Tribal Regulation of Pesticides

Laying the Groundwork

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"When we were strong in our foods on this continent, we were stronger people - we were healthier. And for Indigenous peoples it all starts with the food. When Indian Country lost its ability to feed itself, through whatever means, we lost that part of ourselves that supports our ability to thrive. It is only by regaining our foods will we be able to restore our health, our resilience as peoples and secure the stability and diversification within our own communities and local economies. But the challenges to secure that future require different approaches than those used in other communities and in predominately urban settings, if for no other reason than our unique legal status, the remote location of our lands upon which foods can be found, and the language, cultural traditions, and legal status of our communities. "
- Janie Hipp Director, Indigenous Food and Agriculture Initiative, University of Arkansas School of Law[1]

Introduction and acknowledgments

In 2013, the Yurok Tribe, working with the Northern California Tribal Court Coalition ("NCTCC") received a grant from the National Congress of American Indians ("NCAI") Partnership for Tribal Governance Initiative ("PTG") Government Reform project. Through this PTG grant, the Yurok Tribe, working with NCTCC, enacted legislation to ban genetically engineered organisms on Tribal lands, and has taken steps to similarly restrict pesticides from contaminating Tribal lands.

The Yurok Tribe continues to work with other Tribes in a regional collaborative as part of the NCTCC and the Tribe and NCTCC co-hosted a Northern California Tribal Food Sovereignty Conference - *Restoring the Balance: A Tribal Food Sovereignty Gathering* in Klamath California in April 2016.

In 2016, NCTCC received a Seeds of Native Health grant from First Nations Development Institute ("FNDI") to continue with work started by the Yurok Tribe and NCTCC. Through the FNDI funding, NCTCC was able to complete work on local Tribal pesticide legislation, research and draft model codes and policy guides to regulating genetically engineered organisms, pesticides and other contaminants on Tribal lands, as well as host a series of Tribal Youth Food Sovereignty Camps in February and March of 2017, with additional technical assistance from Valerie Segrest.

This Tribal Regulation of Pesticides guide is aimed to generally introduce Tribal communities to pesticide concerns and regulation.

[1] 'From the report: *Feeding Ourselves: Food access, health disparities and the pathways to healthy Native American communities* (Echo Hawk Consulting, 2015) https://nebula.wsimg.com/891e74d1afe847b92abe87b2a1df7c63?AccessKeyId=2EF8ECC329760AC5A98D&disposition=0&alloworigin=1

In order to best support tribal efforts to exert sovereignty, tribal judges must have adequate written provisions and remedies. When the law is silent on an issue or fails to provide a remedy, a court will have a difficult time filling the gap and may need to look to laws of other jurisdictions to decide how to answer the question before it. This is particularly true (and troublesome) when a tribe desires regulations that are stricter than federal law provides. A court that is asked to rule on a question of pesticide regulation is likely to look to federal standards when its own tribal government has not enacted pesticide regulation. Thus, it benefits a tribe when the tribal government enacts its own pesticide regulation.

This memo provides general information regarding pesticides, examines some risks and impacts of pesticidal toxins on tribal health, safety, and resources, discusses regulatory options and opportunities available to tribal governments, and recommends general courses of action that a tribal council may wish to consider.

Part I: The effect of pesticides on human health and the environment

A. Pesticides are toxic - their sole purpose is to kill.

Pesticides are poisons that are deliberately manufactured to kill life forms, and are not limited to killing only the organisms listed on the labels. Many pesticides have the ability to harm or kill a broad range of life forms, including humans. Because pesticides contain poisons, risk is an inherent in pesticide use. While risks may be minimized, once pesticides are released into the environment the toxins are impossible to avoid. Subsistence foods and cultural materials may become tainted with toxic substances, causing serious short-term health problems and debilitating long-term diseases.[2] Short-term exposure of humans to pesticides can cause skin and eye irritations and respiratory distress. Long-term exposure can cause chronic and serious diseases such as cancer, diabetes, asthma, reproductive complications, birth defects, digestive diseases, autoimmune disease, neurological dysfunction and behavioral disorders in both people and animals.[3]

Pesticide use has become more controversial because evidence increasingly supports claims that toxins in pesticides are the source of many serious diseases. The quantity of pesticides released into the environment increases every year. At the same time, questionable data and factual omissions underlying manufacturer product claims continue to surface as mounting medical and scientific evidence links toxins in pesticides to

[2] YTEP, *Subsistence Resources On the Yurok Indian Reservation*. Available at http://www.yuroktribe.org/departments/ytep/documents/subsistenceresourcesbrochure.pdf. YTEP advises tribal members to be on the alert for signs of pesticide use when gathering food and materials.

[3] Meriel Watts, *Human Health Impacts of Exposure to Pesticides*, World Wildlife Fund, 6 et. seq. (Nov. 2012). Available at http://awsassets.wwf.org.au/downloads/pr_attachment_human_health_impacts_of_exposure_to_pesticides_20mar13.pdf

debilitating, chronic diseases. Greater public awareness of environmental pesticides motivates individuals and groups to insist on a human right to know what poison substances contaminate food, water, air, and the environment.

Some pesticides persist and accumulate in the environment, which increases the quantity of toxins and poisons throughout the ecosystem. Two such poisons are anticoagulent rodenticides and DDT – both are popular at unlawful cannabis cultivation sites. Persistent pesticides can cause genetic mutations and cancerous tumors in both plants and animals, degrading the quality of the ecosystem and the ability of species to survive.[4] These pesticides migrate into streams and underground aquifers and streams, bringing sickness, disease and death to aquatic species in riverine ecosystems.

Some of these pesticides are used globally, causing some plant and animal species to be driven to the point of extinction while other species develop strong immunities. "Superweeds" and "superbugs" are plants and insects that have evolved a resistance to the unprecedented poisoning of the environment. In response to this situation, pesticide manufacturers have increased the potency of toxins in pesticides and created new, toxic cocktails to continue their profitable "War on Pests." Not only is the federal EPA slow to react to reports of pesticide-caused extinctions, it continues to streamline and fast-track the registration process for new pesticides.

B. What are common sources of pesticides on and adjacent to Tribal Reservations in Northern California?

Pesticides enter Tribal Reservations and territories by three main pathways: through household pesticide use, through use in the agricultural industry, and through practices employed in unlawful outdoor cannabis cultivation.[5] Household pesticide use includes bug sprays and baits; rat and rodent poisons; mold and mildew killers; weed killers and other substance used in lawn care and gardening.[6] Although these materials are familiar and used frequently many contain toxic chemical compounds that are harmful to human health, particularly when used frequently, in high quantities, over long time periods, or not in accordance with the label directions.

Commercial timber companies apply a large amount of herbicides in the spring and fall to reduce "unwanted" plants and animals in forests. When pesticides are applied to stands of timber, these chemicals also reach traditional food sources and streams. However, none of the herbicides used in commercial forestry are registered for use on food or medicine plants and are not safe for human consumption.[7]

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[4] Rachel Carson, *Silent Spring*, 5 et. seq. (1962).
[5] Yurok Tribe Environmental Program (YTEP), *Pesticides On the Yurok Indian Reservation*, available at http://www.yuroktribe.org/departments/ytep/documents/pesticidebrochure.pdf
[6] *Id*. Others include flea and tick sprays, powders, and pet collars; kitchen, laundry, and bath disinfectants and sanitizers; insect repellents for personal use; some; some swimming pool chemicals.
[7] *Id*., 2.

Unlawful outdoor cannabis cultivators use copious amounts of rodenticides and other pesticides to eliminate animals and insects that may damage or reduce plant productivity. Often these pesticides, which include DDT and anticoagulent substances that cause internal hemorrhaging in all mammals (including large game animals and humans) are so toxic that the United States has banned their sale and use. These banned substances may be smuggled onto a Tribal territory from outside the United States.[8]

Part II: Types of Tribal actions for protecting tribal members and resources

Although the majority of tribal governments have not enacted pesticide regulations, some have taken steps to control pesticides within their reservation boundaries. This section describes some of tribal pesticide regulatory strategies and notes the benefits and limitations of these approaches.

A. What is the effect of no tribal pesticide regulation?

In the absence of tribal pesticide regulation, such regulation follows the federal scheme established under FIFRA. This benefits a Tribe that does not have the capacity to undertake regulation on its own, since FIFRA is a federal law that applies throughout the United States. However, if a tribe wants regulatory standards that are stricter than those in FIFRA, it will need to enact its own pesticide legislation. Without written legislation, a Tribal Courts does not have a way to enforce the tribe's desired limits on pesticide use. Furthermore, since the EPA can enforce tribal pesticide ordinances that have been through the EPA approval process, the lack of enforceable tribal pesticide legislation means that a tribe does not have the option to enter a cooperative enforcement agreement with the EPA. Without enforceable pesticide legislation, the federal standard will be the default regulation within tribal jurisdictions.

B. How do tribal governments use resolutions to control pesticides?

Resolutions are useful tools for tribes to express their policy stance to those who are located on or near the Reservation. Resolutions can also be effective for communicating policy to other tribal, local, state and federal governing bodies when the tribe is attempting to gain support for actions or influence how other governments decide issues that will impact the tribe and its resources. Resolutions typically do not have penalty clauses, so compliance is voluntary. Additionally, resolutions are less flexible than comprehensive acts, which can be partially revised when necessary. Therefore Resolutions suffer from enforcement, compliance, and flexibility standpoints. However, if a tribe is in the process of establishing comprehensive regulation, it may choose to use a resolution as an interim

[8] The Merck Veterinary Manual, *Anticoagulant Rodenticides (Warfarin and Congeners)*. Available at http://www.merckvetmanual.com/mvm/toxicology/rodenticide_poisoning/anticoagulant_rodenticides_warfarin_and_congeners.html; Ryan Burns, *As Feds Look to Protect Pacific Fisher, Yard Signs Urge Growers to Avoid Rat Poison on Marijuana Grows*, Lost Coast Outpost (Oct. 6, 2014). Available at https://lostcoastoutpost.com/2014/oct/6/feds-look-protect-pacific-fisher-yard-signs-urge-g/

policy statement until it is able to establish a permanent regulatory scheme.

