

Detoxifying the Food We Eat: Accountability Using the Precautionary Principle

by Elizabeth Parker

I. Introduction

What does food undergo before reaching the consumer? Retail consumers in industrialized nations are so far removed from the food they eat and drink that they unknowingly subject their bodies to high levels of toxins.

While some chemicals and pesticides provide some immediate benefits, consumers need to assess the long-term risks and effects of the toxins. The chemicals that industrial agriculture presently subjects upon our Earth and into our bodies present us with new threats of which we may be largely unaware. Available data shows agricultural chemicals cause imbalances, destroy ecosystems, and pollute the groundwater that provides the water we drink. The data also show increased cases of autism, asthma, and babies born with severe birth defects. Despite all of the known hazards, legislatures and courts do not seem motivated to stop the use of agricultural chemicals.

Thomas Berry emphasizes the importance of experiencing the wonder of being in nature as a way of renewing the human spirit. Among his Earth Jurisprudence Principles are two that specifically apply to this dilemma of conventional agriculture. The first is that “the universe is composed of subjects to be communed with, not primarily of objects to be used. As a subject, each component of the universe is capable of having rights.”¹ Presently, the industrial agricultural processes prioritize output: maximum quantity to be produced for human consumption. This process fails to take into consideration the plants’ own integrity and the way humans and plants have interacted and co-evolved in nature for centuries. It treats plants only as objects for human use, with predictable impact on human beings, not to mention the impact on other beings and upon the Earth.

¹ THOMAS BERRY, EVENING THOUGHTS: REFLECTING ON EARTH AS A SACRED COMMUNITY 149 (Sierra Club Books 2006).

The second applicable principle is that, “the various Earth components are in relation with one another, and no living being nourishes itself. Each component of the Earth community is immediately or mediately dependent on every other member of the community for the nourishment and assistance it needs for its own survival, in light of the comprehensive community of existence.”² Our present agricultural model stifles the human relationship with the natural world. Pesticides fail to pay credence to the benefit that insects and their predators bring to the agricultural ecology, and agricultural practices deplete the Earth’s living soil.

The status quo legal model provides a version of oversight and accountability, but its regulatory paradigm has proven ineffective. A renewal of the values that protect life at all levels has become urgent to prevent further harms from agricultural toxins. The Precautionary Principle has a long and respectable history that has guided several jurisdictions to better solutions. While not so revolutionary as to prove impractical, the Precautionary Principle provides a framework that supports Earth Jurisprudence components. When facing potential harm, this approach errs on the side of caution as one of its foundational pillars. Another important pillar of the Precautionary Principle is “shifting the burden of proof to the proponent of the potentially harmful activity.”³

I will discuss some of the known hazards from conventional industrial agricultural practices and the implications of those risks. Next, I will explore those governmental entities presently responsible for toxin regulation and ask why the structure that empowers them has proved so ineffective. Finally, I will discuss the Precautionary Principle as it has been applied by other governments and how it should be applied to resolve present agricultural risks.

² *Id.* at 150.

³ *The Wingspread Statement on the Precautionary Principle*, RACHEL'S ENVIRONMENT & HEALTH NEWS No.586, Feb. 19, 1998, available at <http://www.mindfully.org/Precaution/Precautionary-Principle-Rachels.htm>.

II: Personal Observations

Originally from the Midwest, my perspective has greatly shifted since my move to South Florida. Within my first couple of weeks living in Miami, I noticed the difference in the quality of the produce available in conventional supermarkets. I found this surprising given the climate of South Florida, which appears conducive to growing produce year round. After a couple of months of living in Florida, I nearly stopped buying produce because the quality was so poor.

Additionally, after moving here, I met my husband, and shortly after, his autistic child. His child developed autism after being immunized with a substance that contained thimerosal, a preservative with high levels of mercury that is no longer utilized. While some refute immunizations as causing autism, he stopped talking within a short timeframe after receiving his immunizations. Because of his autism, he is on a restrictive gluten-free and casein-free diet, consuming no wheat or dairy. Studies have shown that autistic people do not properly digest gluten or casein. Improperly digested, these serve as hosts in the body to facilitate certain autistic behaviors and responses.

