APPENDIX K. Bifenthrin Incident Database Review

A review of the Ecological Incident Information System (EIIS) database for ecological incidents involving Bifenthrin was completed on November 1, 2012. This database consists of exposure incident reports submitted to the EPA from 1994 to present. A summary of ecological incidents involving bifenthrin are listed in **Table K-1** below. This table is divided into incidents involving aquatic organisms only and terrestrial organisms only. Within each of these sections of the table, incidents are ordered by date beginning with the earliest incident.

Incidents listed in EIIS are categorized by the likelihood that a particular pesticide is associated with that particular incident. These classifications include highly probable, probable, possible, unlikely or unrelated. "Highly probable" incidents usually require carcass residues or clear circumstances regarding the exposure. "Probable" incidents include those where residue information was not available or circumstances were less clear than those for "highly probable." "Possible" incidents occur when multiple chemicals may have been involved and the contribution of an individual chemical is not obvious. An "unlikely" incident classification is given when a given chemical is considered nontoxic to the type of organism involved or the chemical was analyzed and not detected in samples. The "unrelated" category is used for incidents confirmed not to involve pesticides. A summary is provided for all "highly probably" and "probable" reports.

The number of reports listed in the EIIS database is believed to be only a small fraction of the total incidents involving organismal mortality and damage caused by pesticides. Few resources are assigned to incident reporting. Reporting by states is only voluntary, and individuals discovering incidents may not be informed on the procedure of reporting these occurrences. Additionally, much of the database is generated from registrant-submitted incident reports. Registrants are legally required to provide detailed reports of only "major" ecological incidents involving pesticides, while "minor" incidents are reported aggregately. Because of these logistical difficulties, EIIS is most likely a minimal representation of all pesticide-related ecological incidents.

Summary of Bifenthrin Incident Review

The EIIS database contained 13 incident reports involving bifenthrin. Five out of thirteen incidents are from aquatic ecosystems. Eight incidents involve the terrestrial ecosystem; four of which affect terrestrial plants. Four incidents involve terrestrial invertebrates, three of which display bee kills. No state was overly represented and incidents were widely spread.

Incident Certainty and Legality

Of the 13 incidents reported, 2 (15%) are categorized as 'highly probable' and 7 (54%) are categorized as 'probable.' Collectively the 'highly probable' and 'probable' categories represent 69% of the reported incidents. Regarding the legal status, the 'unknown' and 'misuse accidental' represent legality categories with 38% and 15% of the incident reports, respectively. Approximately 46% of the reports consist of registered uses.

Both of the 'highly probably' incident reports involved only 'registered uses' both of which were due to contamination of the body of water likely due to spray drift and run-off. Three of the 'probable' incident reports come from registered uses, two come from a likely misuse of the chemical and in two incidents it is unknown if the chemical use was registered or it was misused.

Aquatic Incidents

All aquatic incidents involved fish mortality. Of the 5 aquatic incidents involving fish, 2 are classified as 'highly probable' or 3 as 'probable' in the context of bifenthrin use. Catfish were cited in 3 incidents, fathead minnow, trout, bullheads and koi were listed in one incident, and two incidents did not report the species of the kill.

Incident 016338-006
In 2005, 500 to 1,000 trout, fathead minnow, and the bull head were found dead in a manmade 600,000 to 1.2 million gallon pond. The roof of a nearby structure was treated with a power spray application of 0.02% bifenthrin. An estimated 100 gallons of product was used. Water samples found a concentration of 3.40 ppb and 0.098-0.118 ppb of bifenthrin. The Pest Control Operator indicated that the practice was in compliance with the label directions for both chemicals. It is 'highly probably' that the deaths are related to bifenthrin exposure.

Incident 017659-001
In 2006, approximately 400 catfish and koi were found dead in a 120,000 gallon pond adjacent to a lawn area. The Pest Control Operator applied 3 lbs. of product (0.2 % granular application) to a 20,000 square foot area. There was a potential for run-off. A concentration of 4 pbb bifenthrin was found in the water 5 days after treatment. Mallards were also reportedly found dead in areas adjacent to the pond. It is 'highly probably' that the deaths are related to bifenthrin exposure.

Incident 001280-019
In 1994, a small catfish kill was reported in a small pond in Nebraska (estimated number was not reported). Bifenthrin was applied to a cornfield 130 feet up a hill from the pond. The application was followed by a heavy rain. It is assumed that the fishkill was due to runoff of the chemical into the pond. The product label restricts application to more than 150 feet from bodies of water; therefore, the incident is labeled as a misuse. It is 'probable' that the deaths are related to bifenthrin exposure.

Incident 003351-028

In 1993, 25 catfish were reported dead due to Bifenthrin use in Imperial California. It is 'probable' that the deaths were due to exposure to bifenthrin. No other analytical data was included.

