npic

NATIONAL PESTICIDE INFORMATION CENTER

-2015-

Environmental & Molecular Toxicology

Oregon State UNIVERSITY OSU

The National Pesticide Information Center (NPIC) is a service that provides a variety of pesticide and related information to the general public and professionals across the United States and its territories. NPIC is a cooperative agreement between Oregon State University and the U.S. Environmental Protection Agency. The 2015 Annual Report covers the period of February 15, 2015 - February 14, 2016.

DISCLAIMER

Material presented in this report is based on information as provided to NPIC by individuals who have contacted NPIC for information or to report a pesticide incident. None of the information reported to NPIC has been verified or substantiated by independent investigation by NPIC staff, laboratory analysis, or any other means. Based on the information provided, NPIC qualifies the information by assigning a certainty index (CI) and a severity index (SI). NPIC makes no claims or guarantees as to the accuracy of the CI, SI, or other information presented in its reports, other than that NPIC has done its best to accurately document and report the information provided to NPIC.

Submitted To:

U.S. Environmental Protection Agency
Office of Pesticide Programs

Submitted By:

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Project Director

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NPIC 2015 Annual Report
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DELIVERING OBJECTIVES

The cooperative agreement between Oregon State University and the US EPA includes five strategic project objectives. Those objectives are listed below with a summary of measures taken to meet or exceed the goals in our work-plan.

1. To serve as a factual source of information for diverse professional and public audiences on pesticide-related issues.

- In conversations with the public and professionals, NPIC discussed ways to minimize exposure 2,431 times, following the label 2,158 times, IPM concepts 801 times, and environmental protection 195 times.
- NPIC posted new items in social media venues promoting safe use practices, IPM, and pesticide label comprehension. NPIC developed 253 original posts, averaging five posts per week. NPIC engaged with over 200 organizations through social media, including extension, health departments, master gardeners, bee advocates, and professional associations like NPMA and the Entomological Society of America. NPIC partnered with CDPR to highlight disinfectants in schools on social media, which included development of a new infographic in English and Spanish.
- In order to stay current, NPIC staff members participated in 65 events for continuing education, including 34 webinars, 11 off-campus events, 11 on-campus events, and nine in-house presentations.
- NPIC performed chemical-specific literature searches in order to update 16 active ingredient files, and to open 16 new files. Additionally, NPIC added over 500 new documents to the AI file collection through routine monitoring of the regulatory and scientific literature. On average, NPIC staff invested over 10 hours per week monitoring Federal Register Notices, affiliated dockets, newsletters, and selected journals of relevance.
- NPIC maintains current contact lists for many organizations in order to provide the best local referrals. NPIC staff performed quality assurance to verify/update over 1,300 contacts this year. In one case, NPIC called every state and territory to identify the best contact for WPS questions.

2. To operate a toll-free, bi-lingual telephone information service for all callers in the United States and its territories, Monday through Friday at least 4 hours per day, with accessibility to voicemail during closed hours, and ability to address inquiries through email and social media.

- NPIC operated a toll-free telephone service, including voicemail for off-hour inquiries. The toll-free service was operated Monday through Friday, 8:00-12:00 PT, with bilingual capability maintained throughout.
- NPIC responded immediately to 99% of calls received during open hours. Occasionally, a caller in the queue chose to leave a message.
- NPIC responded to 99% of inquiries within one business day when they were received through voicemail, email, and/or social media.
- NPIC recruited and hired one highly qualified pesticide specialist this year. He has a BS in Biology and a Masters of Environmental Management (MEM). He participated in a rigorous, updated training program this year, emphasizing risk communication and pesticide regulation/science.

3. To develop and maintain English and Spanish websites accessible to broad audiences and host NPIC original content, state-of-the-art information technology tools and links to unbiased and authoritative sources of information about pesticides.

- NPIC maintained frequent communication with OPP about proposed projects and priorities for publication development. Examples include NPIC's site visit to OPP in April, a quarterly coordination meeting (QCM) in October, coordinated outreach efforts related to paraquat poisonings and the Zika virus, and a webinar developed and delivered in collaboration with OPP entitled, "Become a PRO: NPIC's Product Research Online (NPRO)."
- NPIC created 68 new web pages this year, including 16 in Spanish. See page 13.
- Quarterly, NPIC identified 100% of broken links on its website, and removed or replaced each one (660). This number was higher than usual because of EPA's website transition. NPIC replaced 520 EPA links manually. NPIC added 31 new links to its website when high-quality science and regulatory items were identified. Eighteen (18) existing web pages were significantly updated with new content.

DELIVERING OBJECTIVES

3. To develop and maintain English and Spanish websites accessible to broad audiences and host NPIC original content, state-of-the-art information technology tools, and links to unbiased and authoritative sources of information about pesticides (cont'd).

- NPIC developed 12 new videos this year, including nine frequently asked questions, two webinars, and a video for parents about how to prevent pesticide poisonings. See page 12.
- NPIC developed four new fact sheets, including one that explains the "half-life" concept. See page 10.
- NPIC developed four new Pestibyte podcasts and two new FAQ comics this year. See page 9. FAQ Comics are replacing Pestibyte podcasts in the NPIC work-plan because of the podcasts' declining web traffic.
- NPIC collected user feedback about its website this year, interviewing seven individuals for over an hour apiece. They were asked to complete eight tasks without using the search feature, and metrics were collected about their navigation paths and time-to-completion. NPIC will repeat this evaluation in year 4 (2017-18) after making changes in year 3 (2016-17) based on the users' experiences.

4. To collect robust pesticide incident data through systematic protocols and to disseminate the information through scheduled reporting and by request from the U.S. EPA and partner agencies.

- NPIC updated and executed a rigorous training program for one new pesticide specialist, emphasizing risk communication skills and the collection of essential data related to pesticide incidents.
- NPIC used standard operating procedures and rigorous quality control to classify reported signs/symptoms. NPIC assigned a severity index 100% of the time when signs/symptoms were described (1,815 times). NPIC assigned a certainty index 100% of the time when signs/symptoms were described, and they could be compared to published reports about the active ingredient(s) involved (745 times).
- NPIC discussed inquiry trends and data with OPP at least quarterly. Examples include the distribution of pesticide product registration statistics with OPP, AAPCO, and AAPSE in April, discussions about pesticide misuse in homes and cleaning quandaries in July, and an evaluation of disinfectant-related incidents in occupational settings in September.
- NPIC monitored data quality and held routine staff development exercises to ensure high standards were met. Every pesticide incident was reviewed by a QA/QC specialist to ensure coding consistency and compliance with applicable protocols. Routinely, she collaborated with Drs. Stone and Berman to evaluate human and animal incidents.
- Each specialist received feedback about their strengths and weaknesses in documenting inquiries. Their performance was scored on 25 distinct measures such as narrative quality, judgment in characterizing symptoms, and accuracy in coding.
- NPIC documented demographic information for 99% of people that may have been exposed to pesticides, product information for 92% of reported incidents, and the location for 95% of incidents.
- NPIC specialists were able to capture the exposure route for 87% of exposed humans/animals, and symptom/scenario information in 97% of cases.
- NPIC provided 35 special reports about incidents and inquiries upon request, including 22 reports for EPA, eight reports for state lead agencies, and three reports for university PSEP programs. Reports were provided within 10 business days. Quarterly reports were submitted within 30 days of each quarter's closure, accompanied by all reports received by NPIC through its veterinary and ecological reporting portals.

5. To conduct our service professionally, with an emphasis on teamwork, integrity and accountability, and a strong commitment to collaboration and exceptional customer service.

- NPIC evaluated each staff member in the fall, including quantified measures of data collection skills, customer service skills, and continuing education measures.
- Key personnel from NPIC visited OPP on April 7th. Subawards with OHSU and AAPCC were monitored at least quarterly.

INTRODUCTION / HISTORY

NPIC provides objective, science-based information about pesticides and related topics to enable people to make informed decisions about pesticides and their use. In this, the second year of the project period under cooperative agreement # X8-83560101, Oregon State University provided information to millions by phone, email, social media, data-sharing, mobile web apps, and/or web content.

NPIC supports the US Environmental Protection Agency (EPA)'s Strategic Goal 4: Ensuring the Safety of Chemicals and Preventing Pollution. NPIC also supports the Mission of the Oregon State University (OSU) Extension System, conveying research-based knowledge in a way that is useful for people to improve their lives, their homes, and their communities.

The complete record of NPIC accomplishments for the operational year includes this annual report, four quarterly reports, and a quality assurance report. Quarterly and quality assurance reports were submitted to the Project Officer within 30 days of the reporting period's closure.

The 12-month reporting period began on February 15, 2015 and ended February 14, 2016.

This period will be referenced as "2015" in this report.

NPIC is open to questions from the public and professionals. Highly qualified specialists have the training needed to provide knowledgeable and objective answers to questions about pesticides. NPIC specialists deliver information in a user-friendly manner, and are adept at communicating scientific information to the lay public. Specialists can help inquirers understand toxicology and environmental chemistry concepts. The services provided by NPIC are strictly informational and have no regulatory or enforcement capability or authority.

History

The pesticide information service began in 1978 with the Texas Tech University Health Sciences Center associated Pesticide Hazard Assessment Project. This service was used to collect pesticide incident reports in EPA Region VI, but callers began using the service to ask questions about pesticides. The service expanded, and moved to Texas Tech University. It has been known as the National Pesticide Information Clearinghouse (NPIC) and the National Pesticide Telecommunications Network (NPTN). The service moved to Oregon State University in 1995.

- In 2010, NPIC started using social media, and developed software to facilitate retrieval of information from the Pesticide Product Information System (PPIS).
- In 2011, NPIC overhauled its websites to infuse IPM concepts throughout, and added a zip code driven contact finder called "My Local Resources."
- In 2012-13, NPIC developed mobile web apps (4), presented with video tutorials.
- In 2014, NPIC developed pesticide-related videos (3), started a YouTube channel, and began partnering with the American Association of Poison Control Centers (AAPCC).
- In 2015, NPIC released a new set of FAQs, its first comic, the Herbicide Property Tool, and NPRO. NPIC celebrated 20 years at OSU.

"Thank you, I appreciate your response. I have found NPIC to be a useful source of information on pesticides on a number of occasions, and it is really helpful that you went out of your way to help me on this."

Emailer

HIGHLIGHTS

- During this period, NPIC received 11,362 inquiries.
- Around 74% of the total inquiries were addressed over the telephone.
- About 16% of NPIC inquiries in 2015 were incidents. A pesticide incident is defined as 1) any unintended pesticide exposure, 2) a pesticide exposure with an adverse effect, 3) a spill, and/or 4) a misapplication.
- Two human deaths and 47 animal deaths were reported. See pages 35 and 37.
- The top active ingredients involved with incidents were naphthalene (313), permethrin (152), boric acid (130), silicon dioxide (119), and paradichlorobenzene (116).
- There were 2,752 entities involved in incidents reported to NPIC: 51.4% were human, 18.6% were animals and 29.2% were structural or environmental. See Chart 16.1 on page 36.
- Among the 990 single humans involved in pesticide incidents for which the age was captured, 14.8% were children (ages 4 and under) and 22.4% were seniors (ages 65 and over). About 35% of all people reported no symptoms.
- Questions related to health/risk (3,400) and application techniques (1,620) were most common.
- The NPIC website received 4,541,036 pageviews during this period. There were more than 2.8 million unique visitors, and 94,836 visitors stayed for more than 15 minutes.

Foreign Language Capabilities – NPIC employs two Spanish-speaking pesticide specialists capable of responding to inquiries and translating publications. The NPIC website is available in Spanish, and invitations to call NPIC are available in Cantonese, French, Mandarin, Russian, Japanese, Vietnamese, and Farsi. Under an agreement with Language Line Solutions, NPIC is capable of responding to inquiries in over 170 languages.

This year, NPIC responded to 196 inquiries in Spanish, two in French, two in Portuguese, one in American Sign Language, one in Japanese, and one in Mandarin.

Mothball Products – NPIC received 804 inquiries about mothballs, flakes, and bars. Of these, 450 (56%) were incidents. Many reports involved off-label use of mothballs to repel animals in and around the home.

Bed Bugs – NPIC received 626 inquiries related to bed bugs this year. About 11.3% of these (71) were pesticide incidents. Many of these inquiries were related to the difficulty of pest control and the potential health effects of pesticides.

FAQ Comics

NPIC created its first comic this year in **English** and **Spanish**. They are based on the new collection of FAQs (see page 9), and they are on a single page.

Comics will replace PestiByte Podcasts, which had dwindling web traffic compared to previous years.

Resources & Facilities

NPIC maintains an extensive collection of hard copy and electronic information. NPIC specialists have access to the full resources of the Oregon State University Library, which includes electronic access to hundreds of academic journals, databases, and indexing services. NPIC's library includes a comprehensive Active Ingredient (AI) file collection with detailed scientific and regulatory information for over 1,000 active ingredients. This collection has been scanned and indexed for desktop access, using software developed by NPIC.

NPIC is housed on the third floor of Weniger Hall in the Department of Environmental and Molecular Toxicology. Allocated spaces include five rooms, two individual offices, and a storage unit.

Funding & Compliance

Funding for NPIC is provided by the US Environmental Protection Agency (US EPA) and Oregon State University.

Throughout the reporting period, NPIC has complied with the requirements of the US EPA regarding Title VI of the Civil Rights Act of 1964 and Section 13 of the FWPCA Amendments of 1972. NPIC has complied with the US EPA Guidelines regarding procurement requirements stipulated in 40 CFR Part 33. NPIC has complied with all requirements specified by the US EPA as part of the funding authorization of this project.

Personnel Update

One pesticide specialist was hired this year, and five were retained. One part time pesticide specialist started working full time. NPIC's staff includes eight full-time pesticide specialists and three supporting staff members. Most pesticide specialists hold master's degrees in applicable fields, with backgrounds ranging from food science to zoology.

The NPIC Executive Committee includes the Director, Dr. Dave Stone, the Project Coordinator, Kaci Buhl, and co-investigators Dr. Fred Berman and Dr. Jeff Jenkins.

Standard Operating Procedures

NPIC staff use a variety of standard operating procedures (SOPs) to guide their work and some decision-making. This year, 9 of 30 SOPs were updated. In addition, a collection of NPIC policies apply to scheduling, personnel matters, and copyright issues. This year, one policy was updated, and a new SOP was written about responding to postal mail.

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FREQUENTLY ASKED QUESTIONS

NPIC modernized its collection of short questions & answers in 2015. The older collection, “Common Pesticide Questions,” were too long and story-based to meet the expectations of today’s internet users. The new collection is taking shape, organized by the topics depicted in this wheel.

- How can I wash out pesticides from dirty work clothes?
- Can I use a pesticide if I’m pregnant or have a baby?
- How can I wash pesticides from fruit and veggies?
- Can I plant vegetables after using a weed killer?
- Can I use mothballs to repel insects or animals?
- How do I protect my pets while using mole/gopher baits?
- Are spot-on flea and tick products safe for my pets?
- Why do I have cockroaches in my home?
- Could snail bait hurt my dog?
- Can I apply DEET under my clothes?
- Can rat poison hurt kids and pets?
- Is ‘food grade’ diatomaceous earth okay for pest control?
- What does it mean when food is organic?
- What can I do after a flood?

This year, NPIC developed 14 new FAQs in **English**, and 11 new FAQs in **Spanish**.

Can I use mothballs to repel insects or animals?

No, not unless the label describes that type of use pattern. The **label** of any pesticide product, including **mothballs**, tells you exactly where and how a product is supposed to be used. Using the product in any other way could put you and others at risk. Besides, they have little or no effect as repellents.

