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NATIONAL PESTICIDE INFORMATION CENTER

-2014-

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 2014 Annual Report covers the period of February 15, 2014 - February 14, 2015.

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 2014 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 2,369 times, following the label 2,297 times, IPM concepts 709 times, and environmental protection 162 times.
- NPIC posted new items in social media venues promoting safe use practices, IPM, and pesticide label comprehension. NPIC developed 157 original posts, averaging three posts per week. NPIC engaged with over 250 organizations through social media, including master gardeners, University Extension, pest management associations, and the Migrant Clinicians Network. In March, NPIC used social media venues to alert 136 organizations about the opportunity to comment on proposed changes to the Worker Protection Standard (WPS).
- In order to stay current, NPIC staff members participated in 50 events for continuing education, including 20 webinars, 11 in-house presentations, 10 off-campus events, and nine on-campus events.
- NPIC performed chemical-specific literature searches in order to update 20 active ingredient files, and to open 13 new files. Additionally, NPIC added over 400 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 3,600 contacts this year. NPIC worked with AAPCO to ensure that pesticide enforcement contacts were up-to-date.

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 e-mail 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 voice mail, email, and/or social media.
- NPIC recruited and hired four highly qualified pesticide specialists this year. Three have masters degrees focused on topics ranging from soil science to library science. One is experienced in pollinator research, and speaks Spanish fluently. Their additional strength areas include rodent ecology, medical science literature, and organic consumer education. All four participated in a rigorous 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. Each quarterly report included upcoming plans and formal meetings occurred each quarter. Examples include the NPIC Director's visit to OPP in May, conference calls with HED and BPPD in the following months, a quarterly coordination meeting (QCM) in October, and a January NPIC webinar for OPP, EPA Regions, and state agencies titled, "Incident Data from NPIC: How to request it, and what can it tell us?"

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 three new videos this year, including two pesticide overviews (**spinosad** and ***Bacillus thuringiensis***) and one FAQ (Would I hurt the fish by weeding & feeding the lawn?). See page 10.
- NPIC developed four new fact sheets this year. See page 9.
- NPIC created 32 new web pages this year, including nine in Spanish. See page 9.
- Quarterly, NPIC identified 100% of broken links on its website, and removed or replaced each one (290). NPIC added 38 new links to its website when high-quality science and regulatory items were identified
- NPIC significantly updated eight existing web pages with new content.
- NPIC developed six new PestiByte podcasts this year, including five in Spanish. See page 7.
- NPIC worked with OPP to evaluate needs and procedures in preparation to conduct feedback collection activities regarding the NPIC website. Feedback will be collected in order to identify priority improvements.

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 four new pesticide specialists, 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 (1,946 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 (816 times).
- NPIC discussed inquiry trends and data with OPP at least quarterly. Examples include discussions with OPP staff at the Western Region Pesticide Meeting in May, consultations about ecological incident reporting in April, collaborations with HED in June related to residential pesticide misuse, collaborations with BPPD related to biopesticide inquiries, collaborations with FEAD about inquiries related to the Ebola virus, and a notification in January about a potential trend of fipronil misuse.
- 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, Sudakin, 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 21 distinct measures such as narrative quality, judgment in characterizing symptoms, and accuracy in coding.
- NPIC documented demographic information for 99.6% of people that may have been exposed to pesticides, product information for 98.0% of reported incidents, and the location for 96.4% of incidents.
- NPIC specialists were able to capture the exposure route for 86.7% of exposed humans/animals, and symptom/scenario information in 97.5% of cases.
- NPIC provided 33 special reports about incidents and inquiries upon request, including 25 reports for EPA and eight reports for state agencies. 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.
- The NPIC Director visited OPP on May 22nd, and quarterly, he monitored execution of NPIC's collaboration with OHSU. NPIC's formal collaboration with the American Association of Poison Control Centers (AAPCC) began on January 1st.

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 first 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, 2014 and ended February 14, 2015.
This period will be referenced as "2014" 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 2012-3, 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).

HIGHLIGHTS

- During this period, NPIC received 11,151 inquiries.
- Ninety percent (90%) of the total inquiries were addressed over the telephone.
- About 17% of NPIC inquiries in 2014 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.
- One human death and 55 animal deaths were reported.
- The top active ingredients involved in incidents were naphthalene (1,049), paradichlorobenzene (803), permethrin (222), boric acid (209), and silicon dioxide (195).
- There were 3,070 entities involved in incidents reported to NPIC: 50% were human, 18% were animals and 31% were structural or environmental. See Chart 16.1 on page 33.
- Among the 1,073 humans with known age, 12.9% were children (ages 4 and under) and 24.5% were seniors (ages 65 and over). About 40% of all people reported no symptoms.
- Questions related to health (3,398) and pesticide usage (1,704) were most common.
- The NPIC website received 4,023,838 page views during this period. There were more than 2.2 million unique visitors, and 87,186 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 inquiries in 196 inquiries in Spanish, three in American Sign Language, two in Mandarin, and five in French.

Mothball Products – NPIC received 799 inquiries about mothballs, flakes, and bars. Of these, 443 (55%) were incidents. Many reports involved off-label use of mothballs to repel animals in and around the home.

Bed Bugs – NPIC received 625 inquiries related to bed bugs this year. About 12.5% of these (78) were pesticide incidents. Many of these inquiries were related to the difficulty of pest control and the potential health effects of pesticides.

PestiByte Podcasts

Tips for Transporting Pesticides (download and listen) **Episode 25** (view transcript) - Dr. Fred Berman explains how you can reduce risk and save money by transporting pesticide products wisely. 3:17 min., 2.1MB

NPIC developed six new podcasts including five in **Spanish**:

- Episode 16: Precauciones para el uso de productos Spot-on (de vía tópica) contra pulgas y garrapatas (Precautions for Using Spot-on Flea and Tick Products)
- Episode 21: “Natural o Verde?” ¿Qué significa esto? (“Natural” or “Green?” What does it mean?)
- Episode 22: Los pesticidas en las aguas subterráneas (Pesticides in Groundwater)
- Episode 23: Mi jardín será rociado, ¿pueden mis hijos salir a jugar? (My Yard is Being Sprayed; Can my Kids Go Out and Play?)
- Episode 24: Cebos para babosas con fosfato de hierro (Slug Baits with Iron Phosphate)

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

Five pesticide specialists (4.49 FTE) were hired this year, and two were retained. As of February 14, 2015, NPIC's staff includes six full-time pesticide specialists, one part-time (0.49) pesticide specialist, and three supporting staff (0.75-1.0 FTE). Most pesticide specialists hold master's degrees in applicable fields, with backgrounds ranging from microbiology to soil science.

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

Standard Operating Procedures

NPIC staff use a variety of standard operating procedures (SOPs) to guide their work and some decision-making. This year, 17 of 29 SOPs were updated. In addition, a collection of NPIC policies apply to scheduling, personnel matters, and copyright issues. This year, three policies were updated, and a new policy was written about using online images in NPIC publications.

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NPIC WEBSITE / FACT SHEETS

The NPIC website received 4,023,838 page views during this period. There were more than 2.2 million unique visitors, and 87,186 visitors viewed NPIC's website for more than 15 minutes. See pages 21-22 for more information about the popularity of specific resources on the NPIC website.

NPIC added 32 new web pages to its collection in 2014. Eight web pages were significantly updated and 38 new links were added to various pages after a vetting process. Over 290 broken links were identified using custom monitoring software, run quarterly. Each one was removed or replaced.

New Engish Web Pages (selected)

- **Spinosad**, **Pyrethrins**, **Bromadiolone**, ***Bacillus thuringiensis***
- **Preparing for a Natural Disaster**
- **Reducing Risk After a Disaster**
- **Rodenticides**
- **Rodents**, **Mice**, **Rats**
- **Pantry Moths**
- **Videos by NPIC**
- **Webinars by NPIC**

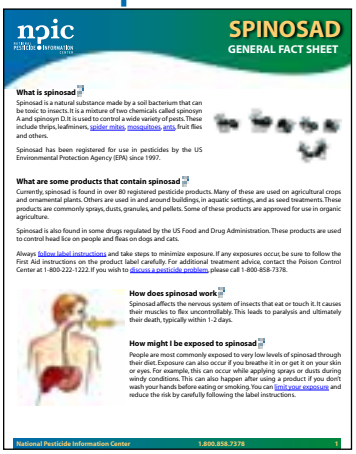
New Spanish Web Pages

- **Almacenamiento de pesticidas** (Pesticide Storage)
- **Eliminación de pesticidas** (Pesticide Disposal)
- **Hormigas** (Ants)
- **Áfidos** (Aphids)
- **Hormigas carpinteras** (Carpenter ants)
- **Hormigas de fuego** (Fire ants)
- **Escarabajos de alfombras** (Carpet beetles)
- **Termitas** (Termites)

NPIC also developed a web page titled, "**Proposed Changes to the WPS in 2014**." The page summarized regulatory language in order to encourage public participation.

NPIC developed four new fact sheets relying on up-to-date scientific and regulatory resources. NPIC has been prioritizing biopesticides for publication development this year.

Spinosad

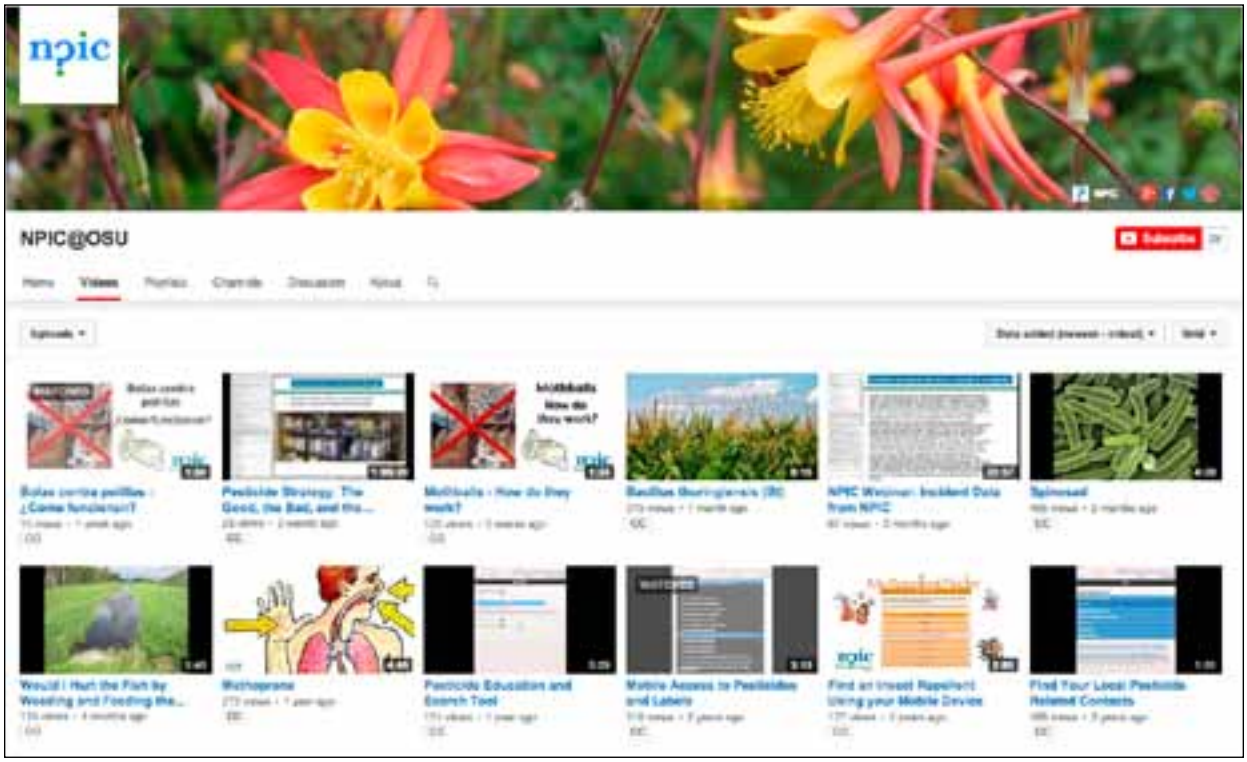


Pyrethrins

Bromadiolone

B. thuringiensis

VIDEOS



Subscribe to our YouTube channel to see the latest releases and comment on videos!

