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NATIONAL
PESTICIDE ● INFORMATION
CENTER

-2010-

Environmental & Molecular Toxicology

Oregon State
UNIVERSITY

OSU

The National Pesticide Information Center (NPIC) is a service providing a variety of pesticide and related information to the general public and professionals across the United States, Puerto Rico and the Virgin Islands. NPIC is a cooperative project between Oregon State University and the US Environmental Protection Agency. The 2010 Annual Report, covers the period April 1, 2010 - March 31, 2011.

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. Thus, if a person alleges/reports a pesticide incident, it likely will be recorded as an incident by NPIC. Based on the information provided, NPIC qualifies the information by assigning a certainty index (CI) and 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:

Dave Stone, Ph.D.
Project Director

National Pesticide Information Center (NPIC)
Environmental and Molecular Toxicology
Oregon State University
310 Weniger Hall
Corvallis, OR 97331-6502
800-858-7378
www.npic.orst.edu

NPIC 2010 Annual Report

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EXECUTIVE SUMMARY

In its first year of the new project period, the National Pesticide Information Center (NPIC) continued to provide information about pesticides by phone, email, and web content to the public. 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 Extension System.

Inquiry Highlights

The operational year was from April 1, 2010 – March 31, 2011, which will be referenced as “2010” in this report. During this period, NPIC received 25,290 inquiries; see Table 1.1 on page 22.

- About 89% of the total inquiries were addressed over the telephone.
- A pesticide spill, a misapplication, a contamination of a non-target entity, or any unintended exposure to a pesticide is classified as an incident. About 14.5% of NPIC inquiries in 2010 were incidents.
- One human death was reported, and 64 animal deaths. Details about these cases were submitted quarterly; see tables 17.1 and 17.2.
- The top active ingredients involved with incidents were naphthalene (809), paradichlorobenzene (380), permethrin (281), pyrethrins (198) and zinc phosphide (195).

Special Reports Provided to EPA

NPIC provides special reports from its Pesticide Inquiry Database (PID) to EPA personnel, often within one week. Selected topics:

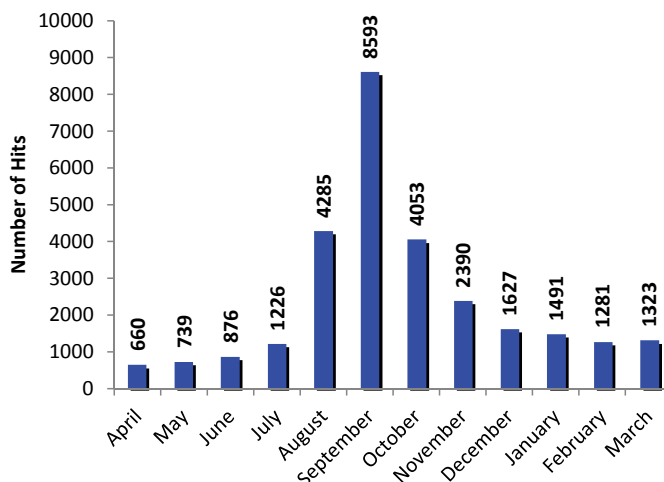
- Permethrin incidents involving spot-on applications to cats
- Human incidents related to chlorpyrifos
- Narratives describing label clarity improvement areas
- Cypermethrin and certain symptoms in animals
- Animal/bird incidents related to corn gluten meal
- Cypermethrin exposures possibly related to dog deaths
- Pesticide incidents involving indoor misuse and/or cleanup
- Incidents related to a product used in humidifier trays
- Bed bug-related pesticide incidents

- There were 4,602 entities involved in incidents reported to NPIC: 48% were human, 31% were animals and 21% were structural or environmental. See Chart 15.1 on page 38.
- Among the 2,031 single humans involved in pesticide incidents, 25% were children (ages 4 and under) and 15% were seniors (ages 65 and over). Almost half of the people reported no symptoms (48%).
- Questions about health/safety (8,416) and pesticide application (10,772) were most common. See Table 6.1 on page 28.

Bed Bugs - The number of bed bug-related inquiries to NPIC almost doubled this year, from 615 (2009) to 1,157 (2010). Many of these inquiries were related to the difficulty of pest control and the potential health effects of pesticides. NPIC also observed a four-fold increase in web traffic to its bed bug page (Figure 1).

Mothball Products – NPIC received 1,514 inquiries regarding the use of mothballs, which represents a 30% increase since last year. Of these, 862 (57%) were incidents, including 617 reports of misapplication. Many reports involved off-label use of mothballs to repel squirrels and snakes in and around the home.

Figure 1. Hits on NPIC's webpage about bed bugs (2010 – 2011).



EXECUTIVE SUMMARY

Notable Items

NPIC Website – This year, the collection of NPIC websites received approximately three million hits, which represents an 11% increase in traffic over the previous year. The collection includes over 200 pages of original content, and over 100 new pages were in development this year. See pages 8-9.

Diversity – Dr. Dave Stone was awarded with the OSU Vice Provost's Award for Excellence in Diversity. Contributing factors included hiring practices at NPIC, his role as a Co-Investigator on a USDA grant for multi-cultural scholars, and his mentoring of under-represented students in the OSU PROMISE internship program and Minorities in Agriculture and Natural Resource-Related Sciences (MANRRS).

NPIC aims to deliver services in a way that works for people with diverse and complex challenges. Pesticide Specialists receive training in tailored messaging. The NPIC website is available in English and Spanish, and it meets W3C web content accessibility guidelines. Fact sheets are available at the technical/scholarly level, and in targeted, question-answer formats at the 8th grade reading level.

IPM and Risk Reduction – While expanding the NPIC website, the team incorporated more Integrated Pest Management (IPM) and risk reduction concepts than ever before. Leveraging over two years of staff training, the same concepts are central to many conversations with callers. NPIC developed web pages about identifying pests, low risk pesticides, minimizing pesticide risks, safe use practices, and a suite of pages about IPM for households, lawns, gardens, schools, and agriculture.

On January 1st, Pesticide Specialists began tracking their activities related to risk reduction, including discussions with callers about following label directions, IPM concepts, protecting the environment, and minimizing exposure.

Scholarly achievements – Dave Stone and Bryan Harper co-authored an article with collaborators entitled, "Exposure Assessment: Recommendations for Nanotechnology-based Pesticides" in the *International Journal of Occupational and Environmental Health*, Volume 16, No. 4 (2010).

NPIC presented at the annual meeting of the American Public Health Association (APHA), delivering one oral presentation and two posters:

- Recurring and emerging trends in pesticide exposure incidents among pets reported to the National Pesticide Information Center (NPIC)
- Bedbug-related pesticide incidents reported to the National Pesticide Information Center (NPIC) from 2004-2009
- Pediatric exposure incidents reported to the National Pesticide Information Center

Office of Pesticide Programs (OPP) Site Visits – Frank Davido, Project Officer for NPIC, visited on September 13-15, 2010 to meet with NPIC management and staff. NPIC staff delivered presentations highlighting new developments, Spanish resource expansion, outreach efforts, fact sheets, and recent advancements in NPIC's information technology (IT).

Dave Stone and Sean Ross visited OPP from March 8-9, 2011. They met with Director Bradbury, Frank Davido, and the Directors of several OPP Divisions. They delivered presentations about NPIC achievements and discussed collaborative opportunities on future projects and project priorities.

New Pesticide Inquiry Database (PID) – On January 1st, NPIC began using a new program to document all inquiries and incidents. The program was developed by NPIC to improve data collection procedures and streamline quality assurance. See page 8.

