Setting the Record Straight On "Organic"
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There are more reasons to choose organically grown foods now than ever before. With industries that compete with the organic food movement and the wellness industry as a whole has come the obfuscation of factual information otherwise needed to make informed and authentic health decisions. People are attempting to make critical food choices to protect their health, yet do not realize the real impact non-organic food choices have on their health and the natural environment. Toxic chemicals and life-depleted soils rob the body's need for deeper nourishment more than ever before, completely disrupting the very foundation from which to build one's total health. Building public awareness that one's nutritional health profile improves with the level of nutrient density organic foods can provide is fundamental to also understanding that supporting the organic industry sustains a regenerative, balanced ecology and nutrient-dense environment.

The more organic farms that are established and supported by local communities, the more conventional agricultural food production methods may be phased out. It is already well established that non-sustainable methods endanger human and animal health, and destroy local and worldwide environments. Growing awareness through grass roots movements against food production methods that use synthetic chemicals linked to disease, including causing reproductive harm, is gaining momentum in enacting more positive change.

However, as more individuals, groups and organizations become involved in helping to form a more numerous and formidable consumer force, this greater involvement has helped stimulate some progress in reversing further harm to humans and all other species while improving critical habitats that impact the health and reproductive quality of all. However, there is still much inadequate or loose adherence to rules set by regulating agencies. For instance, organizations such as the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) under the Environmental Protection Agency (EPA) that oversees agricultural pest management, and the monitoring of harmful chemicals by the Federal Food, Drug and Cosmetics Act (FFDCA) amended by the Food Quality Protection Act (FQPA), are still inadequate in avoiding harm to the environment.

In spite of efforts to clean up the environment we depend upon for producing nutrient-rich, non-toxic food and ensuring a clean water supply free of industrial pollution and synthetic toxins, it still remains that current methods continue to endanger or threaten the genetic code integrity of all species, including human beings.

Our very epidemic of common degenerative diseases are the result of being unfamiliar with the importance of promoting an abundant, self-regenerating, fertile environment, which Earth has self-maintained for billions of years.

Our own self-imposed diseased health conditions mean we have failed to understand the consequences of severely disrupting Earth's interdependent ecosystems by creating thousands of synthetic chemicals that are proving to be incompatible both with our own human physiology and with the Earth's ancient, self-regenerating pattern.

As new information becomes more commonly known, the collective awareness of concerned citizens is gaining momentum. As the sharing of information continues to alert the population, it has created a critical tipping point toward demanding safe food and consumer products produced in a safe, Earth-friendly environment.

It has become crucial for more individuals to help monitor the opposing actions of antithetic industries acting only to protect their own profit interests and that continue to cause harm to human beings and other living things.

Although biotechnology has shown great promise in medicine and science for healing humanity's ills, there is a dark side to this science that is mutating toward destruction of life through biological toxins in more foods, animal feed and the animals given that feed, which altered genetic fragments are then passed on to human beings after consuming animal-derived foods, creating gene mutations that are predicted to have dire consequences for the present and the future (MacLeod October 27, 2001.)

This grim scenario calls into question just how effective regulatory agencies are in protecting the reproductive health of human beings and other living things in environments affected by genetic mutations in the entire food web, and ensuring the humane management of animals raised for food.

Choosing organic foods is therefore no longer only about providing the body with optimal nourishment and energy, as

essential as this is for maintaining optimal functioning and a state of physical fitness and mental acuity, or for disease prevention and improving or alleviating many health conditions.

It is also about preserving the blueprints or genetic codes of human beings and other interdependent forms of life throughout the planet. Protecting the environment from toxic chemicals and transgenic engineering or GMOs (genetically modified organisms), which scientists fear may adversely affect the ancient life blueprints of living things that naturally have evolved and thrived in those environments through time, requires conscious individual choices that discourage unjust, indifferent and harmful profit motives.

Collectively, concerned citizenry engaged in actively monitoring and taking action against corporate, industry and government behaviors that allow or cause harm to health and environment has resulted in a formidable consumer force with which to be reckoned.

Rallying together petitions with signatures in protest, flooding government officials and companies with calls and correspondence, even protest marches and demonstrations that call attention to the media, and grassroots connections like social media and consumer and Earth-advocate organizations are some of the critical actions that are currently upholding your current health freedom rights.

Consumer and citizen efforts continue to demand the right to truthful information to all citizens, including the uninformed, the victimized, and the innocent masses.

Building more of this vital awareness to preserve the health of human beings and preventing the harming of all living things, which depends on preserving and protecting the self-sustainability of the planet, begins with understanding the science of nutrition and organic and sustainable food production. Protective health consciousness and environmentally responsible choices begin with knowing exactly what the term “organic” means, and understanding its distinct implications as opposed to other misleading, ambiguous terms and phrases, such as “all natural” or “raised naturally”.