Increasingly, people seeking technical information are looking for video content. NPIC is responding with the first in a series of videos, including FAQ videos, webinars, and pesticide-specific videos. This year, NPIC developed the policies, procedures, and software savvy to create a high-throughput pipeline for video content. New videos were posted about **spinosad** and ***Bacillus thuringiensis***, two important biopesticides.

SOCIAL MEDIA

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, in addition to its presence on Pinterest. In January, NPIC initiated a formal collaboration with the American Association of Poison Control Centers (AAPCC), which emphasizes social media as a means to do collaborative poison prevention outreach.

POISON Help 1-800-222-1222 AAPCC

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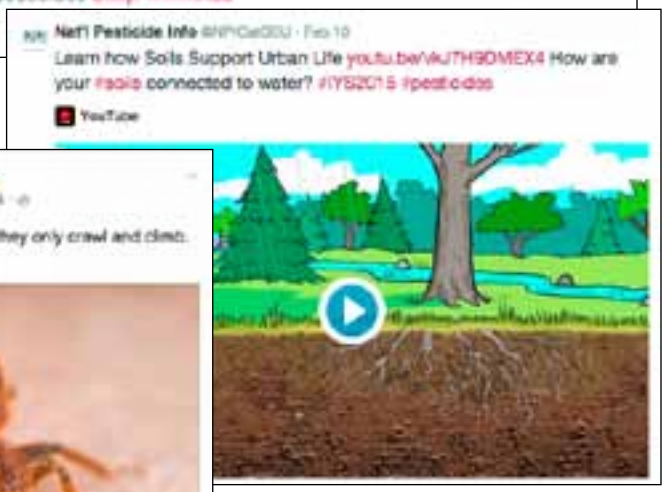
Pesticide Safety and Education

NPIC developed 157 original posts, averaging three posts per week. NPIC engaged with over 250 organizations through social media, including master gardeners, University Extension, pest management associations, and the Migrant Clinicians Network. In March, NPIC used social media venues to alert 136 organizations about the opportunity to comment on proposed changes to the Worker Protection Standard (WPS). See page 15.



Fans and followers of "NPICatOSU" receive updates and tips about reducing the risk of pesticide exposure when controlling pests in the home and garden.

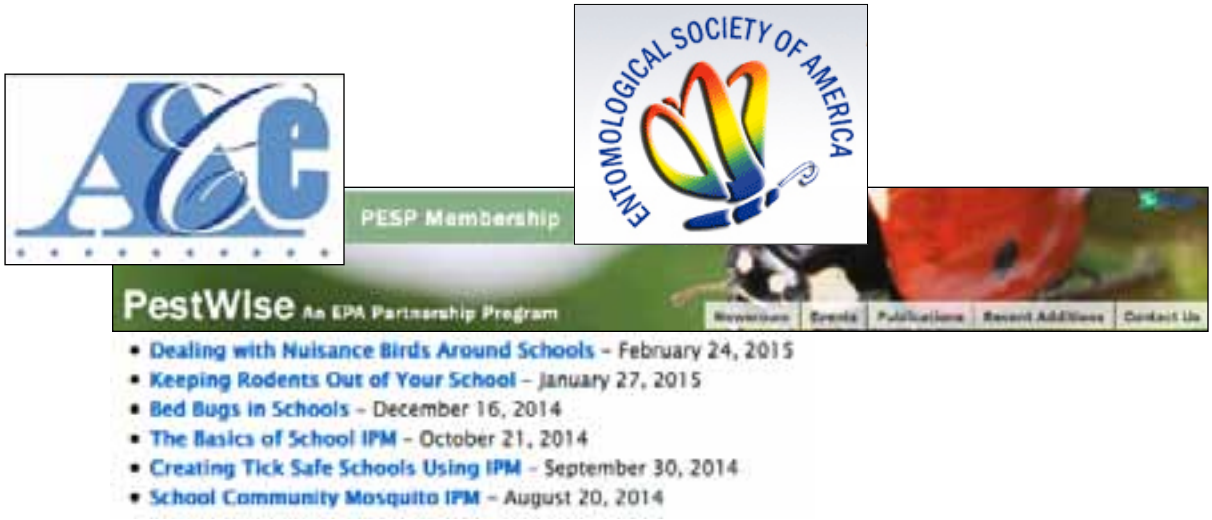
CONTINUING EDUCATION

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 2014.

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 50 events for continuing education this year.



NPIC staff toured a pet store, a farm supply store, and a hardware store to build familiarity with product labels.

NPIC approaches training for new specialists in a way that values diversity, new perspectives and the best science available. The training program includes a comprehensive training manual, facilitated exercises, and mentored practice in risk communication. To maintain consistency and leverage the value of NPIC's diverse team, all pesticide specialists participate in the training program, devoting 5-10 hours of their time to each new specialist.

NPIC trained four new Pesticide Specialists this year.

CONTINUING EDUCATION

Speaker/Source	Speaker's Affiliation	Event Title
Garnet Cooke	Oregon OSHA	Pesticide Safety and Worker Protection
Stone, Berman, Jenkins, Sudakin, Buhl	NPIC	Meet the NPIC Faculty
Aaron Wolf	Oregon State University Geosciences	Transformational Listening for Flourishing Relationships
Adriana Argoti	Oregon State University	Mortality of Bumble Bees (Hymenoptera: Apoidea: Apiformes) Forages on Linden, Tilia spp. (Tiliaceae)
Mairead Dundas	Down to Earth	Brazil's 'mutant' mosquitoes attack disease
Several	Various	Oregon Pesticide Symposium
Several	Various	Harvard Panel Explores the Intersection of Pesticides, Food, and Health
Several	Vietnam Veterans of America	Faces of Agent Orange Town Hall
Chris Geiger	San Francisco Department of the Environment	Safer Sanitizers & Disinfectants: A Look at San Francisco's Latest Alternatives
Mike Marshall	Texas AgriLife Extension	Texas Range: Suface Water - Is Our Water Clean
Amanda L. Whitmire, Melissa Haendel	National Library of Medicine, Oregon State University, OHSU	Data Management - Developing Data Services: a tale from two Oregon Universities
Several	American Society of Agronomy	In Season Pest Issues
Several	University Extension	Association for Communication Excellence (ACE) in Agriculture, Natural Resources, and Life and Human Sciences
Dr. Paul Jepson	Oregon State University, Integrated Plant Protection Center	Multi-Scale Ecological and Human Health Risk Assessment for Pesticides in West Africa
Several	Various	Medical Librarian Meeting
Dr. Nancy Hinkle, Dr. Peter Lepping	Stop Pests (Georgia Extension, Glyndwr University in Wrexham, Wales)	The Bugs That Won't Go Away: Your role in delusional infestation
Several	Various	In Season Pest Issues: Insects, Weeds, Diseases
Kaci Buhl	NPIC	Future of Pest Management
Paul Biwan	Oregon State University	Project Management
Kaci Buhl	NPIC	Regulatory Documents - A Navigational Tour
Dr. Pat Iverson	Various	Ebola 2014: Medical and Ethical Issues
Tim Stock	Oregon State University	School IPM Training
Several	Oregon Department of Agriculture, OSU, Univar	Oregon Agricultural Chemical & Fertilizer Association Safety Seminar
Dr. Paul Slovic	University of Oregon	The Psychology of Risk
Several	Various	Enomological Society of America (ESA) Annual National Conference
Several	AgriSafe Network	Understanding OSHAs Agricultural Exemptions and Standards
Brittany Hanson	NPIC	Communication Assessment
Phil Janney	Oregon State University	Continuous Monitoring and Modeling to Assess Pesticide Exposure in Critical Habitat for Pacific Salmonids
Several	Extension, Regulatory, & Other Professionals	Chemical Applicators Short Course
Several	Oregon State University	Toxicology Research Day
Several	Various	Noncrop Vegetation Management Course
A. Van Eenennaam, J. Rumble	UC Davis, University of Florida	Public Opinion of Genetically Modified Foods
Bill Moar	Monsanto	RNAi Webinar
Keith Robinson	Purdue University	Communication Killers
Dr. Daniel Schlenk	UC Riverside	Climate-Change Induced Salt-water Intrusion to Agricultural Areas of California: Toxicological Impacts on Salmonid Susceptibility to Pesticide Toxicity

PESTICIDE INQUIRY DATABASE QA/QC

Pesticide specialists perform data entry on a daily basis, documenting inquiries and incidents. A Quality Assurance/Quality Control (QA/QC) Specialist reviews the data, making corrections as needed to maintain a consistent approach. She collaborates with Dr. Daniel Sudakin (MD) and Dr. Dave Stone (PhD) on human incidents, and with Dr. Fred Berman (DVM) on animal incidents. Over 1,800 pesticide-related incidents were documented and reviewed this year. See pages 17-36 for detailed information about the wide range of inquiries and incidents.

NPIC performed an annual data assessment focused on personnel, and provided detailed feedback to each Pesticide Specialist about his or her performance in data collection, entry, and incident classification. The QA/QC Specialist assigned quantitative scores based on 21 distinct measures of data quality, such as question/action coding accuracy and the completeness of narratives.

NPIC also led staff activities to bolster and maintain data quality in the PID. In response to QC findings, discussions and coding examples were presented at staff meetings. More detailed information about quality assurance procedures are provided to the NPIC Project Officer in the annual Quality Assurance Reports.

Special Reports from the PID - NPIC provided 33 special reports about incidents and inquiries upon request, including 25 reports for EPA and 8 reports for state agencies. All reports were provided within 10 business days of the request.

Selected examples (data recipient – data requested):

- EPA-OPP-HED – Human incidents involving diazinon, potassium- and sodium nitrate, neem oil, copper hydroxide, acephate, diuron, myclobutanil, tetrachlorvinphos, bifenthrin, mancozeb, and thiram
- Wyoming Department of Agriculture – All non-target impacts of prairie dog bait
- North Carolina and Washington State Departments of Agriculture – Bee-related incidents
- EPA Regions 2 and 6 – Drift-related pesticide incidents
- EPA Region 5 – Bedbugs and pesticide misuse, inquiries and incidents
- Office of Indiana State Chemist – Animal incidents related to flea treatments
- EPA-OPP-FEAD – Inquiries related to the Ebola virus, incidents related to products "Designed for the Environment" (DfE)
- Wisconsin Department of Agriculture – All incidents in Wisconsin
- Vermont Department of Agriculture – All inquiries from Vermont
- EPA-OPP-AD – All incidents related to a product called Clean Clippers
- EPA-OPP-EFED – All incidents related to hexaflumuron

AD = Antimicrobials Division, EFED = Environmental Fate & Effects Division, FEAD = Field & External Affairs Division, HED = Health Effects Division, OPP = Office of Pesticide Programs

NPIC hosted a webinar in January titled, "**Incident data from NPIC: How to request it & What can it tell us?**" It was attended by over 100 representatives of EPA headquarters, Regions, and state lead agencies. The webinar covered the types of data collected by NPIC, and the unique strengths compared to other sources of pesticide incident data.

