POLLINATORS & PESTICIDES

A REPORT BY CENTER FOR FOOD SAFETY
ON POLLINATOR HEALTH, RESEARCH, AND FUTURE EFFORTS
FOR POLLINATOR PROTECTION

SEPTEMBER 2013

ABOUT US

CENTER FOR FOOD SAFETY (CFS) is a non-profit public interest and environmental advocacy membership organization established in 1997 for the purpose of challenging harmful food production technologies and promoting sustainable alternatives. CFS combines multiple tools and strategies in pursuing its goals, including litigation and legal petitions for rulemaking, legal support for various sustainable agriculture and food safety constituencies, as well as public education, grassroots organizing and media outreach.

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EXECUTIVE SUMMARY

OVER THE PAST DECADE, there has been an alarming decline in honey bee populations around the world, with many colonies dying and disappearing mysteriously. One manifestation of this disturbing phenomenon is referred to as "Colony Collapse Disorder" (CCD). While there are a multitude of factors linked to pollinator declines, scientists have more recently attributed many of the common CCD symptoms to the indiscriminate use of systemic pesticides, most notably a class of insecticides known as *neonicotinoids*. Neonicotinoids are highly toxic to bees and other pollinators, and their use can have lethal and sub-lethal effects. In addition, they are extremely persistent and accumulate in the environment, raising concerns about adverse impacts on aquatic invertebrates, birds, and beneficial insects.

Center for Food Safety has initiated numerous legal, policy, and grassroots efforts to protect pollinators from the toxicity of these chemicals. Many neonicotinoid chemicals came onto the market in the early to mid-2000s, which, not coincidentally, was the same time that beekeepers started witnessing widespread cases of colony loss. While sometimes used on crops as foliar sprays, in soil, and as direct injections into tree trunks, the primary use of neonicotinoids is as a seed treatment for corn and other commodity crops like soy, canola, and cotton. Dozens of independent, peer-reviewed studies have assessed the impacts of neonicotinoids on bees and found significant lethal and sub-lethal effects.

More recently, neonicotinoids have been identified as toxic to numerous other species in addition to bees: birds, aquatic and terrestrial invertebrates, beneficial organisms, and broader food webs are all being compromised by the use of these chemicals. The overwhelming impacts of using these pesticides are far-reaching and are placing countless species at risk. Honey bees are an indicator species, and as this report will outline, the effects of neonicotinoid pesticides on pollinators are clearly cause for alarm.

Specifically, this report will: review the scientific literature surrounding neonicotinoids and their impacts on pollinators; examine national and international regulatory developments to address these issues; and provide an overview of various legal, policy, and grassroots efforts being led in the United States to combat the threats facing pollinators.

POLLINATORS & PESTICIDES

The life of a bee is truly one of nature's greatest wonders. With up to 60,000 honey bees living in a single hive, each with its own specific role, there is much to be learned from the beautifully sophisticated, organized lives of bees.

THE START OF A SECOND SILENT SPRING

Bees are an indicator species, meaning that their vibrancy on earth reflects environmental conditions and aids in gauging the health of ecosystems. The life of a bee is truly one of nature's greatest wonders. With up to 60,000 honey bees living in a single hive, each with its own specific role, there is much to be learned from the beautifully sophisticated, organized lives of bees.

Over the past decade, we have witnessed alarming declines in honey bee hives around the world, and native pollinating species are suffering enormous losses as well. While our government agencies and some legislators are dragging their feet, an increasing number of studies point to a certain class of pesticides as a primary culprit in the global pollinator crisis. If we are to preserve and save these incredible creatures, we must act quickly.

"The world of systemic insecticides is a weird world . . . where a bee may carry poisonous nectar back to its hive and presently produce poisonous honey."