Reaching Out to Underserved Audiences – In response to NPIC's annual outreach campaign in 2010, NPIC received over 800 requests for brochures. As a result, NPIC distributed 84,316 English and 38,567 Spanish brochures. See page 16 for more information. Notably, over 300 responses were received from gatekeeper organizations that serve underserved populations, such as County WIC coordinators and the Association of Farm Worker Opportunity Programs. NPIC did not conduct a similar outreach campaign in 2011, given the reduction in budget.

Social Media – NPIC established a routine presence on Facebook and Twitter, targeting residential pesticide

Note: The complete record of NPIC accomplishments for the operational year includes this 2010 annual report and four quarterly reports (submitted earlier). This report covers the grant year April 1, 2010 through March 31, 2011.

EXECUTIVE SUMMARY

users. Updates include tips and resources about IPM and minimizing exposure to pesticides. Follow NPIC on Twitter @NPICatOSU, and on Facebook at <http://www.facebook.com/NPICatOSU>.

NPIC was mentioned in 82 blogs in the first three months of 2011, according to a snapshot survey. NPIC maintains a presence on Wikipedia by updating the page about NPIC and by adding links to NPIC content in related Wikipedia articles.

Telecommunications – NPIC created a new call-handling procedure that splits English- and Spanish-speakers into separate queues and allows people to leave voicemail messages when all Pesticide Specialists are busy. It also replaces on-hold music with recorded messages about pesticide safety.

Foreign Language Capabilities – NPIC employs three 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 a contract with Language Line Services, Inc., NPIC is capable of responding to inquiries in over 170 languages. This year, NPIC used Language Line Services to provide risk communication to 41 people in Spanish, French, Mandarin, Turkish, Arabic, and Russian.

Mission

The primary mission of the National Pesticide Information Center is to provide objective information, collect and report incident data, use cutting edge technologies, and conduct extensive outreach to diverse audiences to promote a better understanding of pesticide use, with an overall goal of reducing risks to people, animals, and the environment.

During this grant period, NPIC services were available 10 hours/day from 6:30 am - 4:30 pm Pacific Time, seven days per week (excluding holidays), via a toll-free telephone number, and 24 hours/day via e-mail and the internet, to anyone in the United States and its territories.

NPIC is open to questions from the public and professionals. It is staffed by highly qualified and trained specialists who have the toxicology and environmental chemistry training needed to provide knowledgeable 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 interpret and understand toxicology and environmental chemistry information about pesticides. The services provided by NPIC are strictly informational and have no regulatory or enforcement capability or authority.

Objectives

The objectives of NPIC are:

- To operate a toll-free, bilingual telephone service to the public and professionals in the United States, Puerto Rico, and the Virgin Islands, 7 days a week, 10 hours per day.
- To maintain and develop English and Spanish websites accessible to broad audiences, and respond to inquiries in multiple formats including e-mail, fax, written requests, and emerging technologies.
- To serve as a source of objective, reliable information on pesticide chemistry, toxicology, environmental fate, pesticide regulation, and human and animal health effects.
- Provide expert consultation to the medical community for pesticide incidents involving humans and animals.
- To collect complete information on human and animal exposure incidents, including the determination of certainty and severity.
- To computerize all inquiries to facilitate reporting and the analysis of trends for pesticide misuse, labeling issues, and risks to humans, animals, and the environment.
- To support and create innovative informational technology (IT) tools to report pesticide incidents and develop and maintain access to specialized databases on pesticides.

History

The pesticide information service began in 1978 with the Texas Tech University Health Sciences Center associated Pesticide Hazard Assessment Project (PHAP) in San Benito, Texas. This service, offered via telephone, was used to report pesticide incidents in EPA Region VI. Callers from across the U.S. began using the service to obtain information on pesticides. In 1980, the network was designated as the National Pesticide Information Clearinghouse (NPIC). In 1984, the NPIC added the 24-hour responsibilities of South Carolina's National Pesticide Telecommunications Network (NPTN) and changed its name to NPTN. The NPTN moved to Texas Tech University in Lubbock, Texas in 1986. Following a competitive renewal process for the cooperative agreement, NPTN moved to Oregon State University (OSU) on April 1, 1995.

At OSU, NPTN started building a comprehensive website, and started responding to inquiries by email. NPTN was re-named National Pesticide Information Center (NPIC) in 2001.

- In 2006, NPIC assumed responsibility for responding to inquiries about antimicrobial pesticides.
- In 2007, NPIC added multi-lingual capabilities through a contract with Language Line Services, Inc. This enables NPIC to provide service in over 170 languages.
- In 2008, NPIC released a comprehensive Spanish-language version of its website.
- In 2009, NPIC launched PestiByte podcasts and an online portal for pesticide incident reporting. The portal was developed collaboratively with the American Veterinary Medical Association (AVMA) for veterinary professionals: <http://npic.orst.edu/vet>.
- In 2010, NPIC started using social media to achieve its mission, and NPIC developed software to facilitate

retrieval of information from the Pesticide Product Information System (PPIS) and the Pesticide Product Label System (PPLS).

- In 2011, NPIC revamped its websites in English and Spanish to infuse Integrated Pest Management (IPM) concepts throughout. Over 100 web pages were added, including a zip-code driven locator for local resources.

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 containing detailed scientific and regulatory information for over 1000 active ingredients. This collection has been scanned for desktop access.

No new acquisitions were made in 2010 with regard to computer hardware, furniture or facilities. NPIC is housed on the third floor of Weniger Hall in the Department of Environmental & Molecular Toxicology. Allocated spaces include five rooms, two 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. Environmental Protection Agency (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 US EPA Guidelines regarding procurement requirements stipulated in 40 CFR Part 33. NPIC has complied with all requirements specified by US EPA as part of the funding authorization of this project.



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ACHIEVEMENTS

Pesticide Inquiry Database (PID)

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. Sudakin on human incidents, and with Dr. Berman on animal incidents. Together, over 3500 pesticide-related incidents were documented, reviewed and characterized in terms of certainty and severity this year. The QA/QC Specialist also provided detailed feedback to each pesticide specialist about his/her performance in data entry and incident classification. Suzanne Phillips trained her successor, Carmen Boone, as the primary QA/QC specialist. Ms. Boone was previously a quality control facilitator at a toxicology consulting firm.



PID Facilitator

This year, NPIC built the framework necessary to house the PID in a new program. The new relational database provides streamlined data entry, clearly defined entity relationships and more dynamic searching and reporting. Members of the PID team met regularly to evaluate the necessary changes and plan for training needs. They started the training process in October using weekly staff meetings and new guidance documents. The launch was successful on January 1, 2011. Benefits include:

- More automated and documented quality control features
- Quantifiable tracking of NPIC actions regarding risk reduction, including integrated pest management

- Increasingly automated notification related to cases of importance
- More flexibility to respond to emerging issues with shortcuts and tracking of hot topics
- Stream-lined user interface and hard copy log will reduce the time needed for data entry and training of new staff
- Relational database enables more specific pairing of exposed entities with products and eliminates former limitations in the number of questions, actions and products per inquiry.

NPIC provides quarterly reports to the Office of Pesticide Programs (OPP) through its Project Officer. They include updates on project activity (i.e. fact sheets, outreach) and detailed traffic reports to describe the number and type of inquiries received. Whole case summaries are included for important and/or interesting inquiries and any reported deaths (human or animal). Special reports are available upon request. See page 4 for a list of special reports provided to OPP this year.