CONNECTING WITH STAKEHOLDERS

Collaborations - selected examples:

- NPIC collaborated with EPA Region 10 on a bed bug work group, tasked with assisting cities and counties without duplicating existing resources.
- NPIC collaborated with EPA Region 5 to characterize pesticide incidents with challenges related to residential, indoor cleanup after pesticide misuse.
- NPIC collaborated with US Fish & Wildlife to preview and test a new incident reporting system for bats and, potentially, other wildlife.
- NPIC collaborated with the Oregon Department of Agriculture to facilitate response to a high-profile pesticide incident.
- NPIC initiated a collaboration with the Southern Regional IPM Center to trade existing resources, such as pesticide product data and pest control images.
- NPIC collaborated with the Association of Structural Pest Control Regulatory Officials (ASPCRO) to deliver training for state regulators on risk communication concepts.

Presentations - selected examples:

- Dr. Stone delivered a presentation about pesticide toxicology at the Western Region Pesticide Meeting.
- Kaci Buhl and Sean Ross delivered a presentation or the Association of Communication Excellence (ACE) promoting its pesticide product search tool or mobile devices.
- Dr. Stone delivered a presentation or the Entomological Society of America promoting NPIC services and mobile applications.
- Kaci Buhl delivered a webinar about pesticide safety through the eXtension webinar series “All Bugs, Good and Bad.”
- Dr. Stone, Dr. Jenkins, and Ms. Buhl delivered several presentations for Oregon pesticide applicators on a variety of topics through the Pesticide Safety Education Program (PSEP).
- Kaci Buhl delivered a presentation for Oregon State Agencies entitled, “Pesticide Incident Intake Procedures” at the request of the Oregon Department of Agriculture.

NPIC used social media venues to alert organizations about the opportunity to comment on proposed changes to the Worker Protection Standard (WPS):

Migrant Clinicians Network, AgriSafe Network, AgriLife Extension, Association of Farmworker Opportunity Programs, Association of Public-Safety Communications Officials, PA Rural Health Farm Worker Protection Safety Program, Farmworker Justice, KS Statewide Farmworker Health Program, National Center for Farmworker Health, The Farmworker Health and Safety Institute, The Farmworker Association of Florida, Border Agricultural Workers Project, Cornell Farmworker Program, Farm Safety Just For Kids, National Children’s Center for Rural and Agricultural Health and Safety, Children’s Environmental Health Network, National Safety Council, Agricultural Worker Health Project, Oregon Association of Nurseries, AmericanHort,California Association of Nurseries and Garden Centers, Nursery & Landscape Associations in AR, WA, T, NC, ID, IN, KS, PA, VA, MI, ME RI, OH, CO, MN, MD, and MI, United Farm Workers, Legal Aid organizations, National arm Worker Ministry, Cesar Chavez Foundation, Farmworker Coordination Council, Farmworker Institute of Education and Leadership, Farm Labor Organizing Committee, Migrant Health Promotion, Farmworker Advocacy Network, National Rural Health Association, National Immigrant Farming Initiative, Health Farms Healthy People Coalition

KEEPING RESOURCES CURRENT

NPIC staff members monitor scientific and regulatory literature, including the Federal Register (pesticide-related), list-serves, relevant journals, and newsletters in public health, food safety, entomology, and other topics. They use a variety of mechanisms to share new information and incorporate it into the NPIC website.

Active Ingredient (AI) Files

In order to respond to inquiries efficiently, NPIC maintains a collection of AI files that contain reputable, science-based information about each pesticide active ingredient. The collection includes 1,072 files. NPIC updated 20 AI files by adding documents obtained from literature searches, and added 13 new AI files to its collection (cyantraniliprole, flumethrin, fluxapyroxad, picoxystrobin, etc.).

NPIC monitored the Federal Register and evaluated relevant dockets for new science and regulatory information. NPIC acquired over 400 new documents for inclusion in the collection this year, including all relevant EPA Fact Sheets, Risk Assessments, and Registration Decisions.

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

Contacts

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 3,600 contacts this year.

- NPIC worked with the American Association of Pest Control Regulatory Officials (AAPCO) to ensure that pesticide enforcement contacts were up-to-date. For each state pesticide regulatory agency, NPIC presents contact information for pesticide enforcement, pesticide registration, applicator certification, and more.

- NPIC updated its directory of County Extension contacts, including over 3,000 phone numbers and websites. Further, NPIC identified websites in each state that provide residential pest-related fact sheets, and built them into the directory. Given the prevalence of pesticide resistance and invasive species, local information is key.

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 definitely, probably, possibly, or unlikely to have been caused by the reported exposure to a pesticide, 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 Drs. Dave Stone and Dan Sudakin 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, 2014 to February 14, 2015.

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 24. 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. See Table 7.3 on page 25.
- NPIC qualifies the information received by assigning a certainty index. The certainty index is an estimate by NPIC as to whether any reported signs/symptoms were definitely, probably, possibly, or unlikely to have been caused by the reported exposure to a pesticide, or whether the signs/symptoms were unrelated to pesticides.
- 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.

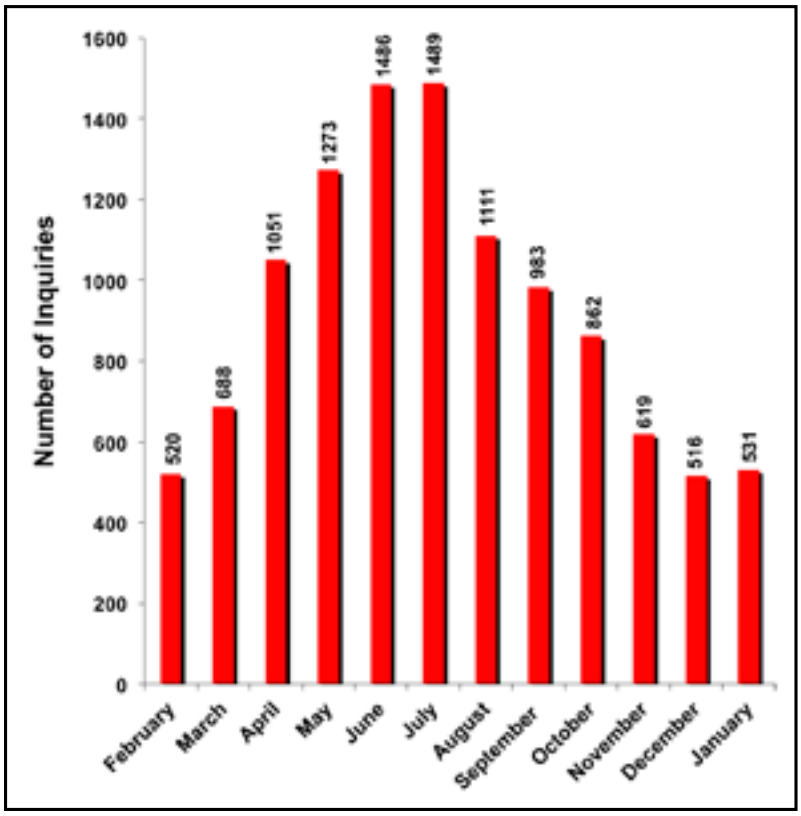
1. Monthly Inquiries

NPIC received 11,151 inquiries during this grant year. Graph 1 shows the number of inquiries received for each month. Seventy-four (74%) 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	520
March	688
April	1051
May	1273
June	1486
July	1489
August	1111
September	983
October	862
November	619
December	516
January	531

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.

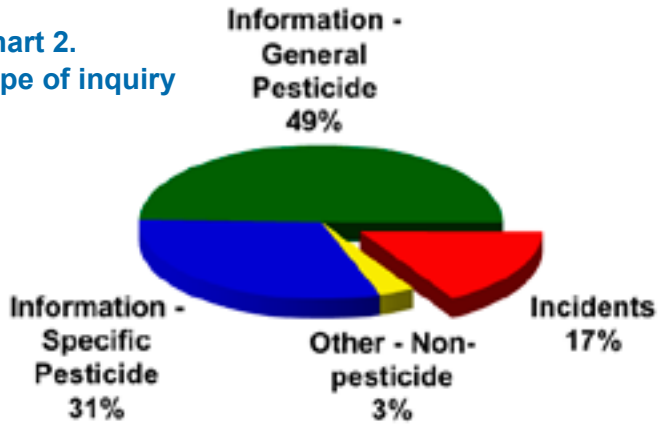
The majority of inquiries (8,954 or 80%) were informational inquiries about pesticides or related issues (Chart 2). NPIC responded to 3,433 (31%) information inquiries about specific pesticides. NPIC responded to 5,521 (49%) inquiries relating to pesticides in general.

NPIC documented 1,845 incidents involving pesticides (17%). NPIC Specialists routinely provide requested information, evaluate the need for any referrals, and ask several scoping questions to document the circumstances surrounding the reported incidents.

Table 2. Type of inquiry

Type of Inquiry	Total
Information - General Pesticide	5521
Information - Specific Pesticide	3433
Incidents	1845
Other - Non-Pesticide	352
Total =	11151

Chart 2. Type of inquiry



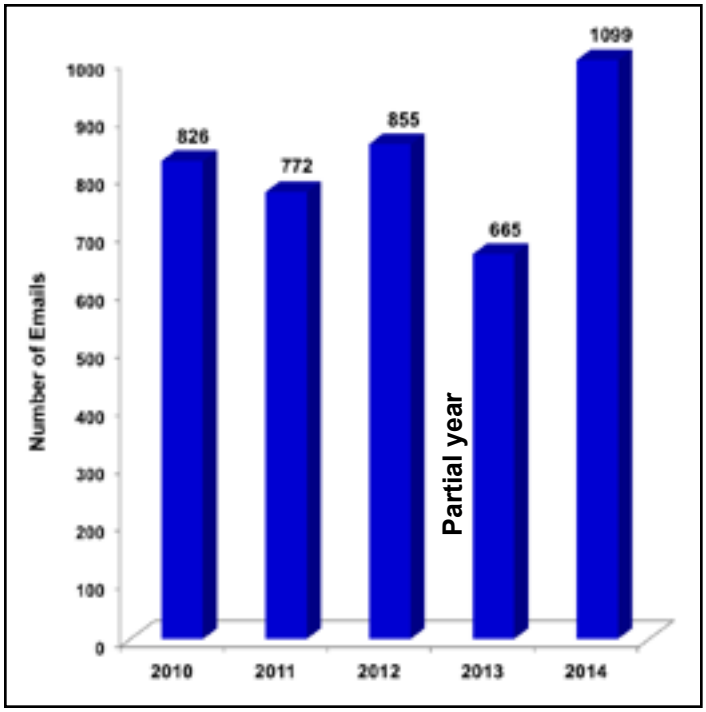
3. Origin of Inquiry

Table 3 summarizes the origin of inquiries received by NPIC. Over 90% of inquiries were received by telephone.

Table 3. Origin of inquiry

Origin of Inquiry	Total
Telephone	8150
Voice Mail	1879
Email	1099
Mail	20
Walk-In	3
Total =	11151

Graph 3. Inquiries received by email



4. Website Access

The NPIC website attracted more than 2.2 million unique visitors viewing 4,023,838 pages during this period.

Almost all of the page views originated from queries on popular search sites (51.3%), or were connected with NPIC from a bookmark (43.1%) or other direct link (i.e., shared via email). The most popular search terms used to reach NPIC were “diatomaceous earth,” “neem oil,” and “copper sulfate.”