Rachel Carson described her fears about the use of systemic insecticides like neonicotinoids 50 years ago when she wrote *Silent Spring*. Now, we are witnessing first-hand as her predictions become a reality:

> *"The world of systemic insecticides is a weird world, surpassing the imaginings of the brothers Grimm… It is a world where the enchanted forest of the fairy tales has become the poisonous forest in which an insect that chews a leaf or sucks the sap of a plant is doomed. It is a world where a flea bites a dog, and dies because the dog's blood has been made poisonous, where an insect may die from vapors emanating from a plant it has never touched, where a bee may carry poisonous nectar back to its hive and presently produce poisonous honey."*[1]
>
> —Rachel Caron, Silent Spring

Compounding the problem is a shift away from integrated pest management (IPM) and agroecological practices, systems that, to varying degrees, mitigate the indiscriminate use of toxic chemicals. Industrial agriculture practices rely on pesticides whether they are needed or not, thus putting an unsustainable load of chemicals into the environment and adding weight to Carson's frightening predictions. As one report notes, "Over the last 20 years or so, the shift in pest management has moved away from reactive to prophylactic. Now many fungicides, pesticides and herbicides are applied to the seeds before sowing. Application of the chemical before pest damage has occurred often involves routine spraying and pre-emptive treatments."[2]

Today, our indicator species are demonstrating quite clearly the deterioration of our environment and the harms of our unsustainable industrial agriculture systems. Beekeepers, scientists, farmers and even some regulators are finally starting to pay attention.

THE IMPORTANCE OF POLLINATORS

Honey bees play a critical role in agricultural production. One in every three bites of food we eat depends on a crop pollinated by honey bees, and about 90% of all flowering plants require pollinators to reproduce.[3] In the United States, pollination contributes $20-30 billion in crop production annually to the agricultural economy.[4] In California alone, it is estimated that nearly one-third of the value of the state's agriculture comes from pollinator-dependent crops, which represent a net value of $11.7 billion per year.[5]

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Maintaining healthy populations of honey bees and other pollinators is essential for the future of the world's agricultural markets and for ensuring diversity in our global food supply. Yet, in recent years, honey bee colonies have been collapsing at record high numbers. Historically, the United States had approximately 6 million colonies in 1947, which declined to only 4 million colonies in 1970 and eventually 3 million in 1990. [6] Today, it is estimated there are only 2.5 million colonies left in the United States.[7] In 2013, commercial beekeepers in the United States reported average annual hive losses of around 50%, with some suffering losses as high as 100%. Since 2006, an estimated 10 million bee hives have been lost, valued at approximately $200 per hive.[8] The total replacement cost of over $2 billion dollars has been an economic burden left entirely to the beekeepers to bear.[9] These dramatic declines are wreaking havoc for beekeepers and the farmers who rely on bees for pollination. Unfortunately, our industrial agriculture system is in many ways responsible for these crippling losses.

IMPACTS OF NEONICOTINOIDS & REGULATORY FAILURES

Neonicotinoids are the most widely used insecticides in the world, and their sales are now worth billions of dollars a year.

WHAT ARE NEONICOTINOIDS?

Neonicotinoids are the most widely used insecticides in the world, and their sales are now worth billions of dollars a year.[10] The main neonicotinoids presently on the market are imidacloprid, thiamethoxam, clothianidin, thiacloprid, dinotefuran, and acetamiprid.[11] From 2009-2011, over 3.5 million pounds of neonicotinoids were applied to roughly 127 million acres of agricultural crops annually across the United States.[12] Unlike traditional pesticides that are typically applied to the surface of plants, neonicotinoids are often used as a coating on a variety of commodity seeds. The seeds absorb the chemicals and transport them through all parts of the plant tissue as it grows, a characteristic known as "systemic,"

making the entire plant poisonous to insects relying on it for sustenance. Plants can also take up the chemicals through their roots or leaves, and vascular tissue then transports the chemicals into the stems, flowers, fruit, leaves, and—most concerning for honey bees—the nectar and pollen.