The National Organic Standards Board defines “organic” in terms of organic food production and certification, labeling, and the effect on the environment. Certification and strict compliance with government regulations are required in organic food production. Product labeling reveals just how many organic ingredients are in a food product, and research on the feasibility of organic food production and its environmental impact and health effects continues to seem favorable in many ways over non-sustainable, conventional agriculture.

First, the term “organic” requires clarification. The organic production of foods must comply with the regulations of the Organic Foods Production Act of 1990 and the USDA’s National Organic Program (NOP) regulation at 7 CFR 205. This regulation states that an “organic production” system integrates biological, cultural and mechanical practices and cycles resources in order to help sustain a balanced ecology and conserve biodiversity.

Organic food production integrates organic farming techniques that minimize air, water and soil pollution and residues that harm the ecology (“USDA National Organic Program”). Even the materials used, and any food production practices applied, must maintain a balanced ecology. Food handlers, processors and retailers are required to retain the condition or integrity of organic foods to ensure “the health and productivity of interdependent communities of soil life, plants, animals and people” (“National Organic Standards Board National Organic Program Definition of ‘Organic’” October 7, 2011).

Organic Food Production Regulations

Quite different from conventional agriculture and non-organic food production, there are strict NOP food production regulations that organic farmers must comply with that include:

- Avoiding the use of prohibited substances on the land for at least three years.
- Establishing buffer zones.
- Improving the soil condition with plant and animal materials.
- Minimizing soil erosion, using cover crops and crop rotations.
- Avoiding environmental contamination and other preventive management practices.
- As specified on the NOP National List, only approved substances can be used, which excludes genetic engineering, irradiation or sewage sludge, and only specific approved synthetics and non-synthetics are allowed for processing and handling.
- United States Department of Agriculture (USDA) performs initial inspections, and other inspections can be made unannounced to ensure compliancy, and are also performed annually.

- Certain pest control measures include introducing predator insects and parasites to control species of pests, and non-synthetic traps and repellants consisting of “substances derived from mineral, plant or animal matter and does not undergo a synthetic process” (“USDA National Organic Program”).
- The use of synthetic fungicides, preservatives or fumigants is prohibited (“Organic Foods Production Act of 1990” November 16, 2005).
- Approved materials for weed control include biodegradable mulch material and certain synthetic mulches included on the National List of synthetic substances. Only items specified on the List are allowed for the production of organic crops. Allowed materials for weed control include the additions of minerals, and non-synthetic biological and botanical applications (“USDA National Organic Program”).

Other Organic Certifications

The national certification process an organic farmer must undergo requires a dauntingly high fee and extensive and detailed record keeping. This can be challenging for organic farmers who operate smaller farms, and many have been forced to simply not use the word organic, even though their growing methods meet and even exceed USDA NOP regulations and standards.

Grassroots efforts to maintain some sort of recognition that verifies a farmer’s organic methods include locally regulated certifications such as the Certified Naturally Grown distinction. Such certifications assure organic standards are upheld, and the certification process is less costly for the organic farmer.

International organic standard organizations such as the European International Federation of Organic Agriculture Movements (IFOAM) are based on standards set by the internationally recognized food safety standard, Codex Alimentarius, which includes regulations for organic foods. Codex Alimentarius operates under the WHO (World Health Organization) and the FAO (Food and Agricultural Organization) of the United Nations (“Sustainable Table — Organic Agriculture”, n.d.).

The Differences Between Organic and Sustainable Farming

There are important distinctions to be aware of about how an organic farm may operate. Some organic farms may not apply sustainable practices and therefore not qualify under the definition of sustainable agriculture. Mass production organic farms may not always use sustainable methods, while farms that are not organic certified might use methods that sustainably produce food for generations, such as the sustainable self-regenerative methodologies of permaculture that builds a progressively complex food forest within a balanced habitat environment.

Raising animals that fall under the organic definition and official standards that still meet minimum certification requirements may include keeping them confined in enclosures their whole lives, with as little access outside their confinement as another small area, or an enclosed building with screened windows. A certified organically raised animal, therefore, can be prevented access to the true outdoors and wide open spaces.

Non-certified farms operating sustainably permit animals to move about freely and behave and interact naturally, and are only confined to protect them against weather and elements. A sustainable farm operation recycles their waste for fertilization and soil nutrient replenishment, and maintains self-sufficiency.