While accustoming myself to what a child on a gluten- and casein-free diet could and could not eat by avidly reading food labels, I became aware of how many ingredients, including artificial ingredients, additives, and preservatives, were present in the foods I had regularly been purchasing prior to this point. This realization also made me contemplate the additional “ingredients” in our food that remained unlabeled. Pesticides and other chemicals are never included as ingredients, and yet we know they are present. So if an autistic child is so affected by gluten and casein, how can we be sure that he is not as equally or more susceptible to the potentially harmful non-ingredients such as pesticides, which may not be included on the label? For that matter, how do I know the effect of the toxins on me? I began purchasing organic food

products where possible, and not only did the produce look and smell fresher, it tasted better. This transition of my life sparked my investigation of the foods I buy for my family and in the larger impacts of the food related practices I blindly participated in before.

III: The impact on the Earth of current agricultural practices

The effects of the industrial agricultural system are exacting a heavy toll from our planet. Industrial agricultural practices use the largest quantity of freshwater and are the leading cause of surface and groundwater degradation.⁴ Agricultural runoff is now the primary source of pollution in streams and lakes in the United States and the third leading source of pollution in estuaries in the United States.⁵

The present model of agriculture is unsustainable. Land degradation from current agricultural practices has resulted in approximately 11.6 billion acres of cropland and other land degradation, with twelve to fourteen million acres of cropland “taken out of production annually because of severe soil degradation.”⁶

Erosion is a major cause of environmental degradation, which stems from the unsustainable agricultural practices of overusing the land. The rate of topsoil loss is estimated at sixteen to three hundred times faster than it can be replaced through natural soil-making processes.⁷ Mechanized tilling, poor soil and water management, and over application of agricultural chemicals also contribute to land degradation.⁸

⁴ Food and Agriculture Organization of the United Nations, *Control of Water Pollution from Agriculture*, <http://www.fao.org/docrep/W2598E/w2598e04.htm>.

⁵ George Vellidis, Matt Smith, and Richard Lowrance, *Impact and Control of Agricultural Runoff*, http://www.stormcon.com/sw_0305_impact.html.

⁶ United Nations Environment Program, Sub Committee on Agri-food Production and Consumption, *Agri-food and the Environment*, <http://www.unep.fr/pc/agri-food/issues.htm>. Last visited April 15, 2008.

⁷ *Id.*

⁸ *Id.*

Land contamination is also a plaguing issue resulting from the uncontrolled use of contaminating pesticides and fertilizers. While the effects on the land of pesticides and fertilizers with high levels of metal are not entirely known, persistent use does contaminate crops and overall food production.⁹

Ground water contamination by nitrates and pesticides from industrial agriculture are serious threats to the world's drinking water, as agricultural runoff threatens the safety of the groundwater.¹⁰ Ninety-seven percent of the Earth's freshwater is stored underground in aquifers.¹¹ The continuing use of fertilizers and pesticides in an unrestricted manner renders ground water contamination an increasing reality.

Five million people die annually from water-borne diseases.¹² Over 1.3 million of these deaths stem from people drinking water contaminated with one or more dangerous pesticides.¹³ As crop yields diminish, the chemical predicament is perpetuated as farmers increase chemical application, further contaminating agricultural run-off into surface and ground-water.¹⁴

Agriculturally-related carbon emissions present another problem. Agriculture currently consumes ten to fifteen percent of total energy in industrialized countries, with only two to three percent of this occurring on the farms themselves.¹⁵ Transportation and food production have

⁹ *Id.*

¹⁰ Worldwatch Institute, *The Hidden Freshwater Crisis*, <http://www.worldwatch.org/node/1684>.

¹¹ RAQUEL PINDERHUGHES, *ALTERNATIVE URBAN FUTURES: PLANNING FOR SUSTAINABLE DEVELOPMENT IN CITIES* 21 (2004).

¹² CDC Panel on Waterborne Disease, http://www.cdc.gov/ncidod/eid/vol7no3_supp/hunter.htm.

