

# npic

NATIONAL  
PESTICIDE ● INFORMATION  
CENTER

-2018-

Environmental & Molecular Toxicology



Oregon State  
University

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 US Environmental Protection Agency. The 2018 Annual Report covers the period of February 15, 2018 - February 14, 2019.

#### 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.

#### A note from the Director



This annual report is the final report for the 2014-2019 funding cycle, the fifth consecutive grant period since our initial cooperative agreement with EPA beginning in 1995. For more than 20 years, NPIC@OSU has protected human health and the environment by monitoring pesticide incidents and helping the public and professionals make informed decisions about

the use and regulation of pesticides. During the last five years we have talked with nearly 55,000 people about reducing risk and preventing pesticide exposures, and during this five-year period, NPIC@OSU received approximately 29 million page views. Since 2006, NPIC has met all reporting requirements and exceeded targets for customer service and for the production of educational materials. In a recent customer satisfaction survey conducted by an independent third party, more than 90% of the respondents agreed that NPIC@OSU Pesticide Specialists were knowledgeable, helpful, and courteous and that they provided useful, easy-to-understand information. This has been another outstanding year as Director of NPIC@OSU. I feel fortunate to be the "point person" for an organization comprised of dedicated and hard-working professionals. Having successfully competed for another five years of funding, we look forward to the challenges ahead with a smaller team due to static grant resources. I have great expectations.

Submitted To:

US Environmental Protection Agency  
Office of Pesticide Programs

Submitted By:

A handwritten signature in black ink, appearing to read "Jeff Jenkins". The signature is fluid and cursive, with a long horizontal line extending to the right.

Jeff Jenkins, Ph.D.  
Project Director

Cooperative Agreement #X8-83560101  
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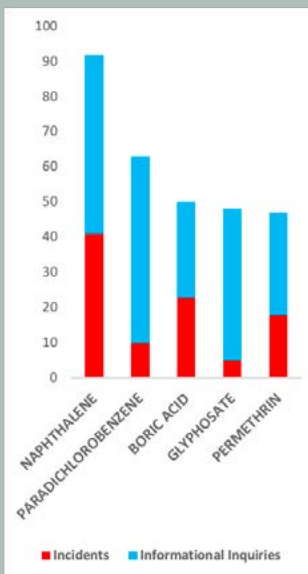
# NPIC 2018 Annual Report

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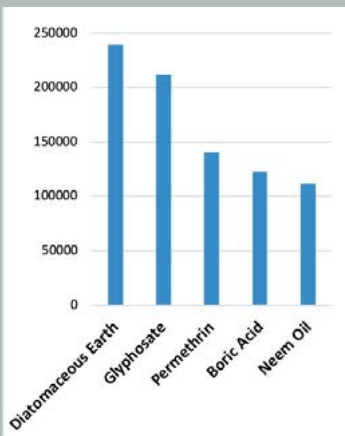
## Inquiry Trends

- NPIC received 10,350 inquiries (17% were incidents).
- Emails to NPIC increased 15% over the last year.
- Top 5 AIs discussed with customers:
- NPIC's website had



more than 7.3 million page views (up 14% from last year).

- Top 5 fact sheets viewed:



## NPIC's Mission:

To provide objective, science-based information about pesticides to professional and public audiences by operating a toll-free, bilingual hotline and maintaining English and Spanish websites. To collect robust pesticide incident data and report to EPA on a scheduled basis and upon request.

## Debunking Bad Science



### Typhus in L.A.

Stories about flea-borne typhus pictured bed bugs, lice, and ticks.

### Pesticides in LaCroix?

Our post debunking linalool as a "cockroach pesticide in LaCroix" reached 31,526 people.

### How common is "wasping"?

News reports of pesticide/drug abuse were likely overestimated.

## Connecting with Professionals

### People, Pesticides, and Pollinators

Webinar for master gardeners

- **1,200+** Participants
- **2,600+** YouTube views in 2018
- **1,755** materials mailed free of charge



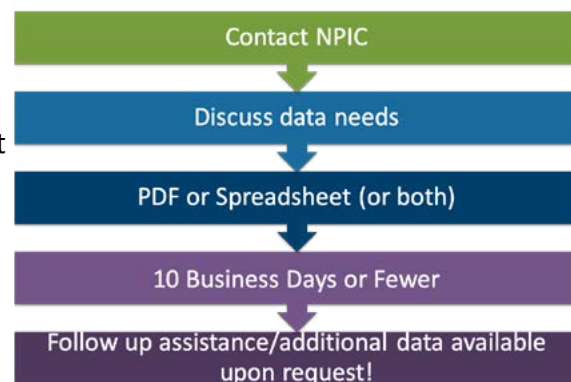
### Risk Communication for Applicators

NPIC was invited to speak about pesticide toxicity and risk communication at 22 events in 2018. Examples of in-person events include the Portland & Tualatin, OR, Parks & Rec Departments and WA & OR Pesticide Safety Education Programs.

## How to Request NPIC Data

Webinar for State, Tribal, and Federal Agencies

- What data does NPIC collect and what can it tell us?
- What are some examples of past requests?
- How do I request it?



**NPIC delivered 27 data reports**



## New NPIC Publications



2018 materials:

- 4 new fact sheets
- 33 web pages
- 4 FAQs
- 3 Infographics
- 2 FAQ comics

End tag created for the Treated Wood fact sheet:



- 1 Brand
- 2 Use description
- 3 Inspector
- 4 Retention
- 5 Treating company
- 6 Preservative
- 7 Use category

- NPIC created 6 videos this year including 2 webinars.
- NPIC's new "Did you know?" videos are 30-second clips great for sharing on social media.



## Collaborations and Outreach

NPIC teams up with national, state, and local groups to increase awareness about pesticide health and safety. We fostered meaningful collaborations through projects with the American Association of Poison Control Centers (AAPCC) and Oregon Health & Science University (OHSU).

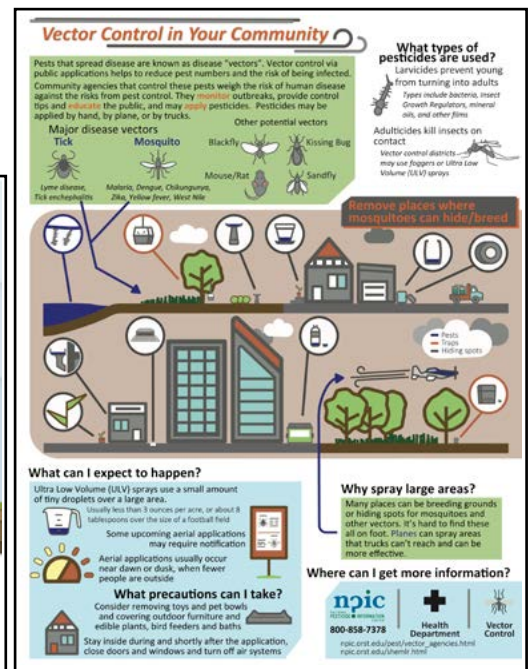
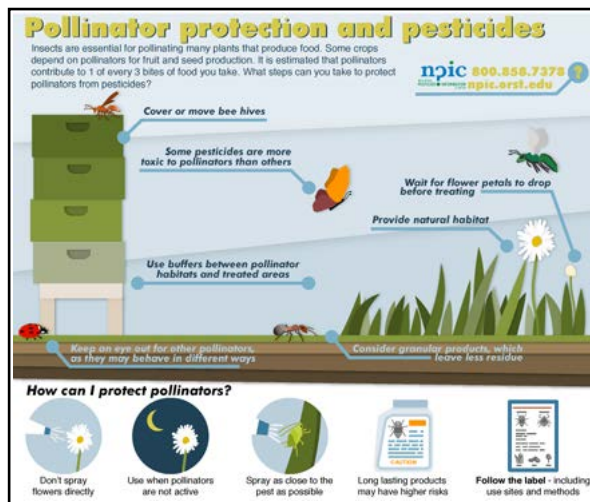
NPIC and AAPCC created the following suite of materials as our annual educational piece:

- Lawn and garden safety brochure (pictured right)
- 'Before You Spray' social media graphic
- Signal Words social media graphic
- AAPCC member toolkit with talking points
- Press Release



## Infographics

Visual materials help NPIC bridge language and literacy barriers for online audiences. This year we highlighted pollinator protection and residential vector control applications.



## What are people saying about NPIC?

"Customer service is a dying art. Yesterday, Warren proved that wrong by going above and beyond."

"He was so kind, so clear, so patient, and informed."

"Alicia could find information faster than the internet!"

- 2018 Callers



facebook.com/NPICatOSU  
twitter.com/NPICatOSU  
youtube.com/NPICatOSU

# INTRODUCTION / DELIVERING OBJECTIVES

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 fifth year of the project period under cooperative agreement #X8-83560101, Oregon State University (OSU) provided information to millions of people by phone, email, social media, data-sharing, mobile web apps, and/or web content.

NPIC supports the U.S. Environmental Protection Agency (U.S. EPA)'s 2018-2022 Strategic Plan Goal 1: Core Mission, and Objective 1.4: *"Ensure Safety of Chemicals in the Marketplace,"* which states: "Effectively implement the Federal Insecticide, Fungicide, and Rodenticide Act to ensure new and existing chemicals and pesticides are reviewed for their potential risks to human health and the environment and actions are taken when necessary." NPIC also supports the mission of the 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 supplemental 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, 2018, and ended February 14, 2019.  
This period will be referenced as "2018" in this report.

The cooperative agreement between OSU and the U.S. 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 2,684 times, following the label 2,379 times, IPM concepts 704 times, and environmental protection 110 times.
- NPIC posted new items in social media venues promoting safe use practices, IPM, and pesticide label comprehension. NPIC uploaded 350 unique posts, averaging seven posts per week. NPIC engaged with many organizations through social media. Some examples include Poison Control Centers, State Pesticide Regulatory Agencies, State Pesticide Safety Education Programs, Cooperative Extension offices, the Entomological Society of America, the Soil Science Society of America, the National Pest Management Association, and the Association of Farmworker Opportunity Programs. See page 14.
- In order to stay current, NPIC staff members participated in 36 events for continuing education, including 14 webinars, 14 on-campus events, five off-campus events, and three in-house presentations.
- NPIC performed chemical-specific literature searches in order to open 17 new active ingredient files and update 10 more. Additionally, NPIC added more than 1,300 new documents to the AI file collection through routine monitoring of the regulatory and scientific literature. On average, NPIC staff invested more than four 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 more than 3,400 contacts this year, including Cooperative Extension, State Pesticide Regulatory agencies, Master Gardeners, Worker Protection Standard state contacts, Occupational Safety and Health Administration, Household and Hazardous Waste, and Pesticide Safety Education Program coordinators (new). NPIC maintains **nationwide contact lists** for the following:
  - State Pesticide Regulatory Agencies
  - State Environmental Agencies
  - County Extension Offices
  - State Health Departments
  - Mosquito/Vector Control Districts
  - Regional EPA Contacts
  - Master Gardener Coordinators
  - Contacts for Information about the Worker Protection Standard in Agriculture and Forestry
  - Household and Hazardous Waste
  - Soil and Water Conservation Districts
  - Pesticide Safety Education Program state coordinators

# DELIVERING OBJECTIVES

## 2. To operate a toll-free, bilingual telephone information service for all callers in the United States and its territories, Monday through Friday at least four 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 95% of calls received during open hours. Occasionally, a caller in the queue chose to leave a message.
- NPIC responded to 95% of inquiries within one business day when they were received through voicemail, email, and/or social media.
- NPIC maintained five highly qualified Pesticide Specialists this year. Their backgrounds include Biology, Chemistry, Anthropology, Journalism, Environmental Science, Toxicology, Geoscience, Marine Biology, Botany, Microbiology, and Soil 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 on March 27, 2018.
  - Three quarterly coordination meetings (QCM) with OPP staff.
  - Notification to EPA regarding mothball ingestions related to homeowners opening package sachets.
  - Prioritizing materials related to treated wood, an NPRO web app user guide (released Q4 2018), and continuing efforts for Integrated Vector Management outreach.
    - After ongoing collaboration with OPP in 2017, NPIC successfully completed a bulk mail-out project by sending outreach materials to more than 1,200 vector control offices nationwide (Q1 2018). Vector control offices in-turn requested an additional 4,500 outreach brochures, infographics, and fact sheets.
  - OPP commented on four NPIC fact sheets created in 2018. Comments were related to pesticide use, regulation, and environmental/health risk assessment science.
  - NPIC, OPP, and state regulators collaborated through discussion and feedback to finalize NPIC's FAQ: Can I burn sulfur for pest control?
- NPIC created 23 new web pages this year. See page 12. Some examples include:
  - **Pesticides and Forestry**
  - **Total Release Foggers**
  - **Modified Mosquitoes**
  - **NPRO User Guide**
  - **Media Kit**
- Quarterly, NPIC identified 100% of broken links on its website and removed or replaced each one (381). NPIC added 37 new links to its website when high-quality science and regulatory items were identified. Ten existing web pages were significantly updated with new content. Some examples include, "**Where to start with pest control**," "**Frequently Asked Questions**," and "**Pesticide Ingredients/Products**."
- NPIC developed four new videos this year. NPIC's most popular videos are "Mothballs - How do they work?" in English and Spanish and "Why do I have cockroaches in my home?" in Spanish. See page 13.
  - **Pesticides and Pregnancy: How do I lower risk?**
  - **What does it mean when food is organic?**
  - **Did you know cleaning after a flood has risks?**
  - **Did you know disinfectants are pesticides?**
- NPIC developed four new fact sheets. See page 13.
  - **Cyfluthrin**
  - **Triclopyr**
  - **Insect Repellents** (topic)
  - **Treated Wood** (topic)



# 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 four new FAQs, three new infographics, and two new FAQ comics this year. See pages 14-16.
  - What should I do when carrying pesticides in my vehicle? (FAQ in [English](#) and [Spanish](#))
  - [Can pesticide use next door affect my health?](#) (FAQ)
  - [Can I burn sulfur for pest control?](#) (FAQ)
  - [Applying & Storing Lawn and Garden Products](#) (Infographic in collaboration with AAPCC)
  - [Vector Control in Your Community](#) (Infographic)
  - [Pollinator Protection and Pesticides](#) (Infographic)
  - How can I remove pesticides from produce? (FAQ comic in [English](#) and [Spanish](#))