Organic farming requires USDA approved certification, but a farm that uses sustainable methods is not required to obtain any certification. Organic farming using sustainable practices, however, falls naturally into the definitions and descriptions of sustainable farming. While organic farmers are forbidden to give their livestock antibiotics, there are no such restrictions for farmers that are not certified organic and farm sustainably. Some sustainable farmers may administer those drugs if their animals become sick, and wait until the antibiotics are dissipated out of the animals’ systems before the meat or milk is produced for food. While there are more relaxed restrictions about antibiotics in sustainable farming, no artificial hormones are permitted in both organic and sustainable farming.

Sustainable farmers are usually residents on the land they farm. They maintain their small farms’ soil nutrient density and fertility and control pests by diversifying the types of foods they grow, mixing plots in close proximity to each other to establish a more natural eco-environment. Sustainable farms sell their produce or animal food products locally; large scale organic food production must often be transported long distances to reach the consumer, using greater amounts of environmentally disruptive and polluting fossil fuel.

With increasing consumer demand, organic food production has grown into corporate, large scale ventures who want in on the action. With no limit on the number of acres an organic food producer can use, the corporate dominance

over small sustainable farms makes it difficult to compete for their own targeted local customers and larger markets. As the higher demand for organically grown or raised foods grows, large agribusiness corporations have developed their own organic food brands and have acquired many smaller label brands.

Such corporate takeovers result in growing single crops on a large scale, neglecting to farm sustainably, which creates a less diversified environment and produces organic foods that may affect their nutrient and phytonutrient density. Corporate decisions to cut corners in production costs and pay their contracted farmers less provide the advantage of higher profit yields than smaller organic farms. Raising dairy cows, for instance, may include confinement for most of the year while still complying with other organic requirements.

When left to graze naturally, livestock is an important part of a diverse and balanced ecology. Since corporate organic food producers are therefore able to offer organic foods for lower prices, they make it difficult for small organic farms that may be producing food sustainably to compete in their efforts to expand and obtain their own market share. Nutritional content of organic foods can therefore vary, depending on the environment in which they are produced.

Consumers who wish to consider humane animal welfare in the organic food products they purchase may not realize that what they are buying in good conscience may actually be a result of what they consider to be unacceptable conditions in which those animals may have been raised. Also, with corporate dominance over organic food production, with an increasing number of additions to the USDA approved National List of allowed synthetic substances, more organic farmers and consumers are becoming uneasy about how more organic foods are produced, and what it means to be certified organic.

Public outrage and protest, with efforts to prevent further additions of allowed synthetic or non-organic substances for organic food production to be added to the National List have been successful, but more ingredients have since been added to that list. It is therefore important for consumers to monitor government action and corporate behavior, and to exercise their buying power over the industry's corporate agenda to motivate them to uphold organic standards. If the USDA Certified Organic standards are lowered, it may be due to both corporate, single-minded profit motives, and consumer innocent or complacent buying decisions.

The less involvement one has in contributing toward or supporting the efforts of a nutrient-rich food production system, the worse it may affect the environment upon which true human wellness depends, and the contributing effects of all living things in a sustainable environment may be diminished. As more corporations are joining in for a market share of the profits, consumers and other organic food producers can act as a balancing force to ensure true and optimal organic food production, and continue to be liaisons for organic foods to others who have yet to become informed about its importance for human health now and in the future.

Large producers of organic food have at least helped increase public awareness of their importance for optimal health and its connection with a healthy environment. More acreage being devoted to organic food production is protected from eco-disruptive, polluting chemical fertilizers, pesticides and genetically modified organisms that have been shown to have adverse effects on humans, animals, sea life, other living creatures and their interdependent habitats. With the cooperative efforts of all involved, we human beings do not have to make food choices from unsustainable, non-regenerative farming practices of conventional agriculture, nor necessarily make choices that support mass production of organic foods.

Ensuring for ourselves a reliable food supply means supporting efforts to promote life diversity and abundance in a nutrient-rich, ecological environment. Learning the processes by which organic food is produced is the foundation upon which to make more informed, sustainable food choices, with the realization that it is those critical choices that ensure the perpetuation and balance of life and have a direct impact on our health ("Sustainable Table — Organic Agriculture", n.d.).

Labeling – Not All Organic Food Products Are 100% Organic

Besides being the operating word for a highly specified, Earth friendly, life preserving and health promoting food production method, the word "organic" is also the labeling term for foods produced in accordance with the Organic Foods Production Act of 1990, and the NOP regulations discussed above.

Is it 100% Organic?

When you shop for organic foods, you may want to know just how much of the food items you're buying actually do contain all organic ingredients. When it comes to product labeling, the percentage of organic ingredients in a product determines whether the USDA Organic official seal may be displayed on the product's packaging. Because a product is labeled "organic" does not necessarily mean that all of its contents are indeed organic. If you examine the label of a

box of cereal, for instance, it may or may not indicate that it is “100% organic”. To be allowed to make this statement, the finished product must meet the following criteria:

All ingredients contained in the product are certified organic.
The name of the certifying agent must be listed on the information panel.
Each ingredient must be identified as organic and include an asterisk or other symbol.
The product must display the USDA organic seal, or state that the product is 100 percent organic.