Neonicotinoids are currently authorized in more than 120 countries for over 1,000 different uses.[13] While sometimes used on crops through foliar sprays, in the soil, and as direct injections into tree trunks, the largest single use of neonicotinoids is as a seed treatment for corn. Production of corn for food, animal feed, and ethanol is the largest single use of arable land in North America, occurring in nearly every state and reaching a near-record 92 million acres in 2011 (a cumulative area virtually equivalent to the entire country of Germany), and corn production is expected to continue to climb.[14] Almost all of the corn seed planted in North America, except for 0.2% used in organic production, is reportedly coated with neonicotinoids—primarily clothianidin and its closely related compound, thiamethoxam.[15] One of the most concerning aspects about neonicotinoid seed treatments is their propensity for contaminating the environment: when used as a coating on seeds, only 1.6-2.0% of the amount of the active chemical applied actually enters the crop itself, leaving the remainder of the chemical coating to pollute the environment.[16] Corn is not the only commodity crop to undergo neonicotinoid seed treatments—by 2009, at least 73% of soybean seeds planted in Iowa were treated with the chemicals.[17]

One of the most concerning aspects about neonic seed treatments is their propensity for contaminating the environment.

Neonicotinoids are also commonly used in backyard gardens, lawns, and turf. These pesticides are extremely persistent and can accumulate quickly in soil. Their half-lives can vary widely according to soil type and weather conditions, but are extremely prolonged, and can range anywhere from 148 to 6,932 days.[18] Neonicotinoids are soluble in water and are mobile, raising additional concerns about contamination of water bodies. The neonicotinoid imidacloprid was found in 89% of surface waters sampled in agricultural regions in California, indicating the ability of neonicotinoids to easily travel from application sites to neighboring environments, including nearby water bodies.[19] Nearly 20% of the water samples tested exceeded the Environmental Protection Agency (EPA) benchmark for toxicity to aquatic invertebrates.[20] Numerous other studies, including U.S. Geological Survey (USGS) data and state water quality reports, have indicated that neonicotinoid chemical traces are present at concentration levels high enough to have severe effects on aquatic invertebrates. According to one expert toxicologist reviewing the USGS report data, the levels of toxins present in the groundwater samples indicate serious biological effects on aquatic systems and unprecedented contamination levels.[21]

Similar concerns were also raised over the impacts of neonicotinoids on terrestrial invertebrates. The Xerces Society for Invertebrate Conservation notes numerous ways in which non-target invertebrates are impacted by neonicotinoids: the disruption of beneficial predator and parasitoid insect populations; pest resistance to neonicotinoids; effects on beneficial fauna; and long-term use consequences.[22] The direct impacts of these pesticides on soil, aquatic environments, and other fragile ecosystems are far-reaching and only worsening as time goes on.

THE WIDE-REACHING EFFECTS OF NEONICOTINOIDS

Over the past decade or so, neonicotinoids have become widespread throughout tens of millions of acres of both agricultural and neighboring lands. Many of these neighboring areas are not only unintentional recipients of pesticide contamination, but are in many cases the remaining prime habitats for bees and native insects. Because of the long persistence and systemic nature of these compounds, bees and other pollinators are exposed to neonicotinoids through numerous routes: residues in pollen and nectar; dust from treated seeds during sowing; residues from foliar uses; dew droplets on contaminated plants; and contaminated soil and water.[23]

Besides honey bees, there are thousands of other native bee and other insect species that EPA has a duty to protect.

Besides honey bees, there are thousands of other native bee and other insect species that EPA has a duty to protect, including, but not limited to: the rusty patched bumble bee; Franklin's bumble bee; yellow-banded bumble bee; and Western bumble bee; as well as non-bee insects such as butterflies, ladybugs and lacewings, dragonflies, and hoverflies. Several of these species are facing severe declines comparable to, or worse than, those faced by honey bees. In 2008, it was reported that "at least four species of formerly common North American wild [bee] species have experienced catastrophic declines over the past decade—two of them may be on the brink of extinction."[24] Imidacloprid, which is the oldest and most widely used of the neonicotinoid pesticides, has been linked directly to poor bumble bee health and reproduction.