NPIC Web Site

NPIC received 2,993,346 total web hits this grant year, which represents a 11% increase in web traffic over the previous year. NPIC's Spanish website received over 130,000 hits. See pages 24-26 for more detailed information about web traffic.

NPIC launched a new resource, an [Insect Repellent Locator](#) (IRL), in April 2010. The tool was developed in consultation with the US EPA, Field and External Affairs Division (FEAD).



Sean - IT Specialist

ACHIEVEMENTS



Bryan H. - Website Facilitator

NPIC designed a new version of its website and over 100 new pages were developed and staged for testing in 2010. The site launched on May 5, 2011. Some of the new web pages are related to the following topics:

- Steps to reduce pesticide risk, safe use practices, and low risk pesticides
- IPM at home, in the garden, in the lawn, at school, and in agriculture
- Minimizing pesticide exposure at work, for children, and for aging populations
- Protecting wildlife, air, soil and water from pesticide exposure
- Comparing organic and conventionally grown foods, washing produce and pesticide tolerances
- Pesticide labels, laws/regulations, risk assessment and registration

NPIC routinely updates the “New & Notable” features on the NPIC home page to keep returning visitors interested, to provide seasonally appropriate resources and to announce new publications. For example, NPIC highlighted weed control in the spring, repellents in the summer, and bed bugs in the fall. NPIC also used this feature to highlight events such as Poison Prevention Week, Drinking Water Awareness Week, and new NPIC publications.

Dozens of links were added throughout the year as new resources were published about pesticides or related topics. Each new link was evaluated for credibility and relevance. In addition, hundreds of broken links were replaced or repaired, and NPIC publications were added to the website upon completion.

New web pages in English (6) included:

- [Community Agencies that Manage Public Health Pests](#) (in both English and Spanish)
- [Insect Repellent Locator](#)
- [Illegal Pesticides](#)
- [Tres Pasitos](#)
- [Illegal Insecticidal Chalk](#)
- [Pesticides and Pregnancy](#)

New pages in Spanish (17) included:

- [Agencies that Manage Public Health Pests](#)
- [A Spanish Fact Sheet page](#)
- [Flea Control](#)
- [Controlling Mold with Antimicrobial Pesticides](#)
- [Rodent Control and Rodenticides](#)
- [Weed Control and Herbicides](#)
- [Reading Pesticide Labels](#)
- [Reporting Pesticide Problems](#)
- [Managing Ticks and Preventing Tick Bites](#)
- [Lyme Disease](#)
- [Controlling Snakes In and Around the House](#)
- [Six pages about mosquitoes and pesticides](#)

NPIC aims to deliver services in a way that works for people with diverse challenges. The NPIC website is available in English and Spanish, and it meets W3C web content accessibility guidelines.

Contacts

NPIC maintains several lists of contacts providing specialists with quick access to frequently requested information, including contact information for local, state, and federal agencies, healthy homes-state program coordinators, organic certifiers, household hazardous waste contacts, health departments, occupational and wildlife agencies. NPIC made efforts this year to make this information more available to the public, planning a zip code-driven resource locator for the new website. Launched in May 2011, see <http://npic.orst.edu/mlr.html>. Future plans include adding a spatial component to allow users to find *nearby* resources.

Led by Cameron Carlson, the Contacts team verified contact information, web sites and mailing addresses for thousands of resources including local OSHA offices, state wildlife agencies, California Agricultural Commissioners, university extension resources and more.

ACHIEVEMENTS

Foreign Language

Members of NPIC's foreign language team responded to 213 inquiries in Spanish this year, including 13 email inquiries. The team also completed translations for three fact sheets, four Common Pesticide Questions (CPQs), eight PestiByte Podcasts, and 17 web pages.

Fact Sheets



Humberto - Foreign Language Facilitator

NPIC aims to deliver services in a way that works for people with diverse challenges. Fact sheets are available at the technical/scholarly level, and in targeted, question-answer formats at the 8th grade reading level. Bryan Luukinen and Jennifer Gervais provided leadership to several team members. They created guidance documents and served as senior editors.

During this grant year, NPIC completed 21 fact sheets:

Technical fact sheets:

- Chlorpyrifos
- Malathion
- Imidacloprid
- Glyphosate
- Zinc Phosphide
- Naphthalene
- Paradichlorobenzene
- Bifenthrin

General fact sheets:

- Chlorpyrifos
- Malathion
- Imidacloprid
- Glyphosate
- Zinc Phosphide
- Naphthalene
- Paradichlorobenzene

Topic fact sheets:

- Pesticides – Minimizing Exposure
- Veterinary Incident Reporting Portal (VIRP)
- Ecotoxicology

Spanish fact sheets:

- DEET general fact sheet
- Pesticides - What's My Risk?
- Pesticides – Minimizing Exposure

The following technical fact sheets were in development during this grant year: Acephate, Aliphatic Petroleum Hydrocarbons, *Bacillus thuringiensis*, Boric Acid, Bromadiolone, Copper Sulfate, D-phenothrin, Dicamba, Piperonyl Butoxide, and Pyrethrins.

The following general and topic fact sheets were in development this year: Bifenthrin, Antimicrobials, and Rodenticides.

NPIC's technical fact sheets are cited in peer-reviewed publications such as: Lee et al. Acute illnesses associated with exposure to fipronil – surveillance data from 11 states in the United States, 2001-2007. *Clinical Toxicology*, 48, 737-744, 2010.



Jennifer - Senior Fact Sheet Editor

ACHIEVEMENTS

Common Pesticide Questions (CPQs)

NPIC designed these short publications to be easily understood by diverse audiences. They include detailed questions and answers, including links to science-based, user-friendly resources. NPIC's collection of 31 CPQs are often provided in response to email inquiries, and the content is adapted for PestiByte podcasts.



Andrea - CPQ / Podcast Facilitator

NPIC completed two new CPQs in English:

- My yard is being sprayed; can my kids go out and play?
- Pesticides on the Golf Course?

... and four new CPQs in Spanish this year:

- Cierra bien los recipientes, ¡protege a tus hijos! (Fasten the lid, protect your kids!)
- Un veneno para ratones sin direcciones de uso... ¿será un mal signo? (Mouse poison without directions.... Is that a bad sign?)
- La plantación acaba de ser rociada, ¿puedo trabajar allí hoy? (The crop was just sprayed. Can I work there today?)
- Mi jardín será rociado, ¿pueden mis hijos salir a jugar? (My yard is being sprayed; can my kids go out and play?)

NPIC updated several CPQs this year by fixing broken links and updating regulatory information.

PestiByte Podcasts

NPIC collaborates with the Community Outreach and Education Core of the Environmental Health Sciences Center (EHSC) at OSU to produce PestiByte podcasts. The EHSC is funded by the National Institute of Environmental Health Sciences (NIEHS), and shares the common goal of "promoting informed decision-making through education." PestiBytes are 1 to 2 minute audio clips, often based on common pesticide questions.

NPIC posted the following eight PestiBytes this year, all in Spanish:

- Precauciones con bolas de naftalina. (Precautions for mothballs)
- ¿Pueden los niños utilizar repelentes contra insectos? (Should kids use bug spray?)
- ¿Qué debo hacer durante la fumigación contra mosquitos? (What should I do during mosquito spraying?)
- ¿Cómo lavar los residuos de pesticidas? (How should I wash pesticides from clothing?)
- ¿Podría el cebo para caracoles causarle daño a mi perro? (Could snail bait hurt my dog?)
- Con un bebé en camino... ¿Es aceptable rociar? (With a baby on the way... Is it okay to spray?)
- ¿Cuándo plantar después de usar un herbicida? (When to plant after using weed killer?)
- ¿Puedo usar un roenticida teniendo niños en la casa? (Get rid of the mouse! With kids in the house?)