The White Mountain Apache Tribe of the Fort Apache Indian Reservation is one example of how another tribe has used a resolution to regulate pesticide use. The Council of the White Mountain Apache Tribe used resolutions to approve business licenses for pesticide applicators within its jurisdiction. For example, in 2005 a resolution was issued to permit a tribal member to conduct his residential pesticide business on the Reservation.[9]

The Fort Berthold Tribal Council provides another example of resolution use. The Council made use of resolutions to approve the Tribe's first pesticide regulations. Those resolutions became the basis for what is now the Tribe's comprehensive pesticide code.[10]

Tribes have used resolutions to approve exceptions to current tribal policy, communicate their concerns about pesticides to other governmental organizations, rapidly establish policy, and to establish the foundation for future pesticide codes and regulations. However, because resolutions are policy statements made by governing councils and typically do not contain enforcement clauses, resolutions are an efficient approach for comprehensive regulation.

C. How do tribal governments use ordinances to control pesticides?

Ordinances put policy into action and may follow Resolutions, however, an ordinance can be enacted without a prior resolution. Some tribes approach pesticide regulation as a land use issue, inserting specific pesticide application limits within land use ordinances. For example, the Fort Peck Tribe's Land Use Ordinance gives the Tribal Office of Environmental Protection (TOEP) the authority to implement a pesticide regulatory program modeled off the current EPA pesticide program. Once implemented by TOEP, adherence to the land use ordinance is required on all tribal and trust lands within the reservation.[11]

Other tribes have established sections of tribal code that expressly regulate pesticides and other hazardous substances. For example, the Confederated Tribes of the Colville Reservation has established a Hazardous Substances Control Act within the Tribal Code. This Act aims to reduce the presence of organic compounds and sediment-dwelling organisms, and requires clean up of these substances in the soil if the hazardous substances exceed a threshold amount.[12]

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[9] Res. No. 02-2005-23, *Resolution of the White Mountain Apache Tribe of the Fort Apache Indian Reservation*, (Feb. 2005) Available at http://www.wmat.us/Legal_Scans/Resolutions/2005/01-2005-23.%20Business%20License,%20Pesticide%20Permit,%20Future%20Business%20for%20Christopher%20Kane.pdf

[10] Fort Berthold Reservation Pesticide Code (FBRPC), § XII (Mar. 1984) Available at http://www.nplnews.com/toolbox/tribal/13.html

[11] *Fort Peck Tribes Land Use Policy*, 9-10 (Dec. 2011).

[12] 4 CTCR 16, Hazardous Substances Control Act, Confederated Tribes of the Colville Reservation (2007). Available at http://www.colvilletribes.com/media/files/4-16.pdf

For large tribes it makes sense to use ordinances for enforcing policy and penalizing violators. Ordinances can be enforced by tribal police and used by tribal courts as statements of Tribal law. Ordinances are preferable to resolutions because ordinances typically include enforcement and penalty clauses within the framework of the law.

Federally-recognized tribes have the option to participate in cooperative agreements with the EPA. Many tribes that have enacted comprehensive pesticide regulation have also entered cooperative agreements with the EPA. Cooperative agreements bring the EPA's Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) enforcement authority to bear on Reservations while the tribe conducts education, outreach, and cooperate with federal enforcement actions.[13] Ordinances establish the tribal pesticide standard when a tribe enters a cooperative agreement with the EPA. The tribal government decides if and how pesticides will be allowed within their nations. Section V.A in the Supplement to this document provides examples of how tribes regulate pesticides through cooperative agreements.

D. How can lack of local support impact tribal pesticide regulation?

Since ordinances contain defined standards that are enforceable by tribal law, stringent standards may result in a backlash from the community. This is particularly true when ordinances affect non-tribal members.

The Yakama Nation's 2003 proposed pesticide ordinance is illustrative of how backlash can interfere with a tribe's intent to regulate agricultural pesticides. The proposed Yakama ordinance would have extended stringent pesticide regulations to all farmlands within the reservation, including those operated by non-tribal members. When the draft ordinance was circulated non-member farmers opposed it on the basis that they were denied a voice in the Yakama Nation's affairs. Due to non-member pressure, the Yakama Nation revised its pesticide ordinance to mirror federal and state standards, but included some exceptions for culturally-sensitive areas.[14]

The potential for backlash should not inhibit a Tribal Council from protecting the Tribe's interests. Instead, it is important to be aware that the potential for community opposition exists and that a proactive approach offers the prospect of reducing community resistance.

[13] Jane Kloeckner, HOLD ON TO TRIBAL SOVEREIGNTY, 42 Envtl. L. Rep. News & Analysis 10057, 10058 (Jan. 2012).
[14] *Yakamas relax stand on pesticides*, Seattle PI (Nov. 28, 2003). http://www.seattlepi.com/local/article/Yakamas-relax-stand-on-pesticides-1130941.php

Part III: Strategies for tribal council action

A. When is doing nothing an effective strategy?

Most tribes have not taken steps to regulate pesticides. No regulation can be an effective strategy when a tribal government needs time to consider if and how FIFRA and EPA regulations impact the tribe and its environment. If pesticides are not a major concern to a tribe, if the tribe is comfortable with the current level of pesticide use on the Reservation, or if the tribe lacks capacity to regulate pesticides in its jurisdiction, then doing nothing allows tribal government to rely on the EPA to enforce federal law while focus on more pressing matters.

However, doing nothing can harm a tribe's interests, particularly in a case where pesticide use may increase due to revised pesticide regulation standards. If the risks to human health and the environment increase, the tribal government may need to act to protect the long-term well-being of its members. Doing nothing can be an effective short-term strategy to allow a tribal government time to assess whether pesticide regulation is necessary, but as a long-term approach inaction has the potential to harm a tribe's members and natural resources.

B. When is an informal approach, such as education and outreach an effective strategy?

Informal regulation such as resolutions and policy statements can be more efficient in the short term than establishing formal regulations. Resolutions combined with education and outreach can be an effective means to encourage grassroots and community support for stricter pesticide regulation while encouraging community solidarity around an issue before enacting more formal approaches such as ordinances. However, since informal regulation relies on voluntary cooperation, it will be necessary to depend on tribal members and reservation businesses to engage in self-enforcement. Thus, informal approaches limit the ability to influence the behavior of those within its jurisdiction.

An informal approach can gradually prepare the community for more formal methods of pesticide regulation and can be helpful if the Tribal Council anticipates much resistance to formal pesticide ordinance and enforcement. The downside of informal regulation is that it takes longer to recruit community cooperation and achieve compliance. This may require a long-term commitment of funds, personnel, and political will to shape the change the Tribal Council seeks.

C. When is formal regulation an effective pesticide regulation strategy?

Formal regulation can be an effective way for the Tribal Council to implement enforceable changes to Reservation pesticide use. Ordinances can be comprehensive and include measurable standards, enforcement mechanisms, and communicate tribal expectations in clear terms. When tribal members support stronger regulation, the Council's strategy should be to take action. Tribal members will perceive the Tribal Council as showing strong leadership and will view decisive action as both an exercise of Tribal sovereignty and an exercise of self-determination.

However, when tribal membership is polarized over an issue, or when non-members who will be affected by the regulation feel that their interests have been marginalized, an ordinance should be preceded by education and outreach. Factors such as the timing of an ordinance, local non-tribal member support for an ordinance, and the ability of a Tribe to compel compliance are important considerations. The best timing for approval of a pesticide ordinance is when the community supports pesticide regulation.

D. Tribal pesticide regulations are as unique as the tribes that enact them.

Several tribes have enacted pesticide regulation within their jurisdictions and a few have entered into EPA cooperative agreements to enforce FIFRA and certify pesticide applicators within the exterior boundaries of their reservations. Cooperative agreements are unique for each tribe since every tribe has different criteria, is responsible for different types of ecosystems, and has different goals. FIFRA enforcement is the common factor in each cooperative agreement. Unlike counties and municipalities, tribes are sovereigns whose pesticide regulations are not affected by state preemption acts, so tribes have the power to establish pesticide regulation even when adjacent local governments are barred by a state from doing so. Unlike city and county pesticide bans that have been held void in some states for being contrary to state regulation schemes, there have been no reported judicial challenges to tribal pesticide ordinances.

Part IV: Sources of Industrial Pesticides

A. How do pesticides enter the environment?

Industrial pesticides can enter the environment through several pathways:

1. Aerial spraying can be used to scatter pesticide-coated seeds, to spray pesticides and fertilizers on large areas of vegetation (one example is crop dusting), and for "water-

bombing," which is a method used in firefighting to drop fire retardants on burning areas.[15] In areas of rough and remote terrain, aerial spraying can be preferred over the use of ground crews.[16] Aerial spraying is indiscriminate because it blankets an entire area with a substance and once released, the applicator has no control over where the pesticide lands. Substances can easily drift off target, carried by wind or picked up by fog droplets.[17]

2. Ground application of pesticides occurs when a pesticide applicator sprays, dusts, injects or otherwise applies pesticidal substances at ground level. Although ground application is easier to control than aerial spraying, "broadcast" pesticides (pesticides applied to an entire area rather than isolated to individual plants[18]) remain indiscriminate.