The persistent nature of neonicotinoids has led to increased contamination of surface water, groundwater, and soil, endangering not only pollinators, but also species that inhabit these ecosystems. As mentioned earlier, harmful effects from neonicotinoid contamination have been identified in aquatic invertebrates, and concerns continue to be raised with respect to long-term impacts on waterfowl, rangeland birds, and mammalian species.

Many prominent scientists who have repeatedly identified neonicotinoid insecticides as a driving force behind symptoms of CCD (as well as other forms of excessive and unusual bee mortality incidents) have called for neonicotinoids to be suspended due to their acute, chronic, and synergistic effects. Not only would the economic losses from the total collapse of U.S. bee colonies used in agriculture be devastating, but beekeeper livelihoods and the health of our environment would also be at stake. In so many ways, the ecological and agricultural impacts of lost wild and managed pollinators would be catastrophic.

SCIENTIFIC RESEARCH

Scientists have repeatedly identified neonicotinoids and other pesticides as a major factor in pollinator population declines and unusual instances of excessive bee mortality. To date, there have been nearly one hundred peer-reviewed papers published on the effects of neonicotinoids. A 2013 study published in the *Journal of Experimental Biology* indicated that honey bees exposed to the neonicotinoid imidacloprid were less likely

to form long-term memory required for recalling food locations. Another study published in 2013 found that honey bees exposed to a different neonicotinoid, clothianidin, had less success in finding their way home to their hives. Many of the harmful effects neonicotinoids have on honey bees, such as disorientation and memory loss, are common symptoms associated with CCD.

Not coincidentally, over the past decade, the proliferation of neonicotinoids has coincided with mass die-offs of honey bee populations commonly identified as instances of CCD. Neonicotinoids affect bee behavior and cognition in ways that compromise the overall health of colonies, often causing them to collapse. Honey bees are social insects that rely heavily on memory, cognition, and communication to coordinate activities essential for their survival. Chronic ingestion of neonicotinoids damages foraging behavior, overall mobility, and the communication by which they coordinate their activities, often leading to an inability to locate the hive.

Similarly, native bee species are also suffering similar sub-lethal and chronic effects from neonicotinoids. In 2012, scientists determined that, when exposed to field-realistic levels of imidacloprid, bumble bee colonies experienced a significantly reduced growth rate and an 85% reduction in new queens.[25] Unfortunately, bumble bees can suffer from exposure to neonicotinoids simply from building their nests in soil—which is often highly contaminated with one or more neonicotinoids. For instance, imidacloprid

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has been detected in 97% of 33 soil samples from untreated fields on which neonicotinoid-treated corn seeds had previously been planted 1-2 years prior to the sampling.[26] This contamination could pose a distinct threat to the health of native bee populations nesting in or near treated seed plantings.[27]

A study published by a leading Canadian toxicologist identified certain pesticides as the most likely primary cause of the rapid decline in grassland birds in the United States.

Recent studies, including some by scientists at the U.S. Department of Agriculture (USDA)'s, confirm that neonicotinoids interact with common bee pathogens and parasites, making bees more vulnerable to the deadly effects of both. This weakened immune system only further increases the likelihood of colony collapse.[28] Numerous peer-reviewed studies demonstrate both acute and sub-lethal harm to bees from a variety of exposure pathways across diverse agriculture landscapes, and therefore support the need for total suspension of uses of neonicotinoids.