Is it 95% Organic?

A product label may state the product is “organic” even though it may not contain 100 percent organic ingredients. In this case, all of the agricultural ingredients in the product must be certified organic, and only up to 5% of nonorganic ingredients can be used, and they must be listed on the National List of allowed substances (“Part 205, National Organic Program” June 17, 2013). Products that fall under these criteria may also display the USDA organic seal. The ingredient list on the product information panel of an organic product you’re considering buying discloses the percentage of organic ingredients and any non-organic ingredients it may contain. Therefore, the USDA Organic seal does not necessarily ensure a product contains 100% organic ingredients. If it is not stated on the package that it is 100% organic and still bears the organic seal, checking each ingredient on the information panel helps determine just how many organic and non-organic ingredients the product actually contains.

Is It At Least 70% Organic?

It’s important to distinguish other products making the organic claim but that contain considerably less organic ingredients. When a product label uses the phrase “Made with Organic”, at least 70% of the agricultural product ingredients must be identified as certified organic, excluding salt and water. Although the remaining percentage of items need not be organically produced, they must be items that are allowed on the National List, and a product may not contain those items listed in the “excluded methods” category, such as genetically modified organisms (McEvoy February 1, 2013). The USDA organic seal is not allowed on product information panels of foods in this category, but as with any organic product, the panel must also name the certifying agent accredited through the USDA National Organic Program (“USDA Accredited Certifying Agents” April 23, 2013).

Is it Less Than 70% Organic?

A product that contains less than 70% certified organic ingredients need not be certified organic in accordance with USDA organic regulations. The USDA organic seal is not permitted anywhere on its main display panel, nor is the word “organic” permitted. Organic ingredients must be listed only on the ingredient information panel, and any remaining ingredients are not required to be in compliance with USDA organic regulations (“National Organic Program, Organic Labeling” December 5, 2012). This leaves in question as to just what other ingredients are in the product aside from organic ingredients. Are those other ingredients listed in the National List, and are they items that are allowed or items that are excluded from this list? To determine if a product containing organic ingredients does not contain antibiotics, pesticides, synthetic hormones, additives or preservatives, it therefore pays to know the different labeling classifications of organic foods to know what exactly you are eating, and to realize the quality of your nutritional health decisions.

How Organic Farming Improves the Environment That Directly Affects Your Health

Knowing how organically grown fresh produce or organically raised animal-derived food products are produced provides the information that can inspire one to make more nutritionally purposeful and meaningful food choices. When it comes to making health management decisions that protect individuals from the all-too-common degenerative diseases that are reducing the numbers of people in the population, it is imperative to experience the impact organic farming has on the human body’s inner eco-environment in order to truly realize its vital importance. The types of daily food choices millions of people are making every day are what influences food production methods that continue to have an impact on the surrounding environment, near and far. Information on the effect organic versus conventional farming methods have provides the data needed for more informed nutritional health management decisions and therefore personal daily participation in environmental consciousness.

The food choices of human beings have become critical not only for protecting one’s health, but for the survival of all species, as those choices affect the complex web of life. Understanding how one’s daily food choices affect the environment has inspired greater adherence to ecologically sustainable choices. Knowing those daily choices contribute toward a richly abundant and diverse environment in which all living things can thrive in balance and harmony helps establish the foundational mindset needed to further encourage more sustainable and smaller scale organic food production. In cooperation with the natural cycles of nature using self-regenerative organic methods, we

avoid the destructive cascading effect on life and ecologies that polluting conventional agriculture and its associated disruptive transgenic biotechnology has imposed.

With new perspectives as well as an appreciation of just how connected individual choices really are for sustaining a complex, inter-dependent, non-polluted eco-environment, we also collectively promote optimal health. This ensures more protection from degenerative, deficiency diseases than any other option. Choosing organic is in complete cooperation and alignment with natural laws, from the micro and quantum world of living cells up through the natural forces of the universe as described in the biological and physical sciences, respectively.

With organic farming in the best sense, we are rewarded with bountiful, nutrient dense foods that contain the compatible biochemistry that replenishes and regenerates, and therefore heals, restores and sustains human health while protecting the thriving sustenance and perpetuation of all life on Earth as it has existed for billions of years. Although species on Earth have come and gone through natural selection over time, never on Earth have there been such a rapid downfall of species in a matter of mere decades due to chemistry, biotechnology, pharmacology, and the devastating, polluting, effects of indifferent industrial and technological “progress”.