3. Scattering of pesticide-coated seeds may involve aerial or broadcast techniques. When commercial seed companies apply pesticide, fertilizer, and polymer (plastic) coatings to seeds, each seed becomes an agent that spreads pesticides to water, the surrounding soil and other organisms, including animals that ingest the seeds. Nicotine-based pesticides (neonicotinoids, or "neonics") are sometimes applied to seeds. Neonics are highly suspect as the culprit in honeybee Colony Collapse Disorder (CCD). Recently, EPA concluded that neonics "provide negligible overall benefits" in most situations, but nicotine-based pesticide use has not decreased.[19]

4. Toxic substances find their way into drinking water by percolating through the soil into the groundwater and running off into rivers, streams and other water bodies.[20] Additionally, aerial applications of toxic substances drift through the air and indiscriminately blanket broad areas with toxins, including homes, schools, gardens, sports fields and other community areas. This practice disproportionately impacts forest and agricultural workers and families that live in surrounding rural areas.[21]

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[15] William Yardley, *In Fighting Wildfires, Concerns About Chemicals*, New York Times (Nov. 15, 2008). Available at http://www.nytimes.com/2008/11/16/us/16wildfires.html?pagewanted=all&_r=0

[16] Rita Beard and Louisa Gibson, *Exotic Plant Management Team Program 2009 Annual Report*, 31 (2009). Available at http://www.nature.nps.gov/biology/invasivespecies/Documents/EPMTFY2009AnnualReport.pdf; Green Diamond Company, *California Timberlands Forest Management Plan* (FMP), 59 (Aug. 2014). Full text available at https://greendiamond.com/responsible-forestry/california/reports/FMP_FULL_Aug_2014.pdf. The Green Diamond 2014 FMP states that the company has not engaged in aerial spraying since 2002.

[17] Yurok Tribe Environmental Program (YTEP), *Pesticides On the Yurok Indian Reservation*, available at http://www.yuroktribe.org/departments/ytep/documents/pesticidebrochure.pdf

[18] Cornell University Cooperative Extension, *Pesticide Dictionary*. http://psep.cce.cornell.edu/Tutorials/dictionary.aspx

[19] Environmental Protection Agency (EPA), *Benefits of Neonicotinoid Seed Treatments to Soybean Production*, Memorandum 1 (Oct. 15, 2014).

[20] National Pesticide Telecommunications Network, *Pesticides in Drinking Water*, 1-2. Available at http://npic.orst.edu/factsheets/drinkingwater.pdf

[21] Pesticide Action Network, *Schools and Playgrounds*, http://www.panna.org/resources/schools-playgrounds; Pesticide Action Network, *Rural Families*, http://www.panna.org/frontline-communities/rural-families; Pesticide Action Network, *Farm Workers*, http://www.panna.org/frontline-communities/farmworkers; State of California Department of Pesticide Regulation, *Pest Control Aircraft Study Guide*, 162 et seq. (Jun. 2006).

B. How do timber-industry pesticides affect traditional and cultural resources?

On forestry lands where Tribal members to gather traditional foods and resources, it is a standard practice for forest managers to apply pesticides to plants that it considers undesirable–the same plants, trees and grasses that Tribes have used for thousands of years and continue to use for traditional arts, crafts, and subsistence foods.[22]

Pesticides used in forestry eradicate important species and taints those that remain: tanoak trees (including the acorns), huckleberries, salmon berries, and numerous basket materials: hazel, ferns, alder, bear grass, and spruce root. Because pesticides also run off into the water, they can contaminate salmon, steelhead trout, sturgeon, candlefish, surf fish, eels, mussels, clams, seaweed. When deer, elk, and waterfowl consume pesticide-laden plants, they can also become tainted.[23]

Tribal members should be cautious when gathering resources and should be on the alert for indications of pesticide use in a gathering area.[24] Consuming foods tainted with toxic substances can lead to serious short-term health problems and debilitating long-term diseases.

Part V: Federal and state pesticide regulation and the impact on Tribes

This section provides a summary of U.S. federal policy, explains how "pesticides" are defined under federal law, and how the federal government regulates pesticides through the EPA. The discussion includes information about how and when federal pesticide regulation applies in Indian Country and includes a brief discussion of how the State of California's pesticide regulations can impact Tribal lands.

A. How are "pesticides" defined?

1. What is a "pest"?

"Pests" are very broadly defined as living organisms that occur where they are not wanted, or that cause damage to crops or humans or other animals. Examples include insects, mice and other animals, unwanted plants (weeds), fungi, microorganisms such as bacteria and viruses, and prions. Given the very generalized definition, any living organism, including humans, could be characterized as a pest.[25] However, one purpose of the federal pesticide policy is to ensure that pesticides will not cause unreasonable adverse effects on

[22] *Id*.
[23] *Id*.; YTEP, *Subsistence Resources On the Yurok Indian Reservation*. Available at http://www.yuroktribe.org/departments/ytep/documents/subsistenceresourcesbrochure.pdf
[24] *Id*.
[25] Environmental Protection Agency (EPA), *What is a Pesticide?* http://www.epa.gov/pesticides/about/

human health or the environment.[26] Pesticide regulation assumes that some organisms are naturally unwanted, so it is appropriate to use poison to kill them.

The goal of agribusiness is to increase profits while decreasing costs, so a "pest" may simply be any organism that out-competes a cash crop. In fact, that is precisely why timber companies apply so many herbicides to the forests they manage: to prevent non-cash crop species from competing with the trees that timber companies intend to harvest.[27] For instance, Green Diamond classifies tan oak, madrone, bay, alder, ceanothus, manzanita, and coyote brush as "pests," and in some instances includes huckleberry, *Rubus* sp., maple, cascara grass and poison oak. Yet many of these species are traditional medicinal and food plants that were once cared for by burning and other labor-intensive traditional methods.[28] Pesticides are an inferior substitute for the insect and vegetation control that intermittent burning accomplishes.

An additional factor that contributes to an increase in "undesirable" organism populations is the intentional practice of reducing biodiversity in commercial forests. Biodiverse forest ecosystems include plants and animals that help balance the ecosystem by controlling species population explosions.[29] However, commercial foresters limit the diversity of tree species they plant in order to increase the quantity of trees that can be harvested for commercial purposes. Reduced biodiversity unbalances forest ecosystems by eliminating organisms that naturally suppress insects, rodents, and other organisms that may be attracted to commercial tree species.[30] Limiting the variety of tree species while increasing the quantity of those that can be sold for profit increases "pest" habitat potential and food supply, resulting in "pest" population explosions.[31]

The commercial goals of agroforestry that have led to reduced forest biodiversity have fostered a general perception that some organisms in forest ecosystems are "pests" that require human intervention to control. In reality these organisms are naturally responding to drastic, human-caused ecosystem alterations. The term "pest" promotes the misconception that an organism, rather than a policy or practice is causing a problem in the ecosystem.[32]

2. What is a "pesticide"?

FIFRA defines a "pesticide" as any substance or mixture of substances intended to prevent, destroy, repel or mitigate any "pest."[33] Though often misunderstood to refer only

[26] EPA, *The National Pesticide Tribal Program: Achieving Public Health and Environmental Protection in Indian Country and Alaska Native Villages*, http://www2.epa.gov/sites/production/files/2014-10/documents/tribal-brochure.pdf
[27] Green Diamond FMP, 58.
[28] Kat Anderson, *Tending the Wild*, 145-148 (2005).
[29] Rachel Carson, *Silent Spring* 10 (1962).
[30] *Id*.
[31] *Id*.
[32] *Id*.
[33] Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) § 2(t).

to insecticides, the term pesticide also applies to herbicides, fungicides and various other substances used to control unwanted organisms.[34] Under this definition any herbicide that is intended to control, defoliate or dessicate plants is considered a pesticide.[35] Although the federal definition of "pesticide" is quite broad, it excludes drugs used to control diseases of humans or animals, such as livestock and pets (these are regulated by the Food and Drug Administration); fertilizers, nutrients and other substances used to promote plant survival and health; biological control agents (certain microorganisms are excepted); and products containing certain low-risk ingredients such as garlic and mint oil.[36] Individual states may apply their own regulations to these substances.[37] *For the purposes of this discussion, a "pesticide" refers to a broad category of poisonous substances, intentionally released into the environment for the purpose of killing living organisms.*

B. What are the major federal categories of pesticides?

The federal government classifies pesticides into two major categories: chemical pesticides and biological pesticides. Chemical pesticides are synthesized from compounds in a laboratory. These include organophosphates (most are insecticides), carbamates (nervous system disruptors), organochlorines (insecticides such as DDT are in this category), and pyrethroids (typically disrupt the nervous system of "living organisms").[38] Consult Section VI.A in this Supplement for additional information on the health effects of these pesticides.

Chemical pesticides are widely used and many are derived from substances developed by Nazi Germany during World War II to conduct chemical warfare.[39] Biological pesticides (biopesticides) are derived from natural materials such as animals, plants, bacteria, and certain minerals. This broadly includes the use of insects (such as ladybugs and birds) and pathogens to control unwanted organisms.[40]

This discussion focuses on the production of biological pesticides through biotechnology and genetic engineering in which a plant's genetic code is modified to produce pesticidal microoganisms or toxins. Biological pesticides discourage pests or allow a genetically engineered ("GE") plant to tolerate conditions that would otherwise kill it.