## 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 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 (948 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 (660 times).
- NPIC discussed inquiry trends/data with OPP at least quarterly, and sent 49 noteworthy cases to the Project Officer, including the death of about 90 chickens after eating feed that had been stored with mothballs over winter. NPIC updated OPP about inquiries related to pesticide use and drug abuse (“wasping”), concerns about health risks related to glyphosate in cereal after the release of an article by the Environmental Working Group, and shifts in most popular active ingredients in inquiries between the second and third quarters. NPIC also provided reports of certain flea collar reactions, all bee inquiries, and inquiries related to flea and tick spot-on products.
- 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. The QA/QC specialist collaborated with Dr. Fred Berman, DVM, to evaluate human and animal incidents.
- Each Specialist received feedback about their strengths/weaknesses in documenting inquiries. Their performance was scored on 25 measures, such as narrative quality, judgment in characterizing symptoms, and coding accuracy.
- NPIC documented demographic information for 99.7% of people that may have been exposed to pesticides, product information for 93.7% of reported incidents, and the location for 95.3% of incidents.
- NPIC Specialists were able to capture the exposure route for 82.2% of exposed humans/animals and symptom/scenario information in 93.3% of cases.
- NPIC provided 27 special reports about incidents and inquiries upon request, including 17 reports for the EPA and 10 reports for other state agencies. Reports were provided within 10 business days. Some examples include:
  - Human incidents involving naphthalene — U.S. EPA
  - Human incidents involving paradichlorobenzene — U.S. EPA
  - Incidents related to plant damage for a specific product — U.S. EPA
  - Incidents and informational calls from four states (NE, IA, KS, MO) 2016 to 2018 — EPA Region 7
  - Sulfuryl fluoride incidents involving humans — U.S. EPA
  - Incidents involving pet flea and tick products — U.S. EPA
- Quarterly reports were submitted within 30 days of each quarter’s closure, accompanied by all NPIC reports received through its veterinary and ecological reporting portals.
- NPIC delivered two [webinars](#) in collaboration with OPP. The webinars were recorded and posted to the website.
  - Pesticides, People, and Pollinators: Answers to tricky pesticide questions for Master Gardeners
  - How to request incident data from the National Pesticide Information Center

## 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 visited OPP on March 27, 2018.
- Subawards with OHSU and AAPCC were monitored at least quarterly.



## Trends in NPIC Data

- During this period, NPIC received 10,350 inquiries.
- About 85% of the total inquiries were addressed over the telephone.
- About 17% of NPIC inquiries in 2018 were incidents. A pesticide incident is defined as: 1) any unintended exposure to humans or animals, 2) an exposure with an adverse effect, 3) a spill, and/or 4) a misapplication. See page 30.
- One human death and 33 animal deaths were reported to NPIC. See pages 34 and 36.
- The following active ingredients were involved in the most incident reports: naphthalene (256), boric acid (145), permethrin (105), bifenthrin (95), and paradichlorobenzene (91). See page 29.
- There were 2,707 entities involved in incidents reported to NPIC: 48% were human, 18% were animals, and 33% were structural or environmental. See page 35.
- Among the 959 single humans in incidents for which the age was captured, 12% were children (ages 4 and younger) and 27% were seniors (ages 65 and older). About 37% of all people reported no symptoms. See page 37.
- Questions related to health/risk (3,705) and pest control (1,390) were most common. See page 26.
- The NPIC website received 7,310,743 page views during this period (up 14% compared to last year). There were more than 3 million unique visitors, and 163,416 visitors stayed for more than 15 minutes. See pages 23 and 24.

## Foreign Language Capabilities

NPIC employs Spanish-speaking Pesticide Specialists capable of responding to inquiries and translating publications. The NPIC website is also available in Spanish. Under an agreement with LanguageLine Solutions, NPIC is capable of responding to inquiries in more than 240 languages. Translation services are provided immediately during calls, at no cost to NPIC customers, and language identification is available through this service.

NPIC responded to 206 inquiries in Spanish, three in French, one in American Sign Language, one in Arabic, one in Cantonese, and one in Malay.

## Noteworthy Inquiries

**Mothball Products** – NPIC received 801 inquiries about mothballs, flakes, and bars. Of these, 445 (56%) were incidents. Many reports involved off-label use of mothballs to repel animals or insects in and around the home.

**Bed Bugs** – NPIC received 499 inquiries related to bed bugs this year. About 9% of these (47) were pesticide incidents. Many of these inquiries were related to the difficulty of pest control and the potential health effects of pesticides.

**Bees** – NPIC received 155 questions about bees or reports of bee deaths. The majority of bee calls were informational only (91%). NPIC Specialists have experience discussing pollinator protection, including ways to prevent pesticide exposure for beneficial insects and how to compare pesticide products for bee toxicity. NPIC immediately notifies the EPA Project Officer when bee deaths are reported.

**Mosquito/Tick Repellents** – NPIC received 450 inquiries about mosquitoes and ticks. Specifically, Pesticide Specialists discussed repellents 276 times.

### What are people saying about NPIC?

"He exemplified compassion, care, and understanding during a very difficult time of personal need. I applaud you all for having such a kind person on staff."

"She could find information faster than the Internet!"

"Customer service is a dying art. Yesterday, he proved that wrong by going above and beyond."

- 2018 NPIC callers and web users

## Resources & Facilities

NPIC maintains an extensive collection of hard copy and electronic information. NPIC specialists have access to the full resources of OSU's Valley Library, which includes electronic access to thousands 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 more than 1,120 active ingredients. This collection has been scanned/saved 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 at OSU. Allocated spaces include five rooms, six individual offices, and a storage unit.

## Funding & Compliance

Funding for NPIC is provided by the U.S. Environmental Protection Agency and Oregon State University.

Throughout the reporting period, NPIC has complied with the requirements of the U.S. 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 U.S. EPA Guidelines regarding procurement requirements stipulated in 40 CFR Part 33. NPIC has complied with all requirements specified by the U.S. EPA as part of the funding authorization of this project.

## Personnel Update

The NPIC Executive Committee includes the director, Dr. Jeff Jenkins, as well as two co-investigators: Kaci Buhl, MS; and Dr. Fred Berman, DVM. Dr. Jenkins and Ms. Buhl hold faculty appointments at OSU, while Dr. Berman, DVM, serves NPIC through a subaward with the Oregon Health & Science University.

Five Pesticide Specialists were retained this year. As of February 14, 2019, NPIC staff included five Pesticide Specialists, three supporting staff members, and the Executive Committee.

## Standard Operating Procedures

NPIC staff use a variety of SOPs and policies to guide their work and some decision making. This year, 10 SOPs were updated. In addition, two policies were updated instructing staff about scheduling and personnel matters.

Environmental & Molecular Toxicology

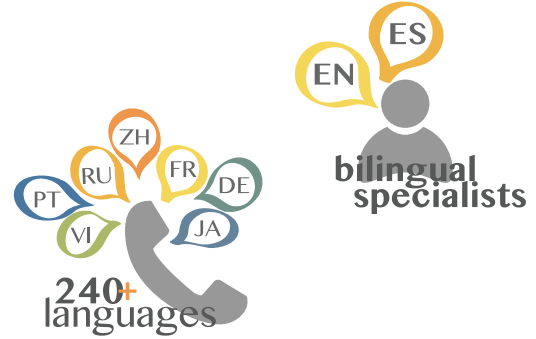


**Oregon State**  
University

# ABOUT US

## Who is NPIC?

NPIC is a team of well-trained, approachable scientists and talented support staff. We have the knowledge and skill needed to effectively communicate scientific information to anyone who contacts us. If we can't directly answer the question, we'll try to figure out who most likely can.



**10,350**  
pesticide conversations  
this year

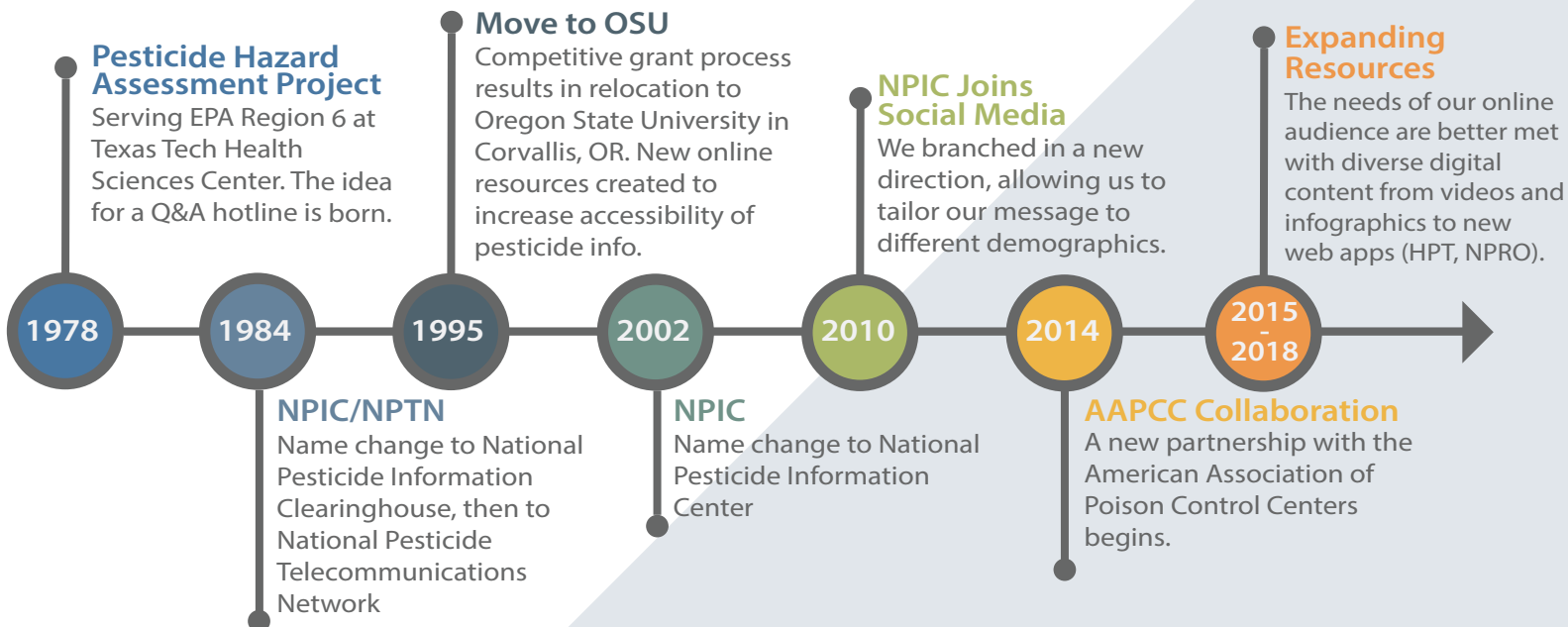
including American Sign Language, Arabic, Cantonese, French, Malay, and Spanish (206).

**millions**  
people served since 1995

Our number one goal is to provide objective, science-based information about pesticides and related topics to enable people to make informed decisions about pesticides and their use.

We reliably create accessible, up-to-date, factual materials to communicate complex pesticide information to both the public and professionals.

## NPIC: A History



# HIGHLIGHTS & TRENDS



What did people ask us in 2018?



## GLYPHOSATE

NPIC keeps up with current news to answer questions about what people are seeing from day to day. News articles prompted questions about glyphosate in food and the risk of cancer. NPIC is on hand to answer callers' most difficult questions.

2018

## FOOD SAFETY

Spring and summer are the busiest times for questions such as "Is this product safe for use in my garden?" and "What if I accidentally sprayed my tomatoes?" We're ready with low-risk options when callers have concerns about food safety.

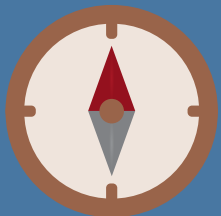
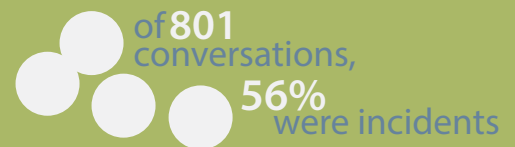


## BED BUGS

We had **499** conversations related to bed bugs this year, including **47** reported pesticide incidents. We've added tabs on pest-related web pages to improve navigability.

## MOTHBALLS

Mothballs continue to be one of our most popular topics. Questions to NPIC range from "Is the odor harmful?" to "Is it legal to spread them across the property?"



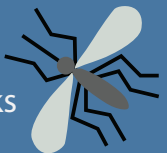
## FUTURE DIRECTIONS

We keep up with these trends by constantly monitoring the news and questions from the public. We respond by creating informative fact sheets, videos, web pages, and more.

## DISEASE VECTORS

Some of our most common questions are about mosquito and tick control. More than just "nuisance" pests, mosquitoes and ticks are common carriers of disease. Many control products are available.

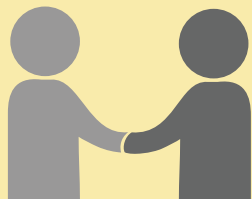
450 questions about mosquitoes or ticks  
276 questions about repellents





# COLLABORATIONS : OUTREACH

NPIC teams up with national, state, and local groups to increase awareness about pesticide health and safety across the nation. In 2018, NPIC attended the Tribal Environmental Health Summit and the OSU150 Land Grant Festival to answer questions about low-toxicity pest control and risk reduction.



Our reach has continued to grow through a collaboration with the American Association of Poison Control Centers (AAPCC). Together, we work to raise awareness about pesticide poison prevention and best use practices, through social media and annual publications.

## American Association of Poison Control Centers

Starting in 2014, NPIC partnered with AAPCC to raise awareness about pesticide poisoning. Our annual outreach materials focus on topics for parents, schools, and the general public.

“Disinfectants in Schools”  
2015 Infographic

“Read the Label”  
2016 Infographic

Lawn and Garden  
2018 Safety Brochure

Back-to-School  
2017 poison prevention  
web page

### Applying & Storing Lawn and Garden Products

If you choose to use chemicals to control problem pests in your lawn and garden, like slugs, rodents, or weeds, follow these safety tips.

#### BEFORE YOU APPLY

- Read the label. Double check that the product targets the insect, rodent, or weed you want to control.
- Wait for good weather. Wind and rain can cause products to blow away or run off.
- Put on long pants, socks & shoes, long sleeves, and rubber gloves. The label may suggest additional protection.
- Remove toys and pet dishes from the yard.
- Keep kids and pets inside or away from the yard while applying.