¹³ Bernard Windham, *Health Effects of Pesticides*, <http://www.flev.com/pesticid.html> (last visited April 15, 2008).

¹⁴ *Supra* note 5.

¹⁵ *Id.*

extensive and severe impacts on the environment, chiefly due to air pollution from the use of fossil fuels.¹⁶

Furthermore, present agricultural practices vastly increase waste generated from agriculturally related products such as containers for holding pesticides and food packaging. In industrialized countries, packaging related to food accounts for nearly seventy percent of household waste.¹⁷

Ecosystems have been devastated and destroyed by agriculturally related hazards. Because of the complex, integrated nature of ecosystems, any foreign substance introduced into the ecosystem may have far-reaching effects. For example, scientists have cited studies of pesticides on orchards.¹⁸ When a pesticide application is administered upon an orchard, the desired effect of killing the target insect is achieved. However, after targeting a particular insect, this eliminates its natural enemies, which then become pests.¹⁹ Using pesticides in such a manner fails to take into consideration the rights of the insects to live within their own ecosystem. The use of pesticides assesses the value of the life of the insects in one way: in relation to their perceived economic burden on humans.

Scientists conducted a nine year study of frogs in various areas and found they were adversely affected by exposure to agrochemicals. Such adverse reactions as alterations in the levels of thyroid hormones, physical developmental problems, weakened immune systems, and abnormal sexual development were cited by the scientists.²⁰ In California in particular, native populations of frogs have been declining rapidly due to their particular susceptibility to

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ David Pimentel & Clive A. Edwards, *Pesticides and Ecosystems*, BIOSCIENCE, Jul.-Aug. 1982, at 595.

¹⁹ *Id.* at 595.

²⁰ Bruce Pauli, National Wildlife Research Centre, *Impact of Endocrine Disrupting Compounds on Amphibian Health in Agricultural Ecosystems*, http://www.hc-sc.gc.ca/sr-sr/finance/tsri-irst/proj/endocrin/tsri-96_e.html.

pesticides through their permeable skin.²¹ Even without the particular susceptibility of permeable skin, many other species can have negative, even toxic, effects from pesticides.

IV. The impact on our bodies of conventional agricultural practices

It is impossible to know with certainty the full direct impacts on the Earth and to the human body of the chemicals and pesticides our modern world so liberally uses. What we do know is that on an annual basis, Americans alone use over 939 million pounds of pesticides, and ninety percent of these chemicals do not reach their intended destination.²² This presents a serious question: Where do these chemicals go? They are dispersed throughout the air we breathe and into the water we drink.

Given the large-scale usage of such a large quantity of chemicals, and the variety of chemicals in use, it would be infeasible for any one agency to document the long term effects of each product. At the present, 296 toxicological profiles have been published or are under development from the Center for Disease Control.²³ Toxicological data exist for a mere seven percent of the 85,000 registered chemicals, while tens of thousand of chemicals are not registered.²⁴

The data that presently exists takes into consideration the effects of only the single toxin in a particular study, whereas a recent Environmental Working Group Study found an average of 200 industrial chemicals and pollutants in the umbilical cord blood of newborn American babies.

²¹ Alex Breitler, *Pesticides Killing Frogs, Report Says*, http://www.recordnet.com/apps/pbcs.dll/article?AID=/20070608/A_NEWS/706080327/-1/A_NEWS.

²² Marika Alena McCauley, *Environmental Impacts of Industrial Farming*, http://www.oxfamamerica.org/whatwedo/where_we_work/united_states/news_publications/food_farm/art2565.html

²³ Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, Toxicological Information Sheet, <http://www.atsdr.cdc.gov/toxpro2.html>.

²⁴ L.R. Goldman and S. Koduru, *Chemicals in the environment and developmental toxicity to children: a public health and policy perspective*, ENVIRONMENTAL HEALTH PERSPECTIVE 108 (2000) (Suppl. 3), p. 443.

²⁵ “Of the 287 chemicals ... detected in umbilical cord blood, ... 180 cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests.”²⁶ While these risks should be alarming in and of themselves, the compounded risks of the large number of toxins to which humans actually are exposed remains unknown.