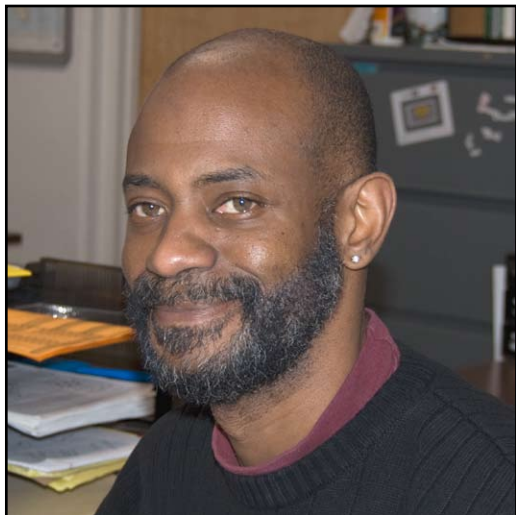
Active Ingredient (AI) Files

In order to respond to inquiries efficiently, NPIC maintains a collection of AI files that contain reputable, science-based information about active ingredients. NPIC acquired 320 new documents for inclusion in the collection this year, including all relevant EPA Fact Sheets, Risk Assessments and Reregistration Eligibility Decisions (REDs). NPIC added 53 new AI files to its collection, totaling 1068 files at the conclusion of the grant year. The AI team updated 24 AI files by adding new and relevant data obtained from literature searches.

Humberto Nation and/or Ted Bunch monitored the Federal Register weekly and evaluated notices and dockets for new science and regulatory information.

ACHIEVEMENTS

NPIC hired an undergraduate student assistant, Emily Escobedo, and a graduate student assistant, Jennifer Snyder, to assist the AI team with opening new files and updating others.



Ted - AI Facilitator

Training and Continuing Education

Training - Bryan Harper is the primary trainer for NPIC. In addition to meeting regularly with trainees for one-on-one instruction and evaluation, he coordinates training activities that involve every member of the NPIC team. NPIC approaches training in a way that values diversity, new perspectives and the best science available.

Throughout the year, Bryan Harper updated all aspects of the NPIC training program in response to inquiry trends and regulatory changes. He added resources and exercises related to bed bugs, and he developed a two-week “refresher course” for Kristen Larson, a former Pesticide Specialist returning to NPIC after three years.

Two pesticide specialists completed the training program and began responding to inquiries this year. The training program includes a comprehensive training manual, several facilitated exercises, mentored practice in risk communication and fourteen sessions of one-on-one instruction from the NPIC trainer. 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.

Continuing Education - NPIC places emphasis on continuing education for pesticide specialists in order to maintain the highest level of service, re-

lying 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. Three out of four weekly staff meetings include some kind of professional development event.

NPIC hosted or attended 55 continuing education events this year. Almost half of these took place in the slowest months for phone traffic, November – January. Examples include campus seminars, invited speakers, and regional conferences. Figure 2 summarizes some of this year’s continuing education events.

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 and other professional publications. Each day, a designated specialist monitors online media sources to identify pesticide-related news items and distributes the most relevant items to the team.



Susie - Pesticide Specialist

Outreach

Overview - NPIC employed new approaches to reach targeted groups this year including occupational users of antimicrobials, veterinary professionals and underserved audiences. Kristina Wick became co-outreach facilitator with Cameron Carlson. The team met to develop innovative, low-cost outreach

Figure 2. Selected continuing education events (April 1, 2010 - March 31, 2011).

Date	Speaker/Source	Speaker's Affiliation	Event Title
4/1/10	Several	NIOSH, EPA, CROET, OR-OSHA, et al	Pesticide Inspector's Forum
4/8/10	Justin Waltz	Oregon State Public Health	Pesticide Exposure, Safety, and Tracking (PEST) Program
4/13/10	Dr. Kerry McPhail	OSU College of Pharmacy	New Natural Products: Discovery and Investigation of Biological Action
4/15/10	Dr. Robin Pappas	OSU Center for Writing and Learning	Effective Phone Interactions: Encouraging Client Learning in a Hurry
4/21/10	Several	Oregon Department of Agriculture and U.S. EPA	Implementation of Fumigation Risk Mitigation Measures
5/18/10	Several	Academic, regulatory and industry presenters	National Conference on Urban Entomology
6/3/10	Several	U.S. EPA	Webinar - Integrated Pest Management in Schools
6/24/10	Allison Wiedeman, Jack Faulk	U.S. EPA	Webinar - EPA Draft National Pollutant Discharge Elimination System (NPDES)
8/24/10	Dr. Freya Kamel, Stacey Jenkins	National Institute of Environmental Health Sciences	Webinar - Neurological Disease and Disorders in the Ag Health Study
9/2/10	Several	California AgrAbility Project	Webinar - AgrAbility Outreach to Migrant and Seasonal Farmworkers
9/2/10	Matt Sunseri	Wisconsin Department of Agriculture	FIFRA Section 24C and Section 18 Overview
10/29/10	Dr. James McKim	CeeTox Inc	New Methods for Identifying Toxicity: Changing the Paradigm of Chemical Safety
11/3/10	Esther McGinnis	University of Minnesota	The USDA's Regulation of Genetically Modified Crops
11/4/10	Dr. Stephen Klaine	Clemson University	Nanomaterials in Aquatic Ecosystems: Sources, Fate and Impacts
11/4/10	Dr. Andrew Thostensen	North Dakota State University	Phosphine: The damage it can do
11/6/10	Several	Various	American Public Health Association (APHA) Annual Meeting
11/17/10	Jos Accapadi	OSU Media Services	Delivering the Right Content and Why Standardization is good for Websites
12/2/10	Paul Biwan	OSU Human Resources	Understanding Communication Styles
12/8/10	Larry Roper	OSU Campus Coalition Builders	Welcoming Diversity Workshop
12/9/10	Jennifer Snyder	NPIC	Antimicrobial Pesticides
1/6/11	Elise Pechter	Massachusetts Department of Public Health	Web-hosted: Clean as a whistle, but what about that wheeze?
1/6/11	Alicia Culver	Responsible Purchasing Network	Web-hosted: Greenwashing vs Green Products
1/7/11	Dr. Dana Barr	Emory University	Assessing Exposures to Pesticides: Lessons Learned and Future Challenges
1/12/11	Holly Thompson	Safer Pest Control Project	Webinar - Beating Back Bed Bugs
1/20/11	Susan Jennings	U.S. EPA	Webinar - Bed Bugs: Why They're Back and the Public Health Response
1/28/11	Jessica Thorpe	NPIC	Are Inert Ingredients Inert?
2/3/11	Several	U.S. EPA and invited speakers	Webinar - Second National Bed Bug Summit
2/11/11	Dr. Jonathan Hofmann	National Cancer Institute	Biomarkers of Exposure, Sensitivity, and Effect in Agricultural Pesticide Handlers
2/17/11	Dr. Carol Mallory-Smith	OSU Crop and Soil Science	Web-hosted: Roundup-Ready Creeping Bentgrass: An Ongoing Story
3/10/11	Bob Farrell	Independent Consultant	Video: Give'em the Pickle - Customer Service in Action
3/17/11	Brad Knotts	Oregon Department of Forestry	Pesticide Application on Forest Lands in Oregon: Process and Notification

methods including the use of Facebook and Twitter. They also made relationship-building phone calls to “gate-keeper” organizations.