### AFTER YOU APPLY

- Check that all lids are closed and tightly sealed. Store out of sight and out of reach of children and pets.
- Store the product in its original packaging. Never transfer pesticides to empty food or drink containers.
- Do not allow children and pets in the yard until the product fully dries or dust settles.
- Take off the clothing you wore during application, and wash your hands.
- Follow disposal directions on the label.

If you have questions about a pest, how to use or dispose of a product, or what the potential risks to people or the environment may be, contact the National Pesticide Information Center at 1-800-858-7378 (Mon-Fri 8am-12pm Pacific Time).

If someone swallows, breathes in, or gets pesticide in the eyes or on the skin, call the Poison Help hotline 24/7 at 1-800-222-1222 to speak with an expert at your local poison control center or visit [www.poisonhelp.org](http://www.poisonhelp.org).

## NPIC Presentations

NPIC has **more than 20 years** of experience engaging the public in science-based conversations. We’re excited to share our pesticide and science communication expertise at public and professional events.

**22** Speaking events in 2018, including:



### Professional Webinar

How to answer tricky pesticide questions for Master Gardeners

### Invited Speaker

Herbicide and Surfactant Toxicity (WA Pesticide Safety Education Program)

### Invited Speaker

Pesticide Risk Communication (Portland, OR, Parks and Rec)

### Professional Webinar

How to Request Incident Data from NPIC



## Website

The NPIC website, available in **both English and Spanish**, is the culmination of years of work from every member on our team. We conducted website usability tests from 2015-2017 and finished making updates in 2018. This helped us better understand how people find information on our site and will guide future updates.

To refresh the look of our website, we've added more pictures and created new ways to find information, like adding topic tabs to improve navigability of our **FAQs** and **pest-related pages**.

## Web Apps

We've developed **web apps** for the public and professionals. Available on any browser, apps are **mobile- and desktop-compatible** for easy access wherever you might be. Because they are web-based, you always get the most up-to-date information. Apps range from our **My Repellent Finder** to help simplify repellent options, to our newest addition, the **Herbicide Properties Tool**. This tool helps professionals select low-impact herbicides for targeted plant eradication in the field.



In 2018, NPIC created or significantly updated 33 web pages. Selected examples are listed below.

### Web Topics

- Human/animal health and safety
- Environmental protection
- Food safety
- Integrated Pest Management
- How to report pesticide incidents
- Safe use practices
- Local pesticide-related contacts

### Web Apps

- Pesticide and Local Services (PALS)
- Insect Repellent Locator (IRL)
- Pesticide Education & Search Tool (PEST)
- NPIC's Product Research Online (NPRO), updated 2017
- Herbicide Properties Tool (HPT)

### 2018 Web Pages

- Pheromone Traps
- Pesticides and Forestry
- Total Release Foggers
- Modified Mosquitoes
- Media Kit
- NPRO User Guide
- Efectos de la salud de bolas contra polillas
- Bolas contra polillas - Regulaciones, usos adecuados y alternativas

# VIDEOS | FACT SHEETS

## Videos

One way NPIC meets the needs of our online audience is by creating short, science-based videos about pesticides. These videos help make challenging topics more approachable to both the public and professionals. Our team creates these videos based on our most common questions and the needs of our stakeholders.

In 2018, NPIC created new videos titled :

- Did you know disinfectants are pesticides?
- Did you know cleaning after a flood has risks?
- What does it mean when food is organic?
- Pesticides and Pregnancy: How do I lower risk?

While providing answers to questions, NPIC videos also encourage the viewer to dig deeper into a topic or to connect with us in other ways. Our new “Did you know?” videos are 30-second clips great for sharing on social media.

## 2018 videos



pesticides & pregnancy



what is organic food?

risks from cleaning after a flood

disinfectants as pesticides



snail bait, glyphosate, pet spot-on, roaches, mothballs, DEET, slug bait, webinars, pesticide storage, washing produce, diatomaceous earth



## Fact Sheets

As part of our mission to encourage informed decision making, NPIC publishes scientific information in the form of fact sheets. These summarize information about pesticides and related topics like “Is it Safe?”, “What’s my Risk?”, “Antimicrobials”, and “Pesticide Binding Affinity.”

50+ pesticide chemical fact sheets

20 pesticide topic fact sheets

Our pesticide chemical (active ingredient) fact sheets answer common questions asked by the public. They allow people to “dig deeper” for answers. In 2018, NPIC created four new fact sheets titled “Cyfluthrin”, “Triclopyr”, “Insect Repellents”, and “Treated Wood.”

# SOCIAL MEDIA | FAQs

## Social Media

At NPIC, we understand that we have to meet people on familiar ground. By staying active on various social media platforms, NPIC is able to further expand our reach to make science-based pesticide information available.

We try to keep our followers in the loop about seasonal pest and pesticide issues, health and safety topics, and the latest resources from NPIC and other reputable organizations.



147 posts  
this year



169,253 video views  
this year



203 posts, 168 retweets  
this year

**Have questions about what you've seen in the news about pesticides?**



In 2018, NPIC grabbed viewers' attention with a new video encouraging people to call us with questions about headlines they see in the news.

## Frequently Asked Questions (FAQs)

Current FAQ topics include questions about pesticide risk to people, animals, and the environment based on real questions received by our team. Answers to FAQ topics can be complicated and situation-specific. We aim to provide brief, yet well-rounded, answers.

38  
and counting

new in **2018**

"Can pesticide use next door affect my health?"

"What should I do when carrying pesticides in my vehicle?"  
(English & Spanish)

"Can I burn sulfur to control pests?"



# INFOGRAPHICS | COMICS

## Infographics

We concentrated more of our efforts on stunning visual projects in 2018, including our infographics. Easy to follow, these colorful graphics are perfect for printing or sharing for outreach opportunities.

In 2018, we introduced three new infographics titled:

- **Pollinator Protection & Pesticides**
- **Applying & Storing Lawn and Garden Products**
- **Vector Control in Your Community** (see next page)

## Pesticide Comics

pesticide  
14 comics

Comics are convenient, one-page publications that address tough questions about pesticide health and safety. They are easily shared on social media and elsewhere on the web. The friendly, familiar format allows us to present these topics in a more exciting way.

### 2018 Comic

"How can I remove pesticides from produce?" (English & Spanish)

Available in both English and Spanish, NPIC creates comics based on pesticide FAQs.







# CONTINUING ED | AI FILES

## Continuing Education

Our Pesticide Specialists and staff make it a priority to keep up with current events, regulatory decisions, and relevant findings in science research. Each year, we devote up to **25%** of our time to NPIC's **Continuing Education** program.

We attend a diverse array of educational events, including webinars, regional professional conferences, expert speaker seminars, and guest lectures. Specialists also regularly monitor scientific journals, daily news articles, social media, and other relevant publications.

In 2018:

**14** web-based events  
webinars | webcasts | recorded lectures

**22** in-person events  
seminars | invited speakers | regional conferences

## Active Ingredient Files

We answer questions as we get them, with limited time for research. To do this, our team needs to have the best resources at our fingertips. We continually monitor and evaluate a wide variety of peer-reviewed sources for the latest research on toxicology, regulatory information, ecological impacts, and pest management science.

**1,375**  
new documents  
added **in 2018**



Documents are uploaded in our searchable collection of Active Ingredient (AI) files for quick reference. The collection now includes more than **17,000** documents in **1,128** AI files. All of these documents are available for Specialists during pesticide conversations.

We invested more than **four hours per week** monitoring Federal Register Notices, affiliated dockets, newsletters, and selected journals of relevance.

# NPIC DATA | STAFF

## NPIC's Pesticide Inquiry Database (PID)

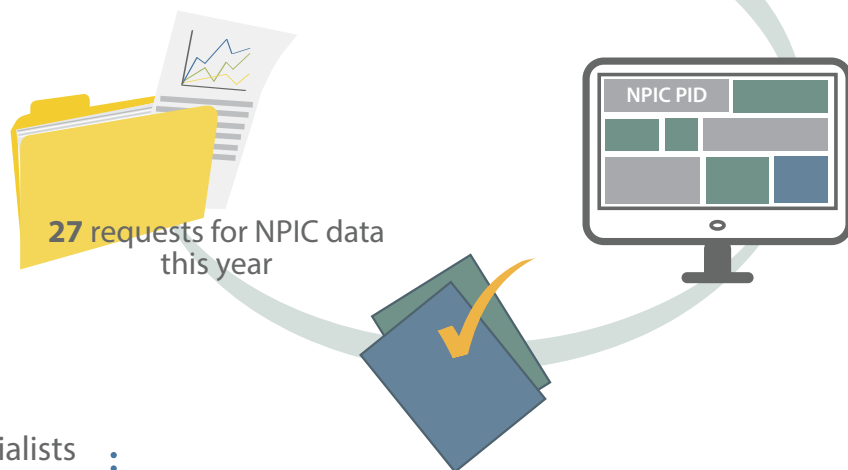
When our Specialists get questions over the phone, through email, social media, or other methods, we collect certain pieces of information about the inquiry. We don't collect personally identifiable information, but we do ask questions to paint a better picture of each unique situation. This helps us tailor our resources to each person, making the conversation valuable to individuals, and our data valuable to other organizations, including:

- Researchers
- Pesticide Regulators and Policy Makers
  - EPA
  - Federal and State Agencies
- Universities



### 2018 Inquiry Types

8,307 informational  
1,795 pesticide incidents  
28% with unknown active ingredient  
248 other (not pesticide related)



## Staff Training & Experience

Our team of highly qualified Pesticide Specialists has nearly **30 years** of combined experience answering questions at NPIC.

Thanks to our rigorous training program, people can be confident they are speaking with an experienced Specialist. The training process exposes new team members to a variety of topics, scenarios, and challenges.

During training, we take an "all hands on deck" approach, where every team member is invested in training new Specialists.

Our Pesticide Specialists have unique scientific backgrounds, from pollinator health to toxicology, soil, and environmental science. This scientific diversity strengthens our ability to answer diverse questions about pesticides and related topics.

chemistry biology soil science  
environmental science botany  
anthropology geoscience  
food science & technology  
microbiology zoology



## Introduction to Inquiry Data

Pesticide specialists create a record for every inquiry, which is entered into the NPIC Pesticide Inquiry Database (PID). PID is a relational database, designed and built by NPIC. Custom reports may be available based on many of the 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 (web, referrals, 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 (inside the home, outside the home, 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 emergency medical events.

- A timeline 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 for the identified active ingredients, in the context of the reported pesticide exposure. 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. Berman, DVM, for human and 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.

The following pages include details about the incidents and inquiries documented by NPIC from February 15, 2018 to February 14, 2019.

## 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 through 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., a product intended for ornamental plants was applied to vegetables in the home garden.)
- About 1% of the time, callers' main purpose for contacting NPIC was to report a pesticide incident. More often, they contacted NPIC to obtain technical information. See page 26. Regardless, NPIC specialists make every effort to collect complete information about scenarios that meet the NPIC incident definition. Approximately 17% 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, provided to the inquirer. See page 27.
- NPIC qualifies the information received by assigning a certainty index (CI). The CI is an estimate by NPIC as to the likelihood that the reported signs and symptoms were consistent or inconsistent with published reports/materials for the identified active ingredients, in the context of the reported pesticide exposure. See page 33.
- 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 voicemail, 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 agriculture and environmental protection agencies. Other entities with interest in special reports should contact NPIC to inquire about the procedure and possible costs.

# MONTHLY INQUIRIES

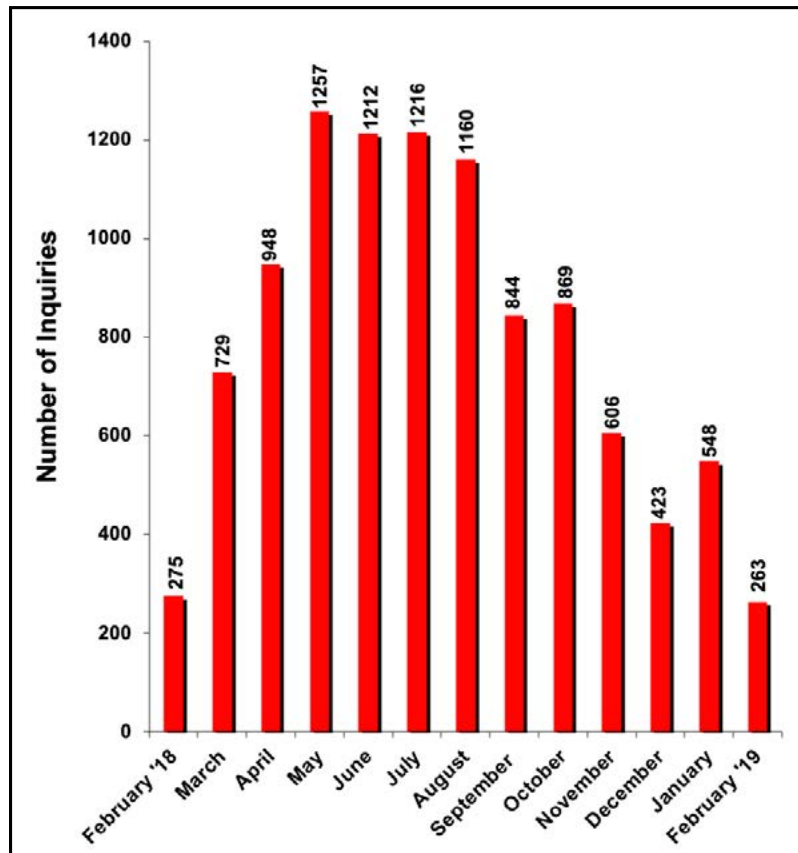
## 1. Monthly Inquiries

NPIC received 10,350 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 2018	275
March	729
April	948
May	1257
June	1212
July	1216
August	1160
September	844
October	869
November	606
December	423
January	548
February 2019	263

**Graph 1. Monthly inquiries**



# TYPE OF INQUIRY / ORIGIN OF INQUIRY

## 2. Type of Inquiry

NPIC classifies inquiries as information, incident, or other (not pesticide related) 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.

