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A STATUTE STRIPPED OF ITS STING: COLONY COLLAPSE DISORDER AND THE EPA'S "IMMINENT HAZARD"

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INTRODUCTION

Domesticated bees are dying off in frightening numbers in the United States and Europe,[1] and the pesticide linked to this decline continues to be used because Environmental Protection Agency ("EPA") contends research demonstrating its deadly effects fails to satisfy the strict statutory standard for an emergency prohibition.[2] When the phenomenon known as Colony Collapse Disorder began ravaging beehives in the winter of 2006, beekeepers and scientists alike were baffled by the devastation.[3] In the following years, as bees and their keepers continued to endure these mysterious and troubling losses, research indicated that a perfect storm of "stress factors" was responsible for these deaths.[4] In particular, scientists have pointed the finger at a pesticide called Clothianidin, which is used to treat a majority of the corn and canola seeds planted domestically.[5] Recent studies have determined Clothianidin weakens, disrupts,

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[1] Dennis vanEngelsdorp et al., *Preliminary Results: A Survey of Honey Bee Colonies Losses in the U.S. Between September 2008 and April 2009*, MAAREC (May 19, 2009), https://agdev.anr.udel.edu/maarec/wp-content/uploads/2011/01/PrelimLosses2009.pdf.

[2] Letter From Stephen P. Bradbury, Director, Office of Pesticide Programs, Formal Response, to Clothianidin Emergency Citizen Petition, United States Environmental Protection Agency (July 17, 2012) (responding to Jeff Anderson, Emergency Citizen Petition to the United States Environmental Protection Agency).

[3] Ann N. Coenen-Davis, *The Mystery of the Disappearing Honeybee: Will Government Funding and Regulation Save This Important Pollinator?*, 14 DRAKE J. AGRIC. L. 175 (2009); M. Frazier et al., *FAQ's: Colony Collapse Disorder*, MAAREC, https://agdev.anr.udel.edu/maarec/wp-content/uploads/2010/05/FAQCCD.pdf (last visited Feb. 7, 2014).

[4] *See* Coenen-Davis, *supra* note 3, at 180.

[5] UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OFFICE OF PREVENTION, PESTICIDES, AND TOXIC SUBSTANCES, CLOTHIANIDIN FACT SHEET (May 30, 2003) [hereinafter CLOTHIANIDIN FACT SHEET], *available at* http://www.epa.gov/opp00001/chem_search/reg_actions/registration/fs_PC-044309_30-May-03.pdf.

and disorients bees, tipping the fragile balance of their ecosystem and playing a major role in these bee die-offs.[6] This research has led to a number of prohibitions on the pesticide in European nations experiencing die-offs;[7] in fact, Clothianidin is illegal for use in Germany, the country in which the chemical is produced by the Bayer Corporation.[8] Due to this, a coalition of beekeepers filed a petition with the United States Environmental Protection Agency requesting an emergency prohibition on Clothianidin use while a formal review of the pesticide could be undertaken.[9] However, EPA rejected the proposal, stating that it failed to meet the "imminent hazard" standard prescribed by statute.[10] This standard, as articulated in the Federal Insecticide, Fungicide, and Rodenticide Act, authorizes EPA to place emergency prohibitions on pesticides only when it is clear that within the time it will take for a formal inquiry into the substance to proceed, either an "unreasonable adverse impact on the environment" will occur, or continued use "will involve unreasonable hazard to the survival of a species declared endangered or threatened by the Secretary pursuant to the Endangered Species Act."[11] Therefore, the petition was rejected because EPA claimed that the research on the impact of Clothianidin on bees neither represented an unreasonable adverse impact on the environment, nor an unreasonable hazard to the survival of a listed endangered species.[12]

Clothianidin, a neonicotinoid pesticide developed by the Bayer Corporation in Germany, is intended to protect corn and canola crops from damage done by insect pests.[13] According to EPA, "close to 90% of the total corn acreage planted in the U.S. is planted with corn seed that has been treated with nitrochanidine neonicotinoid pesticides . . . [and]

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[6] Axel Decourtye et al., *Imidacloprid Impairs Memory and Brain Metabolism in the Honeybee (Apis mellifera L.)*, 78 PESTICIDE BIOCHEMISTRY & PHYSIOLOGY 83 (2004), *available at* http://www.entomology.umn.edu/cues/pollinators/pdf-HBfor/2003Decourtye.pdf; *see also* Cédric Alaux et al., *Interactions Between Nosema Microspores and a Neonicotinoid Weaken Honeybees (Apis mellifera)*, 12(3) ENVIRONMENTAL MICROBIOLOGY 774 (2010), *available at* http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2847190/; Debora MacKenzie, *Honeybees Under Attack on All Fronts*, NEW SCIENTIST, Feb. 16, 2009, at 10.

[7] *Colony Collapse Disorder: European Bans on Neonicotinoid Pesticides*, EPA, http://www.epa.gov/pesticides/about/intheworks/ccd-european-ban.html (last updated Aug. 15, 2013).

[8] *Safety of Clothianidin to Bees*, BAYER CROPSCIENCE (Sept. 1, 2008), http://www.cropscience.bayer.com/en/Media/Backgrounds/Safety-of-clothianidin-to-bee.aspx?overviewId=01BC0BC0-950A-4B79-8643-B64CB395744E.

[9] Bradbury, *supra* note 2.

[10] *Id.*

[11] 7 U.S.C. § 136(l) (2006).

[12] Bradbury, *supra* note 2.

[13] CLOTHIANIDIN FACT SHEET, *supra* note 5.

Clothianidin is the primary neonicotinoid seed treatment used for corn, and is also approved for foliar and other uses on many crops and use sites."[14] However, there has been an increasing amount of data linking Clothianidin to a recent phenomenon known as Colony Collapse Disorder, a term for the "abrupt decline of honey bee populations observed around the world beginning in the middle of the last decade."[15] Each winter since 2004 has seen about one-third of the United States honey bee population die off, nearly double the normal winter decrease.[16] Damage to the natural and human-raised bee populations could have a devastating impact on agriculture in the United States, because honey bee pollination of multiple foodstuffs, ranging from almonds to kiwis, is critical to the survival and propagation of these crops.[17]

Despite evidence of the danger posed by Clothianidin to honey bees in the United States, EPA has refused to place an emergency prohibition on the pesticide because the petitioners were unable to meet EPA's "imminent hazard" standard.[18] According to the Pesticide Registration Improvement Renewal Act, "imminent hazard" is defined as:

> [A] situation which exists when the continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered or threatened by the Secretary pursuant to the Endangered Species Act.[19]

This standard should be broadened in three ways. First, the time frame requirement should be expanded. Although the "unreasonable adverse effects" may not in fact happen during the cancellation proceeding, they may have been set in motion and will be harder to reverse down the line. Second, the endangered/threatened species requirement should either be purged in favor of all species or expanded to include species critical to human agricultural production. Finally, the standard