Responding to the needs of NPIC clientele, NPIC developed a packet of bed bug information for distribution to people without easy access to the internet. The packet is available in English and Spanish, and it includes do-it-yourself pest control tips and pesticide precautions. Over 50 packets were mailed at no cost to recipients.

NPIC monitors the Internet to track the number and type of references to NPIC. This year, NPIC was mentioned in 92 newspapers, magazines, and online news sites. In addition, approximately 120 blogs referenced NPIC throughout the year.

In keeping with the NPIC mission, NPIC joined the National Network of Libraries of Medicine in 2010, which is sponsored by the National Institutes of Health. Benefits include training and resources re-

lated to new technologies, information retrieval, and modern networking.


Annual Outreach Campaigns - Traditionally, NPIC performs an outreach campaign by mail every March, aiming to increase awareness of NPIC services among “gate-keeper” organizations capable of distributing its phone number to underserved audiences. In March 2011, NPIC did not conduct a campaign by mail, conserving resources.

Throughout the summer of 2010, NPIC received the largest response to date from its outreach campaign in March. There were over 800 requests for NPIC brochures. As a result of those requests, NPIC distributed 84,316 English and 38,567 Spanish brochures. See page 16 for more information. Notably, over 300 responses were received from entities that work with underserved populations, such as County WIC coordinators, US Housing and Urban Development (HUD), and clinics for seasonal farm workers.

Figure 3. NPIC poster presented at APHA.

Bed bug-related pesticide incidents reported to the National Pesticide Information Center

Kaci Buhl, MS; Dave Stone, PhD; Laura Power, MS; Department of Environmental & Molecular Toxicology



BACKGROUND

DISTRIBUTION

PESTICIDE INCIDENTS

Specialists respond to thousands of questions each year by phone and email at the National Pesticide Information Center (NPIC). Bed bug-related inquiries have been increasing dramatically for ten years (Figure 1). About 7% of those inquiries involve a pesticide exposure, spill or misapplication, and they are considered pesticide “incidents” (Figure 2). The National Pest Management Association (NPMA) and University of Kentucky also documented an increase in bed bug populations over the same period.¹

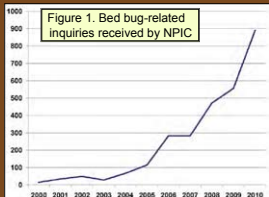
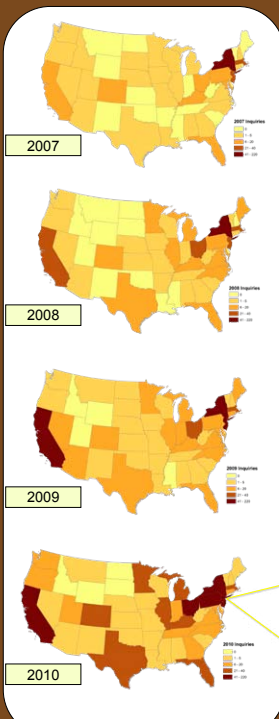



Figure 1. Bed bug-related inquiries received by NPIC



PUBLIC HEALTH PESTS



Although they are not known to transmit any disease, bed bugs are important public health pests. Bites can illicit allergic reactions up to and including anaphylaxis, and they are potential entry points for pathogens. Infestations can have psychological effects including insomnia, anxiety, and social isolation. The high cost of control presents a financial burden as well.² The Centers for Disease Control and Prevention and the U.S. Environmental Protection Agency recently issued a joint statement about the public health significance of bed bugs.³

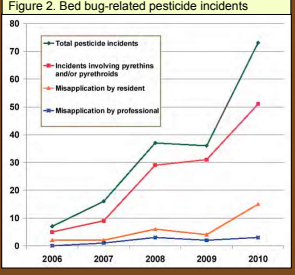
PYRETHRINS & PYRETHROIDS

In the United States, many of products available for use in homes contain pyrethrins and/or pyrethroids. They affect the nervous system of insects and mammals. However, systemic toxicity is low when people are exposed by inhalation or skin contact. People may also experience paresthesias on exposed skin resulting in itchy, tingly, or stinging sensations. These sensations may be confused with bed bug bites. A cycle may be initiated, involving repetitive applications of pyrethrins or pyrethroids, followed by stinging sensations.⁴

Most pyrethroids can be identified with a characteristic suffix “-thrin.” For example, permethrin, cyfluthrin and bifenthrin are insecticides in the pyrethroid family. Fluralanate and estensulvalate are also pyrethroids.

Misapplications are defined as applications that were inconsistent with label directions.

Figure 2. Bed bug-related pesticide incidents



Throughout this poster presentation, years are defined as October 1 – September 30. For example, 2010 = 10/1/09 – 9/30/10.

PESTICIDES MISAPPLIED TO HUMAN SKIN:

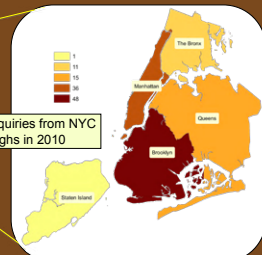
- A woman applied pesticides directly to her bed bug bites and hair before bed, sleeping with a hairnet
- A person reported dousing himself, his bedding and mattress with an insecticide; he reported red, itchy, burning skin
- A caller applied an insecticide to her own skin regularly while treating her home over several months; she reported muscle twitching
- A mother applied insect repellents to her young children before bed for months; the kids had skin and respiratory problems
- A landlord planning to inspect for bed bugs sprayed herself heavily with insecticides; she reported itchy, red, burning skin

Application of cancelled pesticides in homes:

- Report of aldrin use in 2008; cancelled in 1987
- Report of bendiocarb use in 2007; cancelled in 1999
- Report of acephate use in 2009; indoor uses cancelled in 2001
- Report of malathion use in 2010; indoor uses cancelled in 2006

Application of pesticides in ways that disregard labeling:

- A person hired three pest control companies and applied five types of pesticides herself, including misapplications to her ceiling and walls
- A person sprayed his recliner with insecticides until wet, used the chair with exposed legs, and developed red bumps on his skin
- A person used a total release fogger and another product to control bed bugs in her car
- One couple reported spraying their sleeping area (couches) until damp every night before sleeping, and during the night as needed



Bed bug inquiries from NYC boroughs in 2010

References
 1) Finkle, M. F., Rauscher, G., Hevener, M. Bugs without borders: why the global bed bug invasion? *Pest World* 2010, 9-20.
 2) WHO, Hsieh, H., Finkle, M., Baumann, G. Public Health Significance of Urban Pests: Bedbugs, Borealis, X., Kempan, H., Swamy, K., *Ento*, World Health Organization, Copenhagen, Denmark, 2008, pp. 131-155.
 3) CDC, Joint Statement on Bed Bug Control and the Control of Allergic Reactions to Bed Bugs, U.S. Environmental Protection Agency, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, U.S. Environmental Protection Agency. http://www.epa.gov/nationalpestmanagement/Bed_Bugs_CDC-EPA_Statement.htm (accessed Oct 20/10) updated Aug 2010.
 4) Rappaport, R. H., Roberts, J. R. *Pyrethroids*, 2nd Edition, Department of Pesticide Registration, 594 rd., U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Office of Pesticide Programs, U.S. Government Printing Office Washington, DC, 1999, pp. 87-88.

The National Pesticide Information Center is a cooperative effort of the U.S. Environmental Protection Agency and Oregon State University. It is housed in the Department of Environmental and Molecular Toxicology.