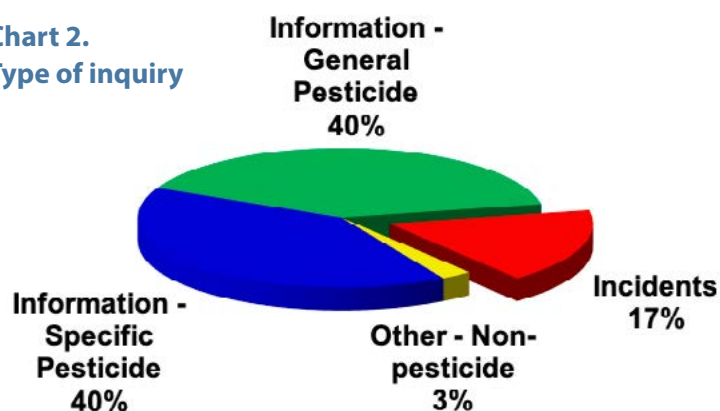
The majority of inquiries (8,307 or 80%) were informational inquiries about pesticides or related topics (Chart 2). NPIC responded to 4,129 (40%) information inquiries about pesticides in general. NPIC responded to 4,178 (40%) information inquiries relating to specific pesticides or active ingredients.

NPIC documented 1,795 incidents involving pesticides (17%). Pesticide 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 - Specific Pesticide	4178
Information - General Pesticide	4129
Incidents	1795
Other (nonpesticide)	248
<b>Total =</b>	<b>10350</b>

**Chart 2. Type of inquiry**



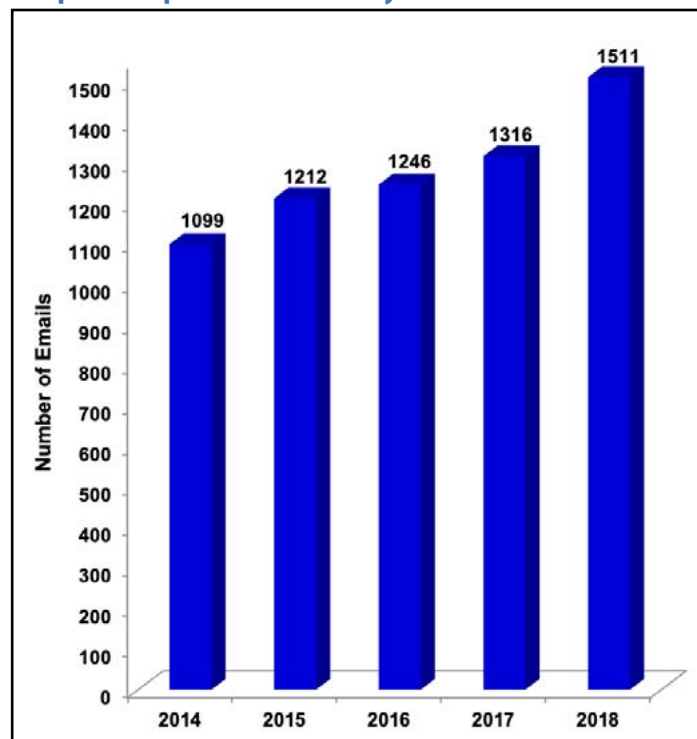
## 3. Origin of Inquiry

Table 3 summarizes the origin of inquiries received by NPIC. About 85% of inquiries were received by telephone.

**Table 3. Origin of inquiry**

Origin of Inquiry	Total
Phone	7679
Email/Web	1511
Voicemail	1147
Mail	10
Walk-in	3
<b>Total =</b>	<b>10350</b>

**Graph 3. Inquiries received by email**





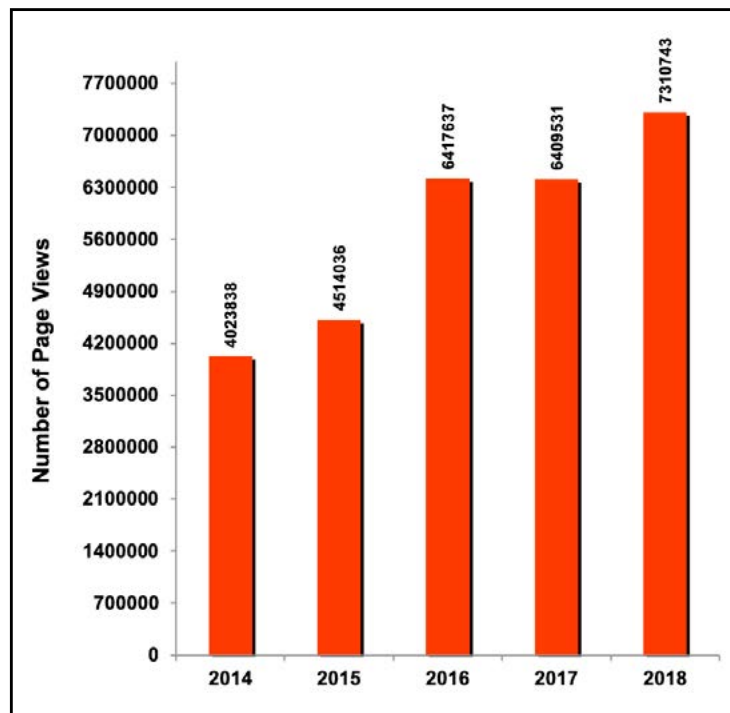
## 4. Website Access

The NPIC website attracted more than 3 million unique visitors viewing 7,310,743 pages during this period. Page views of the NPIC website are up 14% from last year.

Most page views originated from queries on popular search sites (45.4%). Others were connected with NPIC from a bookmark (47.2%) or direct link (i.e., shared via email). The most popular search phrases used to reach NPIC were “ARS,” “diatomaceous earth,” and “neem oil.” “ARS” likely refers to the USDA’s Agricultural Research Service.

Visits to the website varied greatly in duration, with 163,416 visits lasting longer than 15 minutes. The average visit duration was approximately 2 1/2 minutes.

Graph 4.1. Page views



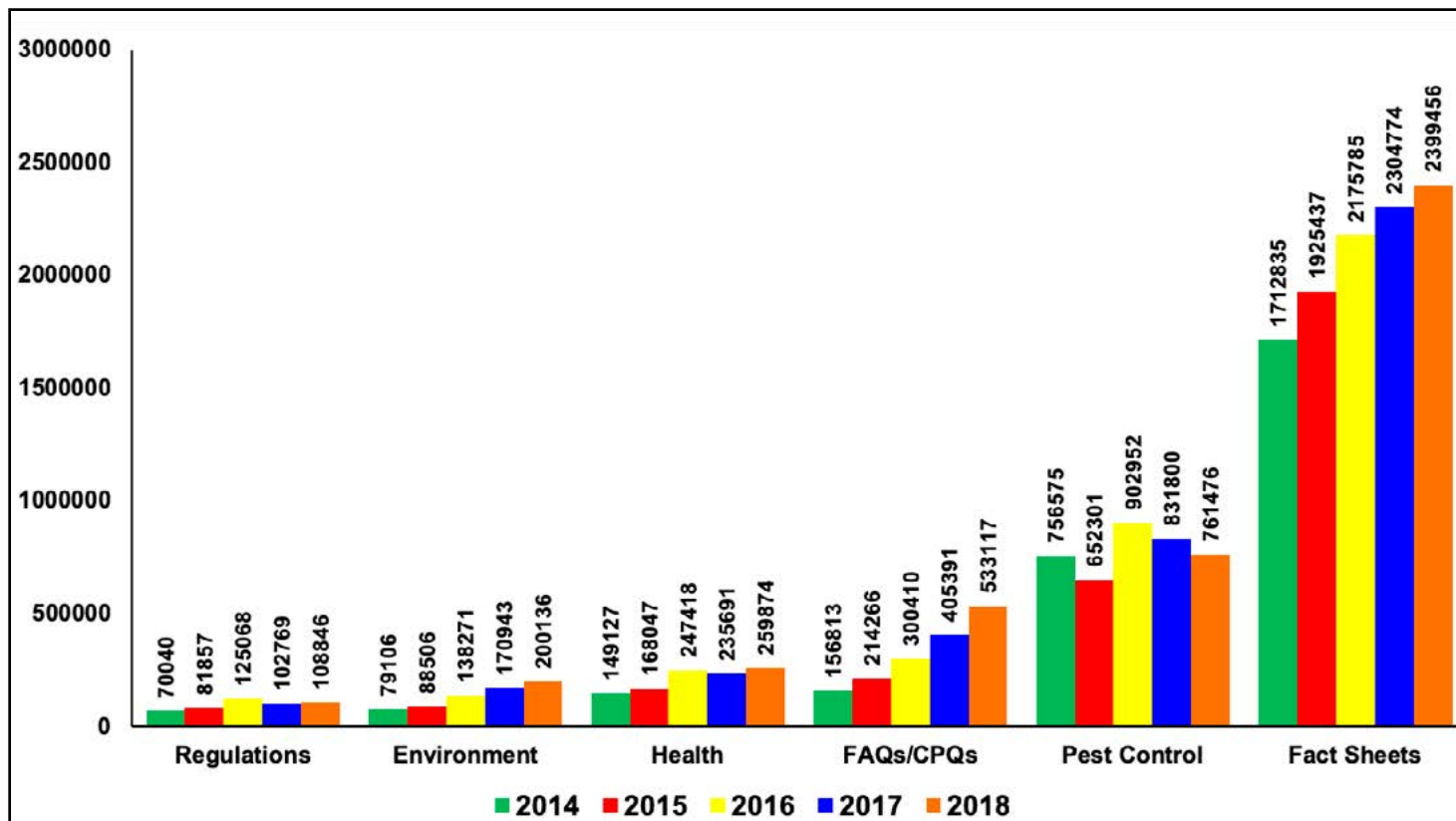
The most popular pages viewed were the NPIC home page (1,028,253 views), the diatomaceous earth general fact sheet (237,663 views), and the glyphosate general fact sheet (187,229 views).

Table 4. Selected page views

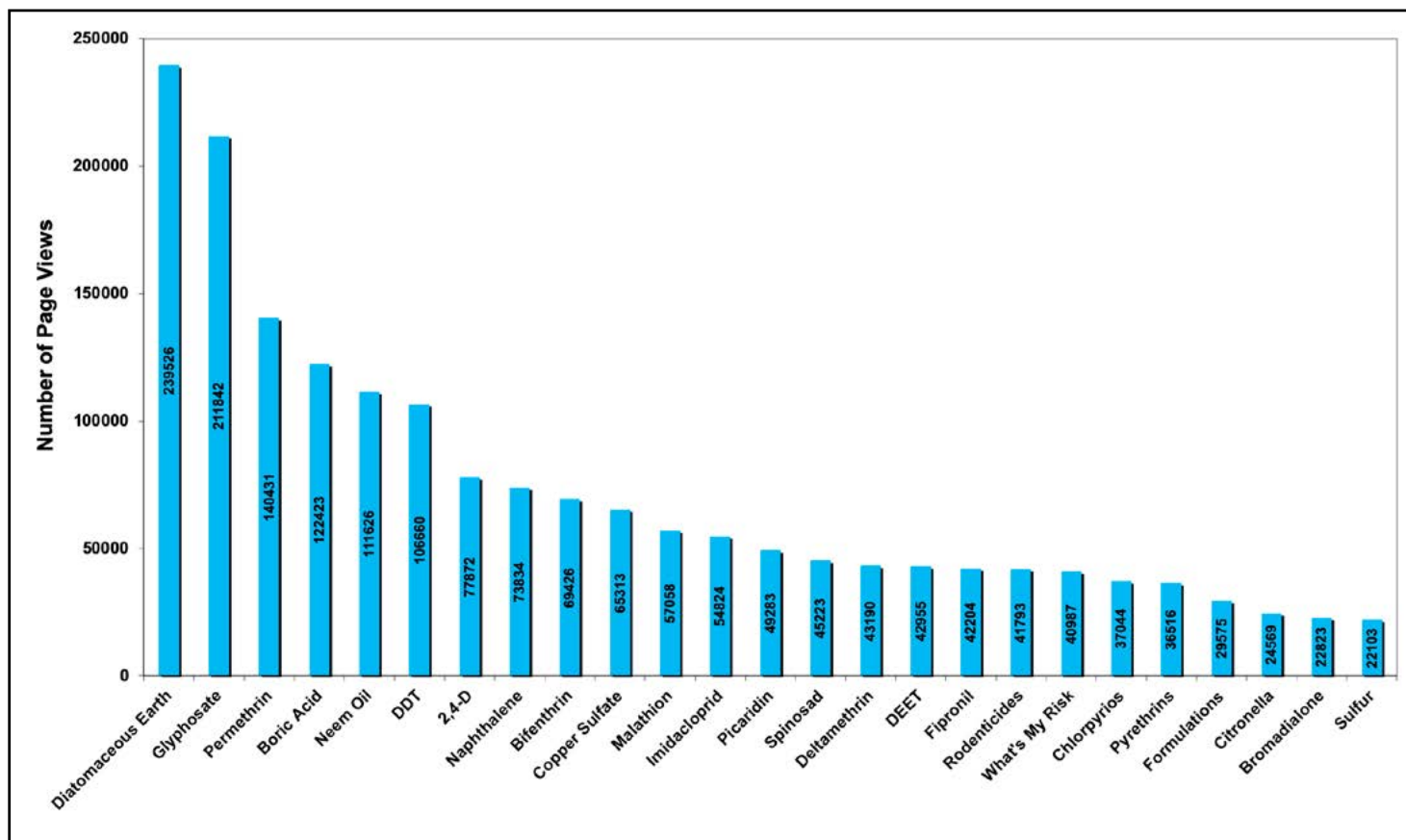
Page Accessed	English page views	Number of pages available	Spanish page views	Number of pages available
Fact Sheets	2,392,233	212	7,223	6
Pest Control	524,888	63	236,588	37
FAQs/CPQs	268,915	88	264,202	85
Health and Safety	200,974	30	58,900	21
Environment	151,325	28	48,811	7
Regulations	100,097	27	8,749	6

# NPIC WEBSITE

Graph 4.2. Top 6 web pages viewed by topic



Graph 4.3. Top 25 active ingredient fact sheet pages viewed



# TYPE OF INQUIRER

## 5. Type of Inquirer

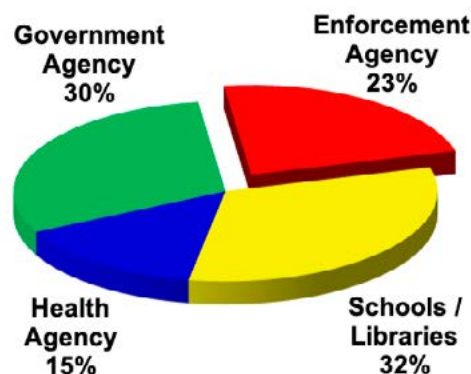
Table 5 summarizes the profession/occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the general public. Of the 10,350 inquiries received, there were 9,071 (87.6%) from the general public, 238 (2.3%) from federal, state, local government agencies, or schools, 156 (1.5%) from pesticide manufacturers, and 105 (1.0%) from human and animal medical personnel.