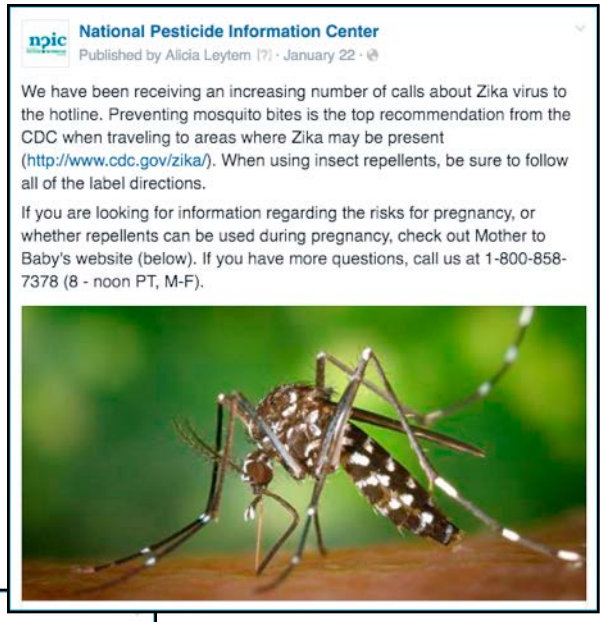
NPIC plans to recreate each FAQ as a short video (1-2 minutes) on YouTube. This year, NPIC developed nine FAQ videos, including six in English and three in Spanish.

NPIC’s YouTube video about mothballs received over 14,000 views in 2015.

SOCIAL MEDIA / FACT SHEETS

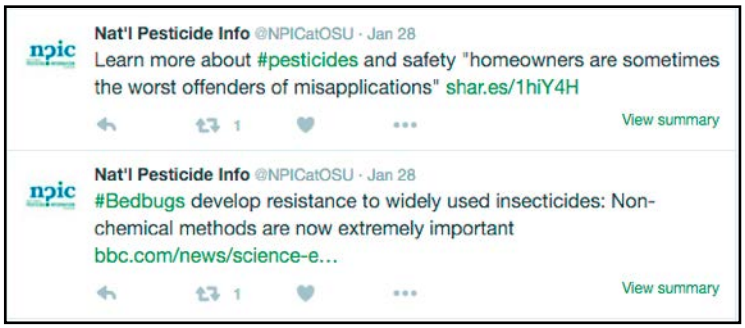
NPIC recognizes the importance of social media as a mechanism to provide objective, science-based information about pesticides in a timely way. NPIC is active on **Facebook**, **Twitter**, and **YouTube**.

NPIC developed 253 original posts, averaging five posts per week. NPIC engaged with over 200 organizations through social media, including extension, health departments, bee advocates, and professional associations like the National Pest Management Association and Entomological Society of America.



Through a formal collaboration with the American Association of Poison Control Centers (AAPCC), NPIC amplifies its reach on social media. They meet weekly to coordinate messaging around timely topics, and to collaborate on new outreach materials. See the example, “Let’s Talk About Pesticides in Your Home” on the next page.

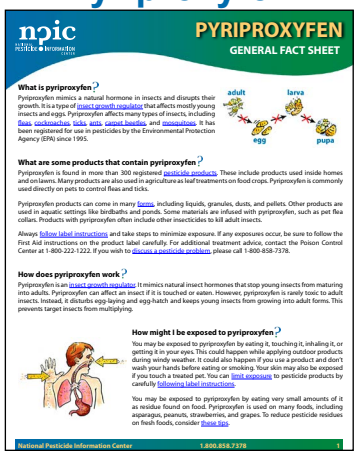
POISON Help 1-800-222-1222



NPIC developed four new fact sheets relying on up-to-date scientific and regulatory resources. They are written in accessible terms, summarizing complex technical information.

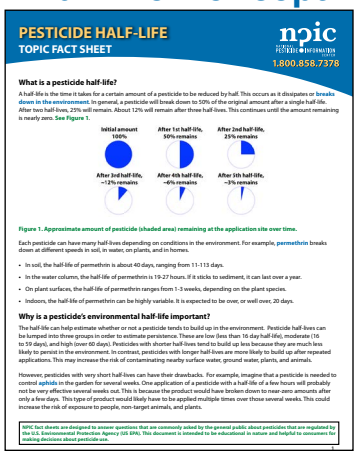
Carbaryl

Pyriproxyfen



MGK-264

Half-life Concept



Let's talk about pesticides in your home...

No thanks. I don't use them.

Wait - are you sure? Got a dog? A pool? Ever use bug spray, clean the bathroom, or do yardwork?

Hmm... OK, so what IS a pesticide?

A pesticide is a chemical used to prevent, kill or repel pests. Pests can be insects, mice and other animals, weeds, even some germs!

Pesticide Examples

- Bug repellent
- Pet flea & tick treatments
- Algae killer for pools and fish tanks
- Bathroom mold removal agents
- Weed killers

When not used properly, pesticides can harm people, pets, and the environment. In fact, poison control and NPIC receive over 100,000 pesticide calls each year!

Really? Is there anything I should know about using pesticides safely?

✓ DOs

Read the label and follow the directions every time you use a pesticide.

Store pesticides in their original containers, up, away, and out of sight of children and pets.

Use protective clothing as directed by the product label. Always wash your hands right after using pesticides.

✗ DON'Ts

Never put pesticides in drinking cups or bottles. Clearly label anything that contains a pesticide.

Never mix different household pesticides together, unless directed to do so by the label.

When adding water to pesticides, never use spoons or cups that you use for food.

Got it! Where can I get more information?

npic
NATIONAL PESTICIDE INFORMATION CENTER
1.800.858.7378

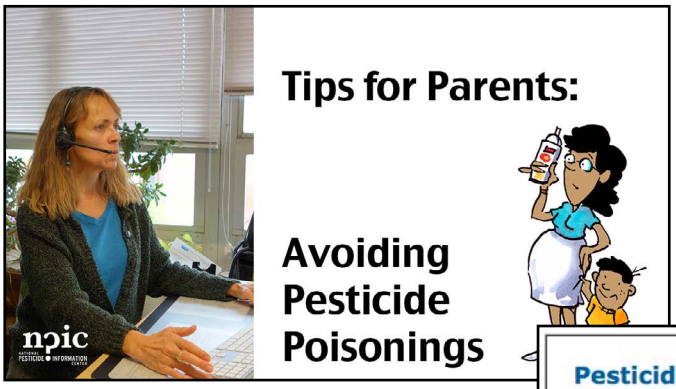
For general questions about pesticides, including the potential risk to humans, pets, or the environment, call NPIC at 1-800-858-7378.

POISON Help
1-800-222-1222

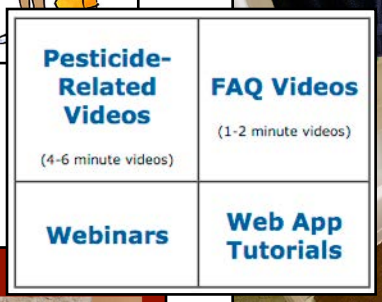
If someone breathes in, swallows, or gets pesticide in the eyes or on the skin, call poison control 24/7 at 1-800-222-1222.

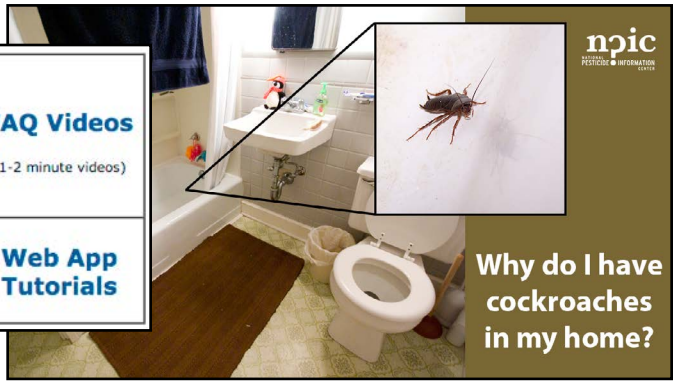
VIDEOS

Increasingly, people seeking technical information are looking for video content. NPIC is responding with webinars, short FAQ videos, and **more**! Subscribe to our **YouTube channel** to see the latest releases and comment on videos.



This year, NPIC released 12 videos, including nine FAQ videos (6 English and 3 Spanish), two webinars, and one "Tips" video for Poison Prevention Week.





This screenshot comes from the webinar about pesticide strategies, which was delivered in cooperation with Alabama and Georgia Extension Services, through eXtension's Urban IPM Community of Practice.

eXtension
Issues • Innovation • Impact
A Part of the Cooperative Extension System

NPIC WEBSITE

NPIC created 68 new web pages this year, including 16 in Spanish. They also performed significant updates for 18 pages, added 31 new links when high-quality items were identified, and fixed 100% of broken links (660) by the end of each quarter. In keeping with the website transition taking place at the Office of Pesticide Programs (EPA), NPIC replaced over 500 broken links by linking to the newer, updated information.

Pesticide risks are reduced when people have access to science-based information about pests and pest-conducive conditions. Priorities for new content development are based on the frequency of inquiries about the topic(s), the availability of new science or regulatory information, and input from the Office of Pesticide Programs.

NPIC combed the latest literature on **bed bugs** and summarized the science in the following new web pages:

- **Where to Start with Bed Bugs**
- **Bed Bug Biology and Behavior**
- **Bed Bug Control Methods**
- **Preventing Bed Bug Infestations**

They were reviewed collaboratively by colleagues at EPA Region 10, and were included in a new resource for local governments that are struggling with increasing bed bug infestations.

NPIC also created a new collection of tips on promoting and conserving **beneficial insects** in the landscape.

Beneficial Insects: Lawn

Beneficial Insects: Garden

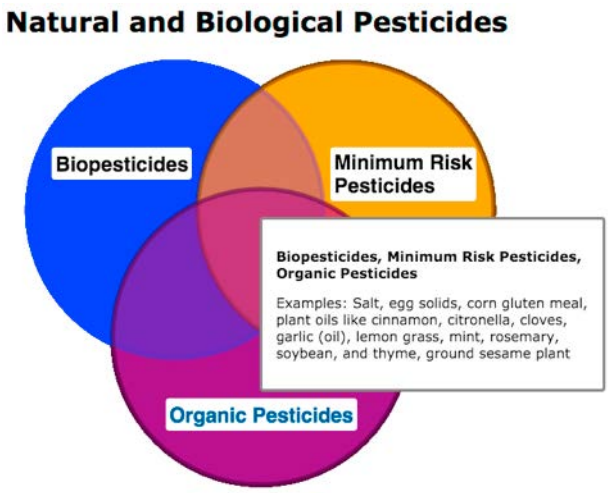
Beneficial Insects: Agriculture

Natural Enemies Quick List

The Predators

The Parasitoids

The Pollinators



By mousing over sections of this **Venn diagram**, the user can see specific pesticide examples that fall into each category of natural or biological pesticides. This feature is part of a new suite of resources that define and explain these similar terms: **biopesticides**, **organic pesticides**, and **minimum risk pesticides**.

In addition to this new web content, many of our new web pages are described on pages 9 (FAQs), 10 (fact sheets), and 15 (contacts). Other notable examples of new NPIC web content this year include **Water Solubility**, **Insect Growth Regulators**, and **Endocrine Disruption**.

CONNECTING WITH STAKEHOLDERS

Collaborations - selected examples:

- NPIC collaborated with the California Department of Pesticide Regulation (CDPR) to develop content and resources about disinfectant use in schools. This **infographic** is an example, which is also available in **Spanish**.
- NPIC collaborated with EPA Region 10 to develop a "**Starter Kit**" for local governments facing increased bed bug activity.
- NPIC collaborated with the Association of Structural Pest Control Officials (ASPCRO) to develop resources about cleaning up after indoor pesticide misuse.
- NPIC collaborated with Yale University and the StopPests! Program at Cornell University to develop a **webinar** about "Pesticide Misuse and the Home."
- NPIC collaborated with the American Association of Poison Control Centers to develop a webinar for front-line health professionals about accurately identifying pesticide ingredients over the phone.
- NPIC collaborated with the Communication Services Branch within the Office of Pesticide Programs to develop and distribute timely information to address paraquat poisonings.

Presentations - selected examples:

- Nick Hurwit presented a **poster** about occupational exposures to antimicrobials at the Western Migrant Stream Forum in Portland, OR.
- Amy Hallman gave a presentation about NPIC services and resources for pesticide applicators at the Oregon Agricultural Chemical & Fertilizer Association Meeting in Springfield, OR.
- Kaci Buhl gave a presentation about risk communication at the Pesticide Inspector Regulatory Training event in Las Vegas, NV.
- Dave Stone presented a **poster** about NPIC at the Annual Conference of the Society of Toxicology in San Diego, CA.
- Sean Ross and Amy Hallman delivered a workshop/webinar about **NPRO** (see page 19) to answer users' questions.
- Kaci Buhl gave a keynote address, "Effective Risk Communication," at the 59th Annual Meeting of the American Association of Structural Pest Control Regulatory Officials in Ft. Lauderdale, FL.
- Amy Hallman spoke about rodenticides (risks and regulations) at the Central Oregon Pest Management Course in Redmond, OR.
- Kaci Buhl spoke about risk communication at the Annual Conference of the Western Society of Weed Science in Portland, OR.

PID Pesticide Inquiry Database

Pesticide specialists perform data entry on a daily basis, documenting inquiries and incidents. A Quality Assurance/Quality Control specialist reviews the data, making corrections as needed to maintain a consistent approach. She collaborates with Dr. Dave Stone (PhD) on human incidents, and with Dr. Fred Berman (DVM) on animal incidents. NPIC follows a quality assurance plan that includes annual staff evaluations, quantitative scores for 25 measures of data quality, and routine log coding exercises with staff.

Over 1,800 pesticide-related incidents were documented and reviewed this year. See pages 20-39 for detailed information about the wide range of inquiries and incidents. In addition to quarterly and annual reporting, NPIC provided 35 special reports about incidents and inquiries upon request, including 22 reports for EPA and 11 reports for state agencies and/or universities. All reports were provided within ten business days, unless otherwise negotiated. Selected examples are highlighted in the text box below.

Special Reports from the PID, selected examples (data requested – data recipient):

- All animal incidents with metaldehyde – US EPA
- Topics of interest to Spanish-speaking callers – Oregon Department of Agriculture
- Egregious termiticide application incidents – Kansas State University
- All inquiries related to acrolein – California Department of Pesticide Regulation
- All incidents in schools – US EPA
- All incidents related to Seresto Pet Collars - US EPA
- All incidents related to flumioxazin and diquat dibromide – Connecticut Department of Health
- Human incidents related to myclobutanil – Colorado Department of Agriculture

Local Contacts

Pesticide Regulatory Agencies

State Environmental Agencies

County Extension Offices

State Health Departments

Mosquito/Vector Control Agencies

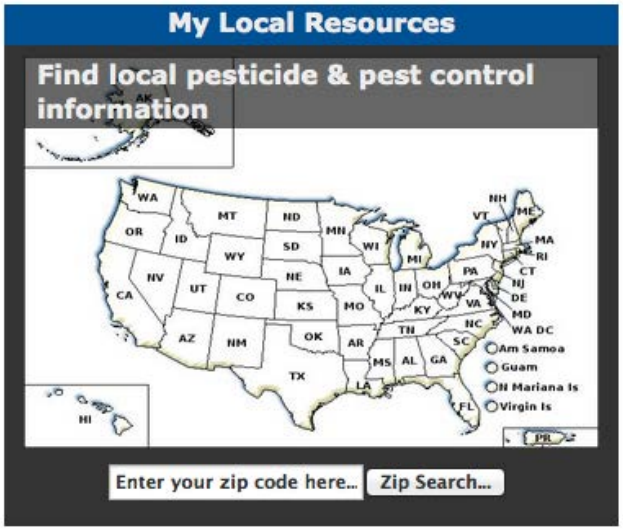
Regional EPA Contacts

Master Gardener Coordinators

Contacts for Information about the Worker Protection Standard in Agriculture & Forestry

Household and Hazardous Waste

NPIC maintains current contact lists for many organizations in order to provide the best local referrals. NPIC staff performed quality assurance to verify/update over 1,300 contacts this year. In preparation for questions about the revised Worker Protection Standard (WPS), NPIC called every state and territory to identify the best contact for WPS questions. NPIC also improved convenience by creating stand-alone web pages for nine groups.