14 NATIONAL PESTICIDE INFORMATION CENTER

ACHIEVEMENTS

Outreach to Veterinary Professionals -

To promote awareness and utilization of NPIC's Veterinary Incident Reporting Portal (VIRP), NPIC mailed information to over 13,000 veterinary professionals including general practitioners, Humane Society offices, and veterinary professional organizations. Mailings included a custom cover letter, NPIC brochure, and a promotional card about the VIRP.



Kristina - Outreach Facilitator

NPIC also delivered an oral presentation in the Veterinary Public Health Section of the American Public Health Association (APHA)'s annual convention. Ms. Buhl emphasized the impact of surveillance on pesticide regulation, and discussed preliminary findings.

Recurring and emerging trends in pesticide exposure incidents among pets reported to the National Pesticide Information Center (NPIC), Kaci Buhl, MS; Dave Stone, PhD.

Overview of Outreach by Mail -

As a result of both proactive outreach activities and requests from NPIC clientele, NPIC distributed 203,846 brochures this year including over 100,000 brochures in response to our outreach campaign (see Figure 4). NPIC proactively provided 15,228 brochures this year using a variety of techniques, summarized in Figure 5. Most notably, NPIC sent a bulk mailing to over 13,000 veterinary professionals in April 2010. The letter encouraged recipients to make use of NPIC services, including the web-based veterinary incident-reporting portal at <http://npic.orst.edu/vet>.

Of those individuals requesting NPIC brochures by mail or phone, 39% were veterinary professionals, and 22% were underserved populations and related organizations.

Outreach to EPA Regions - NPIC identified an individual in each EPA Region with responsibility for leading or participating in pesticide-related activities, and mailed each one a custom cover letter and a copy of the 2009 NPIC annual report. In response, Linda Liu presented information about trends in pesticide incidents to Region 10 staff. Kaci Buhl discussed outreach to tribal groups with Juliann Barta, also from Region 10. As a result, NPIC reached out to the Alaskan Native Tribal Health Council.

Frank Davido participated in a conference call with Jim Roelofs and pesticide representatives from each EPA Region on November 17th. They discussed incident reporting portals and information resources available from NPIC.

Collaborations - In response to NPIC's Farmworker Outreach Campaign in 2010, the Association of Farmworker Opportunity Programs (AFOP) included the toll-free number for NPIC in radio announcements about pesticide safety in the Pacific Northwest.



Kaci Buhl - Project Coordinator

On April 23, 2010, the US EPA published a press release entitled, "EPA Encourages States to Use Portal for Reporting Ecological Incidents." The EPA also sent customized letters about the portal to 167 state agencies describing NPIC's new Ecological Incident Reporting Portal, available at <http://npic.orst.edu/eco>. NPIC launched the web-based portal for professionals in ecology and wildlife sciences in October 2009.

On March 21, 2011, a press release entitled, "EPA Warns Online Shoppers About Illegal, Harmful Pesticide Sales" included the toll-free number for NPIC.

Figure 4. Materials provided by NPIC upon request

Audience Name	Number of Requests	Number of English Brochures	Number of Spanish Brochures	Number of Other Materials
Animal Caretakers	621	45,546	4535	1864
Emergency Management Services	2	250	0	4
Environmental and Municipal Agencies	4	260	50	432
Environmental Protection Agency	15	3316	1915	584
Farmers, Workers and Applicators	30	4390	1850	264
Gardeners	148	14,847	3922	802
General Public	58	376	0	51
Industry	66	9401	2500	569
Other	3	650	25	16
Parents & Children	9	1200	410	419
Physicians	61	7025	2250	418
Public Health Information Services	164	14,760	7580	5664
State Pesticide Agencies	28	4050	1625	1675
Tribes	20	1627	327	260
Underserved	352	30,617	23,314	3178

Figure 5. Materials provided during proactive outreach activities

Audience Name	Number of Activities	Number of English Brochures	Number of Spanish Brochures	Number of Other Materials
Animal Caretakers	9	13,502	0	40,766
Environmental Protection Agency	1	0	0	10
Farmers, Workers, and Applicators	11	550	55	501
Gardeners	1	80	0	80
General Public	2	205	200	507
Industry	4	220	0	120
Other	4	215	15	535
Parents & Children	1	30	30	243
Public Health Information Services	4	50	0	100
State Pesticide Agencies	3	50	25	311
Underserved	3	0	0	236

ACHIEVEMENTS

Ann Ketter and Kaci Buhl were quoted in *The American Gardener* magazine after they contributed to an article entitled, "**Safe Storage and Disposal of Garden Pesticides.**"

NPIC was invited by the AgriSafe Network to deliver a webinar in April 2011. It was titled, "The National Pesticide Information Center (NPIC): Practical Resources for You and the People You Serve." Over 25 people from several states participated live.



Ann - Pesticide Specialist

NPIC collaborated with the Environmental Health Sciences Center at OSU, which is funded by the National Institute of Environmental Health Sciences (NIEHS), to produce podcasts related to pesticides. See page 11.

Conferences & Presentations - NPIC attended the annual meeting of the American Public Health Association (APHA) in Denver, Colorado in November. They delivered an oral presentation and two posters:

- Recurring and emerging trends in pesticide exposure incidents among pets reported to the National Pesticide Information Center (NPIC)
- Bedbug-related pesticide incidents reported to the National Pesticide Information Center (NPIC) from 2004-2009 (see Figure 3 on page 14)
- Pediatric exposure incidents reported to the National Pesticide Information Center

Ann Ketter, Dave Stone, and Kaci Buhl delivered seven presentations about NPIC services at various events for pesticide applicators in Oregon and Washington.

Kaci Buhl delivered a presentation on April 23rd for staff members of the Toxic Free Tips (TFT) help-line, which is operated by the Washington Department of

Ecology. The presentation focused on indoor environmental health in relation to pesticides, and mutual referrals between NPIC and TFT were discussed.

Jessica Thorpe developed and presented, "Are Inert Ingredients Really Inert?" for the Non-Crop Vegetation Management Course sponsored by Oregon State University Extension. The talk was requested subsequently for the Pesticide Inspectors' Forum in April 2011.

Bryan Harper delivered a presentation about water conservation in arid regions as a guest lecturer for Sustainable Water Resources in the College of Engineering, and Kaci Buhl spoke about pesticide issues relevant to veterinarians as a guest lecturer in the College of Veterinary Medicine.

NPIC exhibited booths at Oregon State University this year, including the Oregon Extension Association meeting, Earth Day exposition, Pet Day, and University Day. NPIC also exhibited a booth in nearby Salem at a health fair for parents involved in the head-start program for migrant farming families.

Personnel Update

Three pesticide specialists (1.0 FTE) left the organization this year, and another began maternity leave. NPIC hired two Pesticide Specialists (1.0 FTE), Ted Bunch and Susie Dunham. Ted Bunch has a PhD in Toxicology (ABD) and Susie Dunham earned masters degrees in biology and secondary education, and she holds a PhD in Forest Science.

NPIC hired a former Pesticide Specialist and two student interns part-time for the summer and/or fall.

As of March 31, 2011, NPIC's staff includes a full-time project coordinator, nine full-time and three part-time pesticide specialists, a full-time information resource supervisor, a full-time administrative professional, a part-time fiscal/personnel manager, and three part-time undergraduate student assistants. In addition, the NPIC Executive Committee includes the Director and three co-investigators, all of which hold faculty appointments. All specialists have at least a bachelor's degree in a scientific field; about half of them have earned advanced degrees. Specialists have a variety of scientific backgrounds including toxicology, biology, biochemistry, environmental science, public health, microbiology, food safety, wildlife ecology and hydrology. See page 18-19 for more detailed information about the staff members at NPIC.