A few environmental facts are presented here to increase understanding of how organic food production is the only feasible way to produce food for human beings without environmental destruction and perpetuate an optimally robust human gene pool or genetic code. If we human beings want to avoid the abhorrent health consequences and devastating environmental disruptions as the result of applying non-organic methods, regenerative organic food production seems the sensible, obvious choice. Organic food production has proven to be completely feasible for feeding entire countries without mimicking conventional monoculture methods of mass food production.

Advantages of Organic Farming Practices

According to a nine year study, researchers found that organic farming builds up soil organic matter that supports beneficial microbial life, absorbs greenhouse gasses from out of the air into the soil for healthier crops, holding the appropriate amount of water and preventing the soil runoff that occurs with conventional no-till farming.

Minimal tillage crops such as organic corn, soybean and wheat were compared to the same conventionally grown crops without tillage, and with more active soils containing more carbon and nitrogen, the organic plots were the most productive. Although it takes time to build up organic matter in a soil, researchers found that organic food production methods ultimately produce greater results, particularly when more diverse crops are added to crop rotation that more effectively control weeds (USDA Agricultural Research Service July 2007). Organic farming practices have shown that 7,000 pounds of carbon dioxide can be removed out of the air and absorbed into one acre of farmland soil per year. If all 434 million U.S. farmland acreage were converted to organic farming, it would equal the removal of pollution from 217 million cars. This is almost 88 percent of cars in the U.S. and over one third of cars in the entire world (“Environmental Facts” 2008).

Through research beginning in 1998, conducted by the Long-Term Agricultural Research service, and funded by the Leopold Center in Iowa, it was found that grain-based crops using organic inputs such as composted manure showed a steady increase in soil quality, crop protection, yield and profitability in crop rotations when compared to conventional rotations with greater amounts of such inputs as fossil-based fuels (“Environmental Facts” 2008).

In another joint multi-year, scientific study at the University of Wisconsin-Madison and AGSTAT, an agricultural consulting firm, forage crops produced an equal amount or more of dried plant bulk material than conventionally grown crops, with equal milk-producing quality. Organic methods also yielded 90 percent as much cash grain crops as conventional methods (“Environmental Facts” 2008).

Continuing Reports: Adverse Effects of Conventional Agricultural Practices on Animals, Humans and Environments

According to two Brazilian studies, the Amazon Rain Forest is in danger of shrinking almost 20 percent by 2030. With inadequate government safeguards against deforestation, the clearing away for farming and road construction is reducing the Rain Forest and impacting global ecology. (“Environmental Facts” 2008)

A published study in the Proceedings of the National Academy of Science, March 6, 2008 online edition reported that synthetic fertilizers applied to apple trees adversely affected the environment, while the application of organic alfalfa or manure had a much lesser negative impact and helped reduce nitrogen pollution in the air (“Environmental Facts” 2008).

Tufts University research showed that when exposed to the herbicide atrazine, which is used on golf courses and

home lawns, it adversely affected normal reproduction of tadpoles compared to the unexposed control group. Reproductive defects included deformation of the hearts, as well as kidney and digestive systems malfunctioning ("Environmental Facts" 2008).

At the National Centers for Coastal Ocean Science, researchers also showed the negative effects of decreased protein levels from atrazine exposure on the free-floating phytoplankton consumed by aquatic animals ("Environmental Facts" 2008).

Fertilizer run-off from conventional agricultural practices that minimize tillage contributes to a condition known as hypoxia in fish, shellfish and shrimp in the Mississippi basin. When warm waters from the Mississippi river and the Atchafalaya River meet the colder temperatures of the Gulf of Mexico waters, a deadly algae environment is formed. With the fertilizer present, when this alga grows, dies and decomposes, it results in imbalanced phosphorus production, and in this environment, the oxygen the algae needs to survive is consumed. The restoring of wetlands, introducing sustainable biofuel and improving the use of nutrients are possible solutions for eliminating sea life hypoxia in the Gulf ("Crop Management Strategies Key to a Healthy Gulf, Planet" April 21, 2008).

A study conducted at the University of Oregon's Center for Ecology and Evolutionary Biology discovered that pesticides and other contaminants reduce a plant's ability to uptake nitrogen, affecting its yield by one-third, showing impaired nitrogen fixation symbiosis between rhizobia and host plants (Jennifer E. Fox, Jay Gulledge, Erika Engelhaupt, Matthew E. Burow, and John A. McLachlan June 12, 2007).

The functioning of aquatic ecosystems has been affected by agricultural fertilizers, other forms of pollution, and over-fishing, which has changed wildlife habitats and created freshwater shortages and oxygen-depleted zones in the Baltic and Black Seas, and along large coastal areas in Asia and Africa. The global increase in harmful algal blooms in the last decade is predicted to increase with more use of agricultural fertilizers, and the increase in freshwater salinity makes soil too saline to grow certain crops, making it critical to link managing water and land as an integrative solution ("Executive Summary" 2006).