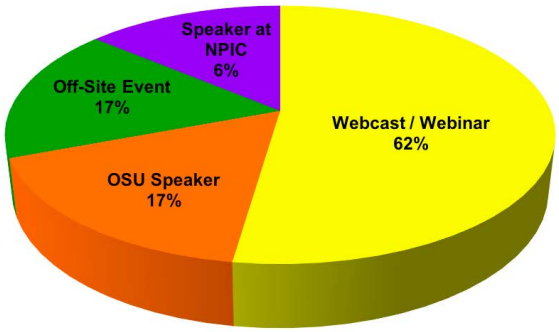
CONTINUING EDUCATION

NPIC places emphasis on continuing education for pesticide specialists in order to maintain the highest level of service, relying on the most up-to-date science and regulatory information. Building and maintaining a strong knowledge base is a significant part of each specialist's position description (25%). See the table on the next page for selected examples of the events attended by NPIC staff in 2015.

Oregon State University provided diverse opportunities for continued learning, including graduate seminars, visiting lecturers, faculty presentations, and regional conferences. Weekly staff meetings allow NPIC staff to discuss coding consistency, trends in inquiries, and new research findings.

Specialists stay current with the scientific, regulatory, and industry aspects of pesticides by monitoring relevant journals, pest control industry magazines, social media, and list-serves. Each day, a staff member monitors the headlines to identify pesticide-related news items and distributes the most relevant items to the team.

NPIC staff attended 65 events for continuing education this year.

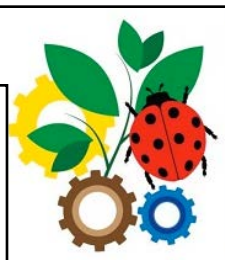


extension
Issues • Innovation • Impact
A Part of the Cooperative Extension System

OSU Oregon State University

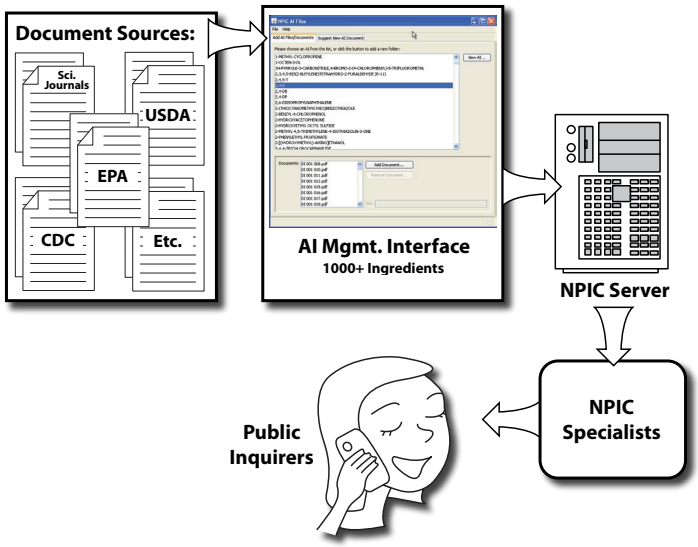
STOP Pests in housing

2015 All Bugs Good and Bad Webinar Series



Synergy in Science: Partnering for Solutions
ASA • CSSA • SSSA • ESA
2015 MEETING
Nov. 15-18 | Minneapolis, MN

AI Files



NPIC monitors the Federal Register and evaluates relevant dockets for new science and regulatory information. Documents are captured for quick reference in our collection of Active Ingredient (AI) files. In 2015, NPIC added over 500 new documents to AI files. The collection now includes over 15,000 documents in 1,086 AI files.

NPIC performed chemical-specific literature searches in order to update 16 active ingredient files, and to open 16 additional new files. On average, NPIC staff invested over 10 hours per week monitoring Federal Register Notices, affiliated dockets, newsletters, and selected journals of relevance.

NPIC also takes advantage of the Oregon State University Library, monitoring a wide variety of peer-reviewed sources for the latest research on toxicology, ecological impacts, and pest management science.

CONTINUING EDUCATION

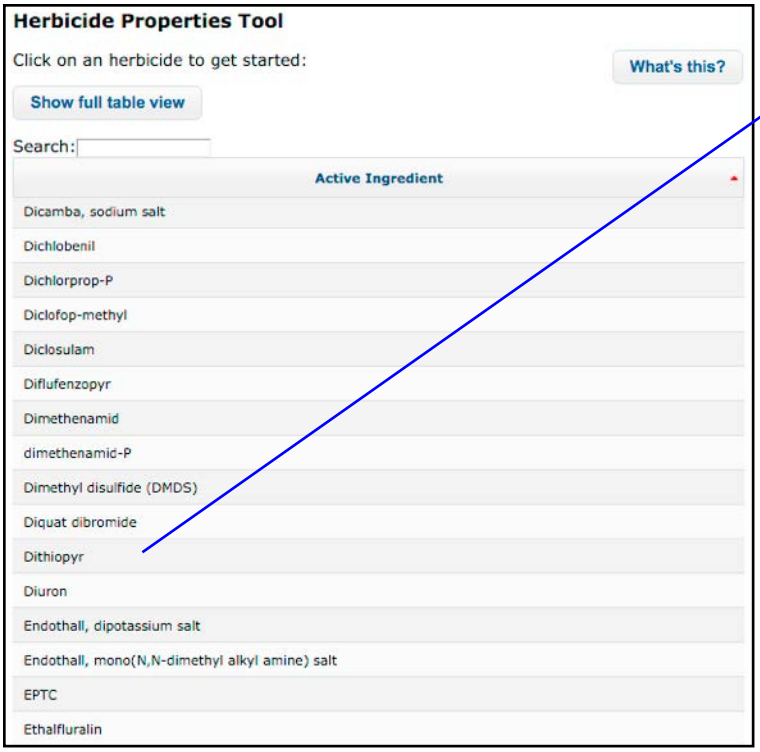
Speaker/Source	Speaker's Affiliation	Event Title
Dr. Louisa Hooven	Oregon State University	Pesticides and Pollinators
Dr. Joy Waite-Cusic	Oregon State University	Food safety risks on the small farm: raw milk and poultry production
Candice Thille	Stanford University	The Science of Learning, Big Data, Technology and Transformations in Education
Dr. Reif	Oregon State University	Environmental Bioinformatics
Dr. Matthias Weidenauer and Dr. Russell Jones	US Environmental Protection Agency and Battelle	Biopesticides: Navigating the Regulatory Landscape in the European Union and the United States
David Crowder and Elias Bloom	Washington State University	Promoting Native Bee Pollinators in Organic Farming Systems
Several	Oregon State University Science Communication Group	Should scientists withhold some evidence to avoid alarming the public? Who decides?
Dr. Robert Puckett	University of Georgia, eXtension	Common Termites of the Southern U.S.: Biology, Behavior, and Management
M.K. Reeves	US Fish and Wildlife Servcie	Amphibian Abnormalities and their Environmental Linkages
Dan Neeman	National Education Center for Ag Safety	Chemical Safety
Paul Axtell	Oregon State University	Revisiting Hardwiring: Examining the Defensive Response
Dr. Kris Braman	University of Georgia, eXtension	Beneficial Garden Helpers
Wayne Hunter	US Department of Agriculture and US Horticultural Research Lab	Future of RNAi in Pest Management, Using Nature to Treat Nature
Joe D. Luck	University of Nebraska Extension	Precision Pesticide Application Technology
Aaron Price and Rebecca Kane	US Environmental Protection Agency	ECHO Training for the Public
Jennie Halperin	Safari Books Online	Website User Testing - Safari Books
Several	US Environmental Protection Agency	EPA's Proposal to Protect Bees from Acutely Toxic Pesticides
Bryan Harper	Oregon State University	Nanotechnology-based Pesticides
Several	US Environmental Protection Agency	Antimicrobials Use Site Index
Several	StopPests in Housing	Hoarding, Housing, and Pests: A New Approach
Peggy Hall and Rusty Rumley	Ohio State University and University of Arkansas	Small Unmanned Aerial Systems in Agriculture: Preparing for Legal Issues
Jill Dyken and Jack Kelley	Agency for Toxic Substances and Disease Registry	Informing Decision-Making through Health Assessment
Several	Various	Science Communication: Visual Chemistry by Design
Several	Various	ASPCRO Annual Conference
Sarah Hoover and Duyen Kauffman	CA Environmental Protection Agency and CA Department of Public Health	Biomonitoring California's Results Communication Approach
Marsha Salzwedel and Bryan Weichelt	National Children's Center for Rural and Agricultural Health and Safety	Harvest Season: Are the Children Safe?
Dr. Douglas R. Call	Washington State University	Antimicrobial Resistance: Moving beyond the prudent-use paradigm
Keith Robinson	News and Public Affairs, Purdue University	Community Excellence-Reader to Writer: C'mon, Man!
Ramesh Sagili	Oregon State University	Honey Bees: Understanding the Superorganism
Amelia Shindelar	University of Minnesota	Let's Beat the Bug! Bed Bug Webinar
Jeff Jenkins	NPIC, Oregon State University	Bt Human Health and Environmental Risks
Several	Various	Synergy in Science National Conference
Several	eXtension	Infographic Inspiration
Several	National Center for Disaster Medicine and Public Health (NCDMPH)	Public Health Incident Leadership
Dr. Ayanava Majumdar	Auburn University and Alabama Cooperative Extension System	All Bugs Good and Bad Webinar Series: Don't Let the Insects Eat Your Vegetables

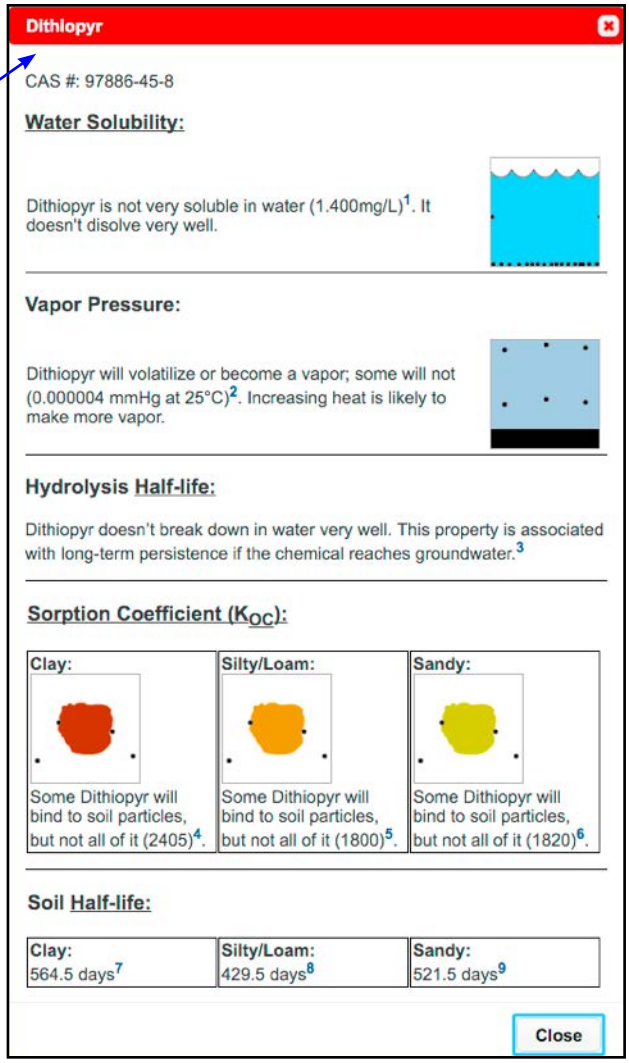
HERBICIDE PROPERTY TOOL

Physical/chemical properties can be difficult to understand and interpret for use in decision-making. NPIC specialists often help callers understand values like sorption coefficients. Is that high, moderate, or low? What does it mean? We use reference values from books to put the numbers in context. For an example, see the table below. Visit the new Herbicide Property Tool **here**!

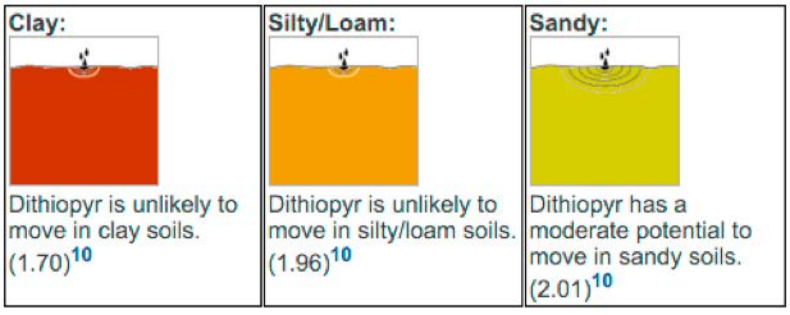
Sorption Coefficient (K_{OC}) Source: Ney Jr., R. E. *Fate and Transport of Organic Chemicals in the Environment: A Practical Guide*, 2nd ed.; Government Institutes, Inc.: Rockville, MD, 1995 p. 20.		
<1000	(active ingredient) will not bind to soil particles.	Image for low sorption coefficient
100 –10,000	Some (active ingredient) will bind to soil particles, but not all of it.	Image for moderate sorption coefficient
>10,000	(active ingredient) will bind to soil particles strongly. This property slows down or stops movement in soil.	Image for high sorption coefficient

NPIC identified 228 currently registered herbicide active ingredients. We looked up each one's water solubility, vapor pressure, sorption properties, and half-lives in water/soil. We highlighted the values in hyperlinked references whenever it was not copyright protected.





Groundwater Ubiquity Score (GUS):

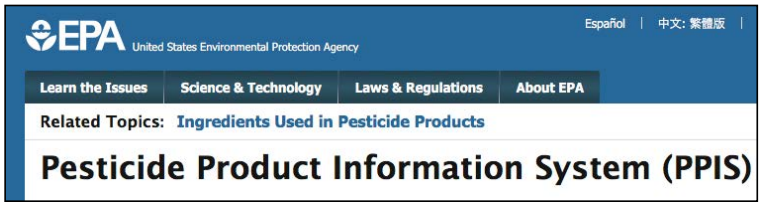


Pesticide movement in soil depends on many factors. The more organic matter, the more slowly things tend to move. Compost is high in organic matter, while sand is not. The pesticide's ability to dissolve in water is also very important. For more information, check the "Environmental Hazards" section of the pesticide label, or call NPIC at 1-800-858-7378.

In addition, we calculated the Groundwater Ubiquity Score (GUS) when sufficient data were available for each of three soil types. The GUS is a validated measure of persistence and mobility that can be helpful in selecting appropriate herbicides for sensitive sites.