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[34] EPA, *Learn about chemicals around your house*. http://www.epa.gov/kidshometour/pest.htm. Sub-categories of pesticides include fungicides, herbicides, insecticides, repellents, rodenticides, algicides, antimicrobials, attractants, disinfectants/sanitizers, fumigants, fungicides, herbicides, insecticides, miticides, microbial pesticides, molluscicides, nematicides, pheromones, repellents, and rodenticides are also included in the list of pesticides.
[35] *Id*. The EPA also provides a list of various classifications of pesticides at http://www.epa.gov/kidshometour/pest.htm
[36] EPA, *What is a Pesticide?*
[37] *Id*.
[38] EPA, *Types of Pesticides*. http://www.epa.gov/pesticides/about/types.htm
[39] In the instance of Bayer, the German multi-national chemical and pharmaceutical corporation that produces the neonicoinoid that has been implicated in Bee Colony Collapse Disorder, the corporation was part of the German IG Farben chemical company that produced wartime toxins during the Second World War. After the war, Farben was broken up and Bayer became independent. Agricultural chemicals and biotechnology rank high among the contemporary Bayer's primary products.
[40] Cornell University, *What is Biological Control?* http://www.biocontrol.entomology.cornell.edu/what.html

"Plant Incorporated Protectants," "Genetically Modified Microbial Pesticides," and "Herbicide-Tolerant Crops" are the three methods used to produce biological pesticides.

Pesticides are broadly defined as any chemical or biological substance that is produced to kill unwanted organisms. These substances are not easily contained and enter the environment and the food supply through indiscriminate application methods.

C. How does the federal government regulate pesticides?

In the United States, pesticides are regulated under a scheme of "regulatory federalism" in which the responsibility for regulation is assigned to both federal and state governments. The *Federal Insecticide, Rodenticide and Fungicide Act* (FIFRA) is a comprehensive federal pesticide policy that has been set by U.S. Congress with a delegation of enforcement responsibility to the EPA. The EPA establishes regulatory mechanisms to implement and administer FIFRA. FIFRA allows states to assume responsibilities for defining and implementing their own pesticide standards. In California, state pesticide laws are enacted by the state legislature. The Department of Pesticide Regulation (DPR) has enforcement responsibility.

1. What is the scope of EPA's regulatory authority?

EPA regulates pesticides under two major Acts: FIFRA and the Federal Food, Drug, and Cosmetic Act (FFDCA). FIFRA delegates authority to EPA to regulate the sale, distribution and use of pesticides in the United States. The FFDCA authorizes EPA to set maximum residue levels, or tolerances, for pesticides used in or on foods or animal feed. Products that act systemically, such as orally-administered flea products, are generally regulated as drugs by the (FDA) rather than as pesticides by EPA.[41]

FIFRA's purpose is neither to prevent the availability of pesticides nor to make pesticides entirely risk-free. Rather, the purpose of Congress in passing pesticide legislation was to allow pesticide manufacturers to develop and sell pesticides while reducing the risks posed by toxic substances to the average human's health and to the environment. To do this, Congress established a system that requires pesticides to be labeled with instructions for use and that requires applicators (persons who apply pesticides) to follow the directions on labels.[42]

EPA is responsible for reviewing and registering pesticides for specified uses. It may also suspend or cancel a registration upon a showing of unreasonable risks.[43] EPA is responsible for balancing what is perceived as a need to kill "undesirable" living organisms with the responsibility to protect public health.

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[41] U.S. Food and Drug Administration (FDA), *Is FDA responsible for regulating pesticides that are used in animal products?* http://www.fda.gov/aboutfda/transparency/basics/ucm217977.htm

[42] EPA, *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*. http://www.epa.gov/agriculture/lfra.html (archived page on file with author).□□

[43] EPA, *Laws and Regulations*. http://www.epa.gov/pesticides/regulating/laws.htm

2. What does the pesticide registration process involve?

When a pesticide manufacturer decides to market a new pesticide product, it must first register the pesticide with the EPA. The registration process includes evaluating pesticide ingredients; how, when, where, and how often the pesticide will be used; and the proposed methods for storage and disposal of the substance. It is the responsibility of the manufacturer to test the product and provide test results to EPA; the EPA does not conduct independent product tests. Instead, EPA conducts "risk assessments" to determine the potential for harm to human, animal, fish and plant species and for contamination of surface or ground water. Risk assessments are primarily reviews of manufacturer-provided test data. Once the data review process is complete EPA will either approve the product for registration, require the manufacturer to change the product or the label, or change allowable tolerances so that the pesticide can be approved for sale.[44] During data review, EPA will decide how to categorize the pesticide: General Use or Restricted Use. The EPA registration process reviews manufacturer-provided data to determine whether a product can be registered for sale.

3. How does the EPA classify pesticides?

General use pesticides contain toxic substance used to kill living organisms, but no special training is needed to apply general use pesticides. The rationale is that the toxins in the pesticide are not concentrated enough to pose a risk to the average person when the instructions on the label are followed. Examples of common household general use pesticides are: cockroach sprays and baits; insect repellents for personal use; rat and other rodent poisons; flea and tick sprays, powders, and pet collars; kitchen, laundry, and bath disinfectants and sanitizers; products that kill mold and mildew; some lawn and garden products, such as weed killers; and some swimming pool chemicals.[45] In spite of labeling, misuse of these substances is always a possibility and disposal of unused pesticides remains problematic. EPA recommends that persons wishing to dispose of small amounts of pesticides should make an effort to use them, and suggests that if a person is unable to use a pesticide, it should offered to a neighbor for use.[46]

The EPA strongly cautions against pouring leftover pesticides down the sink, into the toilet, or down a sewer or street drain, since these substances may interfere with wastewater treatment systems that are not equipped to remove all pesticide residues. Pesticides that enter drainage systems also pollute waterways where fish, plants, and other living things may be poisoned.[47] In addition to household pesticides, the EPA also classifies some agricultural pesticides as "general use." Roundup®, which contains glyphosate, is classified for general use in most products except in certain high concentration commercial products. However, it should be noted that glyphosate has recently been found to be a "probable carcinogen" according to the World Health Organization. See Section IV.A.3 and IV.B.3 below for further discussion on Roundup®.

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[44] EPA, *About Pesticide Registration*. http://www2.epa.gov/pesticide-registration/about-pesticide-registration.
[45] EPA, *What is a Pesticide?*
[46] EPA, *Safe Disposal of Pesticides*. http://www.epa.gov/pesticides/regulating/disposal.htm
[47] *Id*.

Restricted use pesticides are defined by EPA as 1) pesticidal substances or 2) certain uses of pesticidal substances that could cause harm to humans or to the environment if misapplied. EPA requires applicators or purchasers of RUPs (including government entities, commercial agricultural firms and private entities) to undergo training before they can be certified to apply restricted use pesticides.[48] Certification is essentially a licensing process. Although both general and restricted use pesticides contain toxic substances, RUPs pose higher risk to human health and the environment so more regulation is necessary.

D. How does federal pesticide regulation affect sovereign tribal governments?

1. Do EPA pesticide regulations apply to Indian Country?

EPA must explicitly approve a tribal (RUP) certification process.[49] Prior to 2014 this meant that if a tribe did not have an approved pesticide applicator certification process, a pesticide applicator could not lawfully apply pesticides within Indian Country, even though the applicator was certified to handle RUPs.[50] Because many tribes do not have the technical and/or economic means to write and administer a certification process, and many tribes have not entered into agreements with states to recognize state certifications, licensed RUP pesticide applicators have never been able to operate lawfully within tribal jurisdictions. Thus, the lack of explicit EPA approval meant that RUPs were technically banned in almost all of Indian Country.

However, in early 2014 the EPA announced the final plan to implement pesticide applicator certifications throughout Indian Country, excepting tribes that have their own certification plans in place.[51] The rule fundamentally changed the technical pesticide ban to an across-the-board federal approval of RUP throughout Indian Country where tribes did not have an EPA-approved certification plan.[52] EPA alleged the change was necessary to "fill a regulatory gap," citing the need for economic equity for agricultural tribes, public safety, the need for pesticide regulation enforcement in Indian Country,[53] and the need to ensure that applicators have met competency standards.[54] After implementation of the new rule tribes can no longer rely on regulatory silence to implicitly ban RUP within their boundaries.