In Behavioral Brain Research online edition, it was reported that even after being banned in the U.S. and Canada for thirty years, the toxic pesticide DDT still affects the brains of songbirds, inhibiting their song mating ability and the ability to produce complicated songs. Nor were they able to defend their territory or build proper nests. Exposure to the pesticide during their development results in up to 30 percent less brain tissue, and it is estimated that 15 to 20 generations of robins have been affected ("Environmental Facts" 2008).

Preliminary research has indicated that women who live near farms in the California Central Valley and are exposed to organochlorine pesticides may be at high risk for giving birth to children with autism spectrum disorders (Roberts 2007). In another study, six hundred people exposed to pesticides increased their risk 160% for developing Parkinson's disease, and for people who were heavily exposed for over two hundred days in their lifetime, researchers found there was strong evidence linking this disease with organochlorine pesticides and organophosphorus herbicides (Hancock 2008). More research findings showed additional evidence that Parkinson's disease is a result of pesticide exposure; particularly, one known as paraquat. This pesticide causes a build-up of a protein known as alpha-synuclein in the brains of animals, which destroys the same brain cells that are affected in Parkinson's disease patients (Fox 2007). French researchers found that agricultural workers and others had a high risk for brain cancer mortalities from heavy exposure to pesticides (Provost 2007).

A class of widely distributed environmental contaminants called organotins has been shown to be endocrine disruptors and have been closely linked to abnormal fat cell development and weight gain. Organotin pollutants persist in the tissues of humans and animals. They are found in fish and shellfish, are used as antifungal agents in wood treatments, industrial water systems, and textiles. Organotins are used to stabilize polyvinyl chloride during its manufacturing process but are transferred into food and drinking water upon contact. Exposure to tributyltin chloride (TBT) and bis(triphenyltin) oxide (TPTO) leads to abnormal rise in testosterone levels, promoting male characteristics or masculinization in female mammals (Grun 2006).

For several years, UCLA researchers have accumulated evidence that there is a link between pesticides and an increase in Parkinson's disease, a neurodegenerative disorder. The pesticides paraquat, maneb and ziram have for years been applied to crops in California's central valley. Inhaled, drifted particles by anyone working on or living near the fields have been linked to the disease. Another pesticide, benomyl, has been shown to have toxicological effects that are still found in the environment after being banned ten years ago. Benomyl was used for over thirty years in the United States until more cases of liver tumors, brain malformations, reproductive harm and cancers were linked to the pesticide. Benomyl, finally banned in 2001, has effected a series of far reaching, health-damaging events, even affecting those who were never exposed to it.

According to UCLA research, benomyl increases a person's risk for acquiring Parkinson's by causing a series of physiological cascading effects that may lead to the disease. Researchers have found that benomyl keeps the aldehyde dehydrogenase enzyme (ALDH) from preventing a naturally occuring toxin DOPAL, from damaging neurons located primarily in the midbrain. Benomyl disables the brain's ability to produce the neurotransmitter dopamine, an essential cell-to-cell communication facilitator. Researchers also assert that very little risk for Parkinson's can be attributed to genes (Wheeler 2013).

Studies on immigrant farm workers and their families in North Carolina and Virginia revealed that children's urine samples contained organophosphate insecticides at higher levels than people in other areas of the U.S. Based on family interviews, toxic exposure of organophosphates to workers' families likely occurred through indirect contact with contaminated surfaces from the worker's clothing when workers did not shower immediately after work or where they changed clothes (Arcury 2006). In another study, farmworkers who were exposed to organophospate pesticides on apple and pear farms tested with higher concentrations of dimethyl pesticide residues in their urine samples than farmworkers working on farms that raised cherries, grapes, hops and peaches. Children of farmworkers who worked on apple and pear farms also showed more urinary dimethyl metabolites than children of non pome fruit workers through exposure to housedust and workers' vehicles, and revealed the pathway of pesticide exposure via the environment away from the fields (Coronado 2006).

In another study, organophosphate (OP) exposure was found to have affected pregnant women and their children. Urine tests measuring urinary dialkyl phosphate (DAP) metabolites in 3.5 to 5 year olds showed a correlation between exposure and attention problems and behavior. Reports of human poisoning from OP exposure include "imparied concentration, slowed information processing and motor function, anxiety, confusion, tremors, seizure, and death." Low level, chronic exposure to OP is not only relevant to fetuses and young children; it is apparent once they enter school when they exhibit neurobehavioral development symptoms and learning problems through their teens (Marks 2010).