NPIC PRODUCT RESEARCH ONLINE (NPRO)

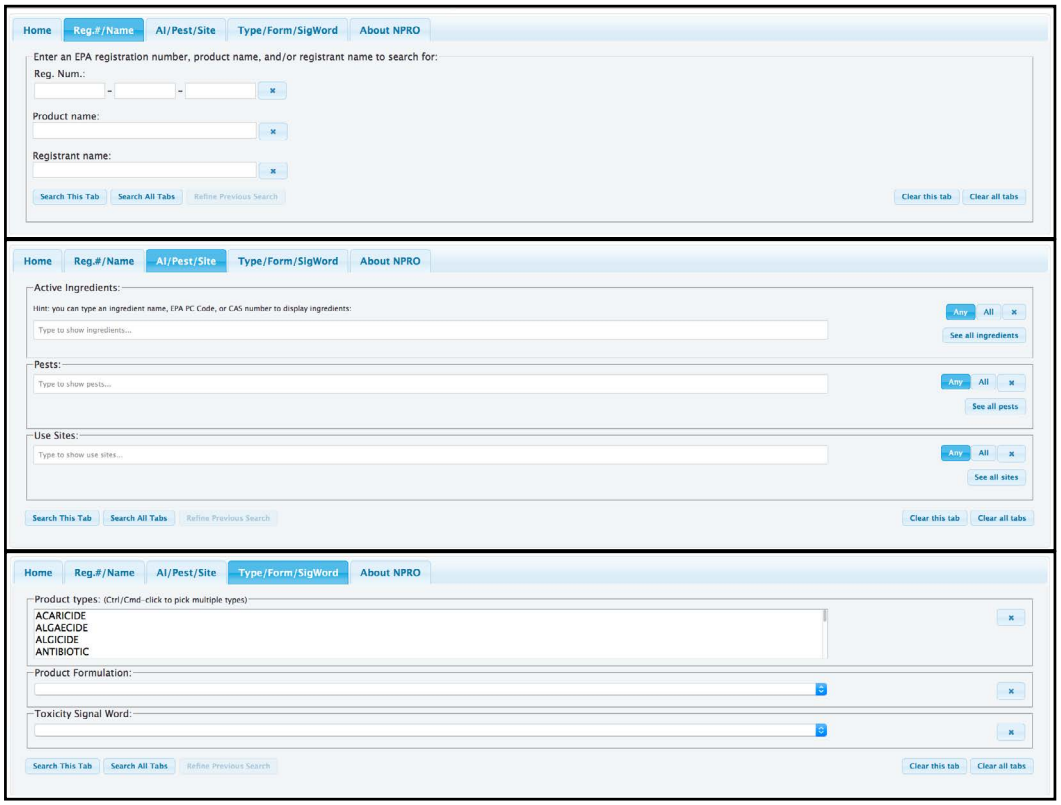
NPIC launched a new tool, **NPRO**, that provides access to over 400,000 pesticide products with a wide range of information. The data comes from two EPA databases that are publicly available, the Pesticide Product Information System (PPIS) and the Pesticide Product Label System (PPLS). It is targeted to professional users; it requires some knowledge of terminology used to describe use sites, chemical synonyms, and pest names. After searching for a pesticide product, the user is presented with an overview of key data points, a link to the federal pesticide label (pdf) and a link to EPA's ChemSearch interface.



npic
Product
Research
Online

NPRO users can search for products by one or many of the following parameters:

- EPA Registration Number
- Product name
- Manufacturer
- Use site(s)
- Active ingredient(s)
- Target pest(s)
- Formulation
- Type (insecticide, etc.)
- Signal Word



NPIC hosted a webinar to introduce the new tool in June, and a workshop in December to interact with new users. These events were promoted and delivered in cooperation with EPA.

Introduction to Inquiry Data

Pesticide specialists create a record for every inquiry, which is entered into the NPIC Pesticide Inquiry Database (PID). The PID is a relational database, designed and built by NPIC. Custom reports may be available based on many of the following items listed below.

There are three types of inquiries received by NPIC:

- Requests for information about pesticides and related issues
- Inquiries or reports about pesticide incidents
- Issues that are not related to pesticides

The type and amount of information entered into the PID depends on the type of inquiry.

NPIC aims to collect the following information for all pesticide-related inquiries:

- The inquirer's zip code or state
- The type of person (general public, government, or medical personnel, etc.)
- The type of question (health risk, regulatory compliance, label clarity, etc.)
- The EPA Registration number, product name and/or active ingredient name(s)
- The actions performed (verbal information, referrals, transfers, etc.)
- The way the person found NPIC (internet, phone book, etc.)

For pesticide incidents, NPIC makes every effort to collect these additional data:

- The type of incident (exposure route, misapplication, spill, etc.)
- The type of exposed entity (person, animal, building, etc.)
- The location of the incident (home inside, home outside, retail store, school, etc.)

If a person or animal was exposed to a pesticide, NPIC specialists attempt to collect additional information. However, they may not ask for all of these items during emergent medical events.

- A time line describing the exposure duration, symptom onset, and resolution
- The person or animal's age, symptoms, and gender
- The species, breed, and weight of animals

When symptoms are reported and the active ingredient(s) are known, specialists evaluate the relationship between them to assign a **certainty** index. The certainty index is an estimate by NPIC as to whether the reported symptoms were consistent or inconsistent with published reports/materials, in the context of the reported pesticide exposure, or whether the signs and symptoms were unrelated. Specialists use the following tools when assigning the certainty index:

- A standard set of criteria, defined in NPIC training and procedures
- Published exposure reports and case studies
- Input from Dr. Dave Stone for human exposure incidents
- Input from Dr. Fred Berman for animal exposure incidents
- Input from the PID QA/QC specialist

Symptoms are also characterized in terms of their **severity** in the PID. The criteria for defining major, moderate, and minor symptoms were adapted from similar mechanisms used by poison control centers in the National Poison Data System, and by the U.S. EPA in the Incident Data System.

NPIC DATA

The following pages include details about the incidents and inquiries documented by NPIC from February 15, 2015 to February 14, 2016.

Disclaimers and explanatory information:

- Material presented in this report is based on information provided to NPIC by individuals who contacted NPIC, primarily by phone or email.
- None of the information has been verified or substantiated by independent investigation by NPIC staff, laboratory analyses, or by any other means. This is similar to other self-reported public health monitoring programs, including the incident data recorded by poison control centers.
- If a person alleges/reports a pesticide incident, it will likely be recorded as an incident by NPIC. To meet the criteria, the person must have sufficient knowledge about the scenario, and it must be reported within two years of its occurrence.
- NPIC defines an incident in terms of public health. The NPIC definition includes any unintended exposure (i.e., child ate a mothball), intended exposures with adverse effects (i.e., illness in pets treated with flea/tick products), spills, and potential misapplications (i.e., product intended for ornamental plants was applied to vegetables in the home garden.)
- Less than 2% of the time, callers indicate their main purpose for contacting NPIC was to report a pesticide incident. More often, they indicate their main purpose for contacting NPIC is to obtain technical information. See Table 6 on page 27. Regardless, NPIC specialists make every effort to collect complete information about scenarios that meet the NPIC incident definition. Approximately 16% of inquiries to NPIC are coded as incidents.
- NPIC specialists are trained to recognize scenarios that could potentially lead to enforcement actions. In these cases, the standard operating procedure requires a referral to the appropriate State Lead Agency. See Table 7.3 on page 28.
- NPIC qualifies the information received by assigning a certainty index. The certainty index is an estimate by NPIC as to the likelihood that the reported signs and symptoms were consistent or inconsistent with published reports/materials, in the context of the reported pesticide exposure. See page 34.
- NPIC makes no claims or guarantees as to the accuracy of the CI or other information presented in its reports, other than that NPIC has done its best to accurately document the information provided to NPIC.
- It is occasionally necessary to collect personally identifiable information (PII) in order to respond to inquiries, for example, by voice-mail, email, or mail. Users of web-based incident reporting portals may have the option to submit PII as part of their reports. In all other cases, it is NPIC policy to refrain from collecting/documenting PII from people who contact NPIC through public channels.
- Through its cooperative agreement with EPA, NPIC provides special reports upon request. Special reports may also be provided to other cooperative agreement holders with EPA, such as state-level Departments of Agriculture/Environmental Protection. Other entities with interest in special reports should contact NPIC to inquire about the procedure and possible costs.

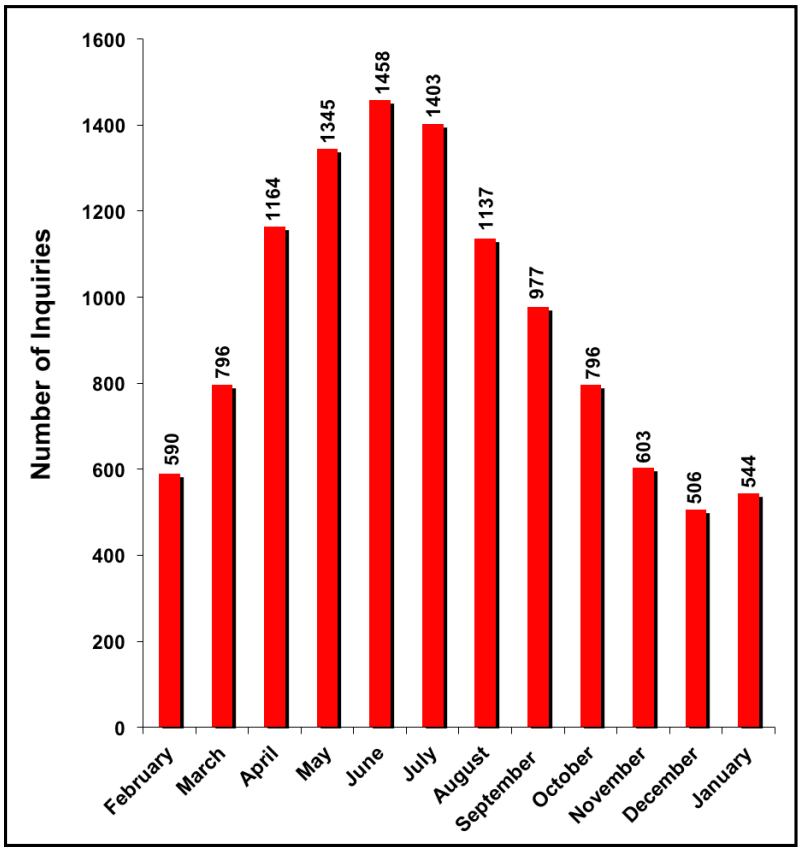
1. Monthly Inquiries

NPIC received 11,362 inquiries during this grant year. Graph 1 shows the number of inquiries received for each month. Seventy-three percent (73%) of the inquiries were received between April and October, concurrent with the part of the year when pest pressures are highest.

Table 1. Monthly inquiries

Month	Total
February	590
March	796
April	1164
May	1345
June	1458
July	1403
August	1137
September	977
October	796
November	603
December	506
January	544

Graph 1. Monthly inquiries



2. Type of Inquiry

NPIC classifies inquiries as information, incident, or other (non-pesticide) inquiries. A pesticide spill, misapplication, contamination of a non-target entity, or any purported exposure to a pesticide, regardless of injury, is classified as an incident.

The types of inquiries are summarized in Table 2 and Chart 2.

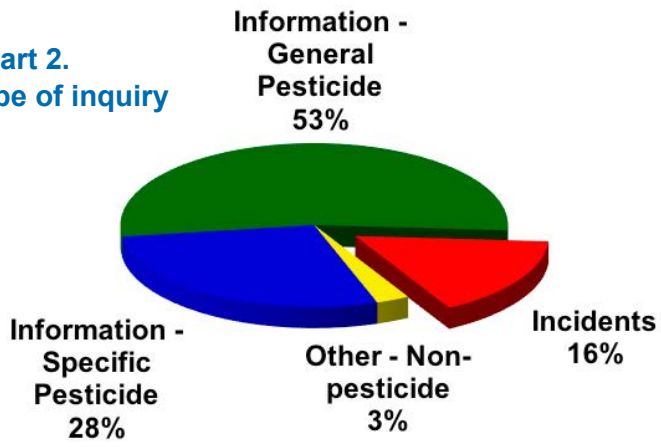
The majority of inquiries (9,238 or 81%) were informational inquiries about pesticides or related issues (Chart 2). NPIC responded to 3,181 (28%) information inquiries about specific pesticides. NPIC responded to 6,057 (53%) information inquiries relating to pesticides in general.

NPIC documented 1,809 incidents involving pesticides (16%). NPIC Specialists routinely provide requested information, evaluated the need for any referrals, and asked several scoping questions to document the circumstances surrounding the reported incidents.

Table 2. Type of inquiry

Type of Inquiry	Total
Information - General Pesticide	6057
Information - Specific Pesticide	3181
Incidents	1809
Other - Non-Pesticide	315
Total =	11362

Chart 2. Type of inquiry



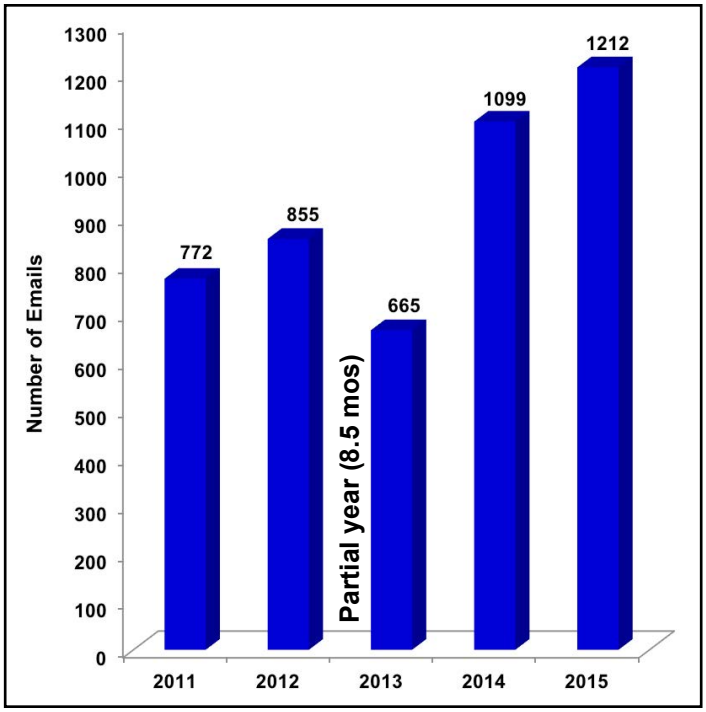
3. Origin of Inquiry

Table 3 summarizes the origin of inquiries received by NPIC. About 75% of inquiries were received by telephone.

Table 3. Origin of inquiry

Origin of Inquiry	Total
Telephone	8423
Voice Mail	1715
Email	1212
Mail	11
Walk-In	1
Total =	11362

Graph 3. Inquiries received by email



4. Website Access

The NPIC website attracted more than 2.8 million unique visitors viewing 4,514,036 pages during this period.

Almost all of the page views originated from queries on popular search sites (42.5%), or were connected with NPIC from a bookmark (51.5%) or other direct link (i.e., shared via email). The most popular search terms used to reach NPIC were “diatomaceous earth,” “malathion,” and “DDT.”

Visits to the website varied greatly in duration, with 94,836 visits lasting longer than 15 minutes. The average visit duration was approximately 2 minutes.

The most popular pages viewed on the site were the Diatomaceous Earth general fact sheet (215,212 views), the NPIC home page (194,526 views), and My Local Resources (126,311 views).