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[48] EPA, *Pesticides*. http://www.epa.gov/agriculture/tpes.html
[49] EPA, *About the Plan to Certify Applicators in Indian Country*, (Aug. 2015). http://www2.epa.gov/pesticide-applicator-certification-indian-country/about-epa-plan-certify-applicators-indian-country
[50] *Id*.
[51] 79 Fed. Reg. 7185 (Feb. 6, 2014).
[52] EPA, *About the Plan to Certify Applicators*.
[53] *Id*.
[54] EPA, *EPA Announces Final Plan for Federal Certification of Pesticide Applicators within Indian Country*, (Feb. 6, 2014). Available at http://www.epa.gov/oppfead1/cb/csb_page/updates/2014/final-cert-rup.html

2. How may tribes avoid being subject to the new EPA certification rule?

A tribe may develop its own plan for certifying private and commercial applicators to use or supervise the use of RUP,[55] but the only tribes that have done so to date are Three Affiliated Tribes of the Fort Berthold Indian Reservation, Cheyenne River Sioux Tribe, Rosebud Sioux Tribe, Shoshone-Bannock Tribes of the Fort Hall Reservation, Navajo Nation, Santee Sioux Tribe of Nebraska, Prairie Band Potawatomi Nation and The White Earth Band of Chippewa Indians.[56] Tribes also have the option to enter into an agreement with a state to certify private and commercial applicators, but that option would most likely result in state oversight of the tribal program.[57]

A tribal pesticide program supports general implementation of the provisions and requirements of FIFRA, and EPA can provide guidance for tribes wishing to develop their own pesticide programs. Several phases in developing a certification plan may include some or all of the following: assessing tribal needs, gathering information, obtaining EPA funding, writing a proposal, educating the community, determining who will be trained and how training will be conducted, developing a worker protection program, protecting endangered species and water quality, and providing for storage and disposal of pesticides.[58]

3. Does federal law support tribal regulation?

Many federal environmental statutes permit administrative agencies to treat federally-recognized tribes as states for the purpose of recognizing a tribe's authority to administer federal programs in its own territory. In 1984, EPA expressed its intention to extend treatment as states (TAS) to tribes, i.e. going forward tribes would be treated as political sovereigns equivalent to states for the purpose of FIFRA.[59] This means that EPA can work cooperatively with tribes to enforce FIFRA,[60] and may provide some funding to help with development and implementation of tribal pesticide certification programs. EPA agreements vary greatly according to the circumstances of each tribe. They may provide avenues for a tribe to assist the EPA in ensuring FIFRA compliance. For instance, the EPA

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[55] 40 CFR § 171.

[56] EPA, *Areas of Indian Country Covered by the EPA Plan* (Aug. 26, 2015). http://www2.epa.gov/pesticide-applicator-certification-indian-country/areas-indian-country-covered-epa-plan

[57] 40 CFR § 171.10(a); Tribal Pesticide Program Council, *Training and Certification*, http://tppconline.org/features/certification-and-training.html

[58] EPA, *Guidance on Basic Elements of an EPA-Funded Tribal Pesticide Program* (May, 2012). http://www.epa.gov/oppfead1/tribes/guidance.htm

[59] EPA, *Policy for the Administration of Environmental Programs on Indian Reservations*, (Nov. 1984). Available at http://www.epa.gov/air/tribal/WETG/wetg2014/indian-policy_1984.pdf. This policy survived a 1985 challenge by Washington State to the EPA's application of Resource Conservation and Recovery Act (RCRA) to the Indian Country. The Ninth Circuit Court of Appeals stated that the EPA is free to carry out its policy of encouraging tribal self-governance by consulting with tribes over hazardous waste management. *State of Washington, Department of Ecology v. United States Environmental Protection Agency*, 752 F.2d 1465 (9th Cir. 1985).

[60] EPA, *Pesticides: Regions, States and Tribes*. http://www.epa.gov/pesticides/local/; FIFRA section 23 permits the EPA to enter into cooperative agreements with tribes.

may support a tribe's efforts to implement federal regulations in the areas of certifying applicators, conducting inspections and recommending enforcement actions to EPA.[61] If a tribe has developed its own pesticide ordinances and conducts its own inspection and enforcement, EPA can lend the weight of its authority to ensure compliance.[62]

EPA may also provide assistance with capacity building; provide grant funding for pesticide education, outreach, and integrated pest management efforts; partner with tribes to ensure enforcement and implementation of tribal pesticide programs; and provide grants for pesticide monitoring on tribal lands.[63] Because EPA is under-funded the degree to which the agency can assist is limited.

In addition to tribes that have EPA-approved pesticide applicator certification programs, a number of tribes participate, at least partially, in the EPA's tribal pesticide program. Some of these tribes include Salt River Pima-Maricopa Indian Community (SRPMIC), Colorado River Indian Tribes (CRIT), Confederated Salish & Kootenai Tribes (CSKT), Coeur d'Alene Tribe, Colville Tribe, Spokane Tribe, Kalispel Tribe and St. Regis Mohawk Tribe.[64] Further discussion of these tribal programs is provided in Section V, below.

E. How does the State of California regulate pesticides?

Although state law cannot nullify federal law, states may enact pesticide regulation schemes that are stricter than federal law. Within California, the California Department of Pesticide Regulation (CDPR) is the administrative agency responsible for ensuring pesticide laws are enforced. CDPR proclaims its pesticide regulation program rests on a "strong scientific foundation" and further asserts that CDPR is the " acknowledged peer of the U.S. Environmental Protection Agency and Health Canada," due to the status of its program as the most comprehensive body of pesticide law nation.[65] In reality, California's pesticide regulation system is weak. CDPR has consistently delayed in cracking down on toxins found in pesticides.

For instance, both federal and state regulators have acknowledged the health hazards resulting from exposure to the toxic chemical chlorpyrifos, (a neurotoxin used as a pesticide that can interfere with the normal brain development of fetuses, infants and children, leading to lasting neurological effects) but CDPR continues to delay actions to classify chlorpyrifos as a restricted use substance. Further, even when CDPR has required stricter regulation of some toxins, the use of those chemicals has not decreased in a

[61] EPA, *The National Pesticide Tribal Program: Achieving Public Health and Environmental Protection in Indian Country and Alaska Native Villages* 4. Available at http://www2.epa.gov/sites/production/files/2014-10/documents/tribal-brochure.pdf
[62] *Id.*
[63] *Id.*
[64] *Id*.
[65] California Department of Pesticide Regulation, *How California Regulates Pesticide Use*. Available at http://www.cdpr.ca.gov/docs/dept/factshts/main2.pdf

meaningful way.[66]

While it is true that California's pesticide control laws are comprehensive, the state's regulatory approach parallels the federal approach in allowing the deliberate poisoning of nature while attempting to strike a balance between industry's desire to increase profits and the responsibility to protect the environment and public health. *Although state pesticide regulation does not apply to federally-recognized tribal reservations, the state regulatory system is not stringent enough to protect tribal interests from toxins contained in pesticides.*

F. What is state preemption and does it apply to tribal pesticide regulation?

In response to the California Supreme Court's 1984 opinion in *Deukmejian v. County of Mendocino,*[67] which upheld the right of citizens to adopt more protective pesticide standards than state and federal governments, the 1984 California Legislature passed a preemption act that removed the authority of local governments to ban pesticides.[68] California's preemption law does not expressly ban tribal government action, and no attempt to regulate tribal government is evident on the face of the Act. It is highly doubtful that an attempt by California to preempt tribal pesticide law would be valid, as currently the weight of federal law is against state regulation of tribal environmental law when a tribal government has enacted comprehensive legislation to regulate its natural resources and protect the health and welfare of its members. Furthermore, since the EPA has established a tribal pesticide program and recently extended federal jurisdiction to certify pesticide applicators in Indian Country, the basis for state preemption is fragile at best.

Part VI: The effect of pesticides on human health and the environment

A. How do pesticides destroy human health?

1. Pesticides are toxic - they are meant to kill.

Pesticides are not limited to killing only the organisms listed on their labels. Many pesticides have the ability to disable or kill a broad range of life forms, including humans. Short-term exposure of humans to pesticides can cause skin and eye irritations and respiratory distress. Long-term exposure can cause chronic and serious diseases such as cancer, diabetes, asthma, reproductive complications, birth defects, digestive diseases, autoimmune responses, neurological dysfunction and behavioral disorders in both people and animals.[69]

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[66] Veena Singla, *Californians need action on toxic pesticide chlorpyrifos*, Natural Resources Defense Council (Feb. 17, 2014).
[67] *People ex rel. Deukmejian v. County of Mendocino,* 36 Cal.3d 477 (1984).
[68] Cal. Food & Agr. Code 11501.1.
[69] Meriel Watts, *Human Health Impacts of Exposure to Pesticides*, World Wildlife Fund 6 et. seq. (Nov. 2012). Available at

2. Risk of harm is greater for vulnerable individuals.

A "risk" is defined as the potential for injury, damage, or loss.[70] A "risk factor" is "anything that increases the possibility of harm or any other undesirable result." When a human health risk assessment is done on a pesticide, the process involves several steps: 1) identifying the health problems a toxin can cause; 2) assessing how likely it is that adverse health effects will occur at different exposure levels; 3) determining how much toxin people are exposed to, how many people are exposed, and for how long; and 4) a conclusion about whether exposure to the toxin poses a significant risk to human health. The purpose of a risk assessment is not to prevent pesticide use, but rather to determine the level of exposure to a toxin most individuals can tolerate before their health is harmed, and set an allowable exposure level somewhat lower than what is generally tolerable.[71]

Typically, the adverse health effects (risks) are more likely to increase as dose increases, however, the level of tolerance is different for each individual, therefore risk assessment is complicated by the need to determine exposure levels for individuals who are more vulnerable and for those who have more exposure than the average person. This includes infants, children, pregnant and nursing mothers, elders, those with diseases such as immune-deficiencies, and for agricultural workers and individuals with subsistence lifestyles. Implicit in risk analysis is that the health of vulnerable individuals will be harmed more easily than the majority of the population.[72]

Infants are at particularly high risk of toxin poisoning. When nursing mothers are exposed to pesticides the toxins concentrate in breast milk and expose infants to higher levels of these harmful chemicals. Infants who consume baby formulas are also exposed to pesticide residues. These toxic residues are not listed as food additives because the FDA has set the legal maximum allowable pesticide residue high enough so that manufacturers can avoid listing these residues as food additives.