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[14] Bradbury, *supra* note 2.
[15] *Id.*
[16] vanEngelsdorp et al., *supra* note 1.
[17] Roger A. Morse & Nicholas W. Calderone, *The Value of Honey Bees as Pollinators of U.S. Crops in 2000*, BEE CULTURE MAG., Mar. 2000, http://www.masterbeekeeper.org/pdf/pollination.pdf.
[18] Bradbury, *supra* note 2.
[19] 7 U.S.C. § 136(l) (2006).

should be broadened to include an economic impact consideration which allows for emergency prohibitions when the continued use of a pesticide threatens serious economic harm. Honey bees, responsible for $14.6 billion per year worth of economic activity,[20] deserve this added statutory benefit. These changes can be affected if EPA reassesses its regulatory approach toward combating Colony Collapse Disorder in light of the proliferation of new studies and data confirming the impact of certain pesticides, which I will delineate below. If the agency follows the steps laid out below, they can begin to reverse the devastation wrought by Colony Collapse Disorder. I will first provide an overview of Colony Collapse Disorder before addressing these linkages to pesticides and offering suggestions for how to address their impact.

I. COLONY COLLAPSE DISORDER OVERVIEW

Domesticated honey bees arrived in the United States from Europe, carried along by early settlers of the colonies of Williamsburg and Jamestown.[21] As the country grew and its borders expanded, honey bees too spread out across the nation. When expanding agriculture, the growth of suburban sprawl, and the widespread use of pesticides rendered native pollinators unable to keep up with demand, domesticated honey bees picked up the slack, and their keepers reaped financial rewards for their assistance.[22] Today, honey bees play a critical role in American agriculture. In the year 2000, it was estimated that there was a total of 2.9 million domesticated bee colonies in the United States, which were responsible for a $14.6 billion increase in agricultural yield.[23] According to the study performed by Roger Morse and Nicholas Calderone, a number of crops in the United States are entirely dependent upon honey bee pollination to survive.[24] For example, research undertaken by the United States Department

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[20] Morse & Calderone, *supra* note 17, at 2.
[21] Sharon Levy, *The Vanishing*, ONEARTH MAG., Summer 2006, http://www.nrdc.org/onearth/06sum/bees1.asp.
[22] *Id.*
[23] Morse & Calderone, *supra* note 17, at 2.
[24] *Id.* at 3, 8. A number of agricultural crops are almost totally (90%–100%) dependent on honey bee pollination, including almonds, apples, avocados, blueberries, cranberries, cherries, kiwi fruit, macadamia nuts, asparagus, broccoli, carrots, cauliflower, celery, cucumbers, onions, legume seeds, pumpkins, squash, and sunflowers. *Id.* Other specialty crops also rely on honey bee pollination, but to a lesser degree. *Id.* These crops include apricot, citrus (oranges, lemons, limes, grapefruit, tangerines, etc.), peaches, pears, nectarines, plums, grapes, brambleberries, strawberries, olives, melon (cantaloupe, watermelon, and honeydew), peanuts, cotton, soybeans, and sugarbeets. *Id.*

of Agriculture indicated that "the almond crop in California alone requires 1.3 million colonies" for pollination.[25] It has been estimated that one in three bites of food taken by Americans is made possible by honey bee crop pollination.[26] From these figures, it is clear that domesticated honey bees have an enormous impact on American agriculture and are deserving of careful monitoring and protection by the government to maintain their invaluable impact. However, this engine of agricultural production has been under threat for the past several years by a mysterious phenomenon known as "Colony Collapse Disorder."[27]

The Colony Collapse Disorder crisis began in 2006, when beekeepers noticed a significant increase in the amount of winter die-offs in their colonies.[28] The first reports were made in Pennsylvania, but it soon became clear that its impact was not an isolated incident when other migratory beekeepers around the nation began reporting suspicious levels of die-offs as well.[29] Some beekeepers suffered losses of up to ninety percent of their bees.[30] Strangely, approximately fifty percent of the collapsed colonies "demonstrate[d] symptoms inconsistent with mite damage, or any other known causes of death. This suggested that increased stress or a new, unidentified agent could potentially be responsible."[31] Evidence from the decimated hives displayed a strange array of abnormal causes, leading to this official list of Colony Collapse Disorder symptoms:

1) Sudden loss of the colonies adult bee population with very few bees found near the dead colonies;
2) Several frames with healthy, capped brood[32] with low levels of parasitic mites, indicating that colonies

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[25] UNITED STATES DEPARTMENT OF AGRICULTURE, CCD STEERING COMM., COLONY COLLAPSE DISORDER ACTION PLAN 6 (2007), *available at* http://www.ars.usda.gov/is/br/ccd/ccd_actionplan.pdf.

[26] Elizabeth Grossman, *Declining Bee Populations Pose a Threat to Global Agriculture*, YALE ENVIRONMENT 360 (Apr. 30, 2013), http://e360.yale.edu/feature/declining_bee_population_pose_a_threat_to_global_agriculture/2645/.

[27] *See* Bradbury, *supra* note 2.

[28] Frazier et al., *supra* note 3.

[29] *Id.*

[30] UNITED STATES DEPARTMENT OF AGRICULTURE, *supra* note 25, at 7.

[31] *Id.*

[32] *See Beekeeping Words, Terms and Definitions*, THE JOY OF BEES, http://www.stormthecastle.com/mead/bees-honey/beekeeping-words-terms-and-definitions.htm (last visited Feb. 7, 2014) (defining "capped brood" as "Brood cells that have been capped over with wax. They are at the point where they will then, after capping, spin cocoons and turn into larvae.").

were relatively strong shortly before the loss of adult bees and that the losses cannot be attributed to a recent infestation of mites;
3) Food reserves have not been robbed, despite active colonies in the same area, suggesting avoidance of the dead colony by other bees;
4) Minimal evidence of wax moth or small hive beetle damage; and
5) A laying queen often present with a small cluster of newly emerged attendants[33]

The crisis was termed "Colony Collapse Disorder," and the United States House of Representative's Subcommittee on Horticulture and Organic Agriculture was tasked with investigating the die-offs and determining the cause.[34] The committee determined that:

> [R]esponding beekeepers suffered an average loss of 38% of their colonies during the winter of 2006–2007. If these losses are representative of the nation, between 651,000 and 875,000 of the nation's estimated 2.4 million colonies were lost over the winter.[35]

While the committee found that "a majority of losses were attributable to known causes, approximately 25% of beekeepers are believed to have suffered from CCD."[36] Scientific findings of Colony Collapse Disorder causation in 2007 listed several potential factors:

1) Parasites, mites, and disease loads in the bees and brood;
2) Emergence of new or newly ore virulent pathogens;
3) Poor nutrition among adult bees;
4) Lack of genetic diversity and lineage of bees;
5) Level of stress in adult bees (e.g., transportation and confinement of bees, or other environmental or biological stressors);