Chart 5 summarizes the 238 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 US EPA, state pesticide regulatory agencies, and police, among others.

Table 5. Type of inquirer

Type of Inquirer	Total
General Public	9071
<b>Federal/State/Local Agencies</b>	
Schools / Libraries	76
Government Agency	72
Enforcement Agency	54
Health Agency	35
Fire Departments	1
<b>Medical Personnel</b>	
Human Medical	65
Animal / Vet / Clinic	40
<b>Other</b>	
Pesticide Mfg / Mktg Co	156
Pest Control	115
Farm	101
Master Gardener	61
Retail Store / Nursery	50
Media	46
Labs / Consulting	37
Info Service / Unions	30
Lawyer / Insurance	13
Environmental Orgs	8
Beekeepers	7
Nonmigrant Ag Worker	6
Other	306
<b>Grant Year Total =</b>	<b>10350</b>

Chart 5. Inquiries from federal / state / local agencies (Total: 238)



# TYPE OF QUESTION

## 6. Type of Question

The questions received at NPIC are most often related to health (e.g., effects, risk, etc.), pest control (e.g., how to control a pest, pest habits, etc.), and application (e.g., methods, label clarity, etc.). "Other" questions (1,550) include all wrong numbers and people seeking their pest control companies, among others.

Questions about regulations (950) 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 (1,276).

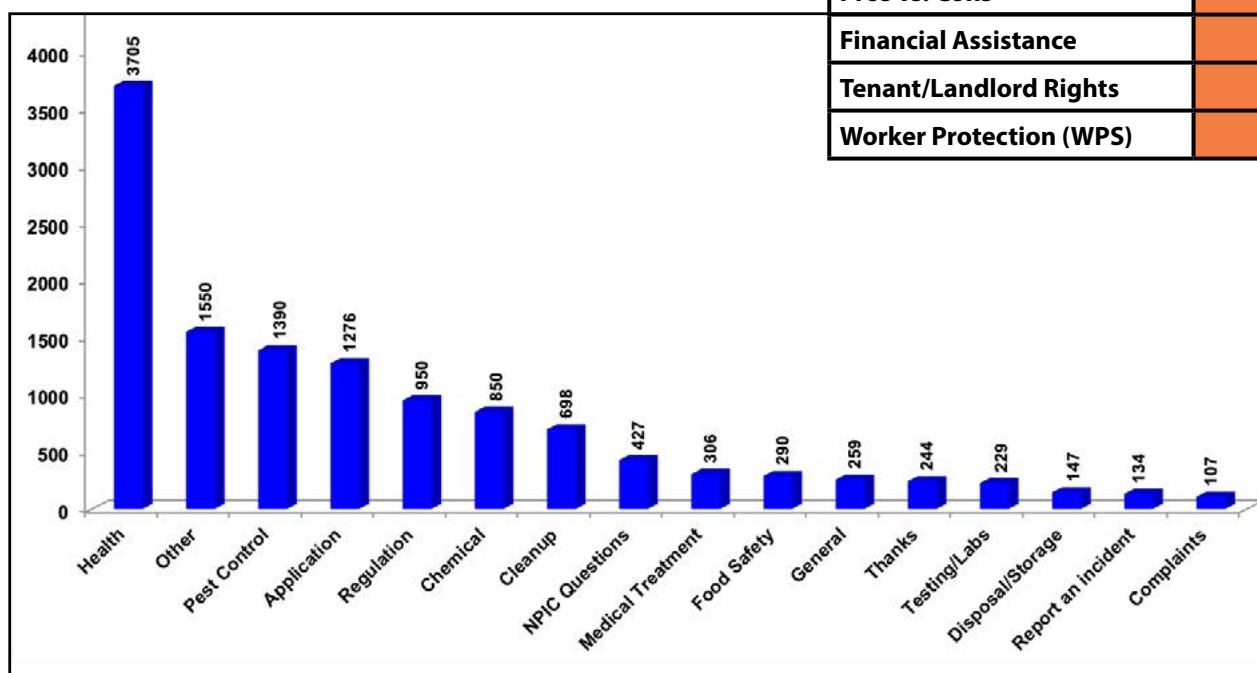
People contacted NPIC in order to report a pesticide incident 134 times. In these cases, NPIC provides people with appropriate local referrals for enforcement, as needed.

Inquiries may involve more than one type of question. Inquirers asked 13,025 questions during this grant year in the course of 10,350 inquiries.

Table 6. Type of question

Type of Question	Total
Health	3705
Other	1550
Pest Control	1390
Application	1276
Regulation	950
Chemical	850
Cleanup	698
NPIC Questions	427
Medical Treatment	306
Food Safety	290
General	259
Thanks	244
Testing/Labs	229
Disposal/Storage	147
Report an incident	134
Complaints	107
Where to Buy a Product	99
Harvest Interval/Re-entry	67
Just Wants Another Contact	66
Inert Ingredients	60
Pros vs. Cons	57
Financial Assistance	53
Tenant/Landlord Rights	45
Worker Protection (WPS)	16

Graph 6. Type of question





# ACTIONS TAKEN

## 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 (8,787) were answered by providing information over the phone. Information was also sent via email in 1,592 cases and by mail in 81 cases. Upon request, NPIC brochures and other promotional materials were mailed to people 76 times in this period.

Table 7.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2018
Verbal Info	8787
Emailed Info	1592
Handled Inquiry in Spanish	134
Transferred to Specialist / Voicemail	97
Mailed Info	81
Sent NPIC Outreach Material(s)	76
Transferred to EC / PC	31
Interpreted via Language Line Svcs	23

### Risk reduction actions:

NPIC keeps track of certain conversation topics aimed at reducing pesticide risk. Specialists documented 5,877 risk reduction actions, detailed in Table 7.2.

Table 7.2. Risk reduction actions

Risk Reduction Action Taken	Number of Inquiries
	2018
Discussed Ways to Minimize Exposure	2684
Discussed Following the Label	2379
Discussed IPM Concepts	704
Discussed Environmental Protection	110

### 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. Examples include “manufacturer/distributor” for detailed application instructions and product complaints, “county extension” for pest control advice, and “state pesticide regulatory agencies” for enforcement.

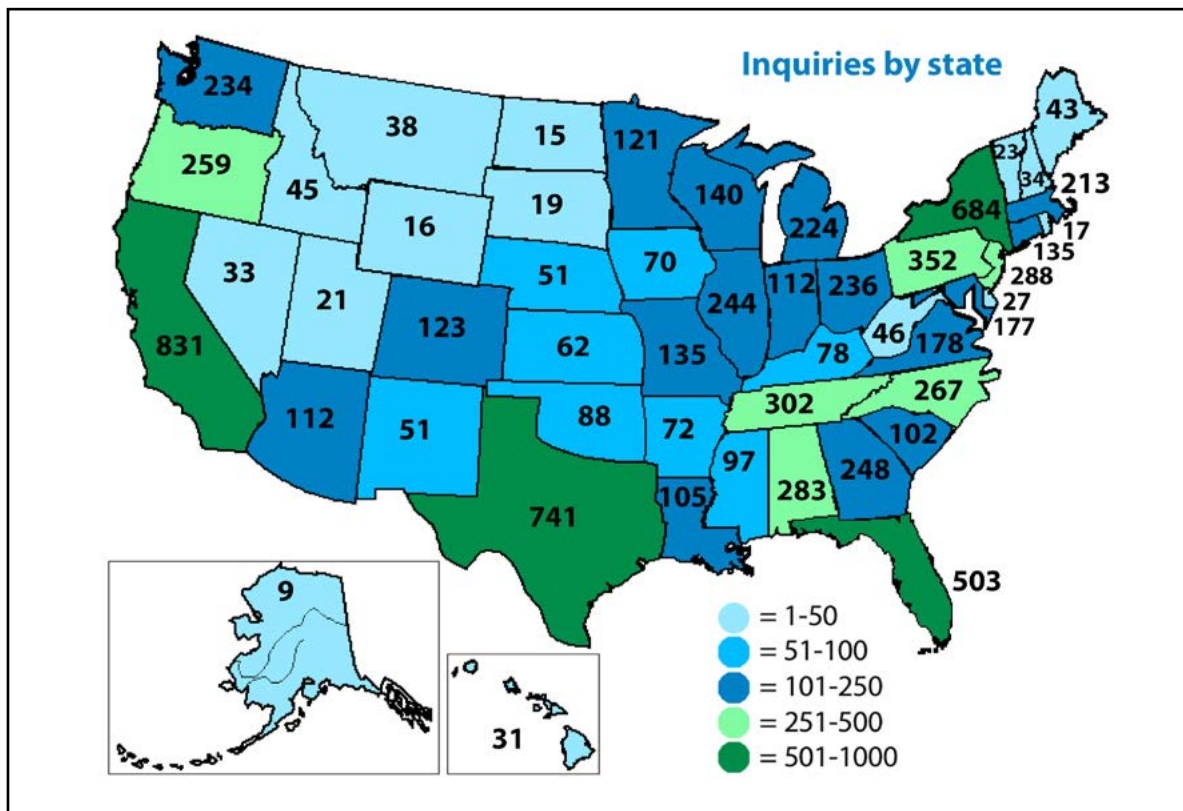
Table 7.3. Referrals to other organizations

Organization Name	Number of Inquiries
	2018
Manufacturer / Distributor Contact	2153
NPIC Website	1202
County Extension Contact	1007
State Pesticide Regulatory Contact	901
Other Organization Contact	873
Poison Control Contact	414
EPA Region Contact	261
Dept of Health Contact	237
EPA Website	219
EPA HQ / OPP Contact	192
Other State Agency Contact	148
Other Fed Agency Contact	134
Hazardous Waste Contact	108
Animal Poison Contact	36
OSHA Contact	23

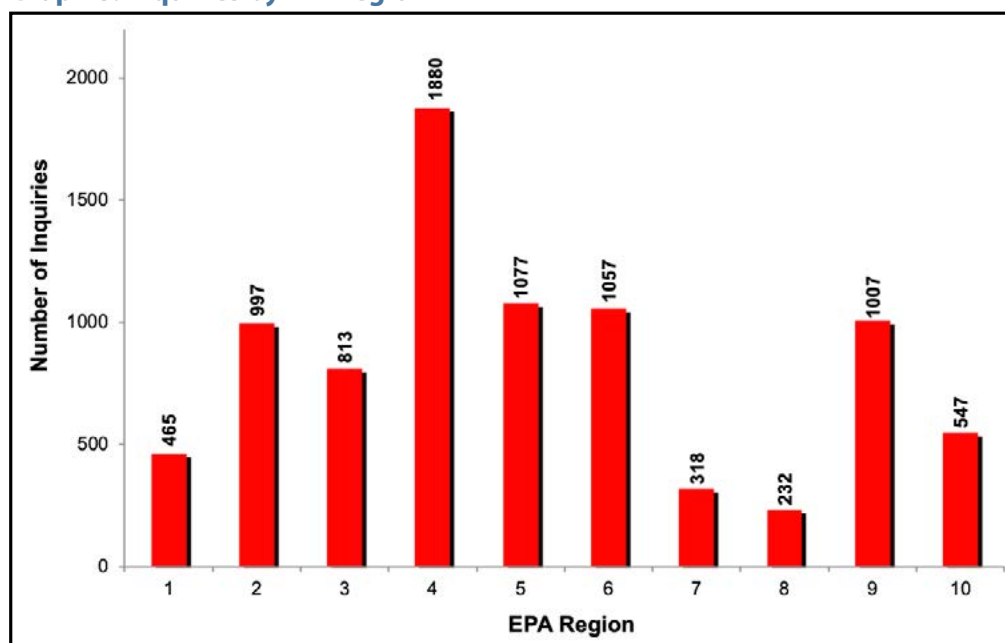
# INQUIRIES BY STATE

## 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, Texas, New York, and Florida. In addition to the states, NPIC received inquiries from US Virgin Islands (1), Guam (1), Puerto Rico (24), District of Columbia (33), Canada (80), and other countries (265). Sometimes a state cannot be identified during the inquiry.



Graph 8. Inquiries by EPA region



Graph 8 summarizes inquiries by EPA region.

The top 5 regions with a known state were:

- Region 4 (21.7%)
- Region 5 (12.5%)
- Region 6 (12.2%)
- Region 9 (11.6%)
- Region 2 (11.5%)

# TOP 25 AIs FOR ALL INQUIRIES

## 9. Top 25 Active Ingredients for All Inquiries

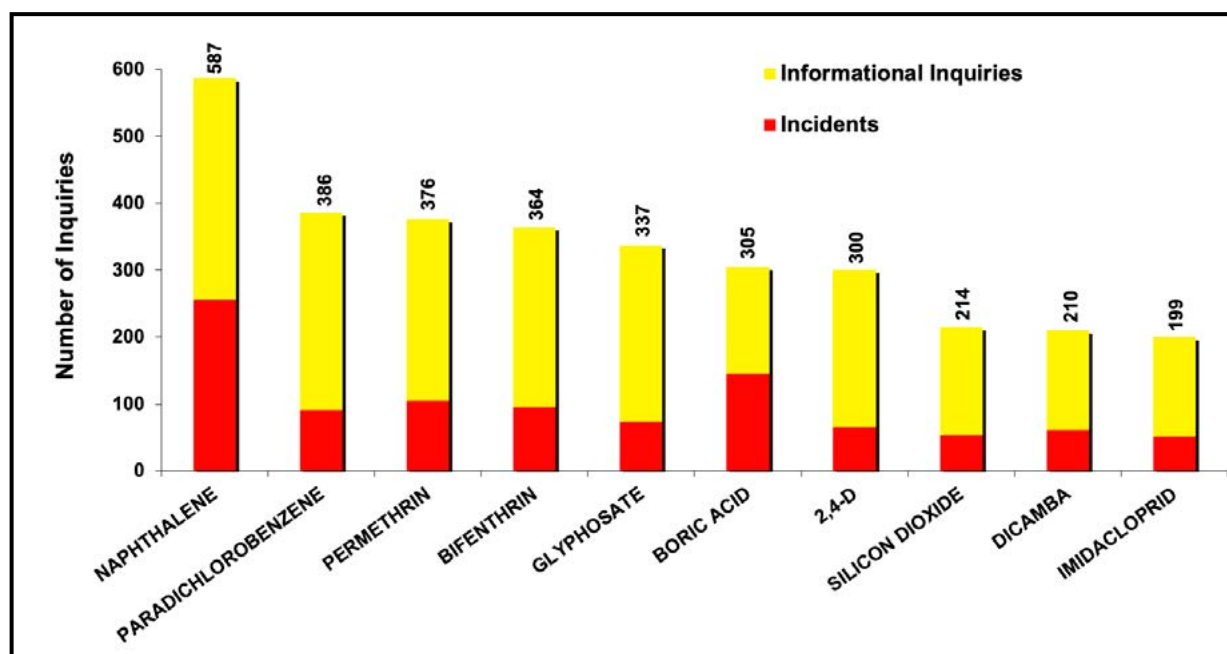
When inquiries to NPIC involve discussion of a specific product or active ingredient, Specialists record the product and the active ingredient in the PID. Naphthalene was discussed in more inquiries than any other single active ingredient this year (Table 9, Graph 9). Of the 587 inquiries involving naphthalene, 256 (43.6%) were incidents. Note that an inquiry may involve discussion of several active ingredients.