Graph 4.1. Page views

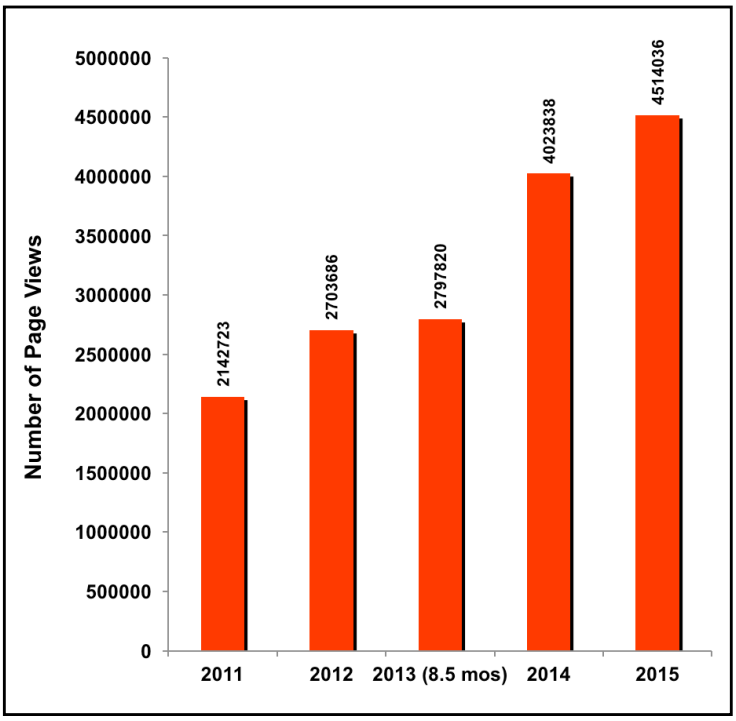
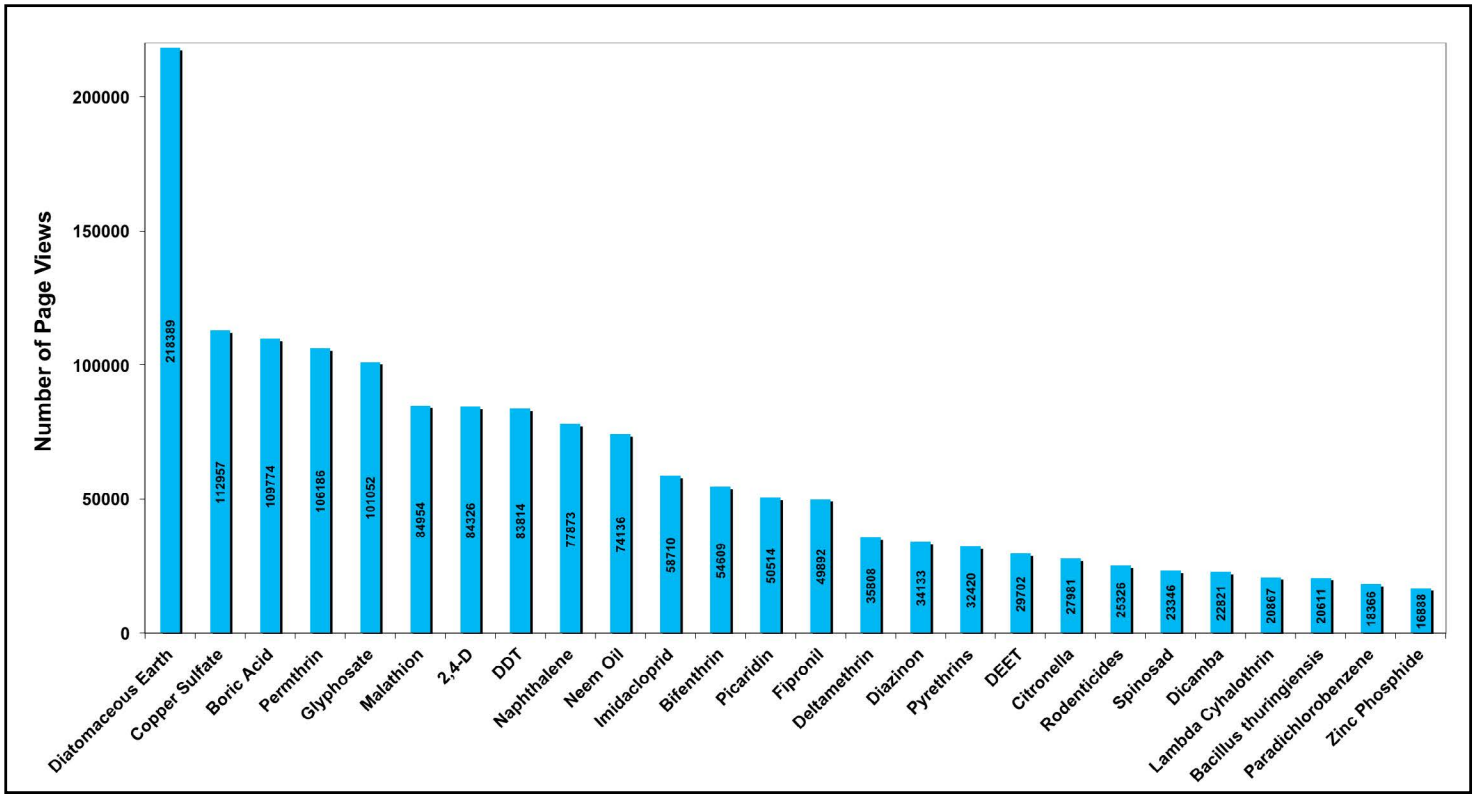


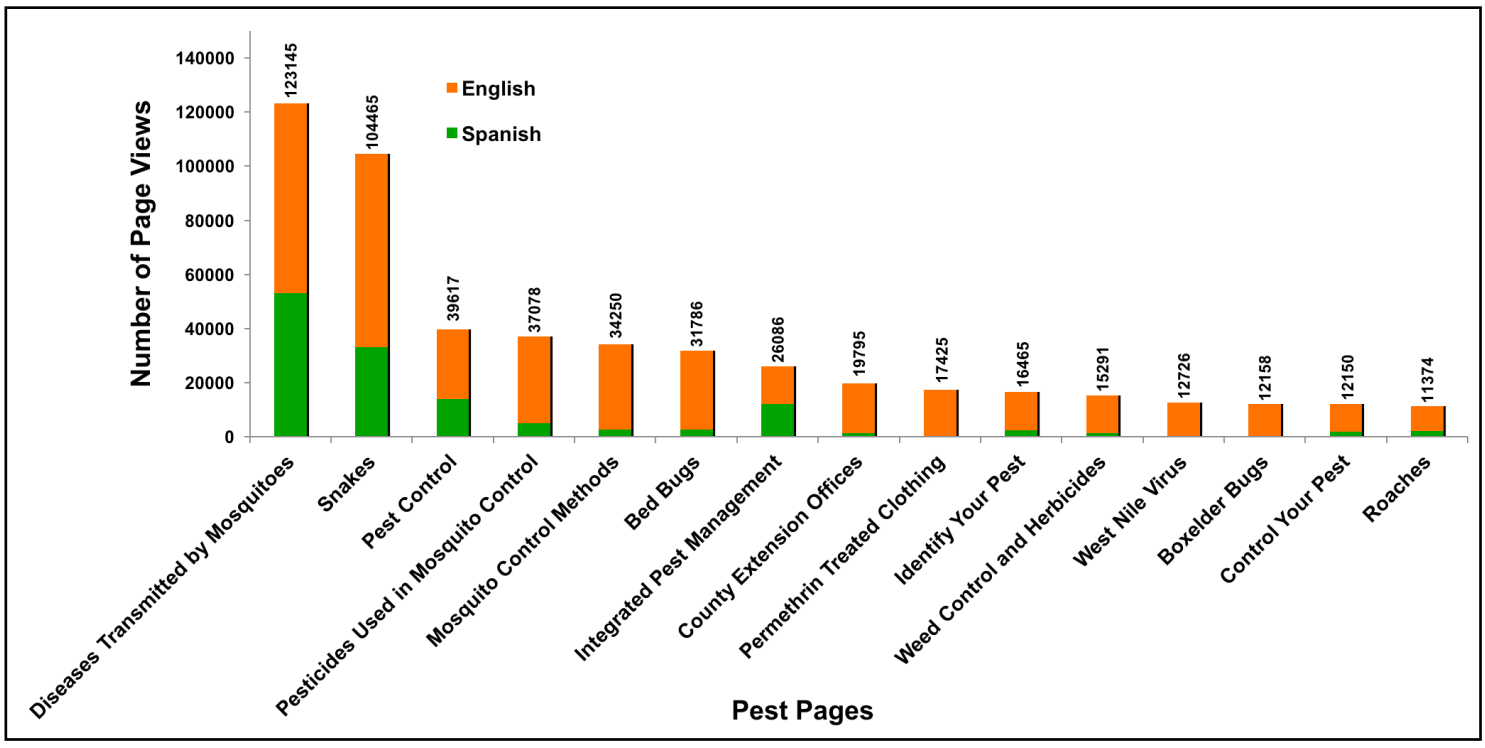
Table 4. Selected page views

Page Accessed	English page views	Number of pages available		Spanish page views	Number of pages available
Fact Sheets	1,907,971	238		17,466	6
Pesticide Ingredients	578,360	95		38,478	15
Pest Control	504,763	60		147,538	35
Home Page	194,602	1		6,765	1
Health and Safety	147,595	27		20,452	21
My Local Resources	126,311	11		13,408	3
Common Pesticide Questions	80,354	88		123,963	56
Regulations	74,528	24		7,329	6
Environment	69,613	25		18,893	7
A to Z Index	60,954	1		7,972	1
Pesticide Incidents	16,700	1		6,024	1
PestiByte Podcasts	9,503	53		6,024	51
Frequently Asked Questions	7,012	11		2,937	6

Graph 4.2. Top 25 active ingredient fact sheet page views



Graph 4.3. Top 15 pest control page views



5. Type of Inquirer

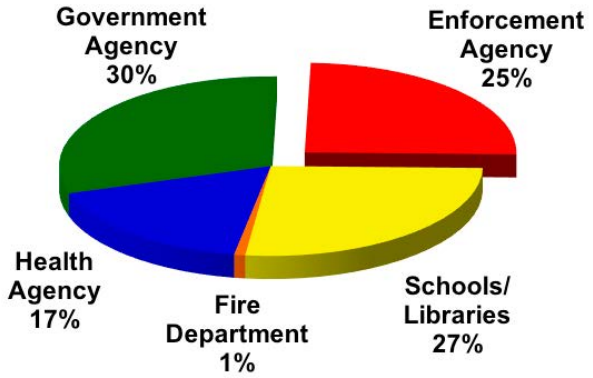
Table 5 summarizes the profession/ occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the general public. Of the 11,362 inquiries received, there were 10,114 (89%) from the general public, 237 (2.1%) from federal, state or local government agencies, 159 (1.4%) from pesticide manufacturers, and 158 (1.4%) from human and animal medical personnel.

Chart 5 summarizes the 237 governmental entities that contacted NPIC during the grant year. Health agencies include health departments and WIC personnel. Government agencies include city, county, and other government entities without enforcement roles. Enforcement agencies include the U.S. EPA, state lead pesticide agencies, and police, among others.

Table 5. Type of inquirer

Type of Inquirer	Total
General Public	10114
Federal/State/Local Agencies	
Government Agencies	72
Schools/Libraries	63
Enforcement Agencies	59
Health Agencies	41
Fire Department	2
Medical Personnel	
Human Medical	102
Animal Vet./Clinic	56
Other	
Pesticide Mfg./Mktg. Co.	159
Pest Control	92
Media	64
Retail Store	61
Farm	44
Unions/Info. Service	39
Lab./Consulting	38
Lawyer/Insurance	18
Master Gardener	18
Environmental Org.	14
Non-migrant Ag. Worker	4
Other	302
Grant Year Total =	11362

Chart 5. Inquiries from federal / state / local agencies (Total: 237)



6. Type of Question

The questions received at NPIC are most often related to health (e.g., effects, risk, etc.) and application (e.g., methods, label clarity, etc.). “Other” questions (2,092) include all wrong numbers and people seeking their pest control companies.

Questions about regulations (1,032) range from “How do I get a new product registered?” to “Can the authorities make my neighbor stop spraying?” Questions about how to follow pesticide label directions were coded as ‘Application’ questions (1,620).

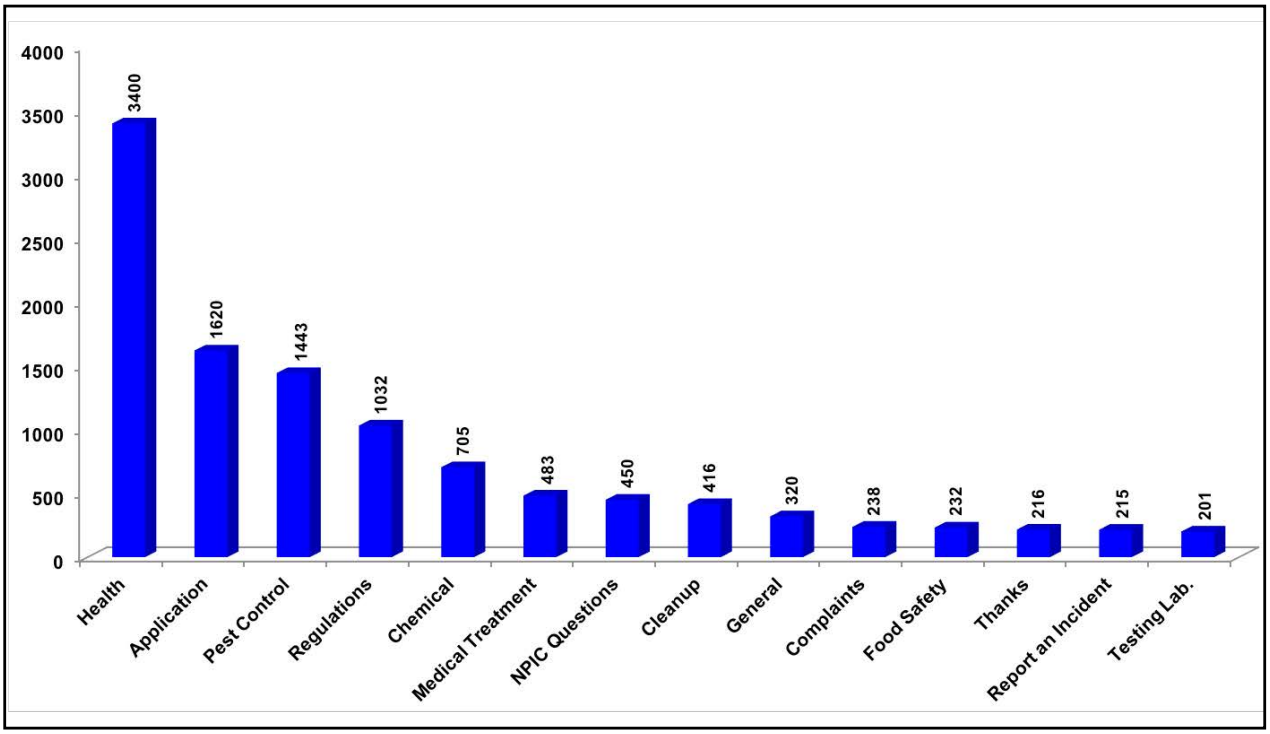
People contacted NPIC in order to report a pesticide incident 215 times with no specific question. In these cases, NPIC provides appropriate local referrals for enforcement, as needed.

Inquiries may often involve more than one type of question. Inquirers asked 13,313 questions during this grant year in the course of 11,362 inquiries.

Table 6. Type of question

Type of Question	Total
Health	3400
Other	2092
Application	1620
Pest Control	1443
Regulations	1032
Chemical	705
Medical Treatment	483
NPIC Questions	450
Cleanup	416
General	320
Complaints	238
Food Safety	232
Thanks	216
Report an Incident	215
Testing Lab.	201
Disposal	104
Harvest Intervals	60
Pros and Cons	50
Inert Ingredients	33
WPS	3
Total =	13313

Graph 6. Type of question



7. Actions Taken

Primary actions:

NPIC Specialists respond to inquiries in a variety of ways. The primary actions are summarized in Table 7.1. Most inquiries (10,076) were answered by providing verbal communication. Information was also sent via email in 1,312 cases, and by postal mail in 108 cases. Upon request, NPIC brochures and other promotional materials were mailed to people 19 times in this period.

Table 7.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2015
Verbal Info	10076
Emailed Info	1312
Transferred to Specialist / Voicemail	129
Handled Inquiry in Spanish	127
Mailed Info	108
Transferred to EC / PC	79
Sent NPIC Outreach Material(s)	19
Interpreted via Language Line Svs	11
Faxed Info	2

Risk reduction actions:

NPIC keeps track of certain conversation topics aimed at reducing pesticide risk. Specialists documented 5,585 risk reduction actions, detailed in Table 7.2.