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[33] *See* UNITED STATES DEPARTMENT OF AGRICULTURE, *supra* note 25, at 7.
[34] RENEE JOHNSON, CRS REPORT FOR CONGRESS: RECENT HONEY BEE DECLINES 4–5 (2007), *available at* http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA469929.
[35] *Id.* at 7.
[36] *Id.*

6) Chemical residue/contamination in the wax, food stores, and/or bees; or
7) Combination of these and/or other factors.[37]

In every winter following the initial 2006 die-off, the domesticated bee population in the United States has been ravaged by Colony Collapse Disorder, and loses approximately one-third of its numbers every year.[38] This rate has not slowed, and beekeepers around the nation have braced for the upcoming figures on the amount of bees lost during the 2012–2013 winter.[39] Scientists and researchers have poured hours into discovering the root of Colony Collapse Disorder and seeking a way to reverse its devastating effects.[40]

II. CLOTHIANIDIN AND COLONY COLLAPSE DISORDER

Research performed by the United States government, the governments of several European states, and independent environmentalist groups has linked the bee die-offs to a pesticide produced by Germany's Bayer Corporation called Clothianidin.[41] According to Bayer's CropScience report, Clothianidin is a seed treatment insecticide designed to be sprayed on canola, cereals, corn, sunflowers, and sugar beets to protect them from "early season pests, soul and leaf bests, beet leaf miners, black cutworms, corn rootworms, flea beetles, grubs, leafhoppers, and wireworms."[42] Clothianidin is a "Neonicotinoid" pesticide, meaning that it is derived from nicotine and designed to affect the central nervous

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[37] *Id.* at 9.
[38] Dennis vanEngelsdorp et al., *Preliminary Results: Honey Bee Colony Losses in the United States, Winter 2012–2013*, BEE INFORMED (May 1, 2013), http://beeinformed.org/2013/05/winter-loss-survey-2012-2013/.
[39] *Id.*
[40] *Id.*
[41] *See* Decourtye et al., *supra* note 6; Alaux et al., *supra* note 6, at 774; MacKenzie, *supra* note 6; Jeffery S. Pettis et al., *Pesticide Exposure in Honey Bees Results in Increased Levels of the Gut Pathogen Nosema*, 99 Naturwissenschaften 153 (2012); BRIAN EITZER, CONN. AGRIC. EXPERIMENT STATION, THE ROLE OF PESTICIDES IN HONEYBEE DECLINE (2011), *available at* http://www.ct.gov/caes/lib/caes/documents/plant_science_day/plant_science_day_spring/2011/spring_open_house_2011_eitzer.pdf.
[42] *Glossary*, Bayer CropScience Annual Report 2011, http://www.annualreport2011.bayer.com/en/glossary.aspx (last visited Feb. 7, 2014); *Products: Clothianidin*, HAILIR PESTICIDES AND CHEMICAL GROUP, http://www.hailir.cn/eg/proItem.aspx?id=318 (last visited Feb. 7, 2014).

system of insects, causing paralysis and death.[43] Clothianidin was provisionally approved for domestic use by EPA in 2003,[44] and has been widely used by farmers across the country since. According to EPA, "close to 90% of the total corn acreage planted in the U.S. [. . .] has been treated with nitroguanidine neonicotinoid pesticides . . . [and] Clothianidin is the primary neonicotinoid seed treatment used for corn, and is also approved for foliar and other uses on many crops and use sites."[45] Clothianidin use occurs in every American state, reaches ninety-nine million acres of land in the United States,[46] and exhibits great variance in its half-life depending on weather conditions and soil type, with the spectrum ranging from 148 days to 1155 days.[47]

However, in the years since its introduction to United States agriculture, Clothianidin has been the subject of many investigations linking its use to Colony Collapse Disorder. Studies contend that, while not always the direct cause of death in bees, Clothianidin's sub-lethal effects are a major catalyst in Colony Collapse Disorder because they "interfere with honey bees' cognition and orientation in ways that would prevent foraging bees from finding their way back to the hive."[48] This is consistent with the mysterious disappearance of worker bees and absence of dead bees in the hive in Colony Collapse Disorder. Scientists theorize that Clothianidin disrupts and disorients bee foraging behavior, causing them to become lost.[49] Another damaging sub-lethal effect of Clothianidin exposure is weakened resistance to pathogens and parasitic mites;[50] in fact, the United States Department of Agriculture's Agricultural Research

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[43] *Overview of the Registration Review Program*, EPA, http://www.epa.gov/oppsrrd1/registration_review/highlights.htm (last updated Nov. 25, 2013).
[44] *Pesticide Fact Sheet: Clothianidin*, EPA, http://www.epa.gov/opp00001/chem_search/reg_actions/registration/fs_PC-044309_30-May-03.pdf (last visited Feb. 7, 2014) [hereinafter *Pesticide Fact Sheet: Clothianidin*].
[45] Bradbury, *supra* note 2.
[46] *GM Corn and Sick Honey Bees—What's the Link?*, GMWATCH (May 14, 2012), http://www.gmwatch.org/index.php/news/archive/2012/13921-gm-corn-and-sick-honey-bees-whats-the-link.
[47] *Pesticide Fact Sheet: Clothianidin*, *supra* note 44, at 15.
[48] PETER T. JENKINS, ATTORNEY FOR PETITIONERS, CENTER FOR FOOD SAFETY AND INTERNATIONAL CENTER FOR TECHNOLOGY ASSESSMENT, EMERGENCY CITIZEN PETITION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY ADMINISTRATOR LISA JACKSON 15 (Mar. 2012), *available at* http://www.whatsonmyfood.org/documents/CFS-Clothianidin-Petition-3-12-SIGN-ON-VERSION.pdf.
[49] *Id.*
[50] *Id.*

Station recently performed an experiment in which they exposed honey bees to sub-lethal doses of neonicotinoid pesticides and determined that:

> Nosema infections increased significantly in the bees from pesticide-treated hives when compared to bees from control hives demonstrating an indirect effect of pesticides on pathogen growth in honey bees. We clearly demonstrate an increase in pathogen growth within individual bees . . . at below levels considered harmful to bees. The finding that individual bees with undetectable levels of the target pesticide, after being reared in a sub-lethal pesticide environment within the colony, had higher Nosema is significant. Interactions between pesticides and pathogens could be a major contributor to increased mortality of honey bee colonies, including colony collapse disorder, and other pollinator declines worldwide.[51]

It is clear from this study that exposure to Clothianidin plays a major factor in bee weakening and die-offs. Another government-funded study in 2011 concluded that "pesticides are a contributing factor to the problems faced by honey bees."[52] In light of the new information regarding Clothianidin, its use has been suspended in several European nations, including France, Italy, Slovenia, and even the country where Clothianidin is produced—Germany.[53]

In response to the devastating honey bee losses and the influx of scientific data linking Clothianidin to Colony Collapse Disorder, a confederation of commercial beekeepers and honey producers and environmental and consumer organizations under the aegis of the Center for Food Safety filed a petition on March 20, 2012, to the United States Environmental Protection Agency urging an emergency ban on the pesticide.[54] The petition cites many of the studies listed above, and inveighs against EPA's "Institutional and Legal Failures" by arguing that, in the face of evidence of Clothianidin and other neonicotinoids' devastating impact on honey bees, the agency should have adopted a more protective stance