Graph 9 illustrates the number of informational and incident inquiries for the top active ingredients discussed during the grant year.

Table 9. Top 25 active ingredients for all inquiries

Active Ingredient	Total Inquiries	Incident Inquiries	Information Inquiries
NAPHTHALENE	587	256	331
PARADICHLORO BENZENE	386	91	295
PERMETHRIN	376	105	271
BIFENTHRIN	364	95	269
GLYPHOSATE	337	73	264
BORIC ACID	305	145	160
2,4-D	300	65	235
SILICON DIOXIDE	214	54	160
DICAMBA	210	61	149
IMIDACLOPRID	199	51	148
PYRETHRINS	194	49	145
DELTA METHRIN	190	62	128
PIPERONYL BUTOXIDE	190	46	144
FIPRONIL	160	46	114
CYPERMETHRIN	144	56	88
NEEM OIL	141	32	109
MALATHION	134	51	83
MECOPROP	134	27	107
TRICLOPYR	114	32	82
CYFLUTHRIN	111	30	81
LAMBDA-CYHALOTHRIN	106	42	64
SULFUR	104	42	62
SULFURYL FLUORIDE	86	13	73
PYRIPROXYFEN	80	30	50
DICHOLOBENIL	79	9	70

Graph 9. Top 10 pesticide active ingredients for all inquiries



# INCIDENT TYPE

## 10. Incident Type

An incident may involve a spill, misapplication, exposure, adverse effects, or any combination of these events.

There were 2,140 pesticide exposures and 1,024 accidents. Charts 10.1 and 10.2 provide further details. Among reported exposures, inhalation was the most common route of exposure (42.6%), followed by dermal contact (21.2%) and ingestion (13.9%). When a specific exposure route could not be identified, specialists documented an "Unknown" exposure route (9.8%).

Indoor spills (88) were reported more often than outdoor spills (41). Among reported misapplications (705), 79% were misapplications by the homeowner or resident. Misapplications by homeowners were comparable between 2018 (550) and 2017 (564). The number of incidents involving drift decreased from 2017 (124) to 2018 (70).

Chart 10.1. Pesticide exposures (Total: 2,140)

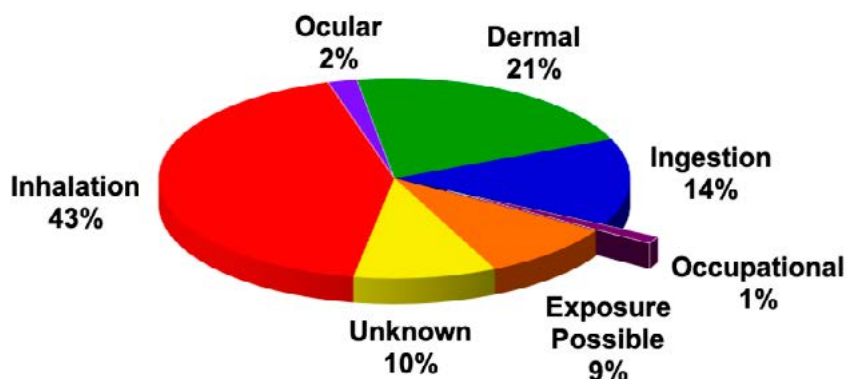


Chart 10.2. Pesticide accidents (Total: 1,024)

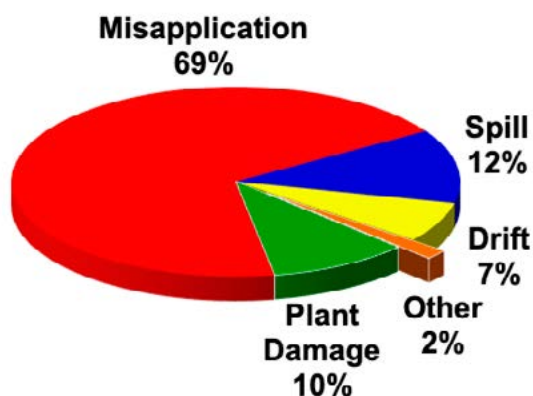


Table 10. Incident Type

Type of Incident	Total
<b>Exposures</b>	
Inhalation	913
Dermal	453
Ingestion	298
Unknown	209
Exposure Possible	198
Ocular	43
Occupational	26
<b>Accidents</b>	
Misapp. - Homeowner	559
Plant Damage	103
Spill - Indoor	88
Misapp. - Other	75
Drift	70
Misapp. - PCO	47
Spill - Outdoor	41
Misapp. - Unknown	24
Other	17
<b>Total =</b>	<b>3164</b>

# TOP 25 AIs FOR INCIDENTS

## 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 paradichlorobenzene were involved in more reported exposures/accidents than any other active ingredients. Both are commonly found in mothballs and similar products.

In Table 11, the top three active ingredients for human and animal exposures are highlighted below. Naphthalene, paradichlorobenzene, and boric acid were involved in the highest number of exposures for human and animal incidents.

**Table 11. Top 25 active ingredients for incidents reported to NPIC<sup>1</sup>**

Active Ingredient	Human Exposures	Animal Exposures	Other Accidents
NAPHTHALENE	412	47	398
PARADICHLOROBENZENE	329	34	327
BORIC ACID	68	68	17
PERMETHRIN	60	22	38
BIFENTHRIN	52	33	26
GLYPHOSATE	44	21	33
2,4-D	38	14	27
DICAMBA	31	8	32
DELTAMETHRIN	49	6	14
SILICON DIOXIDE	39	13	9
CYPERMETHRIN	30	11	18
PIPERONYL BUTOXIDE	34	10	16
IMIDACLOPRID	29	16	14
FIPRONIL	25	20	9
PYRETHRINS	37	7	15
MALATHION	25	1	28
LAMBDA-CYHALOTHRIN	36	5	13
IRON PHOSPHATE	3	26	6
BROMETHALIN	2	24	7
SULFUR	26	4	16
MECOPROP	16	6	10
CAPSAICIN	26	1	10
NEEM OIL	25	3	7
TRICLOPYR	13	4	17
PYRIPROXYFEN	17	13	4

<sup>1</sup> Note that incidents may include multiple humans, animals, and other entities. See Table 9 for a count of incident inquiries by active ingredient.



# LOCATION & ENVIRONMENTAL IMPACT

## 12. Locations of Exposure or Accident

For incidents, specialists record the location of an exposure or accident. Of the 3,027 locations where exposures or accidents were documented, 86.4% occurred in the home or yard, 3.0% occurred in an agricultural setting, and 2.6% occurred at the intersection of home and agricultural property. Table 12 identifies the number of exposures or accidents reported to NPIC in a variety of other locations.

NPIC saw a decrease in incidents occurring at natural (e.g., ponds, lakes, streams) and treated water locations in 2018 (28) compared to 2017 (87).

Table 12. Location of exposure/accident

Location	Total
Home - Inside	1665
Home - Outside	951
Agricultural	91
Agricultural/Urban Interface	78
Vehicle	77
Other	39
Office Building	29
Roadside/Right-of-Way	27
Pond/Lake/Stream	21
Park/Golf Course	14
Retail Store	13
School/Day Care	9
Treated Water	7
Health Care Facility	3
Nursery/Greenhouse	2
Industrially Related	1
<b>Total =</b>	<b>3027</b>

## 13. Environmental Impact

Table 13 presents the type of incidents reported for each kind of environmental or built entity. The most common environmental incidents reported to NPIC involve pesticide misapplications to buildings by residents (304).

Table 13. Reported environmental impacts

	Drift	Misapplication: Resident	Misapplication: Other	Misapplication: PCO	Misapplication: Unknown	Other	Plant Damage	Spill: Indoor	Spill: Outdoor
Agricultural Crop	20	2	0	1	1	1	17	0	0
Building - Home/Office	3	304	45	20	15	6	0	60	11
Home Garden	21	66	5	6	0	2	34	0	3
Home Lawn	4	28	4	1	1	0	14	0	6
Natural Water	0	0	0	0	0	0	0	0	1
Property	2	47	4	11	1	0	0	19	10
Soil/Plants/Trees	16	63	8	5	0	3	37	0	4
Treated Water	0	4	0	1	0	1	0	0	1
Vehicle	2	19	3	0	1	3	0	8	0

# CERTAINTY INDEX

## 14. Certainty Index

Table 14 and Graphs 14.1 and 14.2 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 (2,707), 16.0% of the cases were assigned an index of "consistent," 8.5% were assigned an index of "inconsistent," and 75.5% 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 a quality assurance specialist. Dr. Berman, DVM, provides additional consultation for human and 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 for the identified active ingredients, in the context of the reported pesticide exposure.

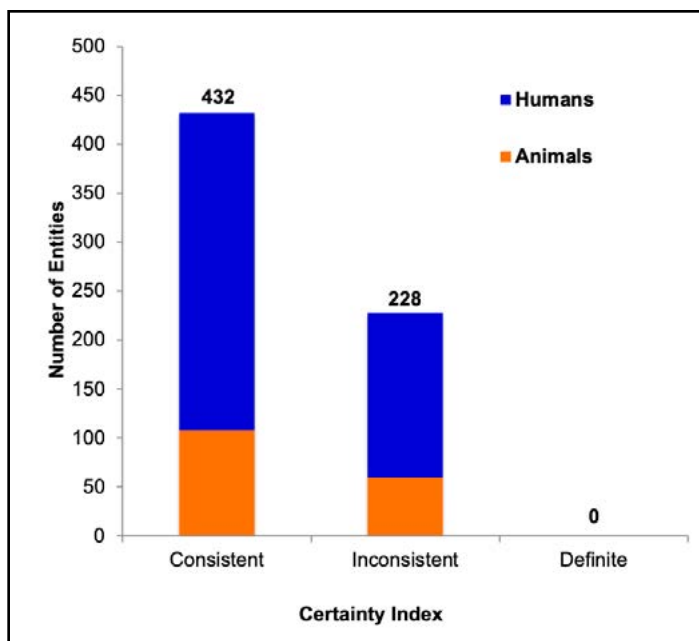
The certainty index is "**unclassifiable**" when one or more of the following criteria apply:

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

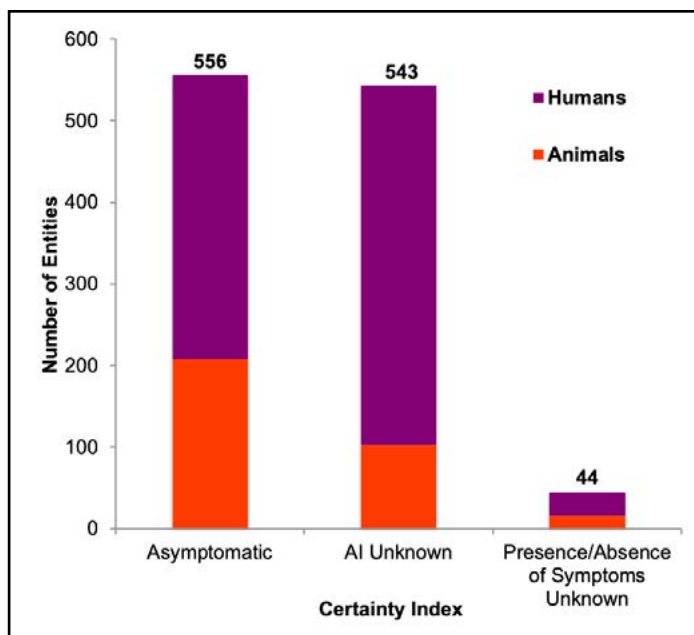
**Table 14. Incident inquiries by certainty index (CI)**

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	817	326	903	2046	256	428	127	6
Definite	0	0	0	0	0	0	0	0
Consistent	325	107	0	432	112	186	27	0
Inconsistent	169	59	0	228	61	99	9	1

**Graph 14.1. Certainty index for incidents**



**Graph 14.2. Unclassifiable CI categories**



# SEVERITY INDEX

## 15. Severity Index

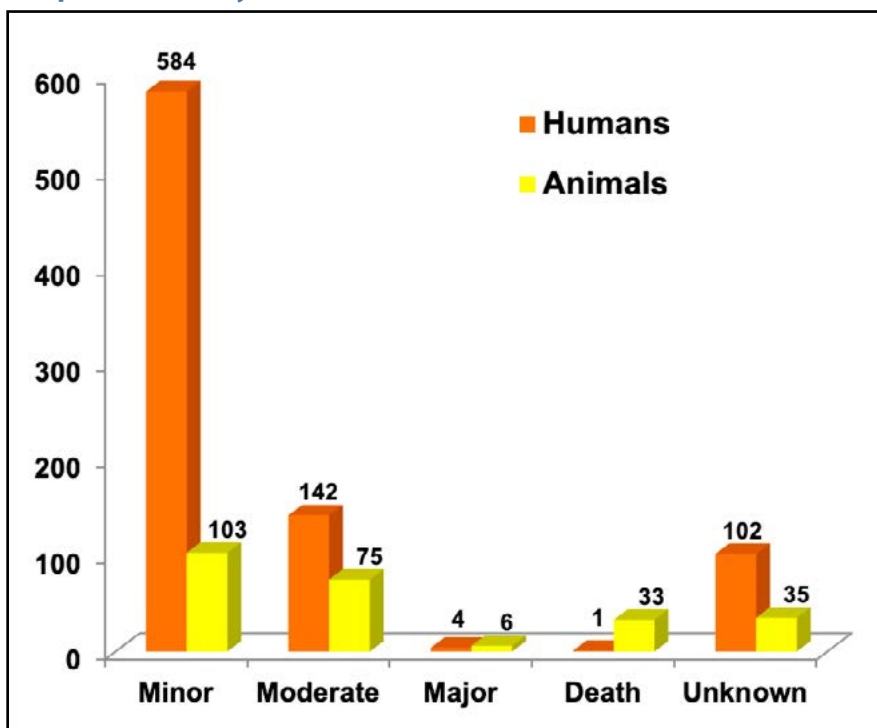
Table and Graph 15 summarize the severity of symptoms for all human and animal incidents reported to NPIC.