Many bird species are experiencing plummeting populations, with those living in grassland areas facing some of the sharpest declines. Specifically, research on the potential effects of neonicotinoids on birds has raised concerns about detrimental impacts on reproductive success. Earlier this year, a study published by a leading Canadian toxicologist identified certain pesticides as the most likely primary cause of the rapid decline in grassland birds in the United States. A subsequent report, "The Impact of the Nation's Most Widely Used Insecticides on Birds," by the same toxicologist, shows high mortality risks to a broad suite of birds as a result of neonicotinoid use, as well as risks to aquatic invertebrates and to ecosystems generally.[29]

The report also found that the severe threats to aquatic invertebrates from neonicotinoid water contamination "may be totally unprecedented in the history of pesticide registration."[30] Perhaps most alarming was the conclusion that a single corn kernel coated with a neonicotinoid can kill a songbird when ingested. As little as one-tenth of a coated corn seed per day during egg-laying season can impair reproduction. The report concludes: "Simply put, EPA has not been heeding the warnings of its own toxicologists."[31] Independent mammalian toxicity studies are now being conducted in rats and mice. While there is not yet enough information to determine if there are negative reproductive and developmental effects in mammals, some of the preliminary results are concerning.

Future research is challenged by a lack of funding sources and support from academic institutions. The following table summarizes recent relevant studies illustrating the harmful effects of neonicotinoid pesticides on pollinators and their routes of exposure. Research on the effects of neonicotinoids on other critical species is ongoing.

REGULATION OF NEONICOTINOIDS

Numerous countries have stepped up and taken preventive actions to protect bees and other pollinators from the adverse impacts of neonicotinoids. On April 29th 2013, European Union (EU) member states voted to approve a minimum two-year moratorium on the use of certain neonicotinoid chemicals across the continent. This decision came several months after the European Food Safety Authority (EFSA) released a report

Authors	Pesticide(s)	Impacts
Gill, et al. (2012)	Imidacloprid and pyrethroid cyhalothrin	Combined exposures to neonicotinoid and pyrethroid pesticides impaired bumble bee foraging behavior and increased worker bee mortality, increasing the likelihood of colony collapse.
Goulson, et al. (2013)	Various neonicotinoids	The review provides a comprehensive overview of numerous environmental risks posed by the widespread use of the neonicotinoid class of chemicals.
Henry, et al. (2012)	Thiamethoxam	Nonlethal exposure of thiamethoxam to honey bees was found to cause high levels of mortality due to homing failure, putting colonies at risk of collapse.
Krupke, et al. (2012)	Clothianidin and thiamethoxam	Research identified a variety of exposure paths for honey bees to agricultural pesticides from cornfields with neonicotinoid-treated seeds. The main route of exposure identified is dust clouds laced with neonicotinoids that are produced by planting machinery. Dust exhaust forms when treated seeds are abraded as they move throughout the seed planting equipment. Dust can directly affect bees flying near planting equipment and can also settle on the soil surface of neighboring fields and flowering plants (such as dandelions) where bees typically forage in the spring. Once the treated corn reaches maturity and flowers, bees are also exposed by visiting corn plants that have neonicotinoids in their pollen.
Laycock (2012)	Imidacloprid	To determine whether environmentally realistic levels of imidacloprid were capable of making a demographic impact on bumble bees, worker bumble bees were exposed to imidacloprid through dietary doses and evaluated for reproductive effects. Adverse impacts were recorded with respect to bumble bee fecundity, thereby raising concerns about the impacts of neonicotinoids on wild bumble bee populations.
Matsumoto (2013)	Clothianidin and dinotefuran	The results from this study indicate that neonicotinoid and pyrethroid exposure reduced successful homing flights amounts far below the median lethal dose in the field. Neonicotinoids were more toxic in this capacity and impaired homing abilities at lower levels of exposure than the pyrethroids.
Pettis, et al. (2012)	Imidacloprid	Honey bee colonies were exposed to sublethal doses of imidacloprid and were then infected with the gut pathogen Nosema. Infections of Nosema in colonies that were exposed to imidacloprid were significantly greater than those in control hives. This research suggests interactions between pesticides and pathogens could contribute to colony collapse and bee kills even though the individual bees may not test positive for lethal levels of pesticide contamination. Bees living in neonicotinoid-contaminated hives may be more susceptible to pathogens.
Starner & Goh (2012)	Imidacloprid	Imidacloprid was detected in 89% of the surface water samples, with concentrations exceeding EPA's chronic invertebrate aquatic life benchmark in 19% of the samples. Many of the concentrations detected also exceeded the maximum accepted contaminant levels established by European authorities. Results of these tests indicate that imidacloprid moves offsite from agricultural applications and contaminates surface waters at concentrations that could harm aquatic life.
Stoner & Eitzer (2012)	Imidacloprid and thiamethoxam	Neonicotinoid levels in nectar and pollen of squash plants were measured after neonicotinoid applications either in the soil before planting or via irrigation of young plants. Results showed neonicotinoid levels that were within the range that can cause sublethal effects in honey bees and bumble bees. Levels in squash during this experiment were higher than those that have been found in other measurements of canola and sunflower nectar and pollen from plants grown with treated seeds.
Tapparo, et al. (2012)	Clothianidin and thiamethoxam	This study quantified the levels of neonicotinoids in the dust released from planting equipment. Levels found confirmed that bees can be directly exposed to lethal and sublethal quantities of neonicotinoids during corn planting season.
Whitehorn, et al. (2012)	Imidacloprid	The authors exposed bumble bees to field-realistic levels of imidacloprid in the laboratory and found that treated colonies had a reduced growth rate and suffered a reduction in queen production. This research suggests that neonicotinoid exposure may be significantly negatively impacting bumble bee populations worldwide.