On December 17, 2004, Carlos “Carlito” Candelario was born in Immokalee, Florida, with no arms or legs. Shortly after, on February 4, 2005, Jesus Navarete was born close by with a rare syndrome, symptomized by an underdeveloped jaw, causing his tongue to fall back in his throat and risk choking. Two days later, nearby Jorge Meza was born without a nose or visible sexual organs. After further examination, Jorge was renamed Violeta to coincide with her appropriate gender, only to die three days later from severe birth defects.²⁷

All three of these children shared one thing in common: During their pregnancies, all three of the mothers were tomato pickers on the same Immokalee farm, run by Ag-Mart. Further investigation triggered officials in other states to look at additional Ag-Mart farms, which led to North Carolina pesticide officials citing Ag-Mart in that state for 369 violations of state pesticide law, chiefly in violating the minimum time within which workers must stay off of the fields after pesticide applications. Florida found Ag-Mart in 88 violations. Florida fined Ag-Mart \$111,200, while North Carolina fined Ag-Mart \$184,500, the largest pesticide case to date in the state of North Carolina²⁸.

²⁵ Environment Working Group, *Body Burden- The Pollution in Newborns*, <http://archive.ewg.org/reports/bodyburden2/execsumm.php>.

²⁶ *Id.*

²⁷ John Lantigua, *Pesticides the Root Cause of Birth Defects in Farmworker*, PALM BEACH POST, Mar. 13, 2005, available at <http://www.organicconsumers.org/OFGU/birthdefects031405.cfm>

²⁸ Kristin Collins, *Grower Settles with Limbless Child*, THE NEWS AND OBSERVER, Mar. 25, 2008, available at http://www.newsobserver.com/news/health_science/pesticide_violations/story/1012290.html.

Signs at the entrance of the Ag-Mart fields listed the use of thirty-eight different pesticide products used on the fields, including thirty toxic chemicals. Ag-Mart claims to have stopped use of five pesticides known to cause birth defects, but what about the other thirty-three chemicals used on the tomato field, or those chemicals for which the risks are unknown?

While the focus has meritoriously been focused on farm worker conditions, another frightening component exists: while these babies were born with visible defects to mothers who worked directly on the tomato farms, what effect did the use of these chemicals have on the consumers of the tomatoes? It would take turning a blind eye to think there would be no effects in consuming the tomatoes sprayed by such a manifestedly dangerous chemical. While such supermarkets as Publix have discontinued the Ag-Mart brand from their stores²⁹, the risks still lurk in other supermarkets, as well as from other growers who may not be aware of the threat their chemical practices pose.

Florida uses more pesticides per acre than any other state; however, a mere forty workers are allocated by the Florida Department of Agriculture and Consumer Services to inspect over 40,000 agricultural sites.³⁰ We cannot rely on such a scant amount of employees to fulfill this large task.

In Florida, the Department of Agriculture has conducted 250,000 analyses on 3,000 samples. Half of all analyses contained detectable pesticide residues.³¹ Translated, a consumer of conventional produce has a fifty-fifty chance of consuming a pesticide which may be

²⁹ Beyond Pesticides Daily News Archive, *Supermarket Rejects Ag-Mart Tomatoes Over Birth Defects in Florida*, Nov. 3 2005,

http://www.beyondpesticides.org/news/daily_news_archive/2005/11_03_05.htm.

³⁰ John Lantigua, *Florida Pesticide Inspectors Spread Thin*, PALM BEACH POST, Jul. 17, 2005, available at http://www.palmbeachpost.com/localnews/content/state/epaper/2005/07/17/m1a_inspect_0717.html.

³¹ Florida Department of Agricultural and Consumer Services, Chemical Residue Laboratory, <http://www.doacs.state.fl.us/fs/chemres.html>.

hazardous. With such a large risk, the next logical step is to question whether the increased pesticide exposure may correlate with any of the other increasing disorders in humans.