This is particularly problematic in infants that regularly consume formula over extended periods, as the toxins can accumulate and concentrate in rapidly developing body tissues.[73] Children are more sensitive to toxic substances than adults because their rapid growth demands a quantity of food disproportionate to adult requirements.[74]

Elders, particularly those experiencing health problems, are also more sensitive to toxins. Aging persons have thinner skin which allows rapid and increased absorption of toxins, and reduced blood flow which slows the breakdown and removal of toxins from the

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http://awsassets.wwf.org.au/downloads/pr_attachment_human_health_impacts_of_exposure_to_pesticides_20mar13.pdf

[70] Black's Law Dictionary, *Risk*, 10th ed (2014).

[71] EPA, *Conducting a Human Health Risk Assessment*. Available at https://www.epa.gov/risk/conducting-human-health-risk-assessment

[72] *Id.*

[73] Robert C. Gelardi, *Infant Formulas: Evidence of the Absence of Pesticide Residues*. Regulatory toxicology and pharmacology 17, 181-192 (1993).

[74] *Children*, Pesticide Action Network (undated) http://www.panna.org/human-health-harms/children

body. Additionally, for elders who take prescription medications, there is the increased danger of medications reacting adversely with absorbed pesticide substances, causing unexpected and unforeseen health problems.[75]

3. Toxins in pesticides are linked to deadly diseases.

Pesticide use is increasingly controversial. The quantity of pesticides released into the environment increase every year. Increasingly, questionable data and factual omissions underlying manufacturer product claims are being brought to public attention as mounting medical and scientific evidence links pesticidal toxins with debilitating, chronic diseases. Greater public awareness of environmental pesticides motivates individuals and groups to insist on a human right to know what poison substances contaminate food, water, air, and the environment.

One example of how these concerns combine to create controversy is the story of Roundup®. The pesticide Roundup® is highlighted here because it is the most prevalent pesticide in the environment and has recently been classified as a probable carcinogen by the State of California. Roundup® is the trade name for glyphosate. Monsanto began selling Roundup® in 1974. In addition to its ubiquitous presence in households, Roundup® now has two other major uses that account for most of the 35 million pounds of the toxin that enters the environment annually. First, it is used commercially on GE crops to kill non-GE plants. Second, it is used as a dessicant to dry non-GE crops (including wheat, barley, oats, canola, flax, peas, lentils, soybeans, dry beans and sugar cane) so that they can be harvested sooner.[76] The result is that even crops that are non-GE can still be contaminated with the glyphosate toxin.

Initially, Monsanto claimed that glyphosate was safe, advertised the product as such, and marketed it to municipal parks departments and consumers as “environmentally friendly” and “biodegradable." However, it has since surfaced that during this campaign the chemical giant was aware of that these claims were untrue. In reality, glyphosate has been increasingly linked to myriad health problems. The World Health Organization's International Agency for Research on Cancer (IARC) classified glyphosate as "probably carcinogenic to humans," and found evidence that the substance causes DNA and chromosomal damage in humans.[77] Mounting evidence shows other diseases are likely the result of glyphosate exposure including: ADHD, Alzheimer’s disease, anencephaly, autism, birth defects, brain, breast and other cancers, celiac disease and gluten intolerance, chronic kidney disease, colitis, depression, diabetes, heart disease, hypothyroidism, inflammatory bowl disease, liver disease, Lou Gehrig’s disease, multiple sclerosis, non-Hodgkin lymphoma, Parkinson’s disease, pregnancy problems, obesity, reproductive problems, and

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[75] *Older Adults and Pesticides*, National Pesticide Information Center. http://npic.orst.edu/factsheets/olderadults.html

[76] Alexis Baden-Mayer, *15 Health Problems Linked to Monsanto’s Roundup®,* Ecowatch (Jan. 23, 2015) http://ecowatch.com/2015/01/23/health-problems-linked-to-monsanto-roundup

[77] World Health Organization, IARC Monographs Volume 112: evaluation of five organophosphate insecticides and herbicides. (Mar. 2015) Available at http://www.iarc.fr/en/media-centre/iarcnews/pdf/MonographVolume112.pdf

respiratory illnesses.[78] Glyphosate contamination is a global phenomenon, having been found in 75% of air and rain samples.[79]

Pesticides are poisons that are deliberately manufactured to kill life forms. Risks may be minimized, but once released into the environment they are impossible to avoid. For the most vulnerable sectors of the population the risks are much greater. Because manufacturers are primarily concerned with profits rather than human health, it is tempting for them to hide or trivialize potential human and environmental health problems related to their pesticide products. Because the EPA reviews manufacturer data rather than conducting its own toxicity tests, false information is not readily discernable. This situation raises the question as to whether it is wise to entrust the well-being of life to the ethics of multibillion dollar, multinational chemical corporations. Humans have the right to well-being, which includes the right to know whether and to what extent they are being poisoned. Tribal governments have the responsibility and right to act to protect the health and welfare of its members.

B. How do pesticides affect the environment?

1. Pesticides persist in the environment.

Pesticides are further categorized into another framework: Persistent and non-persistent. A persistent pesticide is substance that does not readily degrade into other chemical compounds or elements.[80] Persistent pesticides include DDT, DDE, chlordane, aldrin, dieldin, endrin, toxaphene, hexachlorobenzene, octochlorostyrene, silvex (2,4,5-T), and mercury pesticides.[81] These can remain in the environment for long periods of time, continuing to kill target and non-target organisms.[82] Some target organisms have the ability to build up resistance to persistent pesticides.[83] For instance, the housefly developed a resistance to the persistent DDT pesticide, which required applying ever-increasing quantities to be effective against the insect.[84] When toxic substances also cause short- and long-term human diseases, persistence in the environment increases the risk of disease and the number of people who may be stricken. Persistent pesticides are used because they can be applied once and remain effective for a number of weeks to a number of seasons, killing unwanted organisms over a long term.[85] Once they have been released into the environment, eliminating them is difficult and expensive.

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[78] Baden-Mayer

[79] John Delke, *Monsanto's Roundup® Found in 75% of Air and Rain Samples*. Ecowatch (Feb. 27, 2014) http://ecowatch.com/2014/02/27/monsantos-roundup-found-in-75-of-air-and-rain-samples/

[80] J.M. Vargas, *Pesticide Degradation*, Journal of Arboriculture 232-233 (Dec. 1975). Available at http://joa.isa-arbor.com/request.asp?JournalID=1&ArticleID=1362&Type=2

[81] Although some of these pesticides such as DDT and mercury-based substances are banned for sale in the United States, any unused stockpiles of these pesticides that may have been purchased prior to the banned still pose a danger when they are used.

[82] Vargas.

[83] *Id*.

[84] *Id*.

[85] C.A. Edwards, *Factors That Affect the Persistence of Pesticides in Plants and Soils*, Pure and Applied Chemistry 42:1 39-56 39 (1975). Available at http://pac.iupac.org/publications/pac/pdf/1975/pdf/4201x0039.pdf

2. Pesticides poison every element of the ecosystem.

Whether classified as persistent, non-persistent, general use, restricted use, chemical or biological, when a pesticide is released into the environment it affects every element of the ecosystem. Water, light, and organisms in the soil may break down non-persistent pesticides quickly; however, environmental processes can also reverse the process and reconstitute the degraded elements, reactivating the toxic substances.[86] These poisons then continue killing and may contaminate the food chain until they are once again broken down. Persistent pesticides such as organic toxins are easily transferred between plants, herbivores, and carnivores. Because they are long-lived, these poisons will contaminate grasses, plants, shrubs, and trees. They remain active in the soil and can easily enter microorganisms and small soil-dwelling creatures that provide food for rodents and birds.

Persistent pesticides have the ability to cause genetic mutations and cancerous tumors in both plants and animals, degrading the quality of the ecosystem and the ability of species to survive.[87] Persistent pesticides do not remain in the location where they are released. Frequently these poisons either percolate downward into the ground water or flow with runoff into waterways, bringing sickness, disease and death to aquatic species in riverine ecosystems. As one example, a join scientific study by the U.S. Geological Survey and the Columbia River Inter-Tribal Fish Commission concluded that pesticide contaminants in Columbia River Pacific lamprey larvae bioaccumulate at levels that are likely detrimental to their health.[88] These levels of contamination have been shown to affect salmonid health in other studies, and evidence how pesticide contamination of aquatic ecosystems leads to the decline of the entire system.[89]

3. How does glyphosate (Roundup®) harm ecosystems?

Glyphosate is now labeled as a carcinogen by the State of California,[90] although the EPA still refuses to acknowledge what it knew in 1985: that glyphosate causes cancer.[91] Yet, glyphosate is the most widely used poison worldwide.[92] This is because glyphosate is

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[86] Vargas, 2.
[87] J. Dich, et. al., *Pesticides and Cancer*, Cancer Causes Control, 8(3):420-43 (May 1997). Abstract available at http://www.ncbi.nlm.nih.gov/pubmed/9498903
[88] Elena B. Nilsen, *Reconnaissance of contaminants in larval Pacific lamprey (Entosphenus tridentatus) tissues and habitats in the Columbia River Basin, Oregon and Washington, USA*, Environmental Pollution, 201:121-130 (Mar., 2015) Available through Elsevier.
[89] Columbia River Inter-Tribal Fish Commission, *Contaminants Found in Juvenile Lamprey* (Apr. 2015). http://www.critfc.org/contaminants-found-in-juvenile-lamprey
[90] Lorraine Chow, *California Becomes First State to Label Monsanto's Roundup® as a Carcinogen*, Ecowatch (Sept. 8, 2015). http://ecowatch.com/2015/09/08/california-becomes-first-state-to-label-monsantos-roundup-as-a-carcinogen/
[91] Michelle Schoffro Cook, *EPA Classified Roundup® as Carcinogen 30 Years Ago…But Mysteriously Reversed Decision*, Care2 (Mar. 31, 2015). http://www.care2.com/greenliving/epa-classified-roundup-as-carcinogen-30-years-ago.html
[92] Andrew Pollack, *Weed Killer, Long Cleared, Is Doubted*, New York Times (March 27, 2015). http://www.nytimes.com/2015/03/28/business/energy-environment/decades-after-monsantos-roundup-gets-an-all-clear-a-cancer-agency-raises-concerns.html?_r=0

used in agriculture as a "weed" killer to complement crops (such as corn) that have been genetically engineered to resist glyphosate poison.[93]