Table 7.2. Risk reduction actions

Risk Reduction Action Taken	Number of Inquiries
	2015
Discussed Ways to Minimize Exp.	2431
Discussed Following the Label	2158
Discussed IPM Concepts	801
Discussed Environmental Protection	195

Referrals to other organizations:

The number of referrals to various organizations is presented in Table 7.3. Specialists use their training and SOPs to evaluate the need for referrals, providing them only when the requested information is outside NPIC boundaries and there is an appropriate resource available to provide the information (i.e., “Manufacturer/Distributor” for detailed application instructions and product complaints, “Cooperative Extension” for pest control advice, and “State Lead Agency” for enforcement). Local resources are provided whenever possible, and contact information is included. See page 15 for information about how NPIC maintains and delivers appropriate referral information.

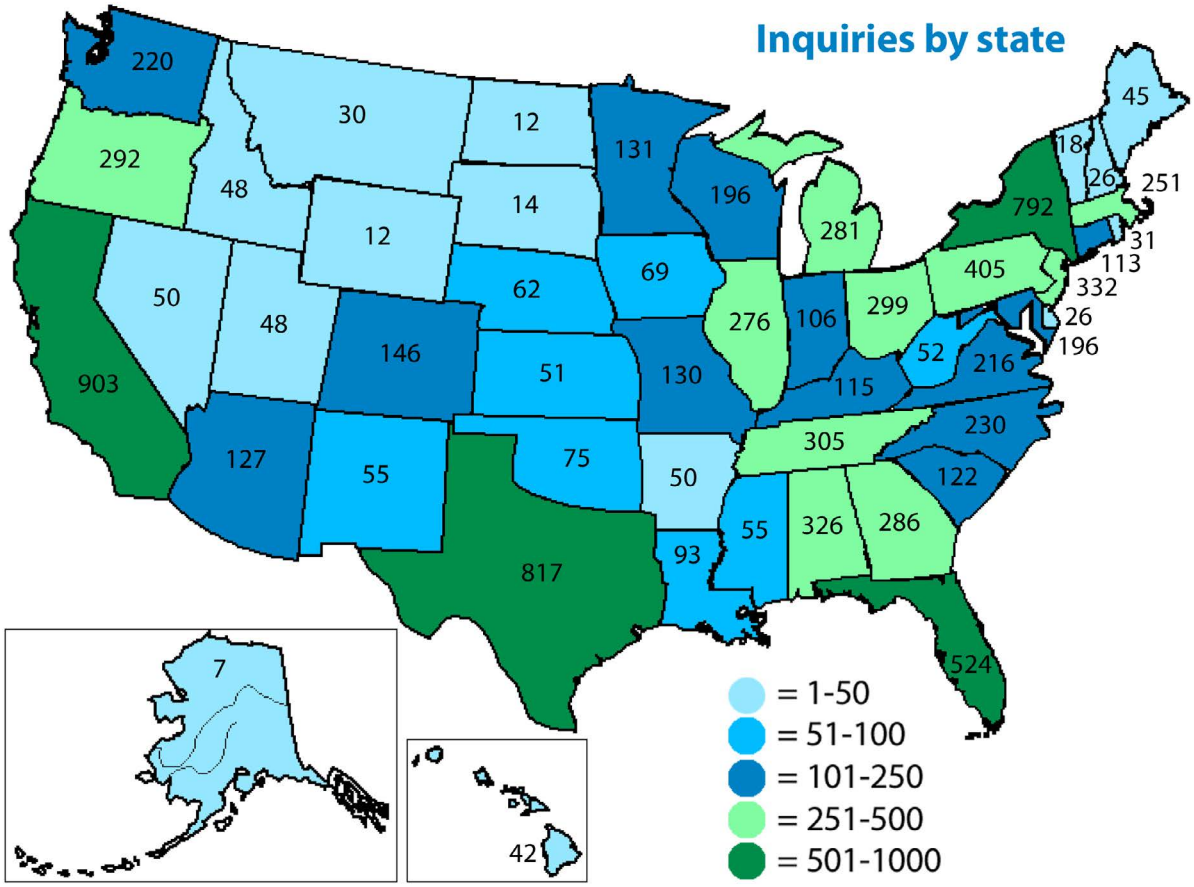
Table 7.3. Referrals to other organizations

Organization Name	Number of Inquiries
	2015
Manuf. / Distributor Contact	2675
NPIC Website	1248
County Extension Contact	1208
State Lead Contact	803
Poison Control Contact	580
Other Org. Contact	570
EPA Website	304
EPA HQ / OPP Contact	288
Dept of Health Contact	275
EPA Region Contact	146
Animal Poison Contact	121
Other State Agency Contact	116
Hazardous Waste Contact	105
Other Fed Agency Contact	77
OSHA Contact	10

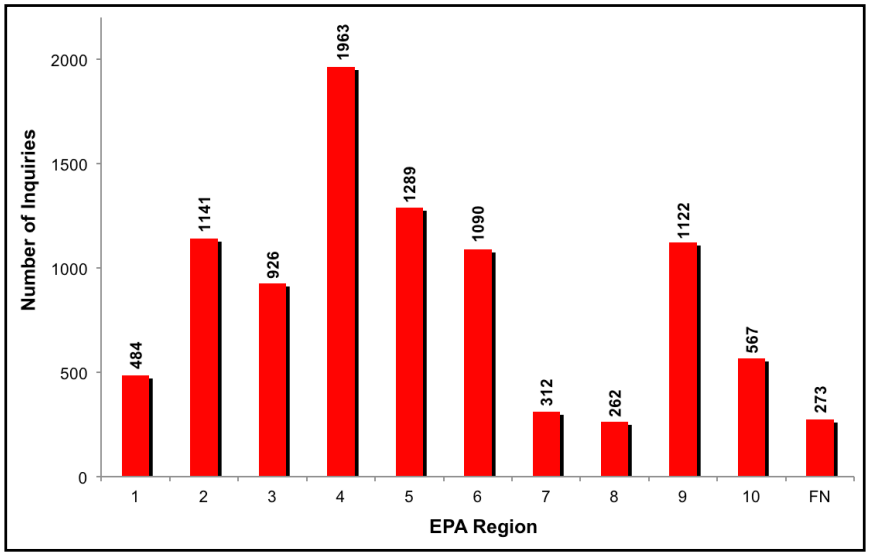
8. Inquiries by State

The map below shows the number of inquiries received by NPIC from each state. The largest number of inquiries came from California, followed by Texas, New York, and Florida. In addition to the states, NPIC received inquiries from Puerto Rico (15), Canada (100), and other countries (273).

Graph 8 summarizes inquiries by EPA region. NPIC received 20.4% of inquiries from Region 4, 13.5% from Region 5, 12.0% from Region 2, 11.8% from Region 9, 11.4% from Region 6, and 9.7% from Region 3.



Graph 8. Inquiries by EPA region



FN = Foreign Nation

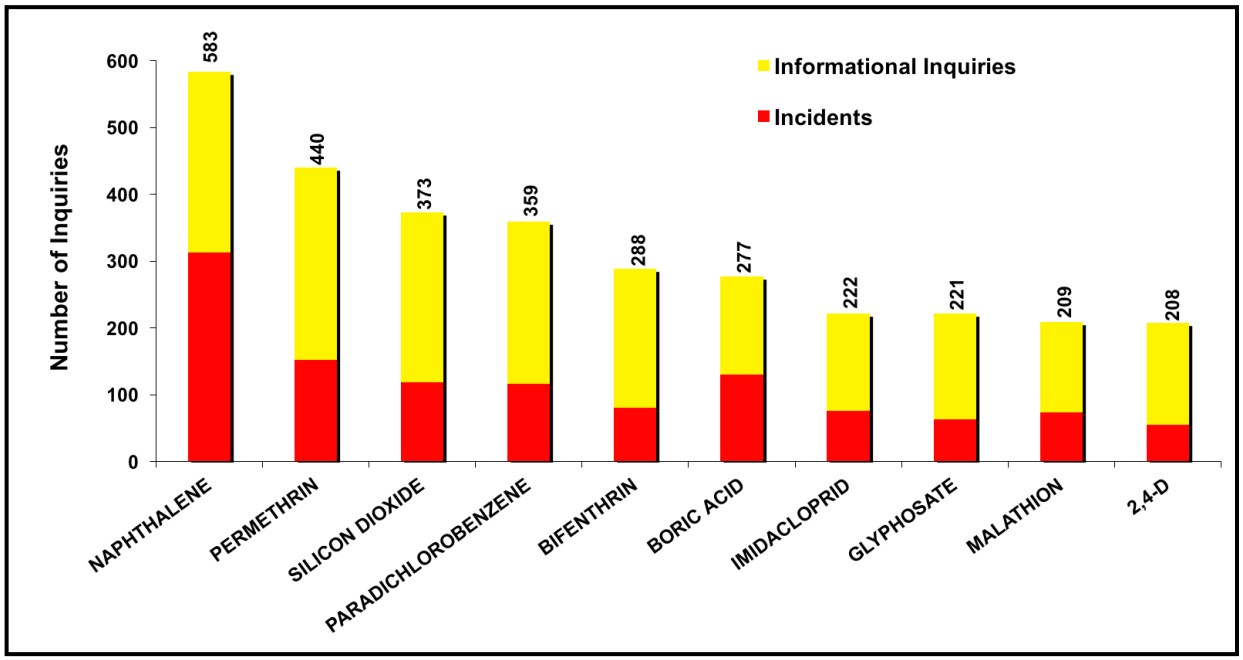
9. Top 25 Active Ingredients for All Inquiries

When inquiries to NPIC involve discussion of a specific product or active ingredient, Specialists record the product and the active ingredient in the PID. Naphthalene was discussed in more inquiries than any other single active ingredient this year (Table 9, Graph 9). Of the 583 inquiries involving naphthalene, 313 (53.7%) were incidents. Note that an inquiry may involve discussion of several active ingredients. Graph 9 illustrates the number of informational inquiries and incident inquiries for the top active ingredients that NPIC received during the grant year.

Table 9. Top 25 active ingredients for all inquiries

Active Ingredient	Total Inquiries	Incidents	Information Inquiries
NAPHTHALENE	583	313	270
PERMETHRIN	440	152	288
SILICON DIOXIDE	373	119	254
PARADICHLOROBENZENE	359	116	243
BIFENTHRIN	288	81	207
BORIC ACID	277	130	147
IMIDACLOPRID	222	76	146
GLYPHOSATE	221	63	158
MALATHION	209	74	135
2,4-D	208	55	153
PYRETHRINS	187	56	131
DELTAMETHRIN	186	67	119
PIPERONYL BUTOXIDE	181	67	114
FIPRONIL	151	47	104
CARBARYL	129	36	93
CAPTAN	119	28	91
DICAMBA	116	40	76
CYFLUTHRIN	110	33	77
MECOPROP	94	20	74
CYPERMETHRIN	89	42	47
PYRIPROXYFEN	89	41	48
LAMBDA-CYHALOTHRIN	87	31	56
N-OCTYL BICYCLOHEPTENE DICARBOXIMIDE	80	26	54
NEEM OIL	78	19	59
PRODIAMINE	75	8	67

Graph 9. Top 10 pesticide active ingredients for all inquiries



10. Incident Type

A pesticide incident may involve a spill, misapplication, exposure, or any combination of these events.

There were 2,367 pesticide exposures and 772 accidents. Charts 10.1 and 10.2 provide further details. Among reported exposures, inhalation was the most common route of exposure (45.7%), followed by dermal contact (23.1%) and ingestion (17.4%). When a specific exposure route could not be identified, specialists documented an “unknown/many” exposure route (4.6%).

Indoor spills (75) were reported more often than outdoor spills (25). Among reported misapplications (630), over three quarters were misapplications by the homeowner or resident. Misapplications by the homeowner decreased in 2015 (515) compared to 2014 (544), and the number of incidents involving drift decreased from 2014 (106) to 2015 (40).

Chart 10.1. Pesticide exposures (Total: 2,367)

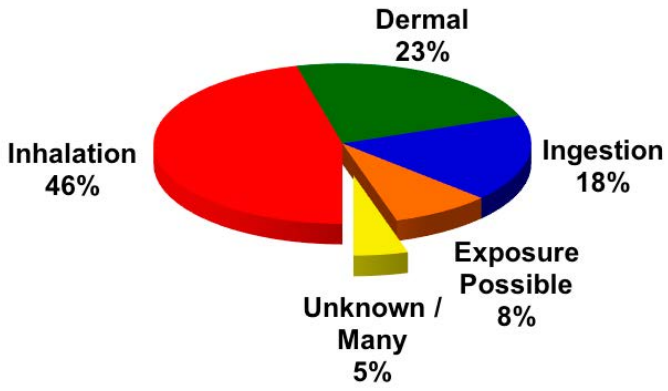


Chart 10.2. Pesticide accidents (Total: 772)

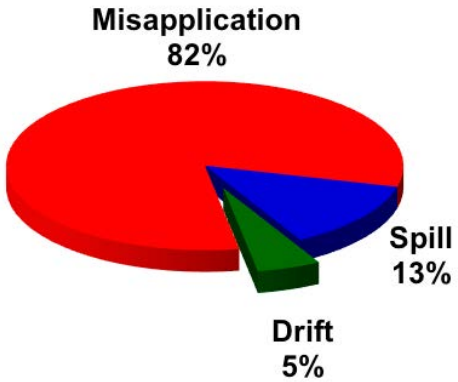


Table 10. Incident Type

Type of Incident	Total
Exposures	
Inhalation	1081
Dermal	546
Ingestion	411
Exposure Possible	199
Unknown/Many	109
Occupational	21
Accidents	
Misapp. - Homeowner	515
Spill - Indoor	75
Misapp. - Other	70
Misapp. - PCO	45
Drift	40
Spill - Outdoor	25
Fire - Home	1
Fire - Other	1
Industrial Accident	0
Other	267
Total =	3406

11. Top 25 Active Ingredients for Incidents

The most common active ingredients reported during incident inquiries are listed in Table 11. The table identifies the number of exposures or accidents involving humans, animals, and other entities, such as environmental entities and property. Naphthalene and permethrin were involved in more reported incidents than any other active ingredients. Naphthalene is one common active ingredient found in mothballs and similar products. Permethrin is one common active ingredient found in pet spot-on and other residential products.

In Table 11, the top 3 active ingredients for human and animal exposures are highlighted below. For animal incidents, permethrin, boric acid, and silicon dioxide were involved in the highest number of exposures.

Table 11. Top 25 active ingredients for incidents to NPIC[1]

Active Ingredient	Total	Human Exposures	Animal Exposures	Other Accidents
NAPHTHALENE	331	171	27	133
PERMETHRIN	178	94	46	38
BORIC ACID	150	94	40	16
SILICON DIOXIDE	145	78	40	27
PARADICHLOROBENZENE	121	66	6	49
MALATHION	93	49	4	40
BIFENTHRIN	89	43	15	31
IMIDACLOPRID	86	36	34	16
PIPERONYL BUTOXIDE	82	51	20	11
DELTAMETHRIN	77	50	13	14
GLYPHOSATE	74	37	13	24
2,4-D	69	40	12	17
PYRETHRINS	67	45	12	10
CYPERMETHRIN	52	34	3	15
FIPRONIL	52	21	20	11
DICAMBA	51	34	11	6
CARBARYL	49	26	3	20
METHOPRENE	43	13	27	3
CYFLUTHRIN	41	30	4	7
PYRIPROXYFEN	41	10	30	1
CAPTAN	40	18	3	19
CAPSAICIN	36	28	2	6
LAMBDA-CYHALOTHRIN	36	15	8	13
TETRAMETHRIN	33	20	3	10
SULFUR	30	18	3	9
Total	2066	1121	399	546

[1] Note that incidents may include multiple humans, animals, and other entities. See Table 9 for total incidents by active ingredient.