Germany, Italy, France, Slovenia, and Austria each took steps independently to suspend and restrict uses of neonicotinoids. Meanwhile, the United States still allows for their use on millions of acres.

identifying "high acute risk" to honey bees from uses of certain neonicotinoid chemicals. Specifically, the chemicals are suspended from use on crops that are 'attractive to bees' and on certain cereal grains that cause dust clouds of toxic chemicals to be released during planting. Prior to this EU moratorium, Germany, Italy, France, Slovenia, and Austria each took steps independently to suspend and restrict uses of neonicotinoids. Meanwhile, the United States still allows for their use on millions of acres.

If the EPA were to take precautionary measures and suspend the use of neonicotinoids, even temporarily, it is likely that the resulting advantages from such measures would occur promptly and across the board, as was clearly the case in Italy after its suspension of neonicotinoid seed treatments. In June 2012, Italy's Ministry of Health announced it would continue the suspension it originally imposed in 2009 in response to bee kills that clearly resulted from clothianidin and thiamethoxam applied to corn seeds.[32] Immediately following this announcement, EFSA issued a report noting that Italy's suspensions had been effective in reducing bee kill incidents.[33] It is important to note that researchers found no evidence indicating that the suspensions are causing economic problems for farmers in Italy. In fact, Italian corn farmers have not seen serious pest attacks on untreated seed and have maintained their yields.[34]

The decision to suspend uses of neonicotinoids is not limited to prominent European nations. In 2005, the New York State Department of Environmental Conservation (NYS DEC) advised Bayer CropScience regarding the withdrawal of its application for "Poncho 600," with the active ingredient clothianidin, stating:

Based on the high toxicity of clothianidin and the potential long-term chronic effects to honey bees, environmental persistence, possible role as an endocrine disrupter, chronic toxic risk to non-endangered and endangered small birds, and acute/chronic toxicity to non-endangered and endangered mammals, Poncho 600 should not be accepted for registration in New York State.[35]

In 2007, the NYS DEC also rejected registrations of four more insecticide products containing neonicotinoids. The NYS DEC justified their rejection of these products with a lengthy list of "unmitigated concerns" about required information that the registrant companies did not submit, including adequate pollinator field studies. This is the same situation that the EPA currently faces with respect to the registration of clothianidin; yet, unlike the NYS DEC, the EPA has not taken a precautionary approach, but rather has resorted to inaction. In 2013, a bill was proposed to the New York State Assembly that would prohibit the distribution, selling, offering for sale, or use of any neonicotinoid chemicals. The bill is supported by 29 assembly members.[36]