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[51] Pettis et al., *supra* note 41, at 153. For a discussion of nosema, see *Honey Bee Disorders: Microsporidian Disease*, UNIV. ALA. COLLEGE OF AGRIC. & ENVTL SCI., http://www.ent.uga.edu/Bees/disorders/protozoan-diseases.html (last visited Feb. 7, 2014).
[52] EITZER, *supra* note 41.
[53] *Colony Collapse Disorder: European Bans on Neonicotinoid Pesticides*, *supra* note 7.
[54] JENKINS, *supra* note 48.

toward the data necessary for pesticide registration, yet "[i]nstead . . . loosened its oversight, allowing farmers to inundate fields with toxic chemicals *before* EPA has confirmed their safety."[55] The petition contends that EPA has failed to identify:

> [A]ny alternative study that supports a finding that clothianidin does not have any unreasonable adverse effects on the environment—including pollinators. Such a finding was, and remains, a prerequisite to conditional registration. Continuing to allow clothianidin to be marketed, sold and used when *not one study* meets EPA's condition for its registration is, as a matter of law, arbitrary, capricious and contrary to the mandates of FIFRA and the APA.[56]

Despite the strongly worded nature of the memo and the scientific studies cited therein, EPA nonetheless rejected the request to enact an emergency prohibition on Clothianidin.[57] In addition to questioning the data and studies cited by the petitioners,[58] EPA declined the request on the grounds that the petitioners failed to demonstrate that the dangers posed by continued use of Clothianidin and other neonicotinoid pesticides met the "imminent hazard" standard defined by statute as the required basis for an emergency prohibition.[59]

III. THE "IMMINENT HAZARD" STANDARD

In response to a large influx of chemical agents to be used in agriculture and animal husbandry, Congress passed the Federal Insecticide, Fungicide, and Rodenticide Act in 1947 to place the import and use of pesticides under federal control.[60] This statute has been renewed and modified periodically since its inception, and is now known as the Pesticide

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[55] *Id.* at 12.
[56] *Id.*
[57] Bradbury, *supra* note 2.
[58] *Id.* at 6 ("[N]either the data nor the incidents suggest that substantial likelihood of serious, imminent harm exists from the current use of Clothianidin such that suspension action is warranted under FIFRA.").
[59] *Id.* at 5 ("[N]owhere in the petition do petitioners explain how the use of Clothianidin rises to the level of the FIFRA imminent hazard standard.").
[60] *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*, EPA, http://www.epa.gov/oecaagct/lfra.html (last updated June 27, 2012).

Registration Improvement Renewal Act.[61] According to the Senate Report conducted following the recertification of the Act in 1996, the purpose of the regulations is to "provide for the protection of man and his environment and the enhancement of the beauty of the world around him."[62] The report speaks in favor of pesticides as "necessary to keep [man's] home free from vermin, to protect him from diseases spread by insects, rats, and other vectors, protect his possessions from termites and other destructive insects, and beautify his lawns and parks."[63] However, the report addresses public fears of pesticides, stating that:

> While appropriate pesticides properly used are essential to man and his environment, many constitute poisons that are too dangerous to be used for any purpose. Others are dangerous unless used extremely carefully, and some may have long lasting adverse effects on the environment. Some may be taken up in the food chain and accumulated in man and other animals. Improperly used they may endanger *bees* and other useful insects, birds, and other animals and their food supply.[64]

Therefore, the Senate attempted to ensure control of pesticide safety by providing for the labeling of pesticides, and insisting that dangerous pesticides which are "injurious to man, other vertebrates, or useful plants . . . cannot be registered under the Act, and cannot be sold or distributed in interstate commerce"; additionally, if research reveals that a registered chemical should not have been registered, "its registration may be cancelled; and in the case of *imminent hazard* its registration may be immediately suspended pending the completion of cancellation proceedings."[65]

The Senate's stated desire to ensure the safe use of pesticides and leave mechanisms in place to prohibit the use of dangerous chemicals set the stage for the ultimate text of the bill, where numerous safeguards were put in place. First, the Act requires all pesticides distributed or sold within the United States to be registered by EPA under F.I.F.R.A.[66] In order to be

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[61] *Pesticide Regulation*, CROPLIFE AM., http://www.croplifeamerica.org/crop-protection/pesticide-regulation (last visited Feb. 7, 2014); *See* 7 U.S.C. § 136(a) (2006).
[62] S. Rep. No. 838, 1972 U.S.C.C.A.N. 3993, 3995.
[63] *Id.*
[64] *Id.* (emphasis added).
[65] *Id.* (emphasis added).
[66] 7 U.S.C. § 136a(a) (2006).

registered, EPA must determine that the pesticide, when used in accordance with widespread and commonly recognized practice, generally will not cause "unreasonable adverse effects on the environment."[67]

Following approval, EPA is required to "periodically review pesticide registration";[68] if, following the review, EPA determines that a registered pesticide no longer meets the standard for registration, it may initiate cancellation proceedings.[69] If EPA's review reveals a substantial danger posed by the pesticide which will take effect before the necessary cancellation proceedings can be undertaken, EPA may begin the process of suspending the registration of a pesticide if it determines that continued use of the pesticide presents an "imminent hazard."[70] The Act defines an "imminent hazard" as:

> A situation which exists when the continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered or threatened by the Secretary pursuant to the Endangered Species Act.[71]

If EPA determines that an emergency exists such that the imminent hazard will occur during the period necessary to complete normal suspension

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[67] 7 U.S.C. § 136a(c)(5)(C) (2006). In the statute's definitions section, "Unreasonable Adverse Effects on the Environment" are defined as:

> (1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of the pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 346a of title 21. The Administrator shall consider the risks and benefits of public health pesticides separate from the risks and benefits of other pesticides. In weighing any regulatory action concerning a public health pesticide under this subchapter, the Administrator shall weigh any risks of the pesticide against the health risks such as the diseases transmitted by the vector to be controlled by the pesticide.

7 U.S.C. § 136(bb) (2006).

[68] 7 U.S.C. § 136a(g) (2006).

[69] 7 U.S.C. § 136d(b) (2006). The D.C. Circuit Court of Appeals has held that whenever it appears that a registered pesticide has been misbranded, EPA is required to issue a notice of cancellation. Envtl. Def. Fund, Inc., v. Ruckelshaus, 439 F.2d 584 (D.C. Cir. 1971).

[70] 7 U.S.C. § 136d(c) (2006).