Because glyphosate kills plants that come into contact with it, many beneficial non-GE plants and medicines are being driven to the point of extinction.[94] One example is the milkweed plant population, which has been devastated by glyphosate. Milkweed is common in agricultural fields and is considered a pest. Yet, milkweed is the sole food source for Monarch butterfly larvae.[95] A suit filed by the Natural Resources Defense Council states that "[t]his winter, only about 56.5 million butterflies—the second lowest number ever measured—reached their winter refuge ... [t]he remaining population is so small that a single severe weather event could eradicate it."[96] Glyphosate has been so successful in reducing biodiversity that beneficial plant and animal species are in danger of extinction.[97]

Additionally, some "weed" plants have developed resistance to glyphosate resistance after a few years of exposure.[98] The ability of plants to tolerate glyphosate means that the chemical's potency must be increased and applied in greater quantities. Additionally, new herbicides must be developed to combat the new glyphosate resistant characteristics in "weed" species. The war on "superweeds" has driven up the volume of glyphosate and other pesticide use by approximately 25 percent *per year*.[99] Between 1996 and 2011, approximately 527 million pounds of herbicides were applied to herbicide-resistant GE crops. In 2009 alone, 79 million pounds of herbicides were applied to GE crops in the United States; glyphosate accounted for the greater part of that amount.[100] Each year the volume of herbicide used on GE crops increases.[101]

4. How do neonicotinoids (neonics) harm ecosystems?

North American pollinators include the introduced European honeybee that lives in hives, as well as species indigenous to this continent: solitary honeybees, bumblebees, butterflies, moths, bats, and hummingbirds.[102] In 1995, beekeepers began to report significant hive losses. Since first reports, hive loss has increased to such epidemic levels,

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[93] *Id*.
[94] David Schultz, *Lawsuit Could Force EPA to Review Glyphosate, Effect on Monarch Butterflies*, Bloomberg Law Chemical Regulation Reporter (Feb. 27, 2015).
[95] David Schultz, *Butterflies, Glyphosate to Be Addressed In Federal Pollinator Strategy, EPA Tells Court*, Bloomberg Law Chemical Regulation Reporter (Apr. 3, 2015). http://0-news.bna.com.library.utulsa.edu/chln/CHLNWB/split_display.adp?fedfid=66039256&vname=chenotallissues&wsn=503890000&searchid=26124904&doctypeid=1&type=date&mode=doc&split=0&scm=CHLNWB&pg=0
[96] *Id*.
[97] Schultz, *Lawsuit Could Force EPA to Review Glyphosate*.
[98] *Id*.
[99] *Genetic Engineering Actually INCREASES Pesticide Use, DECREASES Crop Yield, And May Be Dangerous to Your Health*, Washington's Blog (Jan. 24, 2014). http://www.washingtonsblog.com/2014/01/genetically-engineered-crops-responsible-increase-383-million-pounds-herbicide-use-u-s-first-13-years-commercial-use.html
[100] *Id*.
[101] *Id.*
[102] *Native Pollinators*, Natural Resource Conservation Service (May 2005). Available at http://plants.usda.gov/pollinators/Native_Pollinators.pdf

inspiring baffled scientists to coined the term "Colony Collapse Disorder."[103] Under normal conditions beekeepers will lose approximately 15% of their hives to winter conditions; *the loss during the 2012-2013 winter was 40-50% of all hives.* Researchers have linked neonicotinoid-based pesticides to decreased pollinator immunity. This makes pollinators more vulnerable to parasites and pathogens.

Although the EPA's proposed mitigation of pollinator exposure requires pollinator warnings to be printed on pesticide labels, it has not acted to ban neonicotinoid-based pesticides.[104] To the contrary, EPA caved to pressure from Dow Chemical Corporation to unconditionally approve the neonicotinoid sulfoxaflor, even though the pesticide was shown to have neurotoxic effects in rodents and cause cancerous tumors and reproductive disorders. The EPA concluded that sulfoxaflor can be expected to produce adverse human health effects in a lifetime. Then the EPA *unconditionally approved* Dow's application.[105] Although neonicotinoids have been implicated in pollinator poisoning, the EPA did not evaluate the danger of sulfoxaflor to pollinators.[106]

A federal court struck down the EPA decision to unconditionally register sulfoxaflor finding that Dow had submitted "flawed and limited data" to the EPA.[107] Other neonicotinoid pesticides such as clothianidin and imidacloprid are widely used in the United States on commercial crops: apples, broccoli, almonds, blueberries, cotton, soybean, citrus, stone fruit, grapes, potatoes, vegetables, and strawberries.[108] Neonicotinoids poison more than honeybees; all pollinators are affected. The use of neonicotinoids jeopardizes the reproductive capacity of the entire ecosystem.[109]

5. How do anticoagulent rodenticides harm ecosystems?

Another group of pesticides that are regulated but used unlawfully in massive quantities is anticoagulant rodenticides. Commonly known as "rat poison" and marketed as products such as "D-Con," these substances are produced for the purpose of killing mammals, mainly small rodents such as mice and rats. Anticoagulants block the production of Vitamin K in mammals, causing the breakdown of the circulatory system, which causes a mammal to bleed out, ending its life in a prolonged, painful death. Frequently, many pounds of anticoagulants are heaped on illegal, large commercial cannabis cultivation sites to eliminate any animals that might disturb the cannabis cash crops. These anticoagulents are persistent in the environment and can remain in mammals for several months.

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[103] Kelly Ott, *Buzzkill: How The EPA's Inaction Is Killing America's Bees*, 39 Wm. & Mary Envtl. L. & Pol'y Rev. 401-425, 402 (Winter, 2015).
[104] 80 Fed. Reg. 30644 (May 29, 2015).
[105] 78 FR 29041, 29042-43 (May 13, 2013).
[106] *Id*., 29041 et. seq.
[107] Tom Philpott, *Federal Court to EPA: No, You Can't Approve This Pesticide That Kills Bees*, Mother Jones (Sept. 11, 2015). http://www.motherjones.com/tom-philpott/2015/09/federal-court-nixes-epa-approval-pesticide-known-be-highly-toxic-honey-bees
[108] *Id*.; Ott, 402.
[109] *Id*. While it is easier to measure losses to managed hives than it is to track solitary bees and non-managed butterflies, bats, and birds, pesticide poisoning of pollen on fruit trees, flowers, and agricultural crops obviously affects all pollinators.

Rodents that contain sublethal quantities of anticoagulents produce offspring whose bodies also contain anticoagulents. When owls, hawks, eagles, mountain lions, fishers and other predators consume poisoned rodents, the toxins are transferred up the food chain and bioaccumulate in these predators. Additionally, when anticoagulents enter the soil they can be absorbed by plants, which are eaten by herbivores. Anticoagulents migrate into streams and rivers through runoff, contaminating aquatic ecosystems and drinking water. Illegal use of controlled substances is an additional route to ecosystems poisoning.

C. Are all pesticides dangerous?

The examples provided here are just a few out of hundreds that illustrate the destructive nature of pesticide toxicants to entire ecosystems. Categorizing pesticides as "non-persistent," "general use" "chemical," "biological," or in any other manner trivializes the serious threats these substances pose to humans and other species, to the quality of ecosystems and to all of Mother Earth. Seemingly innocuous terminology promotes the public perception that while there may be minor risks associated with pesticides, exposure to poison is commonplace and should not cause concern. As the evidence shows, this perception is a deception.

Part VII: Examples of Tribal and local government pesticide regulation

A. How have Tribal sovereigns regulated pesticides?

Some tribal sovereigns have entered cooperative agreements with the EPA, and others have not. The examples below demonstrate how tribal pesticide ordinances have been used useful to set a regulatory standard for tribal land. Entering a cooperative agreement with the EPA is an optional step that can be pursued any time after the Council passes a pesticide ordinance.