12. Locations of Exposure or Accident

For incidents, specialists record the location of exposure or accident. Of the 3,259 locations where exposures or accidents were documented, 89.1% occurred in the home or yard, and 1.9% occurred in an agricultural setting. Table 12 identifies the number of exposures or accidents reported to NPIC in a variety of other locations.

Table 12. Location of exposure/accident

Location	Total
Home or Yard	2905
Agriculturally Related	61
Office Building/School	50
Other	44
Park/Golf Course	29
Roadside/Right-of-Way	23
Pond, Lake, Stream Related	12
Retail Store/Business	10
Health Care Facility	10
Nursery/Greenhouse	8
Food Service/Restaurants	5
Treated Water	4
Industrially Related	0
Total =	3259

13. Environmental Impact

Table 13 presents the type of incidents reported for each kind of environmental entity. The most common environmental incident reported to NPIC involves pesticide misapplications to buildings by the residents (287). Many of these are related to mothballs and similar products.

Table 13 - Reported environmental impacts

	Misapplication by Resident	Misapplication by PCO	Misapplication by Other	Misapplication by Unknown	Spill - Indoor	Spill - Outdoor	Drift	Plant Exposure	Other
Agricultural Crop	2	3	0	0	0	0	1	6	0
Building-Home/Office	287	17	39	4	43	2	7	0	13
Home Garden	78	16	3	0	0	1	18	74	8
Home Lawn	32	0	4	0	0	2	0	20	5
Natural Water	2	0	2	0	0	0	1	0	1
Property	31	6	3	0	20	6	3	0	15
Soil/Plants/Trees	54	3	9	0	0	5	7	30	10
Treated Water	1	0	0	0	0	4	0	0	4
Vehicle	14	0	2	0	7	1	2	0	3

14. Certainty Index

Table 14 and Graph 14 summarize the certainty index (CI) assignments for all incidents that were eligible to be classified. An incident is eligible to be classified if there was an exposed person or animal with reported signs/symptoms, and at least one active ingredient was known.

Of the total number of entities assigned a CI (2,752), 18.4% of the cases were assigned an index of consistent, 8.6% were assigned an index of inconsistent, and 72.9% were considered unclassifiable. Because none of the information reported to NPIC has been verified or substantiated by independent investigation, uncertainty is common. This is the case with many forms of self-reported data, which are often used for monitoring public health. As a result, the certainty index assignment for definite is rarely assigned.

All certainty index assignments are reviewed by quality assurance specialists. Dr. Stone provide additional consultation for human incidents, and Dr. Berman for animal incidents.

What is the Certainty Index?

The certainty index is an estimate by NPIC as to the likelihood that the reported signs and symptoms were **consistent** or **inconsistent** with published reports/ materials, in the context of the reported pesticide exposure.

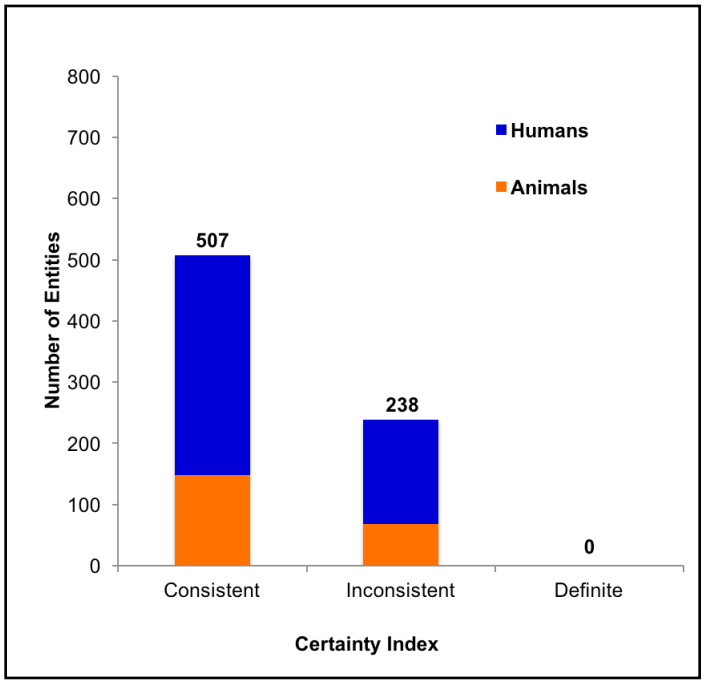
The certainty index is unclassifiable when one or more of the following criteria apply:

- An exposure occurred, but no symptoms were reported
- No active ingredient could be identified
- The presence or absence of symptoms was unknown

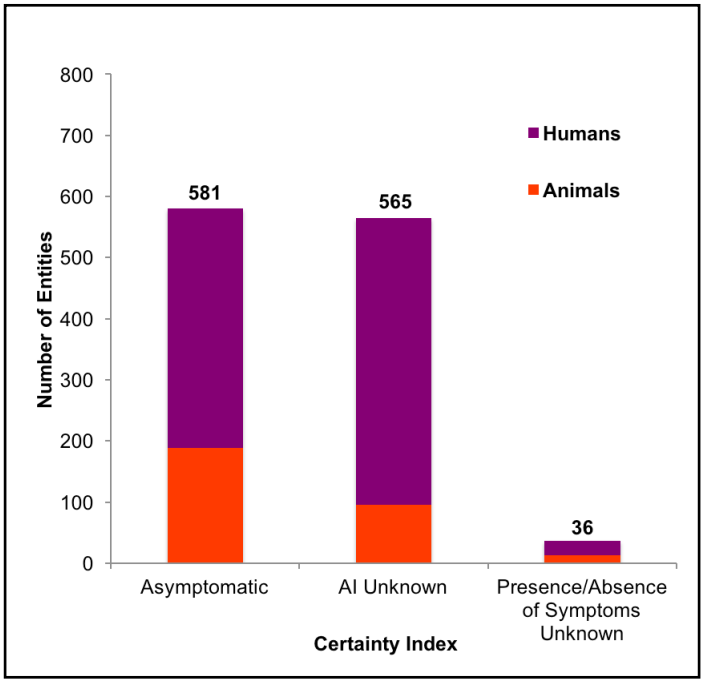
Table 14. Incident inquiries by certainty index (CI)

CI for All Categories of Entities					Breakdown of Human-Entity Incident Inquiries			
Certainty Index (CI)	Humans	Animals	Other	Total	Male	Female	Groups	Gender Not Stated
Unclassifiable	886	296	825	2007	296	437	148	5
Definite	0	0	0	0	0	0	0	0
Consistent	359	148	0	507	137	202	20	0
Inconsistent	170	68	0	238	58	103	9	0

Graph 14.1 Certainty index for incidents



Graph 14.2 Unclassifiable CI categories



15. Severity Index

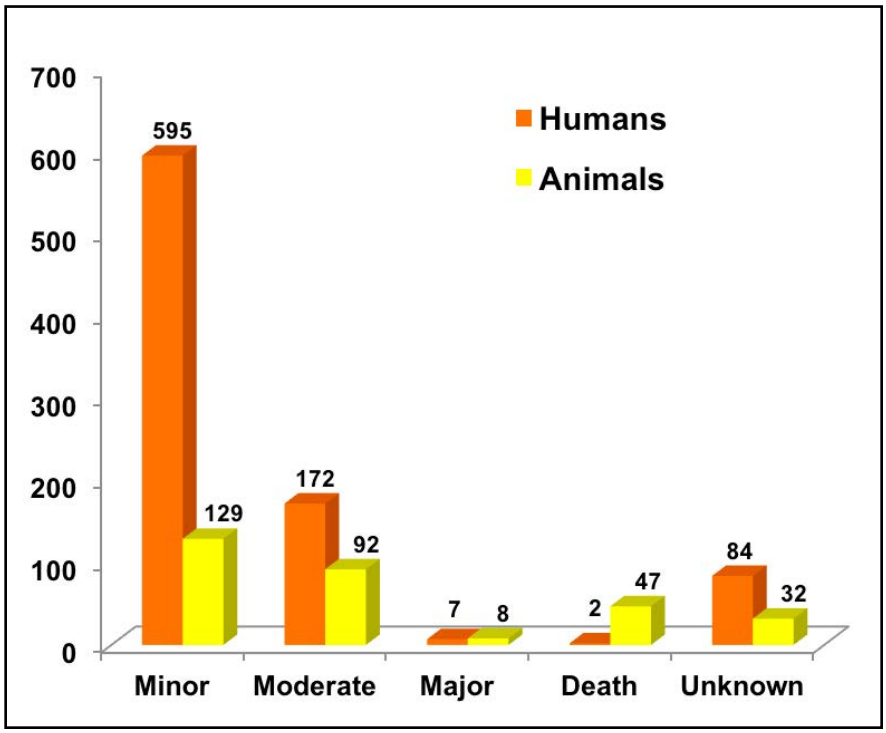
Table and Graph 15 summarize the severity of symptoms for all human and animal incidents reported to NPIC.

For all signs/symptoms reported in human pesticide incidents, 42.1% were minor, 12.2% were moderate, 0.5% were major, and two deaths were reported. Symptoms were unknown in 5.9% of human incidents. In 39.2% of human exposure incidents, the person reported that they did not experience any symptoms.

Table 15. Human and animal incidents by severity index (SI)

SI for All Categories of Entities				Breakdown of Human-Entity Incident Inquiries			
Severity Index (SI)	Humans	Animals	Total	Male	Female	Groups	Gender Not Stated
Minor	595	129	724	198	363	33	0
Moderate	172	92	264	66	95	7	4
Major	7	8	15	3	4	0	0
Death	2	47	49	2	0	0	0
Unknown	84	32	116	22	46	15	1
Asymptomatic	554	204	758	200	232	122	0

Graph 15. Severity index for human and animal incidents



What is the Severity Index?

The severity index is an estimate by NPIC as to the severity of signs/symptoms reported for incidents. The severity of signs/symptoms can be categorized as minor, moderate, major, death, unknown, or asymptomatic. The NPIC severity index is based on criteria used by poison control centers in their National Poison Data System (NPDS).

16. Description of Entities

The chart and graphs below provide a summary of entities involved in pesticide incidents. Of the 2,752 entities involved in incidents reported to NPIC during this period, 51.4% were human, 18.6% were animals, and 29.2% were environmental non-target entities. Other entities (22) are miscellaneous items (i.e., sidewalk, food). Pesticide incidents may involve multiple entities.

Graph 16.1. Humans

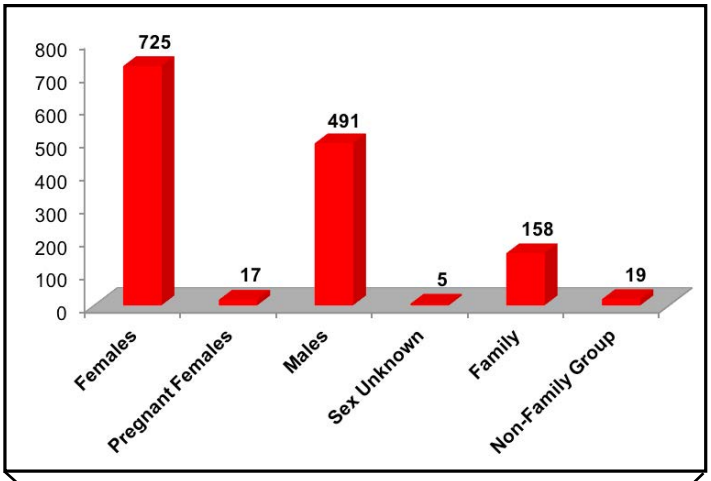
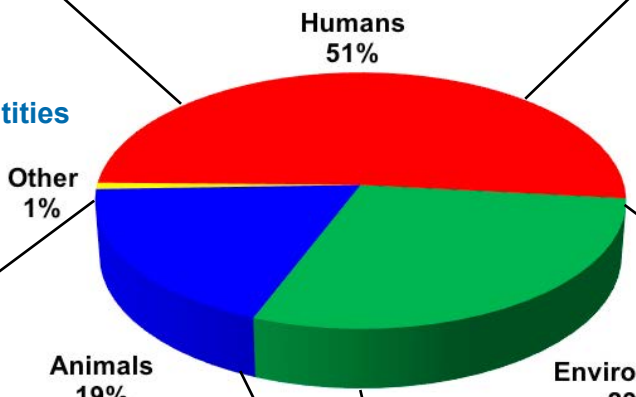
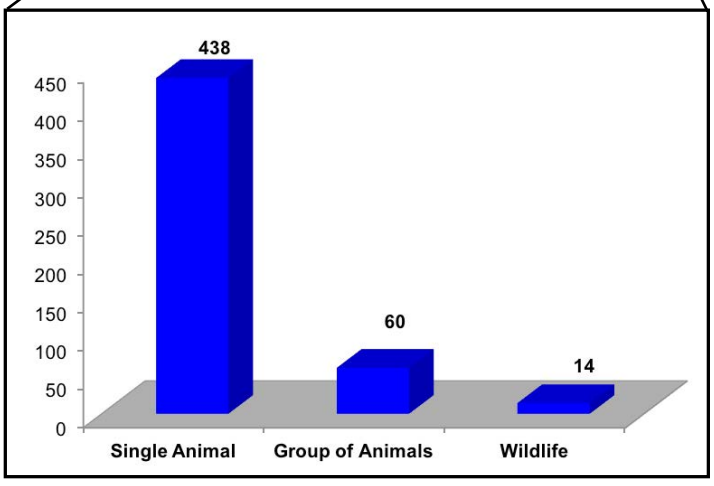
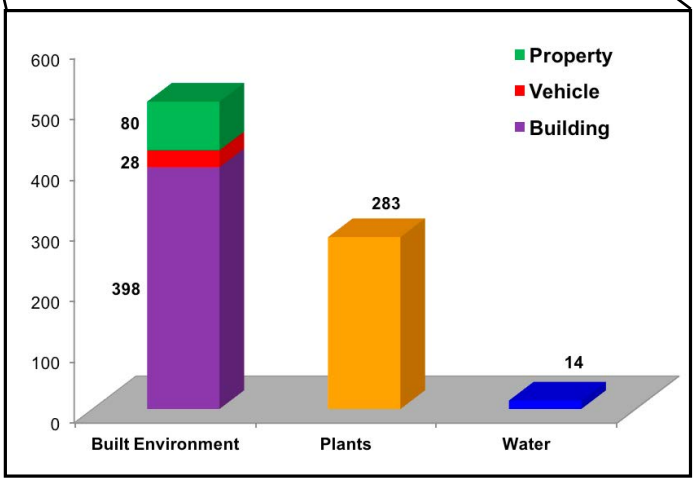


Chart 16. Description of entities





Graph 16.2. Animals



Graph 16.3. Environmental entities

17. Reported Deaths

During this period, two human deaths with a known active ingredient were reported (Table 17.1).

In one of these reports, a coroner was seeking a lab for testing biological samples related to a suspected suicide (male, age 29) through ingestion of Onslaught (active ingredient esfenvalerate); Suspend SC (active ingredient deltamethrin); and Temprid SC (active ingredient cyfluthrin).

The other report was from a widow seeking information about an herbicide exposure (active ingredient mesotrione) her husband (age 55) experienced about an hour before he died two years ago. An autopsy reported the cause of death was a heart attack.

Table 17.1. Reported deaths with known active ingredient

Reported Deaths	Total
Human Deaths -	
Male	2
Female	0
Total Human Deaths =	2
Animal Deaths -	
Single Animal	18
Group of Animals	10
Wildlife	4
Total Animal Deaths =	32
Total =	34

Table 17.2 - Active ingredients involved in three or more animal deaths

Active Ingredient[1]	Number of Deaths
FIPRONIL	5
METHOPRENE	5
MSMA	5
COPPER SULFATE	3
IMIDACLOPRID	3

[1] Note that a pesticide product may contain more than one active ingredient.

Of the 512 animal entities involved in pesticide incidents, there were 32 reported deaths where the active ingredients were known. Fipronil, methoprene, and MSMA were the most commonly reported active ingredients in animal deaths (Table 17.2).