[71] 7 U.S.C. § 136(l) (2006).

proceedings, EPA may issue an immediately effective emergency suspension order in advance of completing suspension proceedings.[72]

"Unreasonable adverse effect" is defined as "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide."[73] This definition will be critical to later analysis, because it will lend teeth to an argument that EPA was deficient in considering all the relevant factors involved in its review of Clothianidin use.[74]

In 1988, the Ninth Circuit Court of Appeals held that an "imminent hazard" exists if there is a "substantial likelihood that serious harm will be experienced during the year or two required in any realistic projection of the administrative process."[75] Regarding specific factors to consider when addressing a potentially imminent hazard, a federal district court instructed EPA to consider:

1.) Seriousness of threatened harm;
2.) Immediacy of threatened harm;
3.) Probability that the threatened harm will occur;
4.) Benefits to the public for the continued use of the pesticide;
5.) The nature and extent of the information before the Administrator at the time he made his decision.[76]

However, EPA does not have *carte blanche* to declare an imminent hazard and enact a suspension order. First, the organization's Administrator must notify registrants of the investigation and identify the pesticide he wishes to cancel based upon "findings pertaining to the question

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[72] 7 U.S.C. § 136d(c)(3) (2006).
[73] 7 U.S.C. § 136(bb) (2006).
[74] It must be noted that the federal courts determined that F.I.F.R.A. confers "broad discretion" on EPA to "not merely . . . find facts, but also to set policy in the public interest." Wellford v. Ruckelshaus, 439 F.2d 598, 600 (D.C. Cir. 1971). This implication could cut both for and against a public challenge to EPA's determination to not find an emergency hazard in the Clothianidin case. On the one hand, it gives EPA more grounds to support its position based on a holistic analysis of the available information revealing a public interest in maintaining the crops sprayed by Clothianidin; on the other hand, EPA may have a difficult time maintaining this position today, considering the public outcry regarding bee die-offs and the many petitions calling for bans of the substance. *See infra* Part IV.
[75] Love v. Thomas, 858 F.2d 1347, 1350 n.3 (9th Cir. 1988) (quoting Envtl. Def. Fund v. E.P.A., 465 F.2d 528, 540 (D.C. Cir. 1972)).
[76] Dow v. Blum, 469 F. Supp. 892, 902 (E.D. Mich. 1979).

of 'imminent hazard,'" which he must detail in specificity.[77] Following this, the registrants are given the opportunity for an expedited hearing to challenge whether an imminent hazard actually exists.[78] The Registrant has five days to file for an expedited appeal; if no appeal is filed before the deadline, the order becomes finalized and the prohibition is enacted.[79]

Following this appeal and the administrative decision to label a danger an "imminent hazard," the administrative order is subject to review by the federal district court.[80] The federal district court has been instructed to consider the five factors laid out in *Dow v. Blum*,[81] including the "the nature and extent of the information before the [EPA] at the time that it issued the order."[82] F.I.F.R.A. instructs the district court that a suspension order is reviewable "solely to determine whether the order of suspension was arbitrary, capricious, or an abuse of discretion, or whether the order was issued in accordance with procedures established by law."[83] However, the Ninth Circuit Court of Appeals has held that there are "certain exceptions" to this rule calling for review of substantive evidence "where such evidence is necessary as background to determine the sufficiency of the agency's consideration."[84] Weighing of the evidence to determine "correctness or wisdom of agency's decision," however, is verboten.[85]

IV. CASE STUDIES AND IMPLICATIONS FOR COLONY COLLAPSE DISORDER

To appreciate EPA's responsibility in determining when an imminent hazard exists and planning a course of action to rectify the situation, I will examine two distinct cases. One, *Love v. Thomas*, involves a D.C. Circuit Court of Appeals finding that EPA's decision to suspend the use of a particular pesticide was "capricious and arbitrary,"[86] and the other, *Environmental Defense Fund, Inc. v. E.P.A.*, addresses a situation in

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[77] 7 U.S.C. § 136d(c)(1) (2006).
[78] *Id.*
[79] 7 U.S.C. § 136d(c)(2) (2006). *But see Thomas*, 858 F.2d at 1356 (clarifying ambiguous statutory language in F.I.F.R.A. regarding the expedited appeal process and determining that "emergency" prohibitions enacted before the Registrant is afforded an opportunity to file an expedited appeal are reviewable in the courts).
[80] 7 U.S.C. § 136d(c)(2)(4) (2006).
[81] *Dow*, 469 F. Supp. at 902.
[82] *Id.*
[83] 7 U.S.C. § 136d(c)(4) (2006).
[84] *Thomas*, 858 F.2d at 1356.
[85] *Id.*
[86] *Id.* at 1358.

which EPA's decision not to suspend the use of a pesticide was held as a failure and rejected by the Court of Appeals.[87] By examining these apposite results, a "road map" detailing an effective process for EPA review of pesticides can be established and then applied to the case of Clothianidin and Colony Collapse Disorder. Additionally, the viability of a federal lawsuit against EPA by groups affected by the continued use of Clothianidin and the likelihood of a court-ordered suspension of the pesticide can be assessed.

Love v. Thomas, which was cited throughout the procedural discussion of the "imminent hazard" standard, is a useful case study for demonstrating the factors a court considers in making a determination about EPA implementation of emergency prohibitions.[88] In this case, EPA enacted an emergency prohibition on the use of dinoseb, a pesticide used on raspberries, green peas, snap beans, and lima beans, after scientific studies had linked dinoseb to "serious health risks to persons exposed to it, including sterility in men and birth defects in the unborn children of pregnant women."[89] The District Court confirmed their jurisdiction under F.I.F.R.A. to review EPA's emergency suspension order banning dinoseb.[90] The District Court also found that EPA carried out its investigation into the economic impact in a "cursory, unacceptable fashion" by not considering "all the relevant factors," thus making a "clear error in judgment"[91]; therefore, the court determined EPA's suspension order was arbitrary and capricious within the meaning of the statute.[92]

The Ninth Circuit affirmed this finding, agreeing that EPA's evaluation "was incomplete and rushed and, under the circumstances of this case, simply not adequate to justify the emergency suspension of the plaintiffs' use of dinoseb."[93] Critical to this ruling was the court's determination that EPA gave itself "insufficient time to comply with the statutory requirement that it balance risks and benefits," resulting in a study the Circuit Court found "woefully incomplete."[94] In addition, the court deemed EPA's extrapolation of national crop data to project impact on the Pacific Northwest to be "tenuous, if not completely arbitrary," due to

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[87] Envtl. Def. Fund v. E.P.A., 465 F.2d 528, 528 (D.C. Cir. 1972).
[88] *Thomas*, 858 F.2d at 1347.
[89] *Id.* at 1350.
[90] Love v. Thomas, 668 F. Supp. 1443, 1448 (D. Or. 1987).
[91] *Id.* at 1448–49.
[92] *Id.*
[93] *Thomas*, 858 F.2d at 1358.
[94] *Id.* at 1358–59.