Visits to the website varied greatly in duration, with 87,186 visits lasting longer than 15 minutes. The average visit duration was approximately 2 minutes.

The most popular pages viewed on the site were the NPIC home page (212,515 views), the Diatomaceous Earth general fact sheet (211,157 views), and Controlling Snakes (113,339 views).

Graph 4.1. Page views

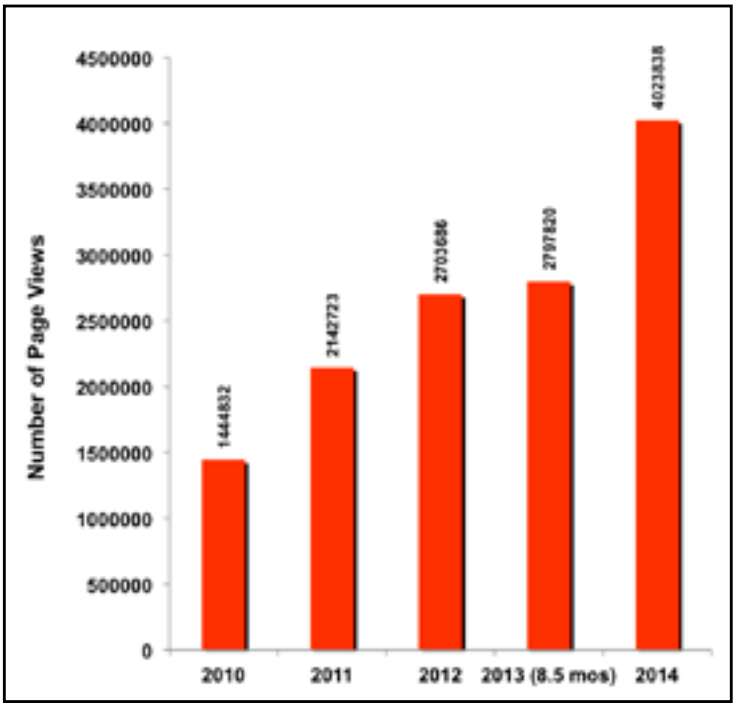
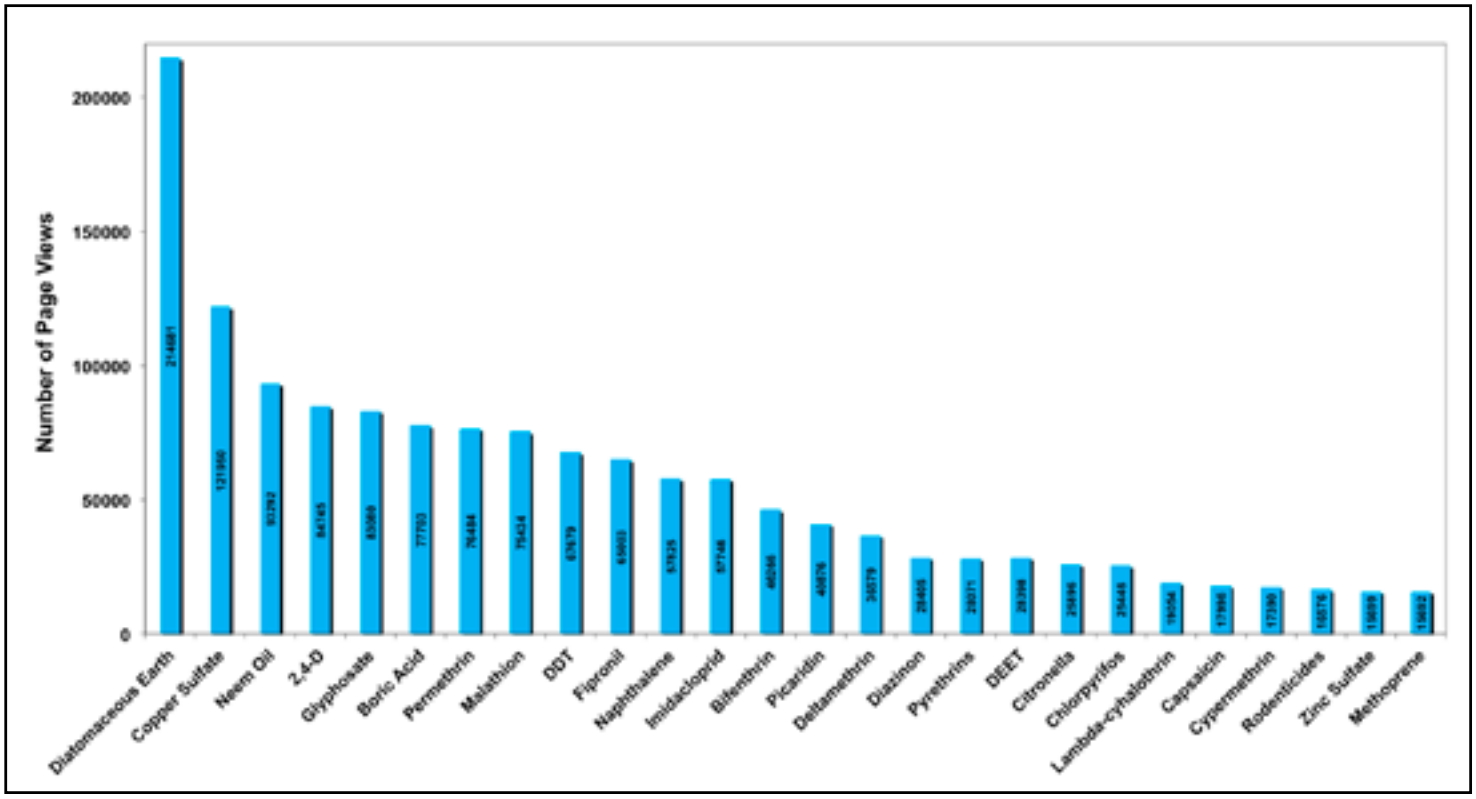


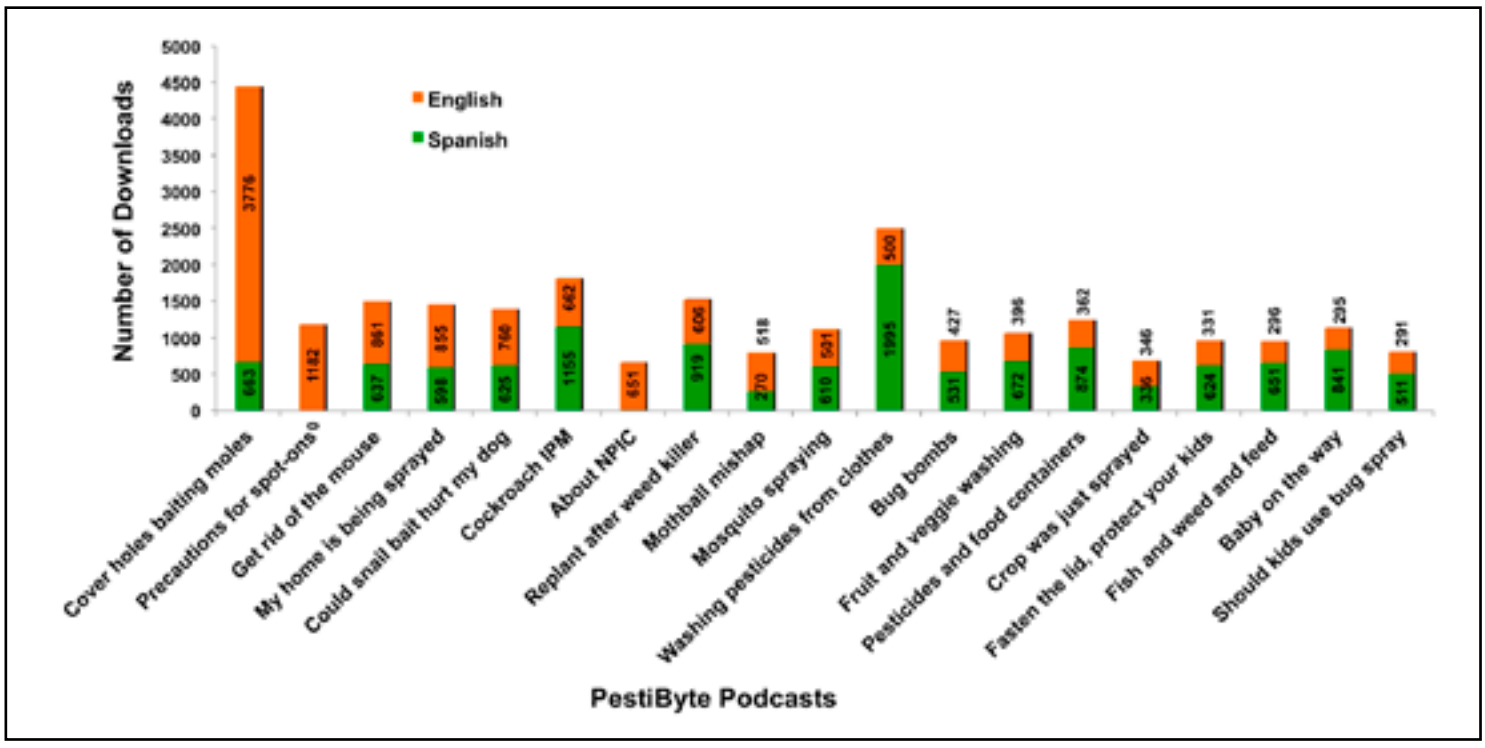
Table 4. Selected page views

Page Accessed	English page views	Number of pages available		Spanish page views	Number of pages available
Fact Sheets	1,701,193	182		11,642	6
Pest Control	604,194	52		152,381	34
Pesticide Ingredients	470,229	89		34,679	16
Home Page	212,623	1		5,995	1
Health and Safety	133,347	29		15,780	19
My Local Resources	82,314	3		10,485	1
Common Pesticide Questions	69,972	89		86,841	61
Regulations	64,269	24		5,771	6
Environment	63,971	18		15,135	7
A to Z Index	57,401	1		2,793	1
PestiByte Podcasts	19,893	52		13,896	46
Pesticide Incidents	15,811	1		1,169	1

Graph 4.2. Top 25 active ingredient fact sheet page views



Graph 4.3. Top 15 PestiByte podcast downloads



On an average day, 36 podcasts are downloaded in English, and 34 podcasts are downloaded in Spanish.

5. Type of Inquirer

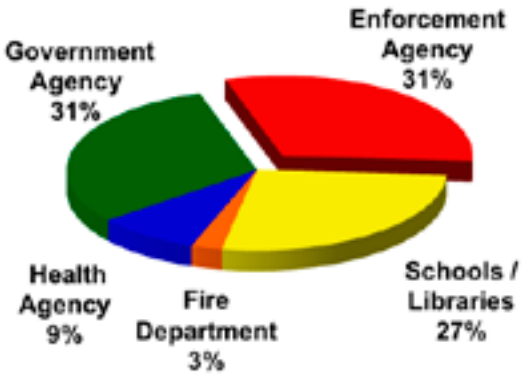
Table 5 summarizes the profession/ occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the general public. Of the 11,151 inquiries received, there were 10,035 (90.1%) from the general public, 231 (2.1%) from federal, state or local government agencies, 181 (1.6%) from information groups including the media, unions, and environmental organizations, and 151 (1.4%) from human and animal medical personnel.