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 Sean Ross to optimize efficiency in data entry, quality assurance, and useful reporting.

There are three types of inquiries received by NPIC:

- 1) Requests for information about pesticides and related issues
- 2) Inquiries or reports about pesticide incidents
- 3) Issues that are not related to pesticides, essentially wrong numbers

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(s) (health risk, regulatory compliance, label clarity, etc.)
- If specific products are discussed, the EPA Registration number, product name, and/or active ingredient name(s)
- The actions performed (verbal information, referrals, transfers, etc.)
- The way the person heard about 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 product formulation and type (insecticide, fungicide, 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 when time is of the essence for medical treatment.

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

Added value: NPIC Evaluations of Certainty and Severity

- 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 symptoms were unrelated. Specialists use the following tools when assigning the certainty index:

- 1) A standard set of criteria, defined in NPIC training and procedures
- 2) Published exposure reports and case studies
- 3) Input from Dr. Dan Sudakin for human exposure incidents
- 4) Input from Dr. Fred Berman for animal exposure incidents
- 5) Input from a Specialist in PID quality assurance.

Symptoms are also characterized in terms of their severity. 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 US EPA in the Incident Data System. NPIC started characterizing the severity of symptoms for humans in 2009, and for animals in 2011.

Narrative Quality

Informational inquiry example:

March 10, 2011

Caller reported that he applied a gopher control product (EPA registration number 12455-30-3240) on his property the day prior to calling NPIC. Caller seeking information about when he would be able to plant a garden intended for human consumption in the treated area. Discussed environmental fate of active ingredient, including half-life in soil and uptake by plants (NPIC fact sheet). Discussed fact sheet resources available on NPIC website and provided web address. Discussed risk equation, including toxicity and routes of exposure. Discussed ways to minimize exposure, including waiting as long as possible to plant garden and checking for intact baits in treated areas. Caller reported that he owned a small dog. Discussed potential health effects of exposure to zinc phosphide (NPIC fact sheet). Discussed ways to minimize exposure, including excluding dog from the treated area. Caller seeking information about alternative methods of gopher control. Discussed Cooperative Extension Service as a resource for information on pest control and provided contact information.

Incident example:

February 9, 2011

Caller reported she put Enoz Old Fashioned Mothballs (EPA registration number 1475-74) in her sofa to control bed bugs. Caller reported she did this 3 days ago and the smell is awful and she feels like it is hard to breath. Caller seeking information about whether this could be bad for her - breathing the mothballs? Discussed the active ingredients in mothballs and their concentrations. Discussed the active ingredient being an insecticide that is typically used in airtight containers. Discussed avoiding prolonged exposure to the fumes. Discussed potential health effects of exposure to naphthalene (NPIC fact sheet). Discussed ways to minimize exposure, including removing the mothballs and airing out her home. Caller provided no other information and said she needed to call her friend because she told her to put mothballs in her sofa and now she needs to tell her to get them out.

In Summary

Special reports are available upon request. EPA personnel should contact the NPIC Project Officer. Others should send written requests to the OSU Office of General Counsel; inquire for details.

The following pages include details about the incidents and inquiries documented by NPIC from April 1, 2010 to March 31, 2011.



Melody - Pesticide Specialist

MONTHLY INQUIRIES

1. Monthly Inquiries

NPIC received 25,920 inquiries during the 2010-11 operational year. Graph 1.1 shows the number of inquiries received for each month. Eighty-eight percent (88%) of the inquiries were received between March and October, concurrent with the part of the year when pest pressures are highest.

The number of inquiries in 2010 was the highest on record, with the exception of 2008. In 2008, a product stop-sale in Region 5 generated over 2,500 inquiries to NPIC.

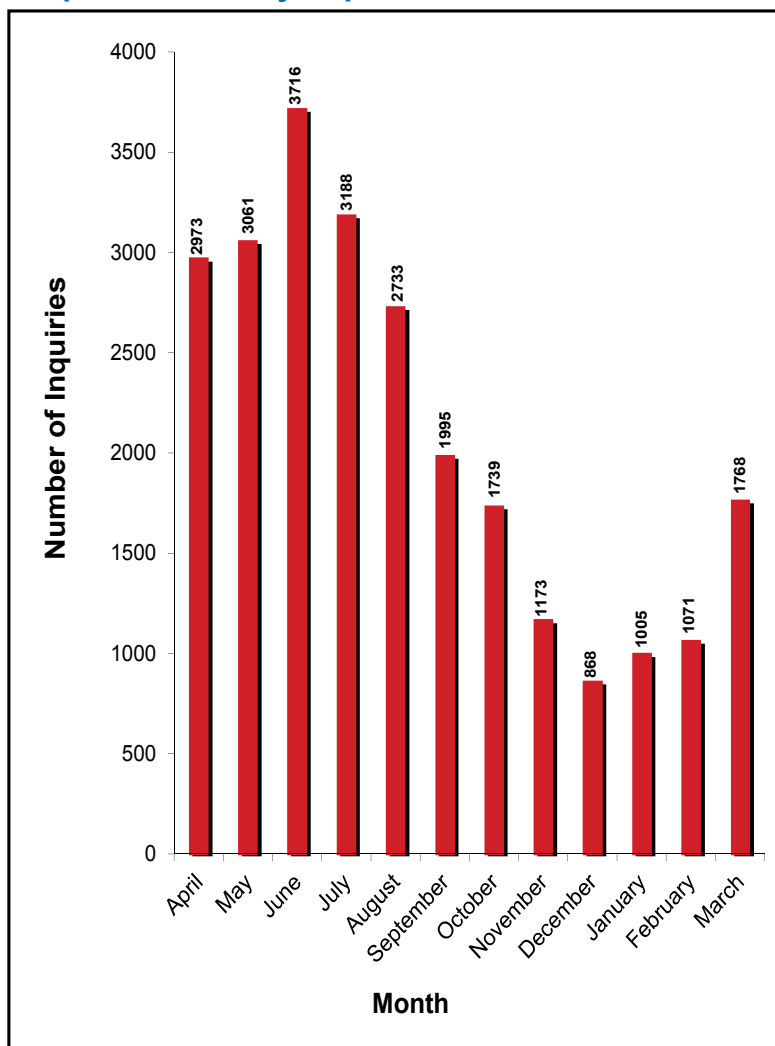
Table 1.1. Monthly inquiries

Month	Total
April	2973
May	3061
June	3716
July	3188
August	2733
September	1995
October	1739
November	1173
December	868
January	1005
February	1071
March	1768
Calendar¹ Year Total =	25301
Grant² Year Total =	25290

¹ January 1 through December 31.

² April 1 through March 31.

Graph 1.1. Monthly inquiries



TYPE OF INQUIRY / ORIGIN OF INQUIRY

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 2.1 and Chart 2.1.

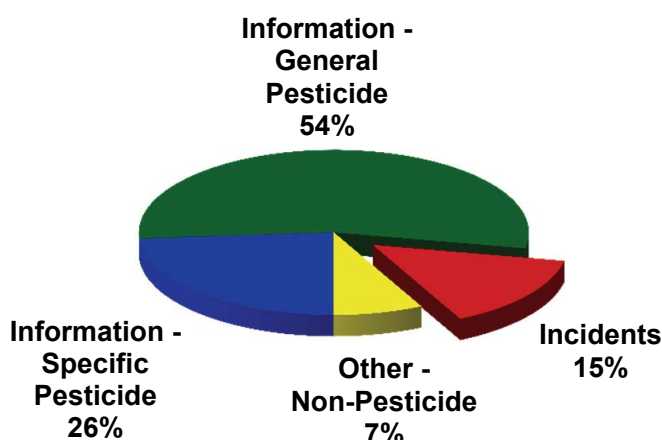
The majority of inquiries (19,753 or 78.1%) to NPIC were informational inquiries about pesticides or related issues (Chart 2.1). NPIC responded to 6,022 (26%) questions about specific pesticides. NPIC responded to 13,371 (54%) inquiries relating to pesticides in general.