With the rising prevalence of autism in children, countless studies have attempted to locate the trigger of this life altering condition. Autism has risen dramatically and now affects one out of every 150 American children, and one out of every ninety-four boys.³² Many studies have linked the rising prevalence of the condition to an increased exposure of mercury. Dr. Ko of the Hong Kong Child Development Centre found that mercury stemmed from many sources, including atmospheric deposits, industrial discharges, agricultural materials, and fish.³³

California Department of Health Services Scientists studied pregnant women living near fields sprayed with the common insecticides dicofol and endosulfan and found they were six times more likely to give birth to children on the Autism spectrum than women living farther away from treated fields.³⁴ Residues of the studied insecticides are commonly found in conventional produce, with particularly high levels found on imported produce.³⁵

In a study of farm women, the risk of developing allergic asthma increased by forty-six percent among farms where pesticides were used.³⁶ Ten of the thirty-one pesticides analyzed for the study were found to cause allergic asthma.³⁷

V: What governmental entity maintains the authority to regulate agricultural toxins?

³² Autism Society of America Home Page, http://www.autism-society.org/site/PageServer?pagename=about_home (last visited July 27, 2008).

³³ Kulani Mahikoa, *Fish and Industry Toxins: A Link to Rising Autism Rates in Hong Kong and China*, http://www.autism-society.org/site/DocServer/EH_fish_and_toxins.pdf?docID=4749

³⁴ Organic Connection, *Linkage Established Between Pesticides and Autism*, Aug. 13, 2007. <http://organicconnection.blogspot.com/search/label/autism> (last visited July 27, 2008).

³⁵ *Id.*

³⁶ Daniel J. DeNoon, *Pesticides May Up Asthma*, Dec. 28 2007, <http://www.medicinenet.com/script/main/art.asp?articlekey=86129>.

³⁷ *Id.*

Three federal agencies—the United States Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA), share primary responsibility for regulating and remedying the negative effects of chemicals and pesticides emitted through agriculture within the United States.

The USDA retains authority to restrict the usage of pesticides and chemicals utilized in the agricultural process. The USDA oversees meat, poultry, and egg products, plant pests and weeds, and animal biologics.

The FDA is responsible for “protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation’s food supply, cosmetics, and products that emit radiation. The FDA is also responsible for advancing the public health by helping to speed innovations that make medicines and foods more effective, safer, and more affordable.”³⁸ This protection is effectuated through labeling and food safety. The FDA takes corrective actions when the EPA determines a particular food contains a high level of pesticides.³⁹

The EPA has authority to regulate pesticides and chemicals, and they are required to subject applicants for pesticides to studies which evaluate ecological effects on plants and animals of the particular pesticide and the products it produces as it breaks down, as well studies detailing how the chemical reach and where it goes within the environment.⁴⁰

The EPA has the authority to regulate chemicals and pesticides specifically as applied through four separate pieces of federal legislation pertinent to toxins. The Water Pollution Control (“Clean Water”) Act, 33 U.S.C. §§ 1251-1387, sets a maximum allowance of chemicals

³⁸ United States Food and Drug Administration Mission Statement, <http://www.fda.gov/opacom/morechoices/mission.html>.

³⁹ United States Food and Drug Administration, *Does FDA Control Pesticides in Foods?*, FAQs, <http://www.fda.gov/opacom/faqs/faqs.html#faq6>.

⁴⁰ Environmental Protection Agency, Pesticides: Environmental Effects, <http://www.epa.gov/pesticides/ecosystem>.

permitted in drinking water.⁴¹ The EPA uses the Clean Water Act for regulating waste discharges into water, but it is not used to address pesticide runoff, as agriculture has been classified as a "non-point source," a particular class which does not fall within the Clean Water Act's reach of regulation.⁴² However, where a company is found to have intentionally polluted, point source classification may be judicially inferred so to impute liability upon the corporation.⁴³

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§ 9601-9675, provides federal remedy for past hazardous waste contamination. While CERCLA provides an appropriate authority, the EPA has failed to implement the CERCLA authority to address contamination of groundwater through pesticides and, in any event, Congress has declined to fund pesticide cleanup.⁴⁴

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), 7 U.S.C. §§ 136 et seq. has been congressionally deemed the statute most aptly suited to deal with pesticide contamination. Under FIFRA, the EPA is not to register a pesticide where it is found to cause "unreasonable adverse effects" to man or to the environment.⁴⁵

The Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f et seq., allows the EPA to promulgate regulations as they relate to groundwater contamination. The Act calls for enforcement by states, who can allow waivers up to three years on enforcement actions, if any are initiated at the states' discretion under a plethora of varying state laws.⁴⁶

⁴¹ Michael T. Olexa, *Laws Governing Use and Impact of Agricultural Chemicals: Agricultural Chemicals and Water Pollution*, Florida Extension Service Fact Sheet FRE-77, Sept. 1995, at.4, available at <http://agecon.uwyo.edu/RiskMgt/legalrisk/AgChem&H2Opollpdf.pdf>.

⁴² *Id.* at 2.

⁴³ *Id.* at 2.

⁴⁴ Thomas A. Packer, *Defense of Agricultural Contamination Cases Under the EPA Safe Drinking Water Act*, Section II, <http://www.gordonrees.com/pubs/water.cfm>.

⁴⁵ *Id.*

⁴⁶ Packer, *supra*, Section IIA.

VI: Attacking the problem through foreseeing and forestalling:

The Precautionary Principle

Because of the nature of toxins, it is difficult to ascertain causation. While we may feel a certain condition or harm is a result of a particular toxin, given the established workings of our justice system, the plaintiff bears the burden of proof in showing such causation. The plaintiff may lack the necessary funds to hire trained legal expertise and to fund the necessary research in order to demonstrate causation.

The EPA presently uses a cost benefit analysis ~ based on information from the chemical producer ~ in determining whether a chemical can be regulated.⁴⁷ The cost-benefit analysis fails to take into consideration Earth jurisprudence perspectives, as the potential harm to the environment may easily be overshadowed by the economic component.

Because of the grave but difficult-to-prove long-term risks that chemicals present, combined contrasted with the ease with which producers can document short-term targeted benefits, a cost- benefit mode is detrimental and should be replaced by the Precautionary Principle. The Precautionary Principle has been developed to take a stance against potential harms and is well suited to prevent harm from agricultural toxins. The Precautionary Principle States:

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process

⁴⁷ United States Environmental Protection Agency, *Ecosystem Effects*, <http://www.epa.gov/NHEERL/research/ecosystems.html>.

of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."⁴⁸

The Precautionary Principle suggests an innovative yet reasonable approach: the proponent of a potentially hazardous activity, rather than the public, should bear the burden of proof. The proponent has more fluid access to the information as well as the appropriate means to fund what could be a costly endeavor and should accordingly bear that responsibility. Below are the five precautionary components suggested by the Science and Environmental Health Network.⁴⁹

1. Taking precautionary action before scientific certainty of cause and effect

The first component structures accountability to prevent harm in the face of uncertainty regarding every detail of the risk at issue. This component establishes obligations to act in a certain non-harmful way even when no specific law prohibits the contemplated act.

2. Setting goals

The precautionary approach is characterized by setting “well-defined goals rather than [relying] on future scenarios and risk calculations that may be plagued by error and bias.”⁵⁰

3. Seeking out and evaluating alternatives

The Precautionary Principle seeks to eliminate the hazardous activity as opposed to working within the dominion of so-called safe levels of contamination or economically beneficial activities. This may include eliminating the proposed, potentially hazardous activity in the first

⁴⁸ *Wingspread Statement*, *supra* note 3.

⁴⁹ Joel Tickner-Lowell, Carolyn Raffensperger, & Nancy Myers, *THE PRECAUTIONARY PRINCIPLE IN ACTION* 1ST ED., 4, available at <http://www.sehn.org/rtfdocs/handbook-rtf.rtf>. Also see generally the resources on this topic posted at <http://www.mindfully.org>.

⁵⁰ *Id.*

place, if no reasonable alternatives exist. Hazardous alternative activities are met with a heavy scrutiny so as to avoid further potential harm.