Chart 5 summarizes the 231 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	10035
Federal/State/Local Agencies	
Government Agency	71
Enforcement Agency	71
Schools/Libraries	63
Health Agency	20
Fire Department	6
Medical Personnel	
Animal Vet./Clinic	76
Human Medical	74
Migrant Clinic	1
Other	
Pesticide Mfg./Mktg. Co.	120
Pest Control	80
Retail Store	74
Lab./Consulting	58
Media	38
Farm	29
Unions/Info. Service	23
Lawyer/Insurance	18
Environmental Org.	17
Non-migrant Ag. Worker	12
Master Gardener	10
Other	255
Grant Year Total =	11151

Chart 5. Inquiries from federal / state / local agencies (Total: 231)



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 (2,223) include all wrong numbers and people seeking their pest control companies.

Questions about regulations (900) 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 (1,704).

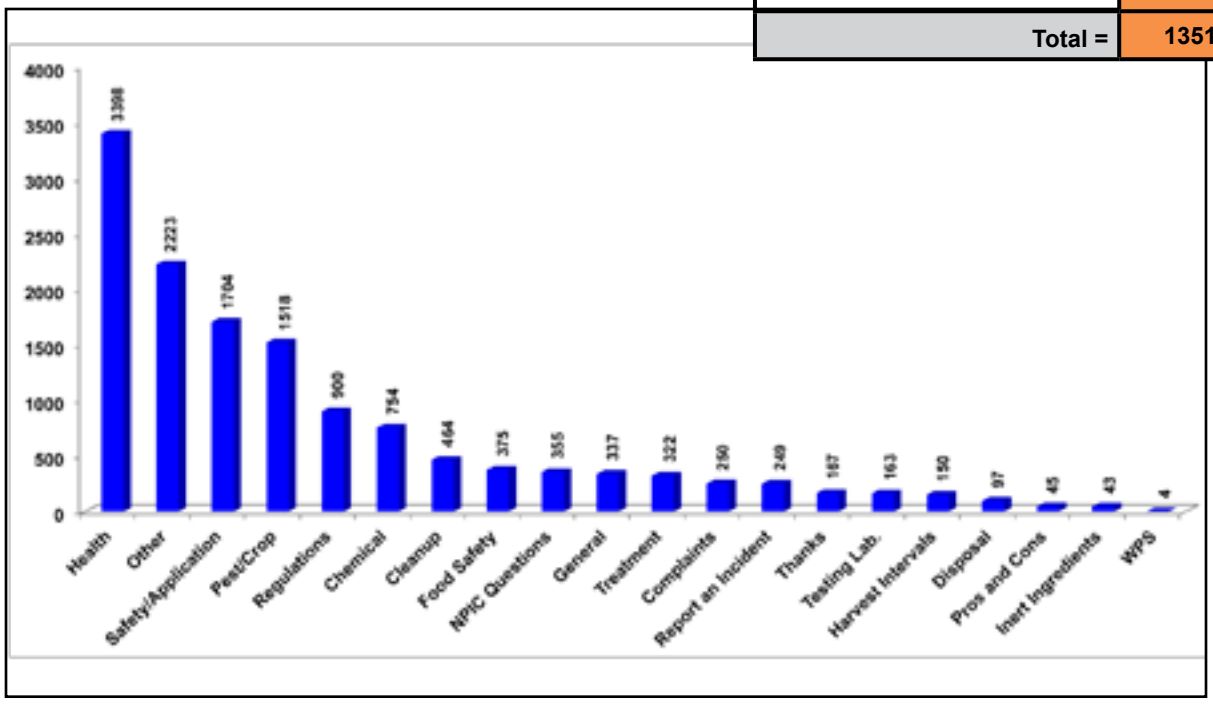
People contacted NPIC in order to report a pesticide incident 249 times with no specific question. In these cases, NPIC provides appropriate local referrals for enforcement, as needed.

Inquiries may often involve more than one type of question. Inquirers asked 13,518 questions during this grant year in the course of 11,151 inquiries.

Table 6. Type of question

Type of Question	Total
Health	3398
Other	2223
Safety/Application	1704
Pest/Crop	1518
Regulations	900
Chemical	754
Cleanup	464
Food Safety	375
NPIC Questions	355
General	337
Treatment	322
Complaints	250
Report an Incident	249
Thanks	167
Testing Lab.	163
Harvest Intervals	150
Disposal	97
Pros and Cons	45
Inert Ingredients	43
WPS	4
Pros and Cons	14
WPS	2
Total =	13518

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 (9,308) were answered by providing verbal communication. Information was also sent via email in 1,095 cases, and by postal mail in 112 cases. Upon request, NPIC brochures and other promotional materials were mailed to people 27 times in this period.

Table 7.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2014
Verbal Info	9308
Emailed Info	1095
Transferred to Specialist / Voicemail	117
Mailed Info	112
Handled Inquiry in Spanish	107
Transferred to EC / PC	33
Sent NPIC Outreach Material(s)	27
Interpreted via Language Line Svs	23
Faxed Info	2

Risk reduction actions:

NPIC keeps track of certain conversation topics aimed at reducing pesticide risk. Specialists documented 5,537 risk reduction actions, detailed in Table 7.2.

Table 7.2. Risk reduction actions

Risk Reduction Action Taken	Number of Inquiries
	2014
Discussed Ways to Minimize Exp.	2369
Discussed Following the Label	2297
Discussed IPM Concepts	709
Discussed Environmental Protection	162

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 16 for information about how NPIC maintains and delivers appropriate referral information.

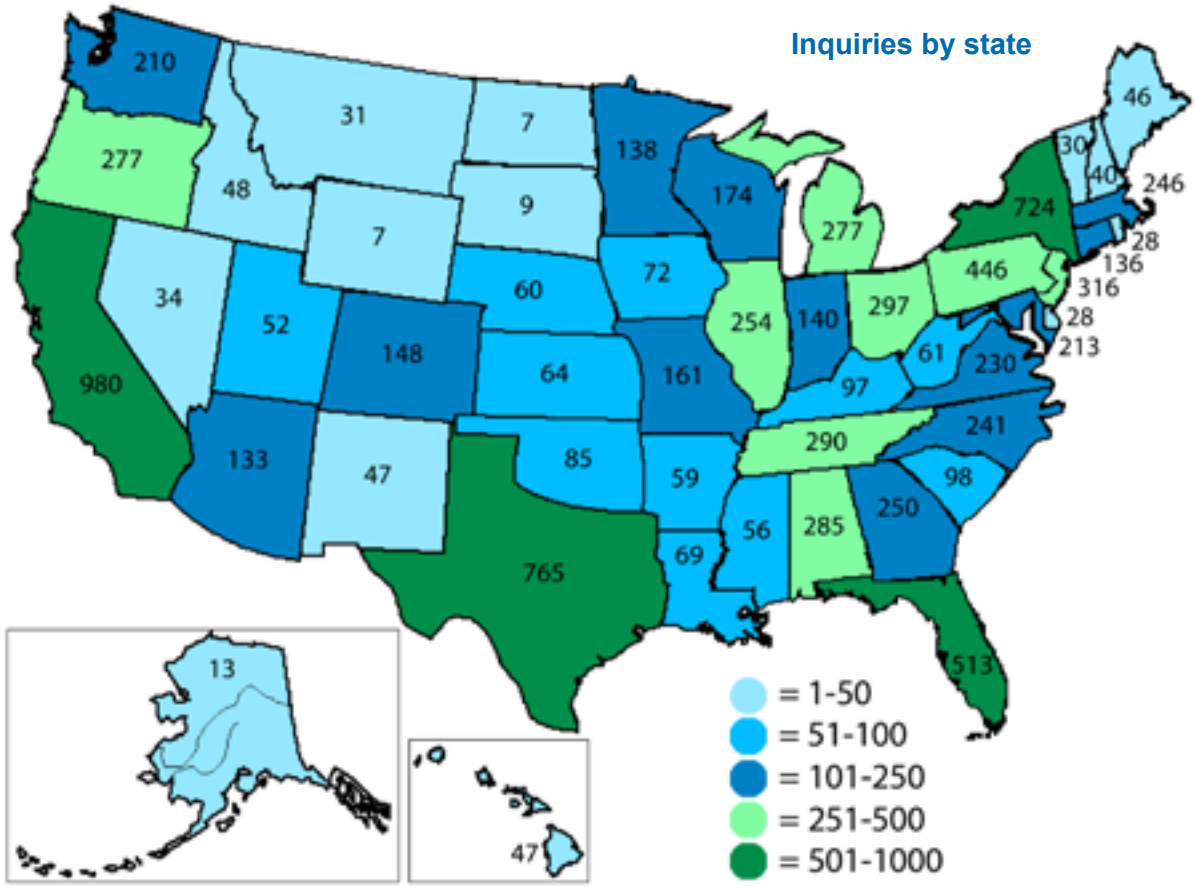
Table 7.3. Referrals to other organizations

Organization Name	Number of Inquiries
	2014
Manuf. / Distributor Contact	2617
County Extension Contact	1078
State Lead Contact	692
Other Org. Contact	618
Poison Control Contact	545
Dept of Health Contact	273
EPA Website	257
EPA HQ / OPP Contact	186
Hazardous Waste Contact	109
Animal Poison Contact	107
Other State Agency Contact	102
EPA Region Contact	96
Other Fed Agency Contact	76
OSHA Contact	26

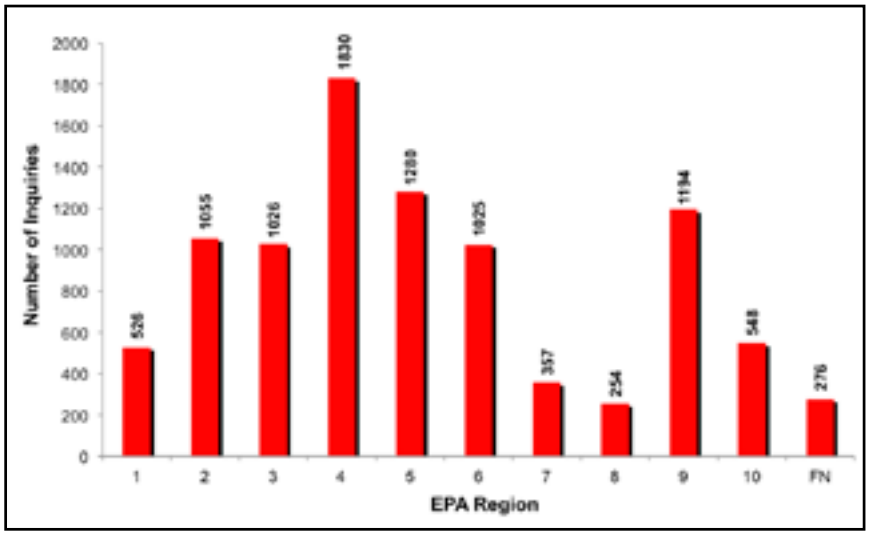
8. Inquiries by State

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, Florida, and Pennsylvania. In addition to the states, NPIC received inquiries from Puerto Rico (15), Canada (78), and other countries (198).

Graph 8 summarizes inquiries by EPA region. NPIC received 16.4% of inquiries from Region 4, 11.5% from Region 5, 10.7% from Region 9, 9.5% from Region 2, 9.2% from Region 3, and 9.2% from Region 6.