EPA's CONCEALED KNOWLEDGE AND PROBLEMATIC PRACTICES

The Environmental Protection Agency (EPA) granted Bayer CropScience a conditional registration for the neonicotinoid clothianidin in 2003. By granting this registration, the EPA assumed that clothianidin would have no "unreasonable adverse effects" on pollinators. The prerequisite for granting this conditional registration was that Bayer would soon submit an acceptable pollinator field study. In December 2010, an internal EPA memo was leaked indicating that EPA's own scientists rejected the pollinator toxicity field study that Bayer submitted. As such, EPA is dangerously and knowingly allowing clothianidin to exist on the market over a decade later, even though the requirements for the conditional registration have still not been met.

INTERNAL EPA MEMO:

...Clothianidin's major risk concern is to nontarget insects (that is, honey bees). Clothianidin is a neonicotinoid insecticide that is both persistent and systemic. Acute toxicity studies to honey bees show that clothianidin is highly toxic on both a contact and an oral basis...

To make matters worse, product labels on pesticides containing clothianidin and other neonicotinoids are inadequate to prevent excessive damage to honey bees and other nontarget organisms. The labels do not adequately warn applicators of the acute and sub-lethal risks posed to bees and other organisms. This problem is compounded by EPA's failure to consult with the U.S. Fish and Wildlife Service and other government agencies under the Endangered Species Act over the potential effects of clothianidin on threatened and endangered species. Through even just a cursory examination of EPA's history with neonicotinoid chemicals, it is clear that the agency has not been diligent in its registration of neonicotinoids. The toxic effects resulting from this negligence have already started to disrupt food webs on a broad scale.

CFS TAKES ACTION TO PROTECT BEES

Center for Food Safety's Pollinators & Pesticides Campaign is multi-faceted and utilizes political, legal, and grassroots strategies to encourage action from our government, policymakers, and citizens to suspend the use of toxic neonicotinoids until proven safe to honey bees, other pollinators, and the environment.

LEGAL EFFORTS

On March 21, 2012, CFS filed an emergency petition with Environmental Protection Agency (EPA) asking the agency to suspend further uses of certain neonicotinoids until proven safe to pollinators and the environment. The petition also requested that EPA adopt safeguards to ensure that additional neonicotinoids with similar adverse effects are not approved by the agency. The legal petition was supported by over one million concerned citizens from across the country, but ultimately the existence of an emergency was denied by the agency.

On March 21, 2013, exactly one year later, CFS, joined by beekeepers and environmental and consumer groups, filed a lawsuit against the EPA for its failure to protect pollinators from neonicotinoids. The coalition, represented by attorneys from CFS, is

seeking the suspension of two neonicotinoids, clothianidin and thiamethoxam, that have been identified as highly toxic to honey bees. The lawsuit also challenges EPA's overall handling of the pesticides with particular attention to the agency's practice of "conditional registration" and labeling deficiencies.

Recently, TIME magazine featured a cover article on the plight of the honey bee, which examined the role that pesticides, specifically neonicotinoids, are playing in bee declines. The article highlights the CFS lawsuit and focuses on one of the beekeeper plaintiffs, Jim Doan, of upstate New York.

The EPA is currently conducting what it considers an expedited review of several neonicotinoid registrations, which it projects to complete in 2018. However, CFS and affected beekeepers argue that this deadline is far too long, as pollinator populations have already suffered—and will continue to suffer—immeasurable losses.

The EPA is currently conducting what it considers an expedited review of several neonicotinoid registrations, which it projects to complete in 2018. However, CFS and affected bee-keepers argue that this deadline is far too long, as pollinator populations have already suffered—and will continue to suffer—immeasurable losses.

LEGISLATIVE ACTION

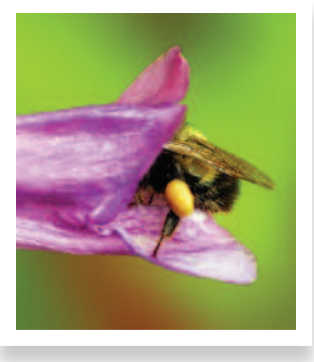
Members of Congress took encouraging steps to protect pollinator populations in 2013. With help from CFS, providing expert legal and policy guidance, a number of legislative efforts were undertaken.