Studies show that longer exposure to agri-chemicals such as fumigants, herbicides, and animal and crop insecticides has an increased risk for non-Hodgkin lymphoma (NHL), a cancer that originates in the body's lymphocytes, a type of white blood cell (Chiu 2006). Other ill effects include headaches, fatigue and nausea, and diseases such as cancer and neurological disorders. At least 20,000 pesticide-related illnesses have been diagnosed. Over 90 percent of samples from various water sources contain several pesticides, and pesticides have also been found in fish samples (United 2001).

Evidence is mounting of the relationship between pesticide exposure and elevated rates of Alzheimer, Parkinson, ALS (amyotrophic lateral sclerosis), reproductive disorders and birth defects. Reports of chronic conditions such as respiratory problems such as asthma and COPD (chronic obstructive pulmonary disease), atherosclerosis, coronary artery disease, kidney disorders, arthritis, chronic fatigue, genetic damage, endocrine disruptions, and rapid aging indicate that pesticides may have an adverse effect on all body systems (Mostafalou 2013).

In yet another study on male Venezuelan farm workers, researchers reported that chronic organophosphate and carbamate pesticide exposure impacted male reproductive function. It is estimated that up to 87.5 percent of the men's sperm and semen quality in the study had been damaged, and adversely affected their reproductive and thyroid hormones (Miranda-Contreras 2013).

In addition to pesticides, some of the most dangerous toxic chemicals that affect human health, known as POPs, form as the result of the byproducts of manufacturing processes and the incineration of industrial waste. POPs have remained in the environment for many years because they can be spread via water currents and through the air. POPs residues continue to persist in the U.S. food supply, and remain a threat to human health throughout the world. Although DDT and PCBs have been banned in the U.S. for many years, they continue to linger. Along with DDT, which was banned in 1972 but still lingers at all levels of the environment and is therefore found in human, animal and sealife tissues, PCBs, dieldrin and dioxins are among twelve of the worst chemical health and environmental threats and have been banned under the global POPs treaty.

According to the FDA and the Department of Agriculture's Pesticide Data program, all food products contain from 63 to 70 "hits" or exposures to POPs daily in the U.S. Daily diets can contain three to seven POPs, and in holiday dinners, the variety of food items can contain up to 38 instances of persistent toxic chemicals. Food items highest in POPs include summer and winter squash, spinach, radishes, peanuts, popcorn, butter, meatloaf, cantelope, cucumbers or pickles. POPs accumulate in body fat, and as these chemicals spread through the food chain, they have also been found in such exceedingly high levels in sea mammals that they have been classified as hazardous waste. POPs are associated with cancer, learning disorders, reproductive disorders including low sperm counts, endometriosis, lowered immune function and diabetes (Schafer 2001).

DDT (dichlorodiphenyltrichloroethane) was first synthesized in 1874, but it wasn't until it was discovered that it could be utilized as an insecticide until 1942. It was originally considered to be advantageous for controlling pests in agriculture because of its stability by remaining in soil and water sources. However, it was found that it also remains in animal and plant tissues, and did not interact well in an environmental ecosystem since it cannot be broken down by microorganisms, enzymes, heat or ultraviolet light. Other DDT organochlorines are methoxychlor, lindane, toxaphane, and the group of compounds aldrin, dieldrin, chlordane, heptachlor and endrin. DDT affects the central nervous system of insects and animals, causing abnormal nerve impulse transmissions that cause muscle twitches, which can result in death ("Pesticides" July 6, 2006).

Wide use of insecticides kills beneficial organisms needed for healthy soil such as bacteria, algae and fungi, which break down plant matter that would normally release nitrogen, carbon and minerals back into the soil, and prevents earthworms from digging tunnels to aerate or oxygenate the soil. With this entire essential ecosystem wiped out from soils, it becomes lifeless and therefore useless for cultivating foods. Besides rendering soil unfit for producing a healthy ecosystem, the polluting effects or bio-concentration process of insecticides affects the entire food chain. Rains wash insecticides into natural water sources where they are absorbed by all members of entire ecosystems beginning with microscopic life forms that are absorbed by fish, which in turn are eaten by larger fish and birds who feed off the aquatic environment. Since prey absorbs insecticides, so do the animals that feed on those prey. Insecticides are stored in body fat and are accumulated. Therefore, the higher the individual is on the food chain, the higher the concentrations of insecticides are stored in fat tissues ("Pesticides" July 6, 2006).