Graph 8. Inquiries by EPA region



FN = Foreign Nation

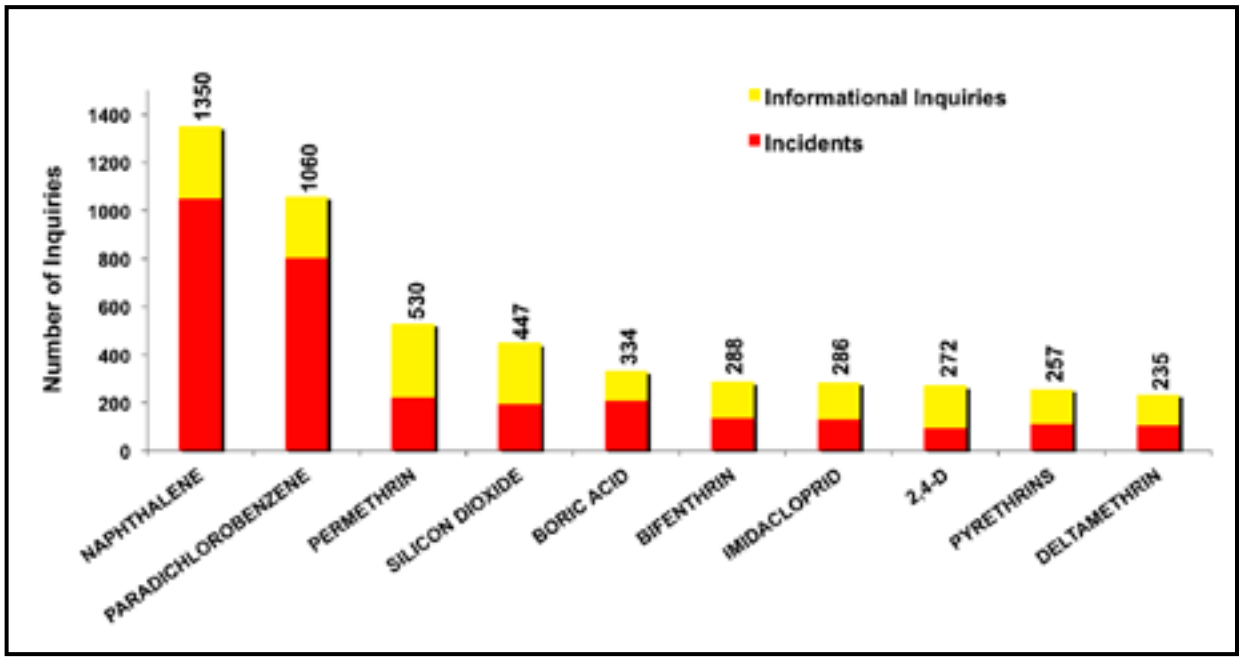
9. Top 25 Active Ingredients for All Inquiries

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 1,350 inquiries involving naphthalene, 1,049 (77.7%) 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	1350	1049	301
PARADICHLOROBENZENE	1060	803	257
PERMETHRIN	530	222	308
SILICON DIOXIDE	447	195	252
BORIC ACID	334	209	125
BIFENTHRIN	288	136	152
IMIDACLOPRID	286	131	155
2,4-D	272	96	176
PYRETHRINS	257	112	145
DELTAMETHRIN	235	106	129
GLYPHOSATE	233	83	150
MALATHION	229	90	139
PIPERONYL BUTOXIDE	220	123	97
FIPRONIL	197	98	99
DICAMBA	166	55	111
CARBARYL	154	63	91
LAMBDA-CYHALOTHRIN	138	73	65
MECOPROP	127	32	95
CAPTAN	125	47	78
CYFLUTHRIN	123	57	66
COPPER SULFATE	120	26	94
PYRIPROXYFEN	115	84	31
CAPSAICIN	112	55	57
METHOPRENE	108	67	41
SULFUR	105	47	58
Total =	7331	4059	3272

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 2,643 pesticide exposures and 957 accidents. Charts 10.1 and 10.2 provide further details. Among reported exposures, inhalation was the most common route of exposure (43.4%), followed by dermal contact (24.0%) and ingestion (14.0%). When a specific exposure route could not be identified, specialists documented an "unknown/many" exposure route (12.2%).

Indoor spills (85) were reported more often than outdoor spills (52). Among reported misapplications (712), over three quarters were misapplications by the homeowner or resident. Misapplications by the homeowner increased in 2014 (544) compared to 2013 (398), and the number of incidents involving drift increased from 2013 (57) to 2014 (106).

Chart 10.1. Pesticide exposures (Total: 2,643)

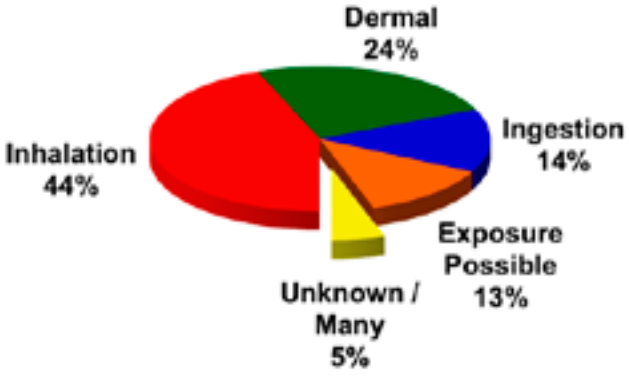


Chart 10.2. Pesticide accidents (Total: 957)

Table 10. Incident Type

Type of Incident	Total
Exposures	
Inhalation	1147
Dermal	634
Ingestion	370
Exposure Possible	322
Unknown/Many	133
Occupational	37
Accidents	
Misapp. - Homeowner	544
Misapp. - Other	126
Drift	106
Spill - Indoor	85
Spill - Outdoor	52
Misapp. - PCO	42
Fire - Other	2
Fire - Home	0
Industrial Accident	0
Other	408
Total =	4008

11. Top 25 Active Ingredients for Incidents

The most common active ingredients reported during incident inquiries are listed in Table 11 and Graph 11. The table identifies the number of incidents involving humans, animals, and other entities, such as environmental entities and property. Naphthalene and paradichlorobenzene were involved in more reported incidents than any other active ingredients. These are the active ingredients found in mothballs and similar products. Among these, humans were more commonly involved than animals, including children under five years old (138).

In Table 11, the top 3 active ingredients for human and animal incidents are highlighted below. For animal incidents, naphthalene, paradichlorobenzene, and permethrin were involved in the highest number of incidents.

Graph 11. Top 10 active ingredients for incidents

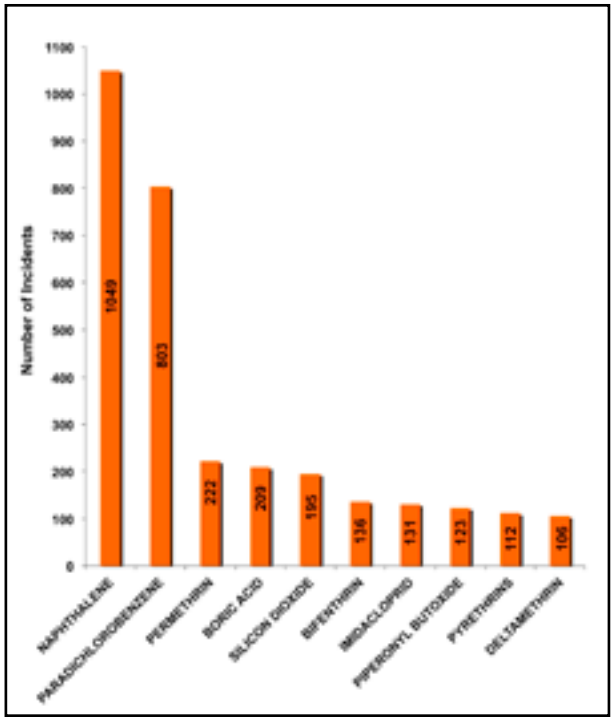


Table 11. Top 25 active ingredients for incidents to NPIC

Active Ingredient	Total Incidents	Human Incidents	Animal Incidents	Other Incidents
NAPHTHALENE	1049	482	68	388
PARADICHLOROBENZENE	803	373	48	305
PERMETHRIN	222	78	45	36
BORIC ACID	209	70	36	18
SILICON DIOXIDE	195	83	33	29
BIFENTHRIN	136	57	19	24
IMIDACLOPRID	131	33	33	23
PIPERONYL BUTOXIDE	123	53	22	19
PYRETHRINS	112	61	12	19
DELTAMETHRIN	106	36	13	27
FIPRONIL	98	19	33	17
2,4-D	96	33	11	32
MALATHION	90	28	4	35
PYRIPROXYFEN	84	13	35	3
GLYPHOSATE	83	32	12	21
LAMBDA-CYHALOTHRIN	73	28	8	19
METHOPRENE	67	9	30	2
CARBARYL	63	13	3	27
CYPERMETHRIN	60	28	7	13
CYFLUTHRIN	57	25	5	12
CAPSAICIN	55	27	4	11
DICAMBA	55	18	8	17
ZINC PHOSPHIDE	53	9	14	9
CAPTAN	47	6	3	19
N-OCTYL BICYCLOHEPTENE DICARBOXIMIDE	47	21	7	9
Total =	4114	1635	513	1134

12. Locations of Exposure or Accident

For incidents, specialists record the location of exposure or accident. Of the 3,481 locations where exposures or accidents were documented, 89.0% occurred in the home or yard, and 3.1% 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	3097
Agriculturally Related	109
Unclear/Unknown	87
Office Building, School	47
Other	41
Retail Store/Business	18
Nursery, Greenhouse	16
Food Service/Restaurants	11
Roadside/Right-of-Way	11
Treated Water	11
Pond, Lake, Stream Related	10
Health Care Facility	10
Industrially Related	8
Park/Golf Course	5
Total =	3481

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 (250). 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	1	0	0	0	0	0	8	9	0
Building-Home/Office	250	15	44	7	60	0	17	0	15
Home Garden	110	15	5	0	1	2	27	172	0
Home Lawn	22	2	11	4	0	5	7	43	3
Natural Water	1	0	0	0	0	1	0	0	0
Property	61	5	7	0	18	8	5	0	16
Soil/Plants/Trees	71	1	32	5	0	9	27	82	10
Treated Water	2	0	0	0	0	7	1	0	1
Vehicle	11	0	2	0	5	2	3	0	1

14. Certainty Index

Table 14 and Graph 14 summarize the certainty index 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.

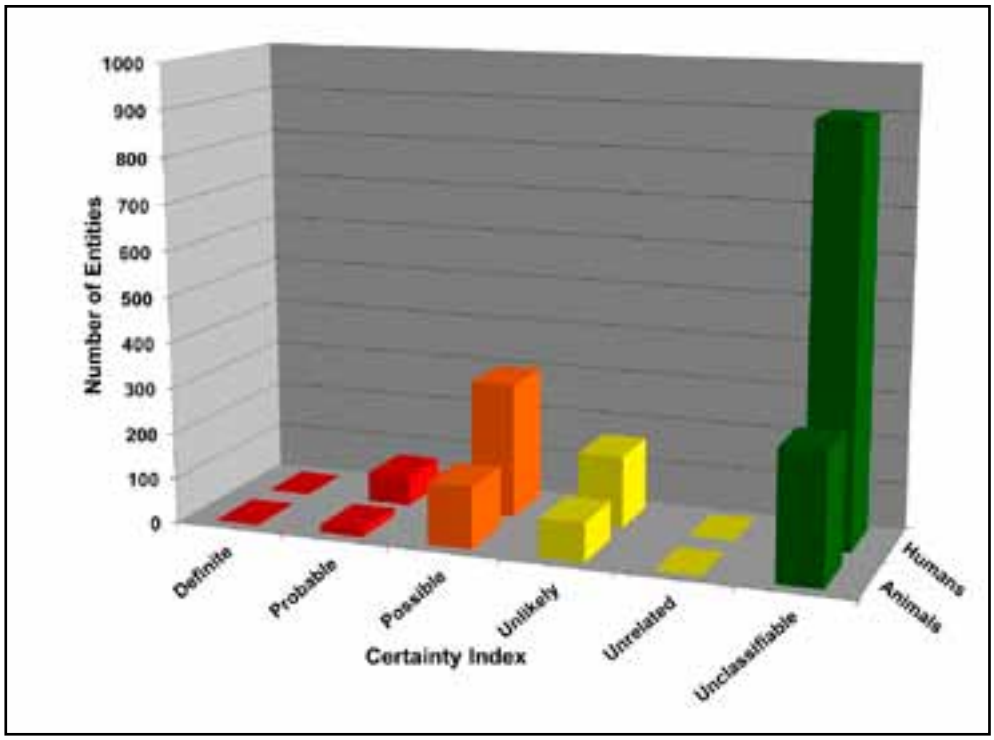
Of the total number of entities assigned a certainty index (2,018), 4.2% of the cases were assigned an index of definite or probable, 21.4% were assigned an index of possible, 12.1% were assigned an index of unlikely, and 62.3% were considered unclassifiable. Because none of the information reported 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 assignments for definite and unrelated are rarely assigned.

