kendra Klein, “Organic diet intervention significantly reduces urinary pesticide levels in U.S. children and adults,” *Journal of Environmental Research*, February 12, 2019, accessed at <https://www.sciencedirect.com/science/article/pii/S0013935119300246>



And when you eat do you also use the mask?

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Island Press, Washington, D.C., 2017

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