During the 2013 National Pollinator Week, Congressman Alcee Hastings (D-FL) offered a pollinator protection amendment to the Farm Bill negotiations in the U.S. House of Representatives. The amendment passed with overwhelming support from Representatives: 273-149 with 81 Republicans and 192 Democrats voting in favor. The amendment, if adopted in the Farm Bill, would improve federal coordination in addressing pollinator declines as well as direct the government to regularly monitor and report on the health of pollinators, including bees, birds, bats, and other beneficial insects. Earlier in 2013, Senator Barbara Boxer (D-CA) filed a nearly identical amendment to the Senate Farm Bill.

In July 2013, Representatives John Conyers (D-MI) and Earl Blumenauer (D-OR) announced long-awaited legislation aimed at stopping the massive decline of bee populations from toxic impacts of neonicotinoids. The Representatives, working closely with CFS and allies, introduced legislation to suspend the use of four systemic neonicotinoid insecticides linked to honey bee and native bee deaths. The law, if passed, would also compel the EPA to conduct a full review of the scientific evidence before allowing future neonicotinoids on the market.

This legislation was extremely timely given that just weeks prior, over 50,000 bumble bees were killed in an Oregon parking lot after exposure to neonicotinoids. This was the largest native bee kill ever recorded in the United States. Besides suspending the chemicals until more rigorous review is undertaken, the bill also requires government agencies to monitor the health of native bee populations and to identify and publicly report on the likely causes of unusual bee kills.

GRASSROOTS OUTREACH AND THE BEE PROTECTIVE CAMPAIGN



The BEE Protective campaign encourages municipalities, campuses, and homeowners to adopt policies that protect bees and other pollinators from harmful pesticide applications and create pesticide-free refuges for these beneficial organisms.

Center for Food Safety and its partner Beyond Pesticides launched their BEE Protective campaign in spring 2013 to support local action across the country aimed at protecting honey bees and other pollinators from pesticides. Because agricultural landscapes are not the only areas that neonicotinoids are applied, BEE Protective will work with municipalities, campuses, and homeowners to adopt policies that protect pollinators from bee-toxic pesticides.

Neonicotinoid products are widely used around our homes and schools, and products approved for home and garden use may be applied to ornamental and landscape plants, as well as turf, at significantly higher rates (potentially 32 times higher) than those approved for agricultural crops.

BEE Protective utilizes a variety of educational materials, including a BEE Protective Habitat Guide that provides information on creating native pollinator habitat in communities, eliminating bee-toxic chemicals, and other advocacy tools. The campaign also encourages municipalities, campuses, and homeowners to adopt policies that protect bees and other pollinators from harmful pesticide applications and create pesticide-free refuges for these beneficial organisms. In addition to scientific and regulatory information, BEE Protective also includes a model community pollinator resolution and a pollinator protection pledge. BEE Protective supports a shift away from the use of these toxic chemicals and encourages organic methods and sustainable land management practices.

Some communities have already stepped up and started initiatives of their own. In April 2013, Thurston County in Washington State proposed restrictions to Washington State Department of Agriculture on the purchase, sale, distribution, and application of neonicotinoids for ornamental use. Shortly thereafter, the Oregon State Department of Agriculture took action and suspended the use of all products in the state containing the neonicotinoid chemical linked to a mass bumble bee kill after it's use on linden trees in an urban parking lot.

In the coming months, Center for Food Safety looks forward to working with many communities and campuses eager to join the fight to protect pollinators. And what better a way to emulate the bees, the definitive creatures of order, than to organize our own efforts to protect colonies and communities from these harmful chemicals.

VISIT WWW.CENTERFORFOODSAFETY.ORG TO JOIN THE CAMPAIGN

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