EPA's awareness of unusual conditions in that region with regard to availability of pesticides and an abundance of pests and weeds unique to that region.[95] The court reserved its harshest language for the EPA's failure to quantify or appreciate the economic hardship farmers in the Pacific Northwest would endure as a result of a blanket prohibition on the use of dinoseb, stating that "such insensitivity to the local economic problems caused by [EPA's] decision is unbecoming and inappropriate," adding that "crop losses of over $39 million may look like small potatoes from Washington, D.C., but . . . such losses would cause very serious economic hardships to the people of the Northwest who would have to bear them."[96] However, the Court of Appeals rejected the District Court's detailed order regarding future use of dinoseb,[97] stating that the only action available to the District Court in the review of a pesticide prohibition is to stay the effectiveness of the order and require EPA to revisit the matter.[98]

This provides a good demonstration of the way the courts believe the "imminent hazard" standard should be addressed and applied. Particularly striking is the importance of the economic analysis of the impact of prohibition on crop farmers; proof of serious and immediate harm is insufficient without a balancing of pecuniary losses due to a prohibition.[99] Additionally, this court defines the contours of EPA imminent hazard review, preserving the federal district court's authority to strike down EPA decisions regarding imminent hazard determinations while forbidding the court to substitute its own judgment for that of the administration, holding instead that the court can only reject and remand the EPA determination for a second evaluation.[100]

Another case involving federal review of the administrative decision regarding the existence of an "imminent hazard" is *Environmental Defense Fund, Inc. v. E.P.A.*[101] In this case, the Court of Appeals reviewed a determination of the District Court, who considered EPA's assessment

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[95] *Id.* at 1360.
[96] *Id.* at 1362.
[97] The district court issued injunctive relief providing limits on quantity of dinoseb that may be sold, restricting persons to whom the pesticide could be sold (growers of certain crops only, with a blanket prohibition on women of child-bearing age), applicators which could be used for spraying, banning aerosol spraying, ordering a warning label to be placed on the pesticide, and others. Love v. Thomas, 668 F. Supp. 1443, 1451 (D. Or. 1987).
[98] *Thomas*, 858 F.2d at 1364.
[99] *Id.* at 1362.
[100] *Id.* at 1364.
[101] Envtl. Def. Fund v. E.P.A., 465 F.2d 528 (D.C. Cir. 1972).

of two pesticides covered under F.I.F.R.A., aldrin and dieldrin.[102] After reviewing these pesticides and assessing their impact, EPA determined that:

> [B]ecause the vast majority of the present use of these products is restricted to ground insertion, which presents little foreseeable damage from general environmental mobility, because of the pattern of declining gross use, and because the lower historic introduction of these products into the environmental residue burden to be faced by man and the other biota, the delay inherent in the administrative process does not present an imminent hazard. Thus the substantial question of the safety of these registrations is primarily raised by theoretical data, while review of the evidence from the ambient environment indicates that such potential hazards are not imminent in light of the present registrations.[103]

Essentially, EPA acknowledged the danger posed by the continued use of these pesticides, yet determined that this threat did not pose an "imminent hazard" requiring action before the regular review process.[104] The challengers saw things quite differently, though, alleging that these conclusions were irrational in light of EPA's acknowledgment of the carcinogen levels in the pesticides and the fact that these carcinogens showed an "affinity for storage in the fatty tissue of animals."[105] Additionally, the Environmental Defense Fund convinced the court that EPA "inconsistently failed to identify any off-setting benefits" for the continued use of the pesticides, and "limited itself to the reference to certain hazards."[106] The court seized upon this lack of discussion of the benefits of continued alderin and dieldrin use, noting that "mere mention of the products' major uses . . . cannot suffice as a discussion of the benefits," and holding that "the interests at stake here are too important to permit the decision to be sustained on the basis of speculative inference as to what the Administrator's findings and conclusions might have been regarding benefits."[107]

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[102] Alderin and dieldrin are chemicals similar to D.D.T., and pose similar ecological danger. *Id.* at 536.
[103] *Id.* at 536–37.
[104] *Id.*
[105] *Id.* at 538.
[106] *Id.*
[107] *Envtl. Def. Fund*, 465 F.2d at 539.

Ultimately, the Court of Appeals remanded the action back to the administrative level and called for further review of relevant data.[108]

V. ANALYSIS OF POTENTIAL RELIEF UNDER CURRENT "IMMINENT HAZARD" STANDARD AND SUGGESTIONS FOR BROADENING

In both *Love v. Thomas* and *Environmental Defense Fund, Inc. v. E.P.A.*, courts of appeals emphasized the need for a detailed cost-benefit analysis for continued use of the pesticide.[109] The court came down on the EPA particularly hard in the latter case, finding insufficient analysis of economic impact due to the agency's cursory review of the relevant factors.[110] Turning back to the Colony Collapse Disorder crisis, EPA's formal review process began when it responded to a petition from a group of beekeepers and others affected by Colony Collapse Disorder.[111] EPA denied this petition, holding that the beekeepers had failed to meet the five-part test articulated in *Dow v. Blum*, which is in accordance with the legislative intent of F.I.F.R.A.[112] However, in EPA's walkthrough of the steps, the agency focused almost exclusively on the immediacy and seriousness of the harm, barely touching on the cost-benefit analysis so valued by the court. In the administrator's own words:

> Because the E.P.A. has not found that imminent, serious harm is substantially likely, the agency has not performed a new benefits analysis in relation to this petition and relies instead on earlier assessments regarding the benefits of Clothianidin.[113]

One aspect of F.I.F.R.A. which on its face seems limiting, but in practice could help EPA reconsider its current stance toward Colony Collapse Disorder, is the section providing the makers of a pesticide with an expedited hearing to challenge the "imminent hazard" designation.[114] By providing Bayer, the manufacturers of Clothianidin, the opportunity to a speedy hearing to determine whether the scientific studies and data

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[108] *Id.* at 541.
[109] Love v. Thomas, 858 F.2d 1347, 1364; *Envtl. Def. Fund*, 465 F.2d at 538–39.
[110] *Envtl. Def. Fund*, 465 F.2d at 538–39.
[111] *See* Bradbury, *supra* note 2.
[112] *Dow*, 469 F. Supp. at 902.
[113] Bradbury, *supra* note 2.
[114] 7 U.S.C. § 136d(c) (2006).

linking Clothianidin to Colony Collapse Disorder are viable, EPA is relieved of a fear that they are behaving like an overly activist administration. Instead of handing down a decree banning Clothianidin use, which would likely prompt outrage from other manufacturers of pesticides (as well as Bayer), EPA can inform Bayer of its concerns stemming from the proliferation of data and studies linking their product to Colony Collapse Disorder, and provide Bayer with the opportunity to tell its side of the story by presenting data and studies challenging the characterization of continued Clothianidin use as an "imminent hazard."

As it stands, the "imminent hazard" standard is insufficiently broad to protect American ecological and agricultural concerns. Unfortunately, the best route for these beekeepers to take in a court challenge to EPA's determination is to use the current construction of F.I.F.R.A.[115] and the case law defining its dimensions[116] to challenge the Agency's review as insufficiently rigorous. While the odds may be stacked against these groups achieving security for their bees or crops, the process of lobbying Congress for amendments to F.I.F.R.A. could take years and currently seems hopeless.[117] Therefore, these farmers should focus first on the legal challenge. Despite the EPA's failure to consider the cost-benefit analysis,[118] which federal courts have viewed as an integral part of the "imminent hazard" test,[119] the beekeepers and farmers will face an uphill battle due to F.I.F.R.A.'s constraints on time period and endangered species.[120] These are the two elements of the Act which must be changed to prevent future ecological and agricultural damage from pesticide use in this country.