4. Shifting burdens of proof

Proponents of the questionable activities should provide evidence that the activity “will not cause undue harm to human health or ecosystems.”⁵¹ This component of the Precautionary Principle recognizes that, more often than not, the proponents of the activities have greater access to the information and surrounding materials. This factor imposes the responsibility on the persons who have the power, control, and resources to act and prevent harm. This responsibility includes:

a. Financial responsibility

Recognizing that regulations alone are not likely to illicit precautionary behavior on the part of governments or proponents of an activity, the Science and Environmental Health Network suggests that holding the proponents of activities liable for any possible negative consequences of their actions through the use of assurance bonds would encourage companies to think about possible impacts and deter them from taking such actions.⁵²

b. The duty to monitor, understand, investigate, inform, and act

The proponent would be required to routinely monitor their own impacts. They would be required to let the public and authorities know when a potentially harmful impact is found, and to act upon any risk even where uncertainty remained.

5. Developing more democratic and thorough decision-making criteria and methods

⁵¹ *Id.*

⁵² *Wingspread Statement, supra* note 3.

Because difficult questions of causation hinge on policy decisions, those who may potentially be affected by the policy are the ones who must be involved in the decision process. Agencies charged with decision-making would be required under a precautionary approach to consider the impact on affected members of the public.

VI. Incorporating Precautionary Principle to address agricultural toxins

The following Precautionary Principle components⁵³ are well suited to address the present concerns with environmental toxins.

1. **Risk Assessment:** The precautionary model should be used in approaching unknown risks of pesticides. In the face of uncertainty of the risks of toxins, this includes erring on the side of caution and refraining from using the product if necessary. As opposed to a maximum allowable quantity of pesticides, the shift is to reduce pesticide and chemical usage to the least possible amount.
2. **Shifting the Burden of Proof:** Proponents of the activity (the chemical manufacturers and distributors) should have the burden to prove their product does not have hazardous effects, either alone or in combination with commonly allowed chemicals in light of long-term studies. This includes, if the chemical is allowed, continued monitoring of it and notification to the community if the effect changes. They should also be held responsible for any consequences which may result.
3. **Right to Know/ Democratic decision making:** The community has a right to know complete and accurate information on potential human health and environmental impacts associated with agricultural pesticides and the degree of certainty of this knowledge. The proponent should be the one to provide this information to the community, and after

⁵³ *Wingspread Statement, supra* note 3.

verifying the accuracy of such information, the community should democratically participate in evaluating the potential harm.⁵⁴

4. Alternatives Assessment: The community must fully and rigorously assess alternative practices or products to develop the safest and best option in light of the impacts not only on humans, but also on the environment and all other ecosystems. If an alternative product is deemed to have negative impacts, to be permissible, it must be found to provide an important benefit and be narrowly designed to avoid as much harm as possible and have no similar (and better) alternatives available.

5. Full Cost Accounting: When evaluating prospective alternatives to particular products, the community has the duty to consider all of the reasonably foreseeable costs that may occur as a result of the shift to use safer products. In relation to the cost, the short and long term benefits of both opting and not opting to use the chemical products should be considered as to make fully informed decisions.

VII. Successfully Applying Precautionary Principle

Rio Declaration on Environment and Development

The 1992 United Nations Conference on the Environment and Development recognized the need to respect the “integrity of the global environmental and developmental system.”⁵⁵ The 1982 UN World Charter for Nature reflected on the important role of the natural world in

⁵⁴ United Nations Conference on the Human Environment, June, 1972, *Rio Declaration on Environment and Development*, Principle 10, available at

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163&l=en>.

⁵⁵ *Id.*, Principle 15.

proposing precaution.⁵⁶ However, the United States voted against the Charter and, although it signed the Declaration, it has not implemented its vision.⁵⁷ Two of the most significant Precautionary Principle components of the Declaration are:

Principle 1: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life *in harmony with nature*.....⁵⁸

Principle 15 : In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.⁵⁹

Sweden, Long-term Precautionary Principle Proponent

Sweden adheres to the precautionary principle as evinced by the Swedish Act on Products Hazardous to Man or the Environment and through the Act on Chemical Products.⁶⁰ Restrictions are placed on those who “produce or handle hazardous products.”⁶¹ The additional responsibilities include the general duty to investigate the effects of the product on the environment and on man. Sweden cancelled the registration of pesticides for which negative or little data existed.⁶²

⁵⁶ World Charter for Nature, G.A. Res. 37/7, ¶¶ 11-12, 48th plen. mtg., (Oct. 28, 1982), available at <http://www.un.org/documents/ga/res/37/a37r007.htm>.