18. Entity Age

Table 18 and Graph 18 summarize the ages of people involved in incidents reported to NPIC. Among 1,238 single human entities, NPIC was able to collect the person's age 80.0% of the time. NPIC aims to capture the age for all human entities; occasionally callers decline to provide that information. NPIC was able to collect the person's gender 99% of the time.

Among the 990 humans with known age, 14.8% were children (ages 4 and under) and 22.4% were seniors (ages 65 and over).

Graph 18. Age of people involved in reported incidents

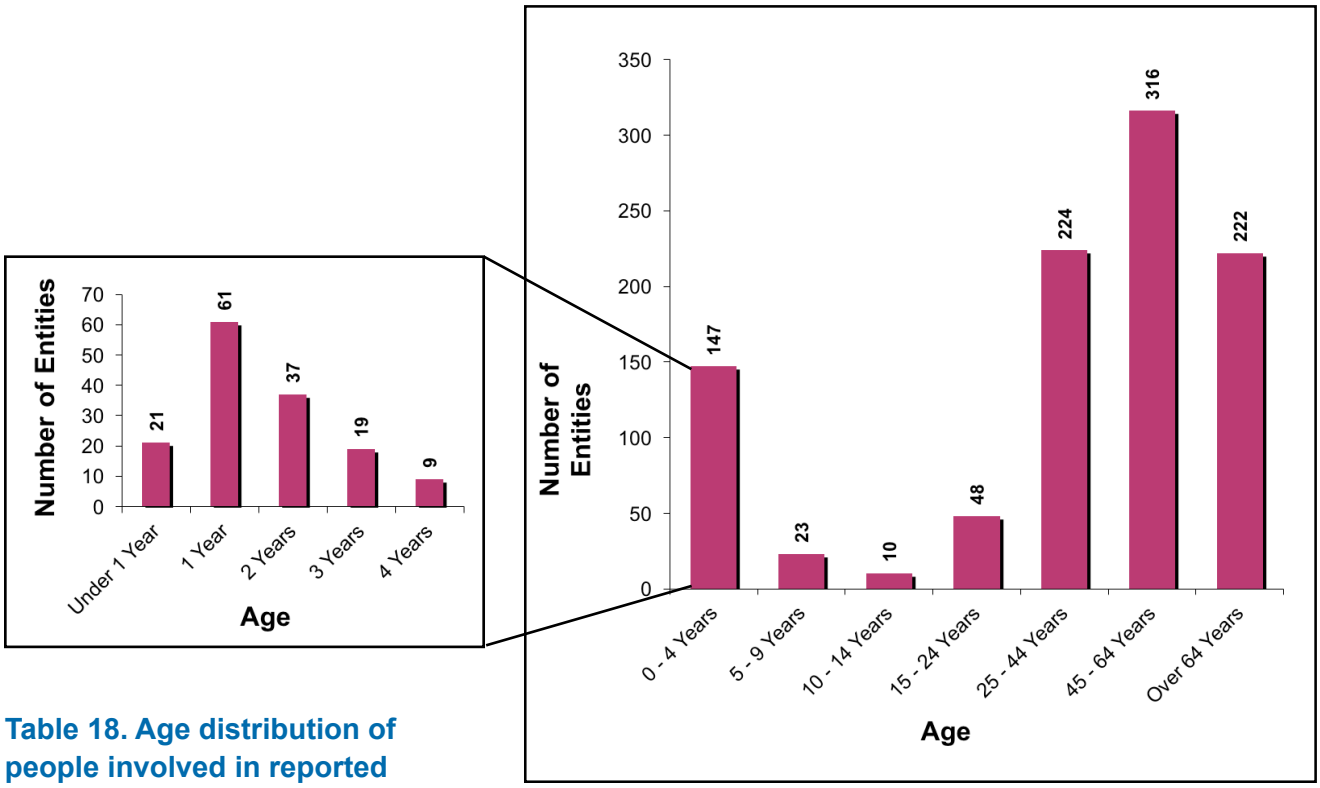


Table 18. Age distribution of people involved in reported incidents

Age Category	Total
Under 1 Year	21
1 Year	61
2 Years	37
3 Years	19
4 Years	9
Total (0 - 4 Years) =	147
5 - 9 Years	23
10 - 14 Years	10
15 - 24 Years	48
25 - 44 Years	224
45 - 64 Years	316
Over 65 years	222

19. Notable Exposures

There were 2,752 entities potentially exposed to pesticides in 1,809 reported incidents.

Figure 19.1

Entities potentially exposed to pesticides in 1,809 incidents reported to NPIC.

Total = 2,752 entities

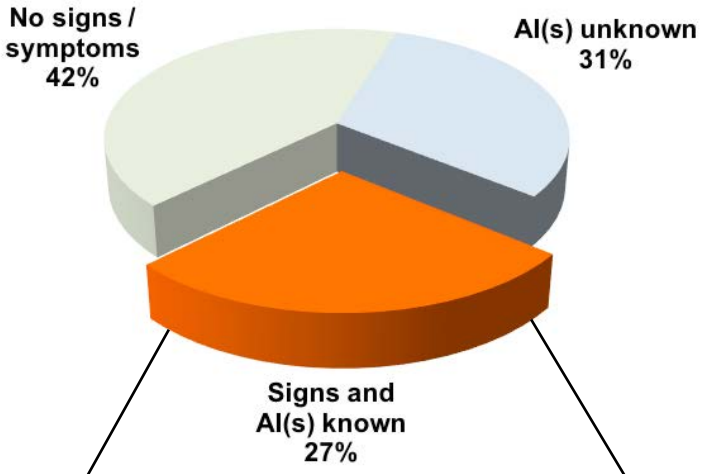


Figure 19.2

Entities potentially exposed to a known pesticide with reported signs/symptoms.

Total = 745 entities

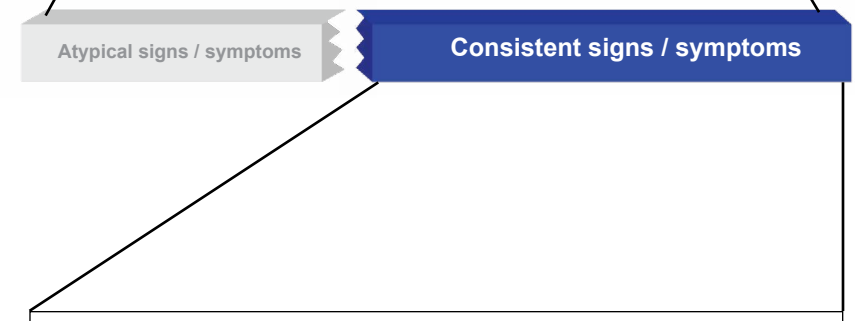
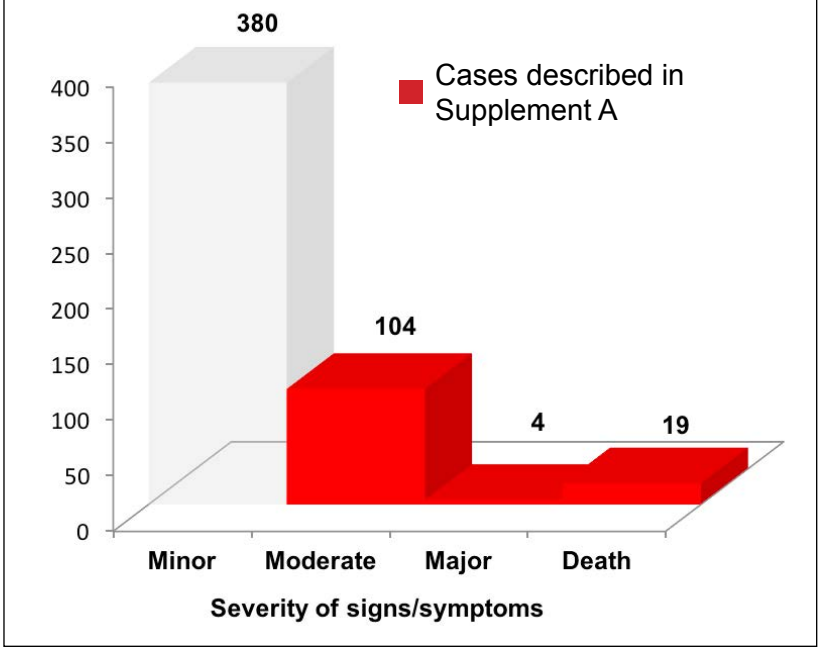


Figure 19.3

Entities potentially exposed to a known pesticide with reported signs/symptoms that were consistent with reports in the literature for that pesticide.

Total = 507 entities



A supplemental report describes the 127 entities represented by the red bars in Figure 19.3.

NPIC developed a web-based portal for veterinarians to report adverse reactions to pesticides among animals. NPIC does not verify or conduct quality assurance of the information submitted into the VIRP.

Veterinarians submitted 48 incident reports to the VIRP involving 55 animals (34 dogs, 19 cats, one bovine, and one desert tortoise). All VIRP reports are forwarded to EPA quarterly, in their entirety.

Table 20.1 and Chart 20.1 summarize the formulation of products that were involved in the incidents reported by veterinarians. Over half of the products were liquid spot-on treatments for pets (28%) and pelleted products (26%). About 11.3% were other liquids, not intended for spot-on application.

Table 20.2 and Chart 20.2 summarize the pesticide types that were involved in the incidents reported by veterinarians. Over half (69.1%) of the products were insecticides and 18.2% were rodenticides.

Table 20.1. Product formulations as reported in VIRP

Formulation	Number of Products
	2015
Spot-on	15
Pellet	14
Other	12
Liquid	6
Aerosol	3
Powder	2
Shampoo	1
Total =	53

Chart 20.1. Product formulations reported in VIRP

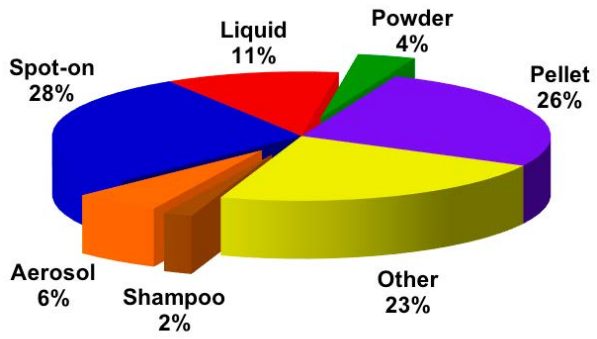


Table 20.2. Product types as reported in VIRP

Type	Number of Products
	2015
Insecticide	38
Rodenticide	10
Molluscicide	4
Herbicide	2
Other	1
Total =	55

Chart 20.2. Product types reported in VIRP

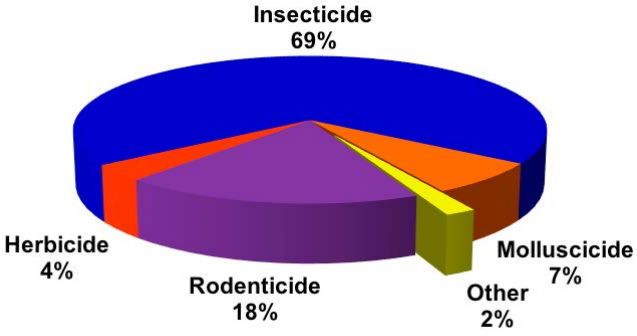


Table 20.3 and Chart 20.3 show the types of animal symptoms reported to VIRP. Symptoms are classified as dermatological (irritant, sloughing, ulcer), gastrointestinal (diarrhea, vomiting), neurological (depression, excited state, seizures, tremors), none, or other. Multiple symptoms may be reported for each animal. Of the reported symptoms, 27.7% were classified as neurological. Twenty-five (25.0%) percent were classified as gastrointestinal, 19.4% as dermatological, 15.3% as other, and 12.5% as none.

Table 20.4 and Chart 20.4 summarize the outcomes associated with each animal incident reported in the VIRP. Multiple animals may be involved in each VIRP report; thus totals reflect the number of animals, as opposed to the number of reports.

Of the total number of animals involved in VIRP incident reports, 60.0% of the cases were ongoing. The affected animals had recovered at the time of the report, in 20.0% of cases. Eleven percent (10.9%) of the animals experienced continuing illness and 7.3% resulted in the death of the animal.

Table 20.3. Animal symptoms as reported in VIRP

Symptom	Number of Animals
	2015
Dermatological: Irritant	10
Dermatological: Ulcer	3
Dermatological: Sloughing	1
Dermatological Total	14
Gastrointestinal: Vomiting	13
Gastrointestinal: Diarrhea	5
Gastrointestinal total	18
Neurological: Tremor	8
Neurological: Seizure	6
Neurological: Depression	5
Neurological: Excited	1
Neurological Total	20
Other	11
None	9
Total =	72

Chart 20.3. Animal symptoms as reported in VIRP

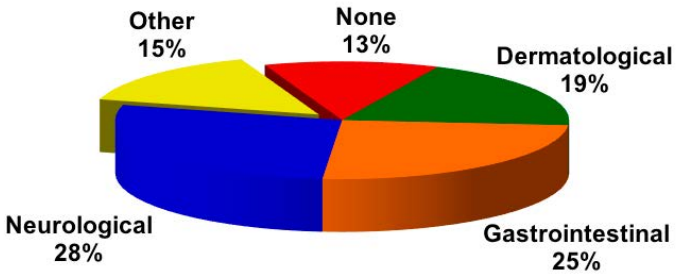
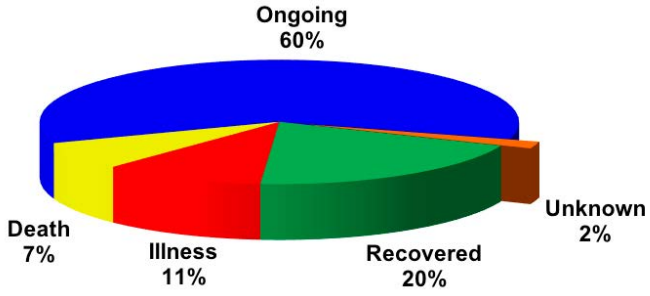


Table 20.4. Incident outcomes as reported in VIRP

Outcome	Number of Animals
	2015
Ongoing	33
Recovered	11
Illness	6
Death	4
Unknown	1
Total:	55

Chart 20.4. Incident outcomes as reported in VIRP



ECOLOGICAL REPORTING

In 2009, NPIC developed a web-based portal to facilitate reporting of ecological incidents. It was designed by the U.S. EPA Office of Pesticide Programs (OPP), built and hosted by Oregon State University.

NPIC does not verify reports through independent investigation, nor does NPIC conduct quality assurance of the information submitted into the Eco-portal. NPIC provides each report, as submitted, to OPP quarterly, in their entirety. More recently, NPIC developed programming to make that delivery automatic and immediate.

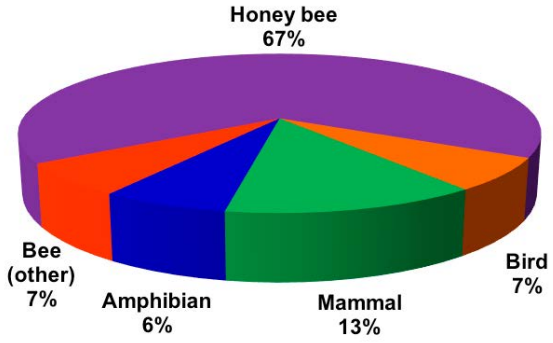
Table 21.1 Entities involved in the Eco-reports

Entity	Number of Reports
Honey Bee	10
Mammal	2
Bee (other)	1
Bird	1
Amphibian	1

Table 21.2 Active ingredients involved in the Eco-reports

Active Ingredient	Quantity
ANTICOAGULANTS	1
UNKNOWN	1

Chart 21.1 Entities involved in the Eco-reports



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