For the future, the affected groups should lobby Congress to amend this Act in three critical ways. First, the time frame must be expanded to a standard of clear harm being currently done to the environment and agricultural interests. This will expand EPA's scope of review by allowing the agency to formulate long-term strategies for controlling pesticide damage. As it stands, the Act allows EPA to declare an "imminent hazard"

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[115] *Id.*
[116] *See* Dow v. Blum, 469 F. Supp. 892, 901 (E.D. Mich. 1979); Envtl. Def. Fund v. E.P.A., 465 F.2d 528 (D.C. Cir. 1972); Love v. Thomas, 858 F.2d 1347, 1347 (9th Cir. 1988).
[117] The 111th Congress enacted a scant 3% of all proposed legislation between 2009–2010, down from the 110th's 4% in 2007–2008. Josh Tauberer, *Kill Bill: How Many Bills Are There? How Many Are Enacted?*, GOVTRACK.US BLOG (Aug. 4, 2011), http://www.govtrack.us/blog/2011/08/04/kill-bill-how-many-bills-are-there-how-many-are-enacted/.
[118] *Thomas*, 858 F.2d at 1358, 1362.
[119] *Id.*
[120] *See generally* 7 U.S.C. § 136(l) (2006).

when "continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment."[121] This is insufficiently broad, as it restricts the imminent hazard to some harm which will occur during the cancellation proceedings.[122] In doing so, it ignores the obvious potential for the seeds of harm to be irreparably sewn yet fail to flower during the review period. In the case of Colony Collapse Disorder, the precipitous declines in bee populations[123] may not result in the "unreasonable adverse effect"[124] on the crops they pollinate during the time it would take for EPA to process a cancellation proceeding. However, if we continue to lose one-third of the bee population per year[125] over the next two years, banning Clothianidin may come too late to revive the failing colonies and sustain this invaluable pollinator. In a broader sense, allowing EPA to take a longer view toward pesticide impacts and mitigation will safeguard American agricultural and ecological interests against a similar situation occurring again.

Another way to ensure that this standard be broadened to take long-term impacts of current use into account would be for the Supreme Court to overrule or expand *Love v. Thomas*.[126] As it stands, the Ninth Circuit has construed the "unreasonable adverse effects" language of F.I.F.R.A.[127] to apply where "a substantial likelihood that serious harm will be experienced during the year or two required in any realistic projection of the administrative process."[128] As discussed above, this standard is insufficiently broad and does not account for effects on the environment during the administrative process[129] that will contribute to damage down the road, focusing too narrowly on actual adverse impacts occurring during the period of time between the filing and disposition of a pesticide ban application. In the case of Clothianidin's contributions to Colony Collapse Disorder, the devastating impact predicted by scientists may not unfold within the time frame for the official administrative review; however, Colony Collapse Disorder will continue striking down millions of bees around the country in that time period, meaning an official ban following

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[121] 7 U.S.C. § 136(l) (2006).
[122] *Id.*
[123] *See* vanEngelsdorp et al., *supra* note 1; Morse & Calderone, *supra* note 17.
[124] *See* 7 U.S.C. § 136(bb) (2006).
[125] vanEngelsdorp et al., *supra* note 1.
[126] *Thomas*, 858 F.2d 1347.
[127] *Id.*
[128] *Id.* at 1350, n.3.
[129] Bradbury, *supra* note 2.

administrative review may come too late to arrest the process. Broadening the length of time standard will strengthen EPA's ability to defend Americans against clear threats posed by pesticides. However, extending this time frame requirement is not dispositive.

The second critical change which must be made to F.I.F.R.A. is a broadening to apply to all species, not just those on the Endangered Species List.[130] Clothianidin's impact on Colony Collapse Disorder illustrates why limiting emergency bans on pesticides to cases which "involve unreasonable hazard to the survival of a species declared endangered or threatened by the Secretary pursuant to the Endangered Species Act"[131] misses the mark. Honey bees are not covered by the Federal Endangered Species Act,[132] and no one has proffered a suggestion that honey bees may be in danger of extinction. However, the damage to the honey bee community devastates their impact as a vital pollinator.[133] This illustrates one of F.I.F.R.A.'s major flaws: by limiting scope to environmental damage or harm to endangered species, the act misses cases where the harm takes other forms. Here, despite clear evidence[134] that Clothianidin is a key contributor to Colony Collapse Disorder, the issue slips through the statutory cracks because honey bees are not covered by the Endangered Species Act.

The danger of tailoring F.I.F.R.A. to apply only to animals on the endangered species list goes beyond its neglect of honey bees in this case. It is well within the realm of possibility that pesticides could threaten other animals crucial to American agricultural production.[135] For example, if continued exposure to a pesticide threatened bovine or poultry crops, those farmers would clamor for relief through immediate suspension of the chemical. Here, while honey bees are not threatened by extinction, they are dying off at a frightening rate[136] and require swift action to stabilize their numbers. Absent an emergency prohibition on the use of Clothianidin, American beekeepers stand to lose approximately two million bees in the next two years,[137] the length of time it would take

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[130] 7 U.S.C. § 136(l) (2006).
[131] *Id.*
[132] 16 U.S.C. § 1531 (1973).
[133] Levy, *supra* note 21.
[134] Pettis et al., *supra* note 41.
[135] Coenen-Davis, *supra* note 3, at 189–90.
[136] Frazier et al., *supra* note 3.
[137] JOHNSON, *supra* note 34.

to conduct a review of Clothianidin.[138] This would be a catastrophe for bees and beekeepers, and should be guarded against. It is unclear what the intent behind limiting the animal protections in F.I.F.R.A.'s "imminent hazard" emergency ban prohibition to endangered species is. In a case such as this, when millions of useful animals face imminent extermination, EPA should be able to step in and protect them.

Finally, the standard should be expanded to apply to economic harm. While Clothianidin may not impact the environment through emissions, the damage it does to farmers and crops is devastating.[139] However, the strict language in this statute means economic damage is excluded from consideration during the emergency ban process. By including situations in which continued use of the pesticide could damage economic interests, Congress could protect vital agro-economic interests. According to Morse & Calderone's report,[140] the annual economic value attributable to honey bees from 1996 to 1998 was $14.5 billion.[141] Honey bee pollination is critical for the continued production of key foodstuffs such as soy, almonds, olives, citrus, and many others.[142] Ignoring the economic harm element of pesticide prohibition claims could wreak havoc on the economic viability of the farmers who produce these crops, and would certainly be an inconvenience to the millions of Americans who rely on honey bee pollination for the production of their staple foods.[143] While the "imminent hazard" standard is unlikely to be expanded to protect all animals, it certainly should at least be expanded to apply to the domesticated animals that are critical to the national economy and food supply. Being placed on the endangered species list is an administrative procedure as well,[144] meaning honey bee keepers are without a rapid response to these growing die-offs.