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

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	Total	Male	Female	Groups	Gender Not Stated
Definite	2	0	2	0	0	0	0
Probable	17	65	82	28	35	2	0
Possible	136	296	432	122	162	12	0
Unlikely	85	159	244	62	90	7	0
Unrelated	0	0	0	0	0	0	0
Unclassifiable	283	902	1258	338	448	111	5

Graph 14. Certainty index for incidents



What is the Certainty Index?

The certainty index is an estimate by NPIC as to whether an incident (including reported symptoms) was either definitely, probably, possibly, or unlikely to have been caused by the reported exposure to a pesticide, or whether the incident was unrelated to pesticides.

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

15. Severity Index

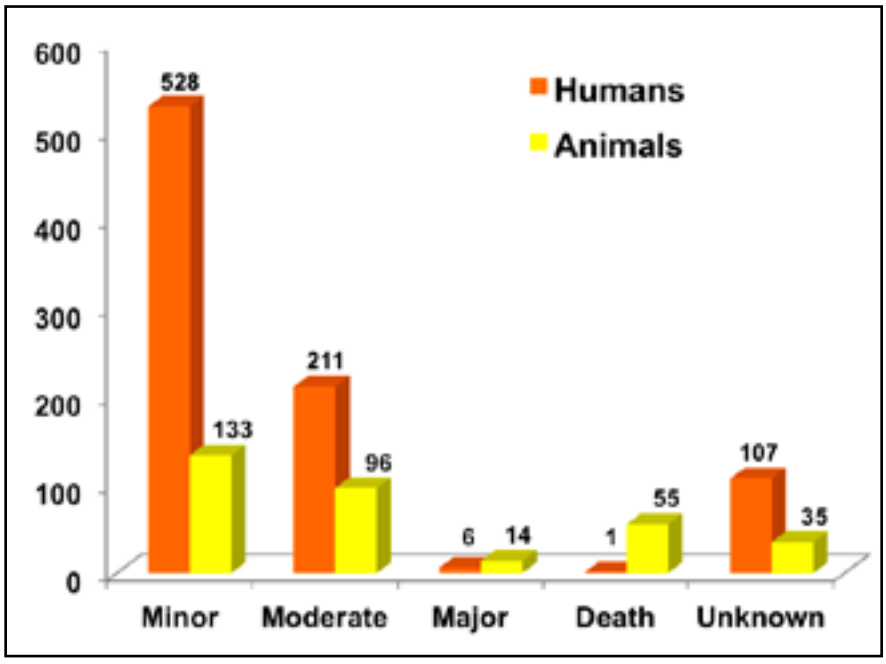
Table and Graph 15 summarize the severity of symptoms for all human and animal incidents reported to NPIC.

For all signs/symptoms reported in human pesticide incidents, 37.1% were minor, 14.8% were moderate, 0.4% were major, and one death was reported. Symptoms were unknown in 7.5% of human incidents. In 40.1% 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	528	133	661	210	294	24	0
Moderate	211	96	307	78	126	7	0
Major	6	14	20	2	4	0	0
Death	1	55	56	1	0	0	0
Unknown	107	35	142	28	52	24	3
Asymptomatic	570	190	760	232	259	77	2

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 3,070 entities involved in incidents reported to NPIC during this period, 49.6% were human, 18.5% were animals, and 30.7% were environmental non-target entities. Other entities (37) are miscellaneous items (i.e., sidewalk, food). Pesticide incidents may involve multiple entities.

Graph 16.1. Humans

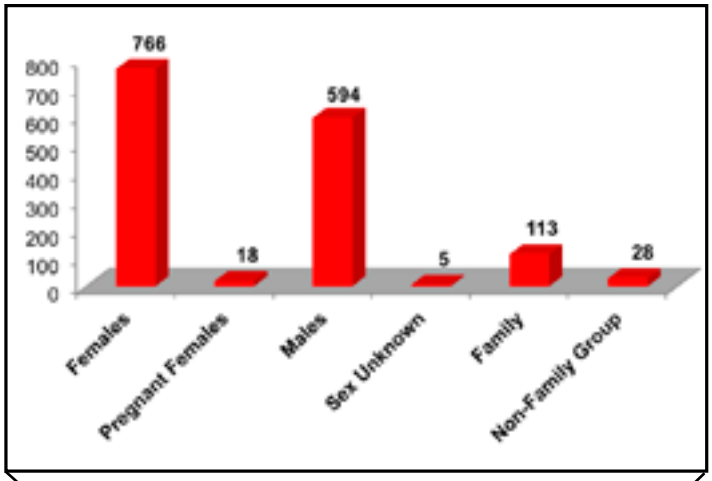
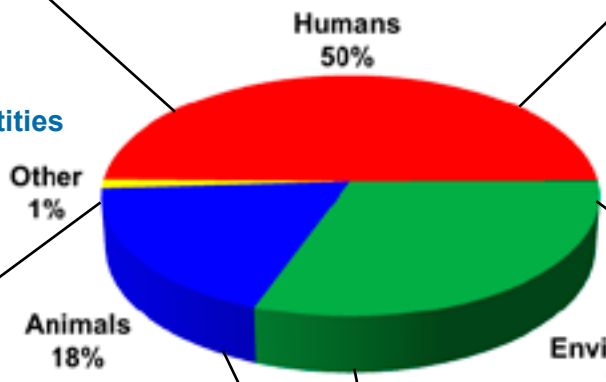
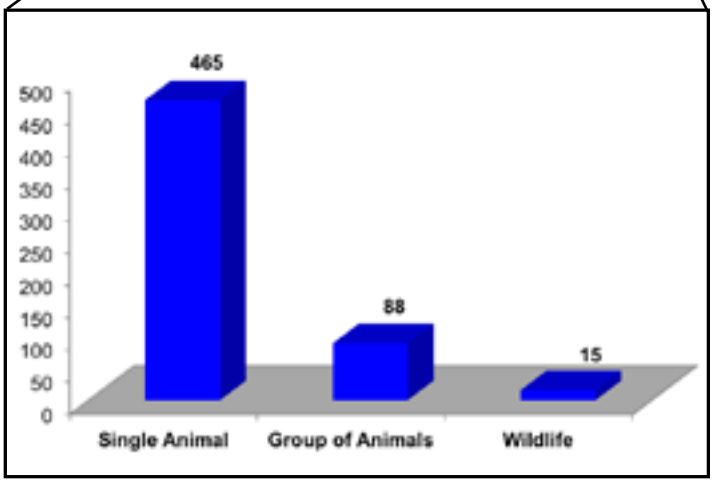
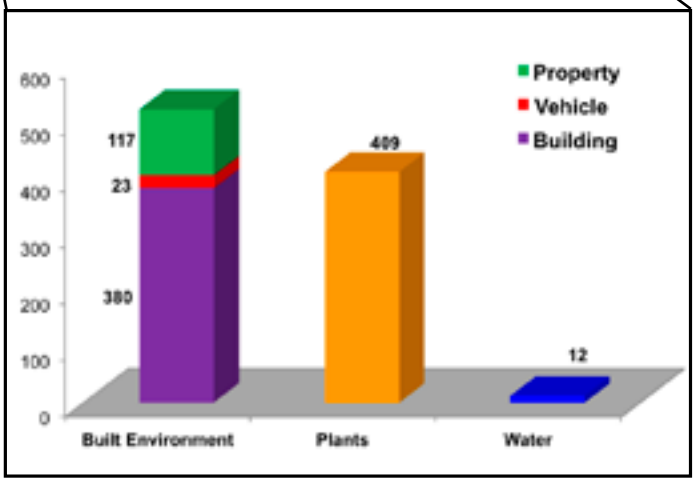


Chart 16. Description of entities





Graph 16.2. Animals



Graph 16.3. Environmental entities

17. Reported Deaths

During this period, one human death with a known active ingredient was reported (Table 17.1). An investigator with the US Military called NPIC seeking information about zinc phosphide after a serviceman died in Afghanistan, and zinc phosphide was potentially involved.

Of the 568 animal entities involved in pesticide incidents, there were 44 reported deaths where the active ingredients were known. Piperonyl butoxide and methoprene were the most commonly reported active ingredients in animal deaths (Table 17.2).

Table 17.1. Reported deaths with known active ingredient

Reported Deaths	Total
Human Deaths -	
Male	1
Female	0
Total Human Deaths =	1
Animal Deaths -	
Single Animal	31
Group of Animals	7
Wildlife	6
Total Animal Deaths =	44
Total =	45

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

Active Ingredient[1]	Number of Deaths
PIPERONYL BUTOXIDE	7
METHOPRENE	5
BIFENTHRIN	4
ETHOFENPROX	4
IMIDACLOPRID	4
FIPRONIL	3

Active Ingredient[1]	Number of Deaths
TRICLOPYR	3
GLYPHOSATE	3
PYRETHRINS	3
PYRIPROXYFEN	3
PERMETHRIN	3

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

18. Entity Age

Table 18 and Graph 18 summarize the ages of people involved in incidents reported to NPIC. Among 1,383 single human entities, NPIC was able to collect the person's age 77.6% 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 1,073 humans with known age, 12.9% were children (ages 4 and under) and 24.5% were seniors (ages 65 and over).