For all human pesticide incidents with reported exposures, 44.5% had minor symptoms, 10.8% had moderate symptoms, and 0.3% had major symptoms. Symptoms were unknown in 7.8% of human incidents. In 36.6% 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	584	103	687	184	350	48	2
Moderate	142	75	217	47	86	8	1
Major	4	6	10	0	6	0	0
Death	1	33	34	0	1	0	0
Unknown	102	35	137	33	54	16	4
Asymptomatic	479	240	719	206	218	91	0

**Graph 15. Severity index for human and animal incidents**



### What is the Severity Index?

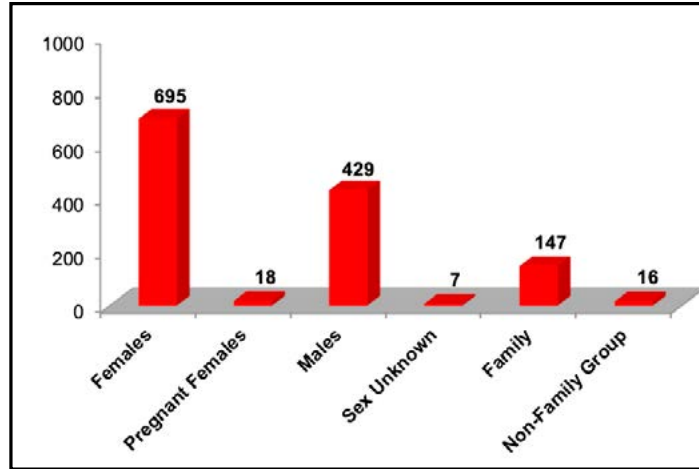
The severity index is an estimate by NPIC as to the severity of signs/symptoms reported for incidents. The severity of signs/symptoms can be categorized as minor, moderate, major, death, unknown, or asymptomatic. The NPIC severity index is based on criteria used by poison control centers in their National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

# DESCRIPTION OF ENTITIES

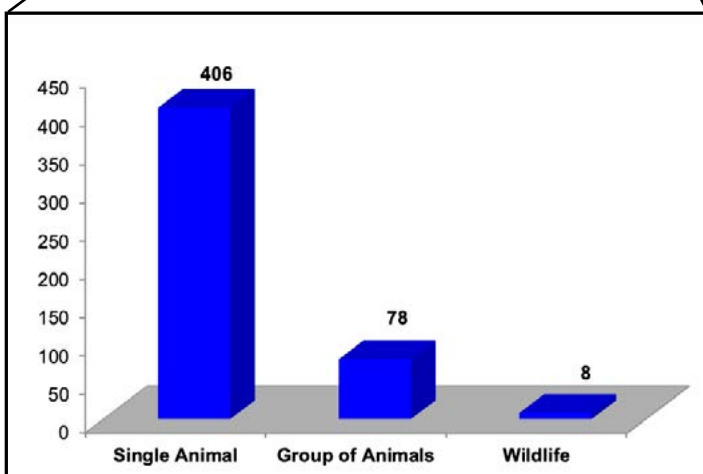
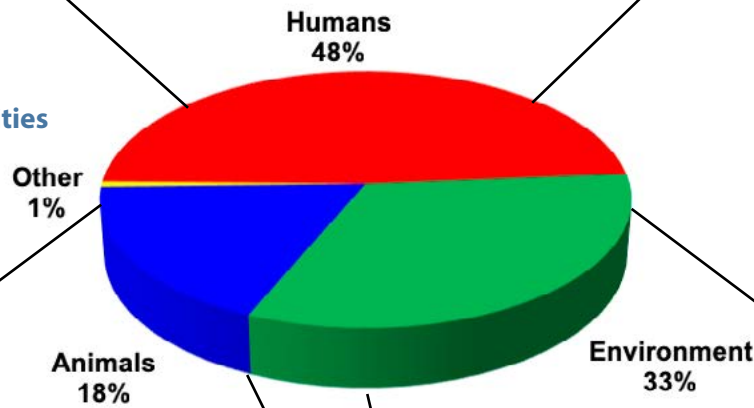
## 16. Description of Entities

The chart and graphs below provide a summary of entities involved in pesticide incidents. Of the 2,707 entities involved in incidents reported to NPIC during this period, 48.5% were human, 18.2% were animals, and 32.7% were environmental nontarget entities. Other entities (18) are miscellaneous items (i.e., sidewalk, food). Pesticide incidents may involve multiple entities.

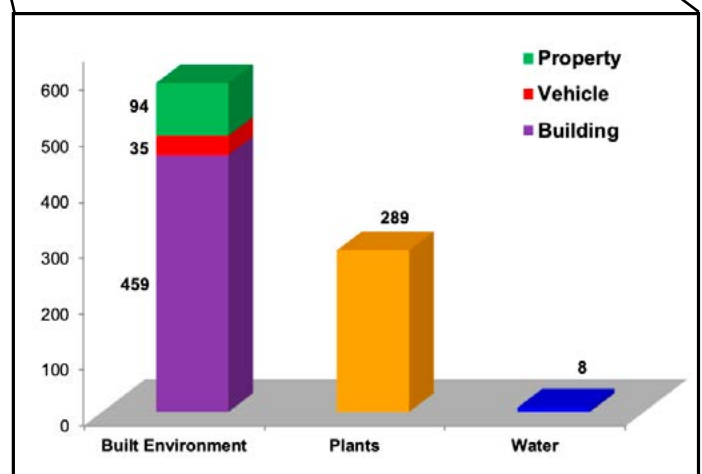
**Graph 16.1. Humans**



**Chart 16. Description of entities**



**Graph 16.2. Animals**



**Graph 16.3. Environmental entities**

# DEATHS WITH KNOWN ACTIVE INGREDIENT

## 17. Reported Deaths

Of the 492 animal entities involved in pesticide incidents, there were 21 reported deaths (Table 17.1) where the active ingredients were known.

Table 17.2 describes reported deaths with known active ingredient(s) where signs and/or symptoms were consistent with literature, in the context of the reported exposure scenario.

One human death was reported to NPIC in 2018, submitted via email inquiry with nonspecific pesticide and exposure information. No product information could be gathered regarding the situation.

**Table 17.1. Reported deaths with known active ingredient**

Reported Deaths	Total
<b>Animal Deaths</b>	
Single Animal	12
Group of Animals	7
Wildlife	2
<b>Total =</b>	<b>21</b>

**Table 17.2. Reported animal deaths with compatible signs/symptoms in severity**

PESTICIDE PRODUCT	ACTIVE INGREDIENT	INCIDENT TYPE	ENTITY	CERTAINTY INDEX	STATE
TOMCAT MOUSE KILLER 1	BROMETHALIN	Exposure: Possible	Wildlife	Consistent	MD
CRYSTAL BLUE COPPER SULFATE	COPPER SULFATE	Exposure: Ocular   Exposure: Inhalation   Exposure: Ingestion   Exposure: Dermal	Group of Animals	Consistent	IN
HARTZ REFERENCE #141	METHOPRENE   ETHOFENPROX	Exposure: Dermal	Single Animal	Consistent	NY
TUNDRA	BIFENTHRIN	Exposure: Possible	Wildlife	Consistent	IN
UNKNOWN	2,4-D	Exposure: Possible	Single Animal	Consistent	WY
TOMCAT ALL-WEATHER BAIT CHUNX	DIPHACINONE	Exposure: Possible	Group of Animals	Consistent	NM
ELIMINATOR ANT, TICK & FLEA KILLER GRANULE	BIFENTHRIN	Exposure: Dermal	Single Animal	Consistent	OK
UNKNOWN	CHLORPYRIFOS	Exposure: Unknown	Group of Animals	Consistent	CA
AMDRO GOPHER BAIT	ZINC PHOSPHIDE	Exposure: Ingestion	Single Animal	Consistent	CA
WATERS GARDEN CENTER PLANT PROTECTOR TREE & SHRUB INSECT CONTROL	IMIDACLOPRID	Exposure: Ingestion   Exposure: Dermal	Single Animal	Consistent	CA
UNKNOWN	DICAMBA	Exposure: Possible	Group of Animals	Consistent	MO
JAGUAR RAT BAIT	BRODIFACOUM	Exposure: Possible	Single Animal	Consistent	FL
UNKNOWN	BIFENTHRIN	Exposure: Possible	Single Animal	Consistent	AZ

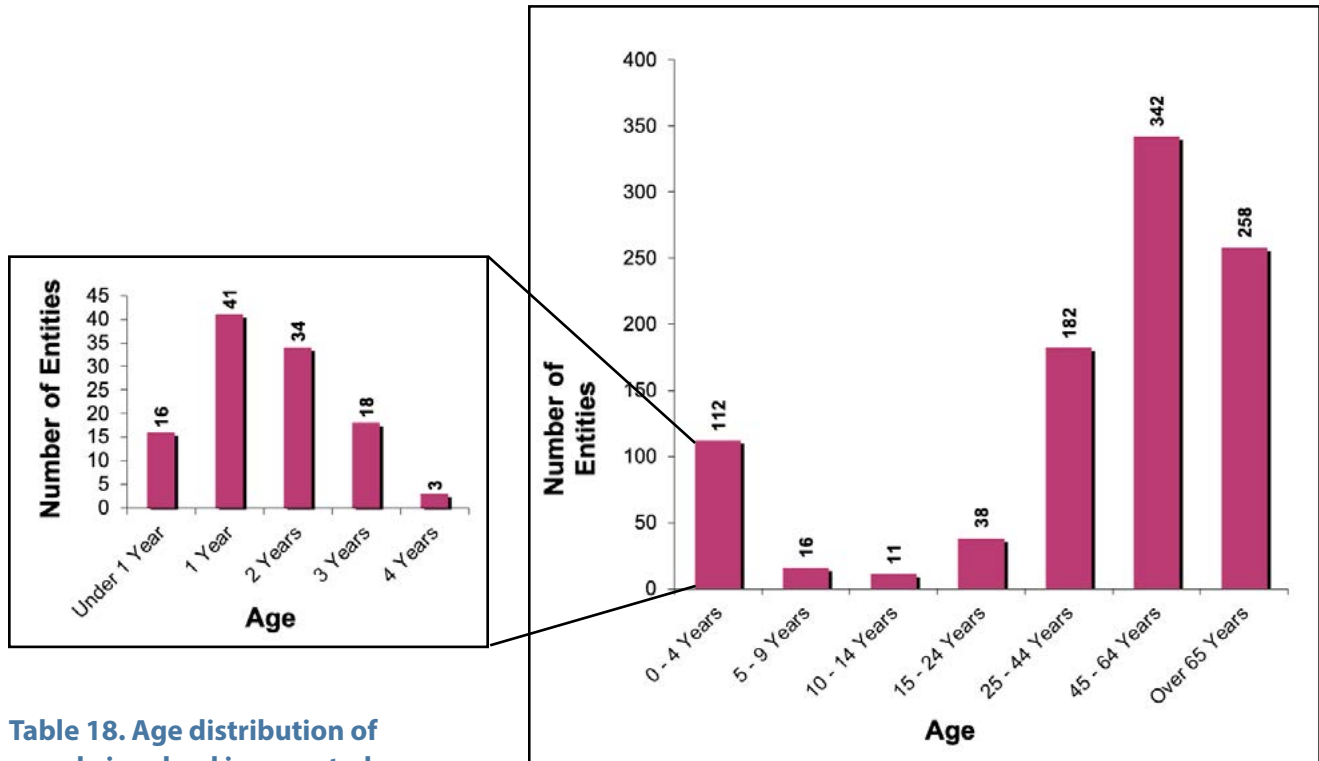


## 18. Entity Age

Table 18 and Graph 18 summarize the ages of people involved in incidents reported to NPIC. Among 1,149 single human entities, NPIC was able to collect the person's age 83.5% of the time. NPIC aims to capture the age for all human entities; occasionally callers decline to provide that information.