DDT has been found to affect birds' reproductive ability, and disrupts egg shell formation such as producing soft shells or eggs without a shell, particularly in ospreys and bald eagles. DDT inhibits the essential environmental production of plankton, which all marine life depends upon as a main food source. Susceptible humans are affected with heavy exposure during the manufacture of insecticide chemicals or through their heavy use. Eventually, long term exposure can lead to cancers, birth defects, damage to genetic material, kidney, liver and lung damage, reproductive problems and nervous system disorders. Those insects that survive contact with insecticides pass their ability to resist these chemicals to their offspring, developing cross-resistance to other classes of insecticides as well.

With the survival rate of insects against insecticides comes a resurgence of pests as they return in larger numbers before their natural enemies or predators are eliminated. Since such insect resistance has become a problem for the environment and human health, a different approach to eliminating pests has been introduced, known as Integrated Pest Management (IPM). IPM combines chemicals, natural predator insects or biological controls such as the release of parasites, pathogens particular to pest species or sterile pests that interfere with reproductive cycles, scent lures and traps, and plants resistant to many pests. Crop rotation has also been shown to discourage insect pests. Reducing the number of pests to a more manageable level minimizes environmental harm and harm to the economy ("Pesticides" July 6, 2006).

As of 2001, according to the UN Food and Agriculture Organization (FAO), persistent pesticides are an ever increasing threat to the health of millions of people and the environment, with over 500,000 tons of unused or old pesticide stocks that are leaking, contaminating soil and water, and creating unfit crop production conditions. FAO experts contend that forgotten, dangerous obsolete stock inventories that have accumulated for over thirty years and continue to be accumulated in Africa, the Near East, Asia, Eastern Europe, the Soviet Union and Latin America have leaked into many large areas, making soil and water unfit for crop production.

Persistent Organic Pollutants (POPs), DDT, dieldrin, endrin, heptachlor, aldrin and chlordane produce toxic by-products more dangerous than the original lethal chemicals. Along with these persistent pesticides, other dangerous pollutants are stored at these sites such as sprayer equipment used to administer them and overwhelming amounts of heavily contaminated soil. It is not as if these sites are isolated; these pollutants have spread into the environment throughout the world long after they have been banned. Old stocks of dangerous pesticides are close to farms, rural areas of the poor, near urban homes and stores. Abandoned pesticide dumps are not contained and left to leak into the ground in their deteriorating metal containers. Many villages' toxic waste dumps are located centrally where families prepare their food and draw water for drinking and cooking.

Failure to use pesticides for a variety of reasons, whether there were incidents of overstocking, pesticide ineffectiveness, mislabeling, language barriers, or insufficient coordination of supplies between countries and improper disposal have contributed to the accumulation of banned pesticides. With large financial gains to be made in pesticide production in the U.S., Europe, Japan, China and India keep agendas hidden, this situation does not allow the best solutions for managing pests.

The Netherlands, Germany, the U.S., Sweden and the FAO have provided funding for the proper removal and disposal of these dangerous pesticides, estimated to cost $3 U.S. dollars per kg or liter. FAO has assisted Ethiopia in cleaning up projects where approximately 3,000 tons of heavy soil contamination needed to be removed from nine

hundred locations and then shipped to Finland for incineration, the only safe method for destroying the pesticides without endangering the environment. The proper disposal of dangerous pesticides has cost the Netherlands, the U.S., and Sweden about $8 million in U.S. dollars.

The Global Crop Protection Federation (GCPF) has been urged by the FAO to help with the costs of pesticide disposal on a global scale since those chemicals are produced by companies who are members of the GCPF. However, cooperation in paying for incineration of obsolete stocks has been minimal. It is critical, according to the FAO, for industries to support and cooperate in covering the costs for proper and safe disposal of dangerous pesticides since aid agencies cannot foot the costs without their help ("FAO WARNS: TOXIC PESTICIDE WASTE STOCKS DRAMATICALLY HIGHER THAN PREVIOUSLY ESTIMATED —CALLS ON COUNTRIES AND INDUSTRY TO SPEED UP DISPOSAL " January 28, 2001).

In conclusion, the choices made daily in selecting conventionally grown foods and other toxic products have been shown to have far reaching ramifications in our lives, and those choices will continue to impact human health and the natural world unless supporting industries that produce toxic products is completely halted. Voting with your purchasing power is the most effective and efficient way to ensure positive change and protect yourself against the devastating effects of toxic chemicals in your food and preventing accumulating them in your body.

Your choices affect the extent to which industries apply health and environmentally hazardous chemicals to the soil, which end up in drinking water, and contaminates food sources from the sea and other water sources, rendering them no longer safe to eat. The first step toward removing the overhwhelming accumulations of environmental biohazards is to simply stop supporting the industries responsible for producing them. This accomplishes both improved personal health protection, and creates a paradigm shift away from supporting the destruction of life by many powerful industrial complexes. This means rapid changes for our civilization toward healing the planet and preventing the many diseased conditions caused to its inhabitants.

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