Incident 004439-076
In 1996, a number of fish were reported dead in a pond in North Carolina following the aerial application of bifenthrin to an adjacent field (number and species of fish was not reported.) The incident reports contamination of the pond due to spray drift as a result of windy conditions. No other analytical data was provided. Label restrictions were followed and thus the incident is classified as a registered use. It is 'probable' that the deaths are related to bifenthrin exposure.

Terrestrial Plants

Of the 4 incidents involving terrestrial plants, only 1 is classified as 'probable.' The other 3 incidents are classified as 'possible' with an unknown legality of use. Two of the reported incidents which were classified as 'possible' occurred in France. The incident reports the death of 19 trees but is inconsistent with the species through the report. No other analytical information was included, thus the incidents could not be classified as 'probable.' The other incident classified as 'possible' cited the probable cause of leaf burn to high temperatures which coincided with application of bifenthrin.

Incident 009262-121
In 1999, a complaint was submitted in which a resident of New York sprayed a product containing bifenthrin on roses. After application, the leaves of the bush began to curl and the blossoms shriveled. The product was applied via a ground spray as stipulated on the label. It is 'probable' that the deaths are related to bifenthrin exposure.

Terrestrial Invertebrate Incidents

Of the four incidents involving terrestrial invertebrates, three are classified as 'probable' and one is classified as 'possible.' The incident classified as 'possible' involved the spraying of chemicals onto alfalfa and resulting in bee mortality. It is classified as 'possible' due to the application of a number of chemicals.

Incident 000080-009
In 1992, death of an unknown number of leafcutter bees was reported after the organisms came into contact with alfalfa seeds which had been treated with bifenthrin. It is assumed that the sweet odor of the bifenthrin enhanced the attraction of the bees to the alfalfa. The incident is classified as a misuse of the product; it is 'probable' that the deaths are related to bifenthrin exposure.

Incident 023061-001
In 2011, a complaint was submitted in which a resident of Nevada found a number of dead bees around her apartment complex upon the conclusion of a treatment from a pest control company. 200 gallons of product (0.06% bifenthrin) was sprayed around the perimeter of the complex.

The application was a registered use in compliance with the label. The number of bees killed was not reported. It is 'probable' that the deaths are related to bifenthrin exposure.

Incident 023221-001
In 2012, an incident was reported in which a number of worker bees were reported dead in the 5 days following the application of bifenthrin in Arizona. The product was aerially applied at a rate of 5.0 fl oz./A. A total of 126.5 acres of cotton were treated to protect against the brown stinkbug. The number of bees was reported to have been reduced by 50%. Bee mortality is suspected to be due to the coincidence of product application with their period of active foraging in the field where application was occurring. It is unknown if the product application was in compliance with the registered labels. It is 'probable' that deaths are related to bifenthrin exposure.

Table K-1. Wildlife Incidents Associated with Bifenthrin

Incident Number	Taxa Involved	Magnitude	Year	Location (County, State)	Use	Legality of Use	Certainty Category[1]	Residue
Aquatic Incidents								
I004439-076	Fish	Unknown	1993	NC	Not reported	RU	Probable	No
I003351-028	Catfish	25	1993	Imperial, CA	Not reported	UN	Probable	No
I001280-019	Catfish	Small #	1994	NE	Corn Spray	M	Probable	No
I016338-006	Fathead Minnow, bull heads, Trout	500 – 1,000	2005	Dutchess, NY	Building Spray	RU	Highly Probable	No
I017659-001	Catfish Koi	400	2006	CA	Residential Turf	RU	Highly Probable	No
Terrestrial Incidents								
I000080-009	Leafcutter bee	Unknown	1992	Not Reported	Alfalfa Seed	M	Probable	No
I009262-121	Rose	5	1999	Erie, NY	Home Tree	RU	Probable	No
I012786-002	Trees	19	2001	Not Reported	Trees	UN	Possible	No
I012786-004	Cherry Laural	Unknown	2001	Not Reported	Trees	UN	Possible	No
I020835-001	Bees	61 hives	2007	UT	Alfalfa Spray	UN	Possible	No

Incident Number	Taxa Involved	Magnitude	Year	Location (County, State)	Use	Legality of Use	Certainty Category[1]	Residue
I023061-001	Bees	Unknown	2011	NV	Residential	RU	Probable	No
I023302-031	Peanut	100% of 155 acres	2011	GA	Peanut	RU	Possible	No
I024221-001	Bees	50% of worker bees	2012	AZ	Cotton	UN	Probable	No

[1]Incidents classified as 'unlikely' are excluded.
RU=Registered Use
M=Misuse
UN=Unknown