⁵⁷ Barry Raabe, *Second Generation Climate Policies in the United States*, THE ENCYCLOPEDIA OF EARTH (first ¶) available at http://www.eoearth.org/article/Second_generation_climate_policies_in_the_United_States.

⁵⁸ *Rio Declaration*, *supra*. note 3.

⁵⁹ *Id.*

⁶⁰ CAROLYN RAFFENSPERGER, *PROTECTING PUBLIC HEALTH & THE ENVIRONMENT: IMPLEMENTING THE PRECAUTIONARY PRINCIPLE* 54 (1999).

⁶¹ *Id.*

⁶² *Id.*

San Francisco

In recognition of the rights of the citizens of San Francisco, the city acknowledged that, in the past, “environmentally harmful activities have only been stopped after they have manifested extreme environmental degradation or exposed people to harm.”⁶³

Where reasonable grounds for concern exist, the precautionary approach is designed to mitigate the threat of serious or irreversible harm by triggering a process to select the least potential threat.⁶⁴ San Francisco incorporated into their environmental code and their product purchasing roughly the same essential elements of the Precautionary Principle as I have suggested.

City of Portland, Multnomah County

The toxins Reduction Strategy used in governmental purchasing of toxic products in Multnomah County, Oregon, are included the following quoted principles:⁶⁵

- Use products and substances that do not contain or generate persistent bioaccumulative and toxic chemicals, heavy metals of concern, or known, probable or suspected carcinogens, mutagens, teratogens, endocrine disrupters, organ toxics or respiratory irritants.
- Use effective and progressive integrated pest management strategies, including monitoring of the targeted pest, physical barriers to protect the agriculture, and use of natural pesticides as opposed to synthetics, to minimize reliance on pesticides of concern

⁶³ San Francisco, Ca., Precautionary Principle Resolution (July 3, 2003), available at <http://www.municode.com/Resources/gateway.asp?pid=14134&sid=5> and http://www.takingprecaution.org/docs/sf_pp_resolution.html.

⁶⁴ *Id.*

⁶⁵ Multnomah County, Ore., Toxics Reduction Strategy Resolution (Sept.23, 2004), available at <http://sehn.org/rtdocs/ToxicsResolution.pdf>.

- Ensure careful screening of products and their application to minimize adverse impacts.
- Effectively utilize procurement tools that support toxics reduction in the purchase of all goods and services.
- Implement best management practices that support toxics reduction and proper waste management in all operations.

VII: Conclusion

Our planet is in peril, and unless we begin taking an affirmative stance as to our rights, we are risking the health of the planet and humanity as we know it. Agriculture is a huge promulgator of these risks, and not only are we as humans affected on a serious health level, but also affected are the lives of all of the other beings we share this world with, the land we walk on, and the water we drink to survive.

The Precautionary Principle takes into consideration the needs of the community and the need to take preventative action in contrast to remedial action after the harm is caused. The Precautionary Principle provides a shift in legal thought necessary to stop the use of chemicals for which no one knows the risks. The affected community must be involved in making decisions after being fully provided with information about the pesticide and assessing the risks, with the right to refuse any pesticide and to opt for a healthier alternative.

We must consider our relationships as humans in connection with the rest of nature. In regard to the changes needed to modify conventional agriculture, we must consider the rights of not only ourselves, but the rights of all other beings in the universe to exist as well. The Earth should be able to function as the Earth, yielding crops in its own natural and sustainable way. Water should be able to flow free of pesticides, to foster the growing algae and plants needed to

sustain the fish and life within it, and to be healthy for all to drink. Insects should be free to live as insects do, without being deemed pests and being eliminated by pesticides. We should also remember the nourishing relationship which can be fulfilled only when all members of the Earth community are able to fully maximize themselves and contribute to the whole.