- The *Navajo Nation Pesticide Act* is an extensive statute that recognizes EPA classifications and establishes procedures for applicator certification and licensure as well as licensing of pesticide dealers; storage and disposal of pesticides; and inspection, enforcement, penalties and judicial review of enforcement actions. Subject to tribal approval the Act authorizes cooperative agreements with state and federal agencies.[110]

- The Confederated Salish and Kootenai Tribes (CSKT), entered into a cooperative agreement with EPA in 2006 and now participate in the Tribal Pesticide Circuit Rider Program for Region 8. CSKT employ two FIFRA-credentialed inspectors and a staff pesticide compliance and outreach coordinator.[111] The CSKT *Site and Building Standards for Tribal Homesites* requires "minimal" use of pesticides and fertilizers

[110] Navajo Nation Pesticide Act. http://www.navajonationepa.org/Pdf%20files/Pesticide.pdf
[111] Confederated Salish and Kootenai Tribes, *Pesticides Program*. http://www.cskt.org/tr/epa_pesticides.htm

within recommended 50-100 foot setback buffer zones near water bodies or wetlands to maintain native vegetation. Pesticides must be approved for use near aquatic environments, and the standard further prohibits dumping of pollutants (including pesticides) into any Reservation waters and placing pollutants where they can enter Reservation waters. The standard also encourages homeowners to notify their neighbors before using pesticides.[112]

- In 1981, the Gila River Indian Community (GRIC) established the Pesticide Control Office, adopted a pesticide code, and subsequently entered into a cooperative agreement with the EPA.[113] Regulated activities include the production, transportation, storage, and sale of pesticide devices and the use and disposal of pesticides, including containers.[114]

- The Shoshone-Paiute Tribal Business Council of the Duck Valley Reservation adopted a *Tribal Pesticides Regulatory Ordinance* in 2007. The ordinance requires "all parties applying pesticides" to be permitted prior to applying the pesticide. The ordinance has two purposes: 1) to prevent damage to human health, property and the environment, and 2) to authorize inspections in order to monitor compliance, and document violations.[115]

- The *Leech Lake Pesticide Management Ordinance* gives broad authority to the Pesticide Program Director to designate restricted use pesticides; restrict, regulate or prohibit pesticide-related activities and facilities within the Reservation; allow for inspection, observation and monitoring of pesticide use and related activities, equipment and stores; issue permits and orders; enforce tribal pesticide regulations; delegate responsibility; adopt US and state pesticide laws, rules, regulations, orders, or other requirements by reference; obtain advice from other persons with technical expertise; enter into agreements with other entities and organizations; and report to EPA administrator.[116]

- Pesticide disposal is addressed in the Mandan, Hidatsa, and Arikara Solid and Hazardous Waste Management and Remediation Code as a special waste.[117] Every person, commercial or industrial facility handing surplus agricultural pesticides or herbicides and/or containers must disposal of these substances in a manner that does not endanger humans, animals, and/or the environment and must handle storage containers in a prescribed manner.[118]

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[112] Confederated Salish and Kootenai Tribes, *Site and Building Standards for Tribal Homesites*. Available at http://www.cskt.org/tld/docs/siteandbuildingstandardsfortribalhomesites.pdf
[113] Gila River Indian Community, *Pesticide Control Office*. http://gricdeq.org/pesticide_control_office.html
[114] *Id*.
[115] Shoshone-Paiute Tribes. *Pesticides Program*. Available at http://www.shopaitribes.org/epa/images/stories/pdf/CC%20pesticides%20program%20brochure.pdf
[116] Leech Lake Ojibwe Pesticide Management Ordinance § 5 (Oct. 25, 2012).
[117] Three Affiliated Tribes Solid and Hazardous Waste Management and Remediation Code Ch. 15.1 § 8.02.7 et seq. (Jan. 2012).
[118] *Id*.

- The Omaha Nation has promulgated a *Pesticide Control Code* similar to the Navajo Nation.[119] Omaha Code states the tribe's authority to certify pesticide applicators and control application within the Reservation. The code authorizes Omaha Tribal Council to cooperate with and enter into reciprocal and/or cooperative agreements with state, federal, tribal, and any other government or governmental agencies in order to promote prudent pesticide use and effective certification program administration.[120]

B. How have local governments approached pesticide regulation?

1. Takoma Park, Maryland's Safe Grow Zone Act of 2013.

Maryland is one of seven states that do not prohibit the adoption of local pesticide legislation.[121] In 2013 the City Council of Takoma Park, Maryland approved the first local ordinance to restrict the use of cosmetic lawn pesticides on both private and public property throughout the city.[122] Takoma Park's ban was inspired by a Washington, D. C. pesticide control act that prohibits RUP use on public property near waterways, schools, daycare centers and city-owned property, and by another ordinance in Greenbelt, MD that strictly prohibits chemical pesticide use on all city-owned land.[123] The Takoma Park ordinance was not widely opposed and has not yet been challenged.

2. Pesticide industry lobbyists opposed Montgomery County regulations.

Although many states have passed preemption acts to prevent local government regulation of pesticides, the policy of some states is to leave pesticide regulation within the power of cities and counties. Local regulation has been very successful in limiting the use of pesticides on certain public lands and playgrounds, however, as localities have begun to assert their authority to ban pesticide use on privately-held property, the pesticide industry has begun to fight back by hiring lobbyists and using aggressive strategies to undermine local government attempts to regulate or ban pesticide use.

Most recently the County Council of Montgomery County, Maryland passed a law to restrict the use of cosmetic pesticides such as dicamba, 2,4-D and glyphosate on private lawns, on certain county land, playgrounds, and at child-care facilities, while exempting golf courses.[124] The ordinance's drafters included some of the same drafters who worked on the Takoma Park ordinance. Supporters expected very little resistance to the ordinance. However, when the proposed ordinance caught the attention of the pesticide industry, it

[119] Omaha Tribal Code, Title 48 (2013).
[120] OTC § 48-2-1.
[121] *Cosmetic Lawn Pesticide Use Outlawed In Takoma Park, MD, First Local Ban Of Its Type in U.S.*, Beyond Pesticides (July 25, 2013).
[122] *Id*.
[123] *Id*.
[124] Bill Turque, *Five things to know about Montgomery County's cosmetic pesticides ban*, The Washington Post (Oct. 7, 2015). Available at https://www.washingtonpost.com/local/md-politics/five-things-to-know-about-montgomery-countys-cosmetic-pesticides-ban/2015/10/07/5d0abd44-6d01-11e5-9bfe-e59f5e244f92_story.html

began a campaign of provocation in Montgomery County communities.[125]

To fight the Montgomery County ordinance, the pesticide industry hired lobbyists who persuaded lawn care companies to enclose "informational" flyers along with their customer invoices. The flyers alerted customers to the pesticide legislation and advised them to contact an 800 number with their concerns.[126] The 800 number routed calls to the lobbying firm where lobbyists were able to persuade over 2,000 residents to protest the pesticide ban.[127] The lobbyists also successfully persuaded other stakeholders, including the County's Parks Department, to oppose the ban.[128] Although the County Council passed the ban, the Parks Department is reluctant to cooperate with the ordinance, and homeowners and other stakeholders are expected to file lawsuits against Montgomery County.[129]

C. How does state preemption affect pesticide regulation by local governments?

1. In the absence of express state regulation, the California Supreme Court upheld a Mendocino County pesticide ban.

In 1979 Mendocino County voters approved an initiative prohibiting the aerial application in the county of phenoxy herbicides, including, but not limited to, 2,4,5-T, silvex, 2,4-D and any matter containing dioxin,[130] to protect themselves from the dangers of drift, contamination of food and water, irrevocable harm to natural resources and threats to their right to be secure in their homes and to enjoy the peaceful, undisturbed use of private property and public lands.[131] California Attorney General George Deukmejian filed a successful lawsuit on behalf of the people of California to overturn the Mendocino County initiative, but on appeal to the California Supreme Court, the Mendocino County voters' will was upheld.

The court found that not only had the state legislature recognized the right of counties to regulate to preserve and protect public health, it had also imposed a *duty* to regulate in areas where the general laws of California do not. Because California did not expressly regulate in the area of law that the County was regulating, the California Supreme Court upheld Mendocino voters' aerial pesticide spraying ban.[132] Directly after the court validated the Mendocino County ban, the state legislature passed a preemption act, which voided the Mendocino County law.[133]

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[125] David Schultz, *Lobbyists Lay Out Their Playbook In Fight Against Local Pesticide Bans*, Bloomberg Law Chemical Regulation Reporter (Apr. 24, 2015).
[126] *Id*.
[127] *Id*.
[128] *Id*.
[129] Turque.
[130] *People ex rel. Deukmejian v. County of Mendocino,* 36 Cal.3d 477 477 (1984).
[131] *Id*., 480.
[132] *Id*., 483-484.
[133] Cal. Food & Agr. Code 11501.1.

2. Existing Hawai'i preemption law voided a Kaua'I County pesticide ban.

On November 16, 2013 the County of Kaua'i, Hawai'i adopted Ordinance No. 960 to regulate genetically-modified organisms (GMO) and RUP (often used in conjunction with GMO crops).[134] The ordinance required disclosure by commercial agricultural entities when large quantities of RUP were to be used; required notice and reporting before, during and after RUP application; established buffer zones to protect vulnerable human populations (elders, infirm, children); and established civil and criminal penalties for violations.[135] Syngenta Seeds, Inc. challenged the ordinance on the grounds that the State of Hawai'i's pesticide regulatory scheme preempts local regulation. The federal District Court found that Hawai'i state law preempted the County of Kaua'i's ordinance and held that Ordinance 960's pesticide provisions were barred from taking effect.[136] The Ninth Circuit Court upheld the case on preemption grounds.[137]

[134] Codified on April 22 as Kaua'i County Code (KCC) 1987, as amended, Chapter 22, Article 23.
[135] KCC § 22-22.4(a). KCC § 22-22.4(b) also requires all commercial agricultural entities that intentionally or knowingly possess any genetically modified organism (GMO) must disclose the growing of said GMO.
[136] *Syngenta Seeds, Inc. v. Cnty. of Kauai*, WL 4216022; No. 14-00014 (D. Haw. Aug. 25, 2014). Syngenta also asserted that the Interstate Commerce Clause preempts GMO labeling regulations but the court disagreed, holding that requiring disclosure (labeling) does not regulate the "movement" of any plant or noxious weed, nor permit anything that federal law has proscribed.
[137] *Syngenta Seeds, Inc. v. County of Kauai*, Case no. 14-16833, (9th Cir., Sept. 2014) ,https://cdn.ca9.uscourts.gov/datastore/opinions/2016/11/18/14-16833.pdf