The current construction of F.I.F.R.A. places additional hardships on beekeepers by restricting their ability to sue in State court for negligence claims.[145] In *Anderson v. State Department of Natural Resources*, the Minnesota Supreme Court held that "F.I.F.R.A. preempts state-based

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[138] 7 U.S.C. § 136a(g) (2006).
[139] Morse & Calderone, *supra* note 17, at 2.
[140] *Id.*
[141] *Id.* at 8 (taking into account honey bee pollination of fruits, vegetables, and field grain crops around the nation).
[142] *Id.*
[143] *Id.*
[144] 16 U.S.C. § 1533 (1973).
[145] Anderson v. State Dep't of Nat. Res., 693 N.W.2d 181 (S. Ct. Minn. 2005).

negligence actions premised on breach of warranty, failure to warn, and other causes of action impinging on EPA's power to enforce labeling requirements."[146] Other courts have viewed F.I.F.R.A.'s federal-state dichotomous discussions as establishing federal supremacy over pesticide regulations through F.I.F.R.A.[147] Section 136v of F.I.F.R.A. states that:

> (a) In General
>
> A State may regulate the sale or use of any federally registered pesticide or device in the State, but only if and to the extent the regulation does not permit any sale or use prohibited by this subchapter.
>
> (b) Uniformity
>
> Such State shall not impose or continue in effect any requirements for labeling or packaging in addition to or different from those required under this subchapter.[148]

By preventing states from tacking on additional constraints on pesticides and denying farmers a right of action in State courts, F.I.F.R.A. ensures the these beekeepers lack redress for the harm they are currently experiencing due to the effects of Clothianidin. Despite the fact that many countries have banned the use of Clothianidin on crops due to the havoc it wreaks on honey bee pollination,[149] States are unable to follow this example due to the federal constraints.[150] It is for this reason that the proposed Clothianidin ban in Vermont[151] is likely to fail or be without teeth. Beekeepers deserve legal recourse for the devastating losses they have endured, and they are helpless due to the current state of the law. F.I.F.R.A. must be updated to include economic damage done by pesticides, or thousands of Americans and billions of dollars' worth of crop damage[152] will be swept under the rug by federal agencies.

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[146] *Id.* at 188.
[147] Dow Agrosciences LLC. v. Bates, 332 F.3d 323, 328 (5th Cir. 2003).
[148] 7 U.S.C. § 136v (2006).
[149] *Colony Collapse Disorder: European Bans on Neonicotinoid Pesticides*, *supra* note 7.
[150] 7 U.S.C. § 136v (2006).
[151] H.B. 34 (NS), 2011 Reg. Sess. (Vt. 2011–2012).
[152] Morse & Calderone, *supra* note 17, at 8.

CONCLUSION

The pending lawsuit against EPA will end in favor of the agency due to the statutory standard set in the Federal Insecticide, Fungicide, and Rodenticide Act. The standard is fairly clear[153] and the danger posed by Colony Collapse Disorder, as frightening as it may be, does not satisfy the requirements. Under F.I.F.R.A., an emergency ban on a pesticide may only be instituted if EPA believes that an endangered species will be irreparably harmed or the environment will suffer an unreasonable adverse effect in the time it takes for EPA to conduct a formal review of the pesticide's registration and uses.[154] In this case, the petitioning beekeepers,[155] despite the powerful scientific evidence supporting their contention that Clothianidin drives Colony Collapse Disorder,[156] were dismissed by EPA for failing to fulfill the imminent hazard standard.[157] EPA challenged the beekeepers' evidentiary findings,[158] and stated that:

> While the information before the E.P.A., including the information you provided to us, clearly indicates that Clothianidin is acutely toxic to bees, your request for suspension does not demonstrate a causal link between Clothianidin and harm to bees sufficient to justify the suspension of these pesticides under the F.I.F.R.A. imminent hazard standard.[159]

It is troubling that EPA recognized the danger posed by Clothianidin, yet rejected the petition on technical grounds.[160]

In the face of a growing body of work clearly demonstrating the link between Clothianidin and Colony Collapse Disorder,[161] Congress

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[153] 7 U.S.C. § 136(l) (2006) (stating that, "[a] situation which exists when the continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered or threatened by the Secretary pursuant to the Endangered Species Act.").
[154] *Id.*
[155] JENKINS, *supra* note 48.
[156] *See* vanEngelsdorp et al., *supra* note 1; USDA AGRIC. RESEARCH SERV. AGRIC. STATISTICS BOARD, ACREAGE REPORT, *supra* note 25; EITZER, *supra* note 41.
[157] Bradbury, *supra* note 2.
[158] *Id.* at 6.
[159] *Id.* at 10–11.
[160] *Id.*
[161] *See supra* note 5; Morse & Calderone, *supra* note 17; *supra* note 44.

should reevaluate F.I.F.R.A. and grant EPA greater discretion in implementing emergency bans. The key expansions should be threefold. First, the ecological harm element[162] should be softened to apply in cases where harm done (such as one-third reductions in bee population nationwide) compounds and worsens over the years.[163] Second, the scope should be broadened to apply not only to endangered species covered by the Endangered Species Act,[164] but also to domesticated animals raised for agricultural purposes. This would protect farmers and beekeepers by covering the source of their livelihood in federal protection. Third, the act should be expanded to include economic harm done by pesticides. Studies estimate the value of honey bees on the economy is $14.5 billion per year.[165] The threat of Colony Collapse Disorder could be a crushing blow to American agricultural interests and send food prices skyrocketing.[166] Beekeepers are not alone in fearing destruction to their livelihoods by pesticides; all farmers and agricultural workers must recognize dangers posed by chemical use and appreciate a "safety valve" of legal protection through EPA.

Unfortunately, it is highly unlikely these amendments would occur before EPA completes the formal evaluation of Clothianidin. As a nation, we will likely be faced with significant challenges due to Colony Collapse Disorder, and will have to cross our fingers and hope that EPA can complete a formal evaluation and recognize the proliferation of data linking this pesticide to the devastation of American bees. However, I do believe that the formal amendment could prevent future harm to bees and other valuable crops by providing greater access to administrative avenues for relief. Although Congress is currently deadlocked, formal lobbying for a change in the standard should begin now, as we cannot predict what new challenges the future poses. It may be too late to save the bees, but we can at the very least learn a lesson from the fate of these tiny martyrs.

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[162] 7 U.S.C. § 136(l) (2006).
[163] *See generally* vanEngelsdorp et al., *supra* note 1.
[164] *See* 7 U.S.C. § 136(d) (2006); 7 U.S.C. § 136(l) (2006). *See generally* 16 U.S.C. § 1531 (1973).
[165] Morse & Calderone, *supra* note 17.
[166] *Id.*