Among the 959 humans with known age, 11.7% were children (ages 4 and under), and 26.9% 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	16
1 Year	41
2 Years	34
3 Years	18
4 Years	3
<b>Total (0 - 4 Years) =</b>	<b>112</b>
5 - 9 Years	16
10 - 14 Years	11
15 - 24 Years	38
25 - 44 Years	182
45 - 64 Years	342
Over 65 years	258

# NOTABLE EXPOSURES

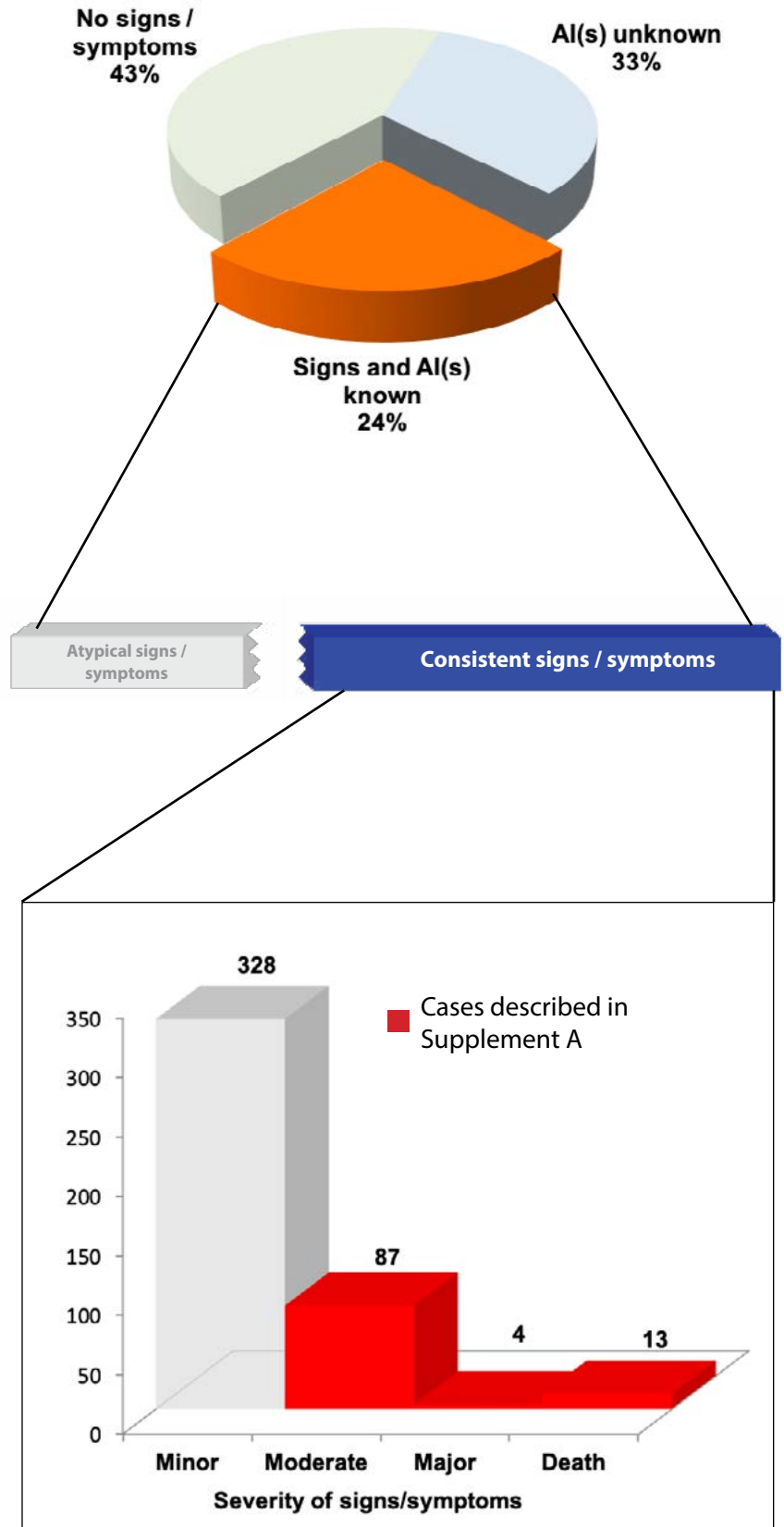
## 19. Notable Exposures

There were 2,707 entities potentially exposed to pesticides in 1,795 reported incidents.

### Figure 19.1

There were 1,795 pesticide incidents reported, involving 2,707 exposed entities (people, animals, buildings, plants, soil, and water).

**Total = 2,707 entities**



### Figure 19.2

Human and animal entities potentially exposed to a known pesticide, with reported signs/symptoms.

**Total = 660 entities**

### Figure 19.3

Human and animal entities potentially exposed to a known pesticide with reported signs/symptoms that were **consistent** with reports in the literature for that pesticide.

**Total = 432 entities**

Signs and symptoms are compared to the open literature, including fact sheets, case reports, textbooks, and articles. Furthermore, the timing of onset and duration are considered.

A supplemental report describes the 104 entities represented by the red bars in Figure 19.3.

# VETERINARY REPORTING

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 Veterinary Incident Reporting Portal (VIRP).

Veterinarians submitted 33 incident reports to the VIRP involving 33 animals (23 dogs, 9 cats, and one bovine). All VIRP reports are forwarded to EPA quarterly, in their entirety.

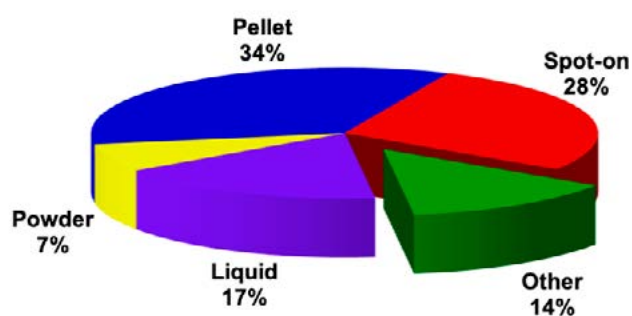
Table 20.1 and Chart 20.1 summarize the formulation of products that were involved in the incidents reported by veterinarians. One-third of incidents were pellet products (34%).

Table 20.2 and Chart 20.2 summarize the pesticide types that were involved in the incidents reported by veterinarians. Most of the products were insecticides (72%) and 22% were rodenticides.

**Table 20.1. Product formulations as reported in VIRP**

Known Formulations	Number of Products
	2018
Pellet	10
Spot-on	8
Liquid	5
Other	4
Powder	2
<b>Total =</b>	<b>29</b>

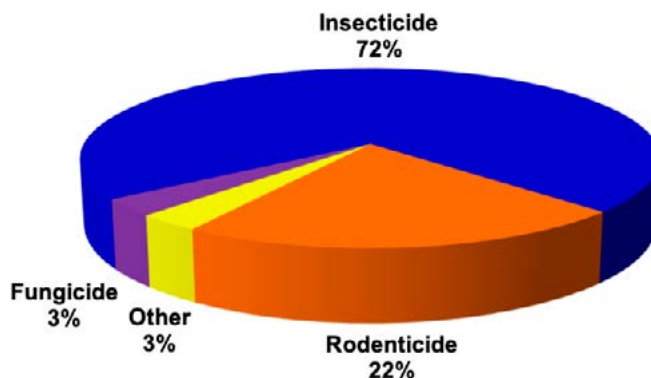
**Chart 20.1. Product formulations reported in VIRP**



**Table 20.2. Product types as reported in VIRP**

Type	Number of Products
	2018
Insecticide	23
Rodenticide	7
Fungicide	1
Other	1
<b>Total =</b>	<b>32</b>

**Chart 20.2. Product types reported in VIRP**



# VETERINARY REPORTING

Table 20.3 and Chart 20.3 show the types of animal symptoms reported to the VIRP. Symptoms are classified as dermatological (e.g., irritant, sloughing, ulcer), gastrointestinal (e.g., diarrhea, vomiting), neurological (e.g., depression, excited state, seizures, tremors), none, or other. Multiple symptoms may be reported for each animal. Of the reported symptoms, 27% were classified as other. Twenty-two percent (22%) were classified as none, 18% as neurological, 18% as dermatological, and 15% as gastrointestinal.

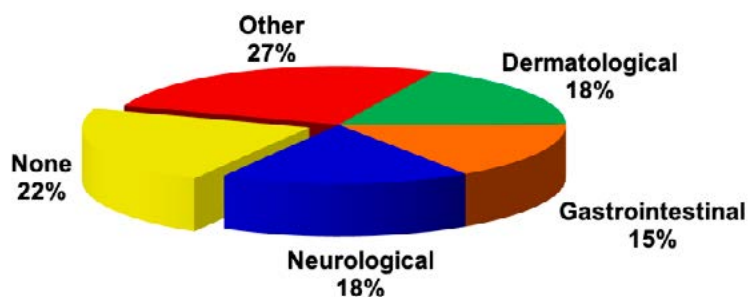
Table 20.4 and Chart 20.4 summarize the outcomes associated with each animal incident reported in the VIRP. Multiple animals may be involved in each VIRP report. Thus, totals reflect the number of animals, as opposed to the number of reports.

Of the total number of animals involved in VIRP incident reports, 58% of the cases were ongoing. The affected animals had recovered at the time of the report in 24% of cases. Nine percent (9%) of the outcomes reported an animal death.

**Table 20.3. Animal symptoms as reported in VIRP**

Symptom	Number of Animals
	2018
Dermatological: Irritant	6
Dermatological: Ulcer	1
Dermatological: Sloughing	1
<b>Dermatological Total</b>	<b>8</b>
Gastrointestinal: Vomiting	6
Gastrointestinal: Diarrhea	1
<b>Gastrointestinal total</b>	<b>7</b>
Neurological: Tremor	3
Neurological: Seizure	3
Neurological: Depression	1
Neurological: Excited	1
<b>Neurological Total</b>	<b>8</b>
Other	12
None	10
<b>Total =</b>	<b>45</b>

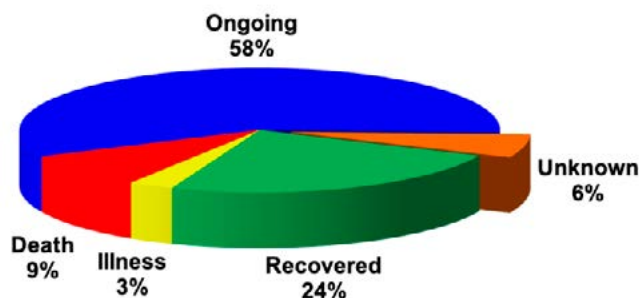
**Chart 20.3. Animal symptoms as reported in VIRP**



**Table 20.4. Incident outcomes as reported in VIRP**

Outcome	Number of Animals
	2018
Ongoing	19
Recovered	8
Death	3
Unknown	2
Illness	1
<b>Total:</b>	<b>33</b>

**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 US EPA Office of Pesticide Programs (OPP), built and hosted by Oregon State University.

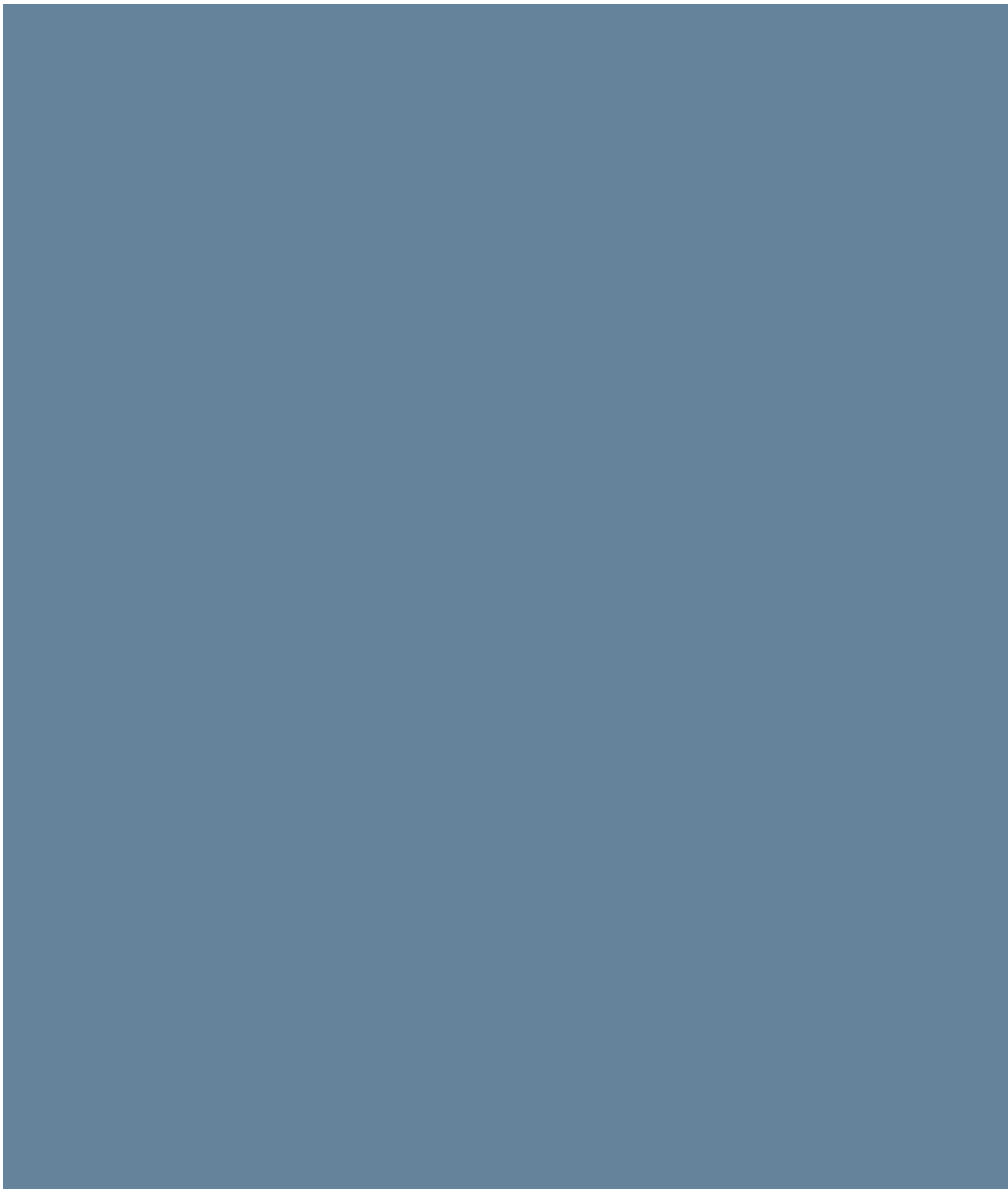
NPIC does not verify reports through independent investigation, nor does NPIC conduct quality assurance of the information submitted into the Eco-portal. NPIC provides each report, without modification, to OPP quarterly, in their entirety. More recently, NPIC developed programming to make that delivery automatic and immediate.

All reports submitted to the Eco-portal in 2018 involved possible exposures to bees. Table 21.1 summarizes the active ingredients involved in the 18 reports submitted to the Eco-portal.

**Table 21.1. Active ingredients involved in the Eco-reports**

<b>Active Ingredient</b>	<b>Quantity</b>
<b>UNKNOWN</b>	<b>11</b>
<b>NEONICOTINOIDS</b>	<b>3</b>
<b>AMMONIA</b>	<b>1</b>
<b>BLEACH (SODIUM HYPOCHLORITE)</b>	<b>1</b>
<b>GLYPHOSATE</b>	<b>1</b>
<b>IMIDACLOPRID</b>	<b>1</b>
<b>PHENOTHRIN</b>	<b>1</b>
<b>TETRAMETHRIN</b>	<b>1</b>





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