Graph 18. Age of people involved in reported incidents

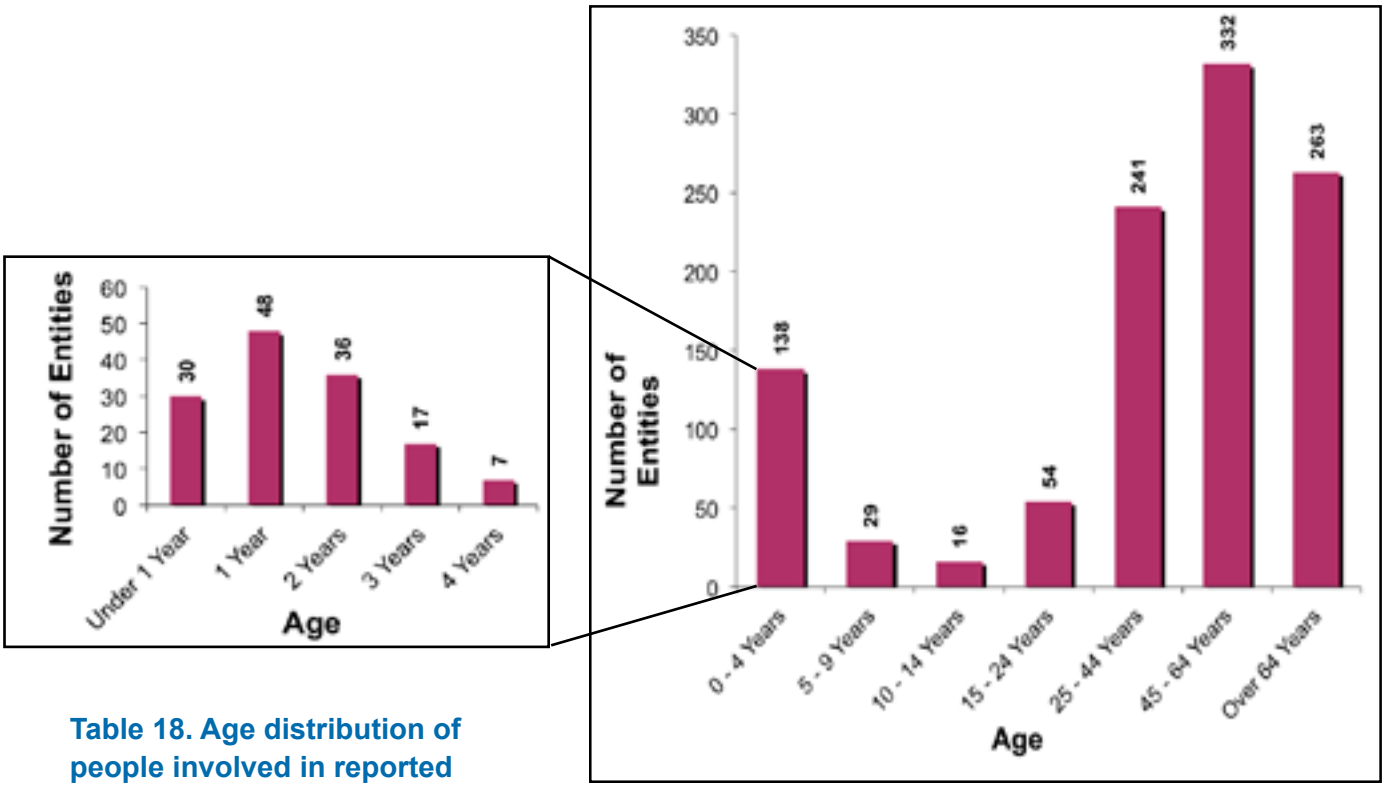


Table 18. Age distribution of people involved in reported incidents

Age Category	Total
Under 1 Year	30
1 Year	48
2 Years	36
3 Years	17
4 Years	7
Total (0 - 4 Years) =	138
5 - 9 Years	29
10 - 14 Years	16
15 - 24 Years	54
25 - 44 Years	241
45 - 64 Years	332
Over 65 years	263

19. Notable Exposures

There were 3,070 entities potentially exposed to pesticides in 1,845 reported incidents.

Figure 19.1

Entities potentially exposed to pesticides in 1,845 incidents reported to NPIC.

Total = 3,070 entities

Figure 19.2

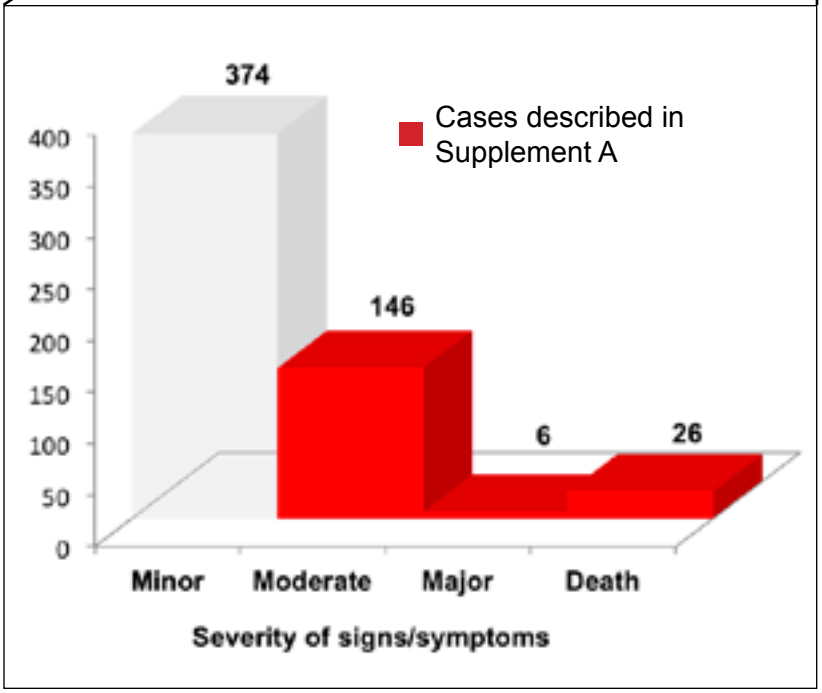
Entities potentially exposed to a known pesticide with reported signs/symptoms.

Total = 816 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 = 552 entities



A supplemental report describes the 178 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 55 incident reports to the VIRP involving 56 animals (40 dogs, 14 cats, one equine, 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. Over two-thirds of the products were liquid spot-on treatments for pets (34%) and pelleted products (34%). About 18.7% 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 (59.3%) of the products were insecticides and 25.9% were rodenticides.

Table 20.1. Product formulations as reported in VIRP

Formulation	Number of Products
	2014
Spot-on	18
Pellet	18
Liquid	10
Shampoo	2
Powder	2
Other	2
Aerosol	1
Total =	53

Chart 20.1. Product formulations reported in VIRP

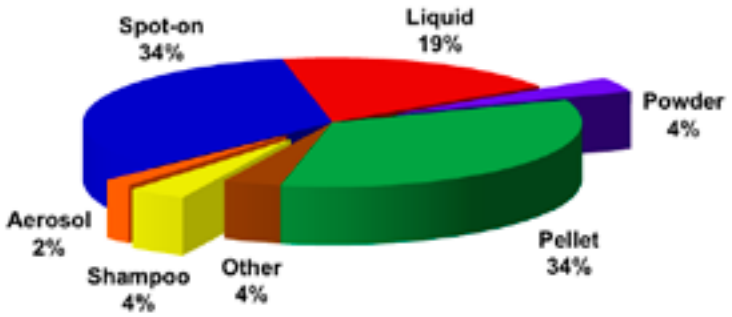


Table 20.2. Product types as reported in VIRP

Type	Number of Products
	2014
Insecticide	32
Rodenticide	14
Molluscicide	3
Herbicide	3
Fungicide	1
Other	1
Total =	54

Chart 20.2. Product types reported in VIRP

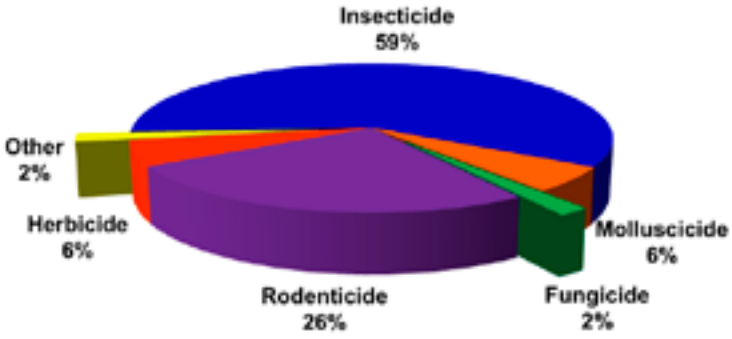


Table 20.3 and Chart 20.3 show the types of animal symptoms reported to VIRP. Symptoms are classified as dermatological (irritant, sloughing, ulcer), gastrointestinal (diarrhea, vomiting), neurological (depression, excited state, seizures, tremors), none, or other. Multiple symptoms may be reported for each animal. Of the reported symptoms, 47.7% were classified as neurological. Eighteen (18.2%) percent were classified as gastrointestinal, 18.2% as other, 9.1% as none, and 6.8% as dermatological.

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, 51.8% of the cases were ongoing. The affected animals had recovered at the time of the report, in 14.3% of cases. Nine percent (9.0%) of the animals experienced continuing illness and 17.9% resulted in the death of the animal.

Table 20.3. Animal symptoms as reported in VIRP

Symptom	Number of Animals
	2014
Dermatological: Irritant	4
Dermatological: Ulcer	2
Dermatological: Sloughing	0
Dermatological Total	6
Gastrointestinal: Vomiting	13
Gastrointestinal: Diarrhea	3
Gastrointestinal total	16
Neurological: Tremor	17
Neurological: Depression	15
Neurological: Excited	6
Neurological: Seizure	4
Neurological Total	42
Other	16
None	8
Total =	88

Chart 20.3. Animal symptoms as reported in VIRP

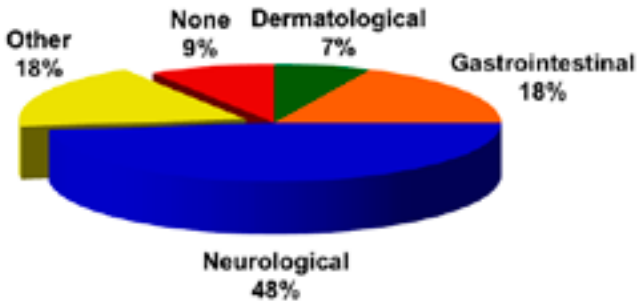
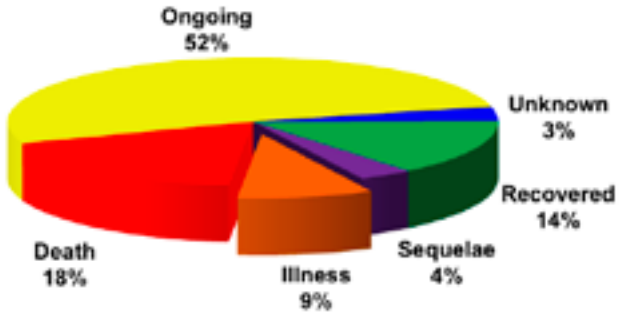


Table 20.4. Incident outcomes as reported in VIRP

Outcome	Number of Animals
	2014
Ongoing	29
Death	10
Recovered	8
Illness	5
Sequelae	2
Unknown	2
Total:	56

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.

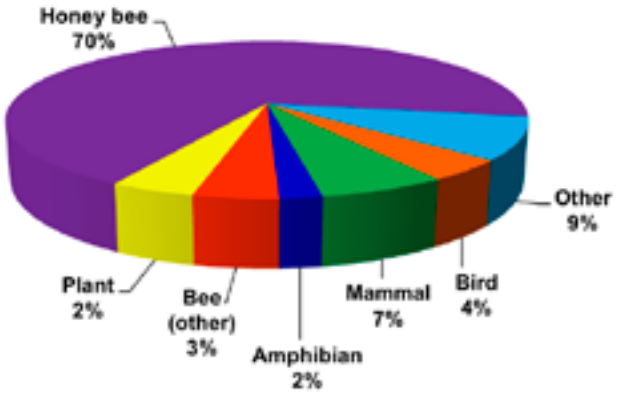
Table 21.1 Entities involved in the Eco-reports

Entity	Number of Reports
Honey Bee	32
Other	4
Mammal	3
Bee (other)	2
Bird	2
Plant	2
Amphibian	1

Table 21.2 Active ingredients involved in the Eco-reports

Active Ingredient	Quantity
BIFENTHRIN	1
DIMETHOATE	1
NALED	1

Chart 21.1 Entities involved in the Eco-reports



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