NPIC documented 3,667 incidents involving pesticides. NPIC Specialists routinely provide requested information, evaluate the need for any referrals before providing contact information, and ask several scoping questions in order to document pesticide incidents in a way that is useful to risk assessors.

Table 2.1. Type of inquiry

Type of Inquiry	Total
Information - Specific Pesticide	6022
Information - General Pesticide	13731
Incidents	3667
Other - Non-Pesticide	1870
Total =	25290

Chart 2.1. Type of inquiry



3. Origin of Inquiry

Table 3.1 summarizes the origin of inquiries received by NPIC. Of the 25,290 inquiries, 22,434 (88.7%) were received by telephone, 680 (2.7%) were received by a voice mail after-hours, 1347 (5.3%) were received by postal mail, 3 were walk-in inquiries, and 826 (3.3%) were by e-mail.

Table 3.1. Origin of inquiry

Origin of Inquiry	Total
Telephone	22434
Voice Mail	680
Mail	1347
Walk-In	3
E-Mail	826
Total =	25290

The number of inquiries received by postal mail has been increasing since 2005 when NPIC initiated its annual outreach campaign. Recipients can return a pre-paid postcard to request NPIC brochures.

4. Website Access

The NPIC website is an increasingly popular source of information for the public and professionals. The NPIC website received **2,993,346** total web hits this grant year, which represents an 11% increase in web traffic over the previous year.

Table 4.1 summarizes the number of hits to NPIC main web pages, and corresponding figures for the mirrored, Spanish website. Hits to common pesticide questions are shown in Graph 4.1, which are almost equally popular in English (36,044 hits) and Spanish (27,615 hits). Graph 4.2 shows the number of hits for PestiByte Podcasts, including hits for the audio files and their associated transcripts.

Table 4.1. Selected web hits

Page Accessed	English Web Hits	Spanish Web Hits
General Information	47663	2666
Technical Information	77695	2395
Fact Sheets	471706	N/A
Regulatory	24920	6946
Recognition & Management of Pesticide Poisonings	102312	N/A
Manufacturer Information	39298	3320
Pest Control	185101	26821
FAQ's	11062	1917

npic National Pesticide Information Center
1.800.858.7378 npic@ace.orst.edu

Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Search

About NPIC Health and Safety Pest Control Pesticide Ingredients Regulations Environment Emergency Report a Problem A A A

Understanding and Controlling Bed Bugs
Mothballs
Pesticides and Pregnancy
New PestiByte Podcast

Learn about how to **control bed bug infestations** in your home or business.

My Local Resources
Find local pesticide & pest control information
Enter your zip code Zip Search...

People and Pets
Human Health
Animal Health
Safe Use Practices
Pest Control
Pets and Pesticides
Report a Problem

Science and Regulation
Toxicology Resources
Pesticide Ingredients
Medical Case Profiles
Veterinary Resources
Pesticide Regulations
Occupational Safety
Report a Problem

Pests and Environment
Identify your pest
Learn about your pest
Control your pest
Integrated Pest Management
Environment
Report a Problem

NPIC Publications
Pesticide Fact Sheets
Topic Fact Sheets
PestiByte Podcasts
Common Pesticide Questions
Pesticide Quick FAQs
Outreach Materials
Medical Case Profiles

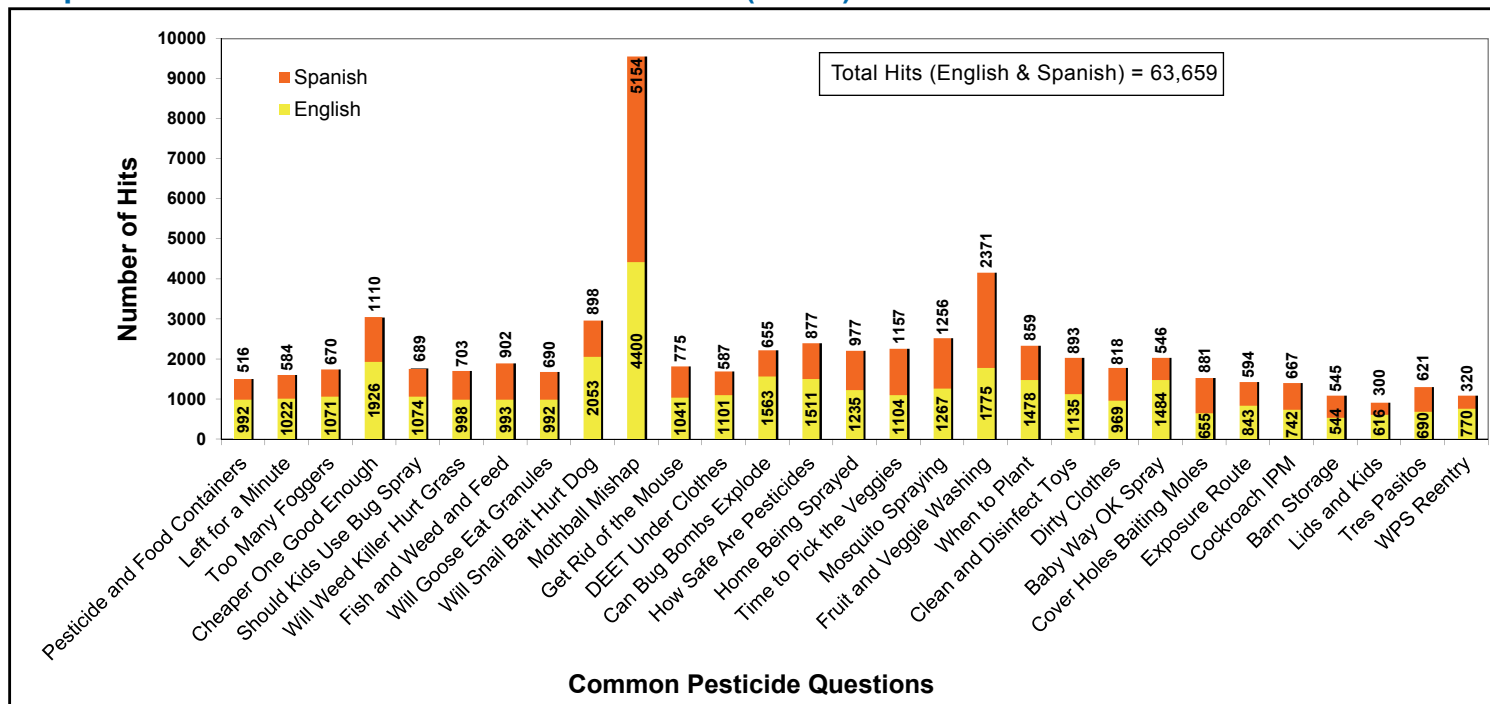
We are open from 6:30am to 4:30pm pacific time daily. Please read our [disclaimer](#) | [Contact us](#)

粵語 Français 普通话 Русски 日本語 tiếng Việt فارسی Español

NPIC provides objective, science-based information about pesticides and pesticide-related topics to enable people to make informed decisions. NPIC is a cooperative agreement between [Oregon State University](#) and the [U.S. Environmental Protection Agency](#).

WEBSITE ACCESS

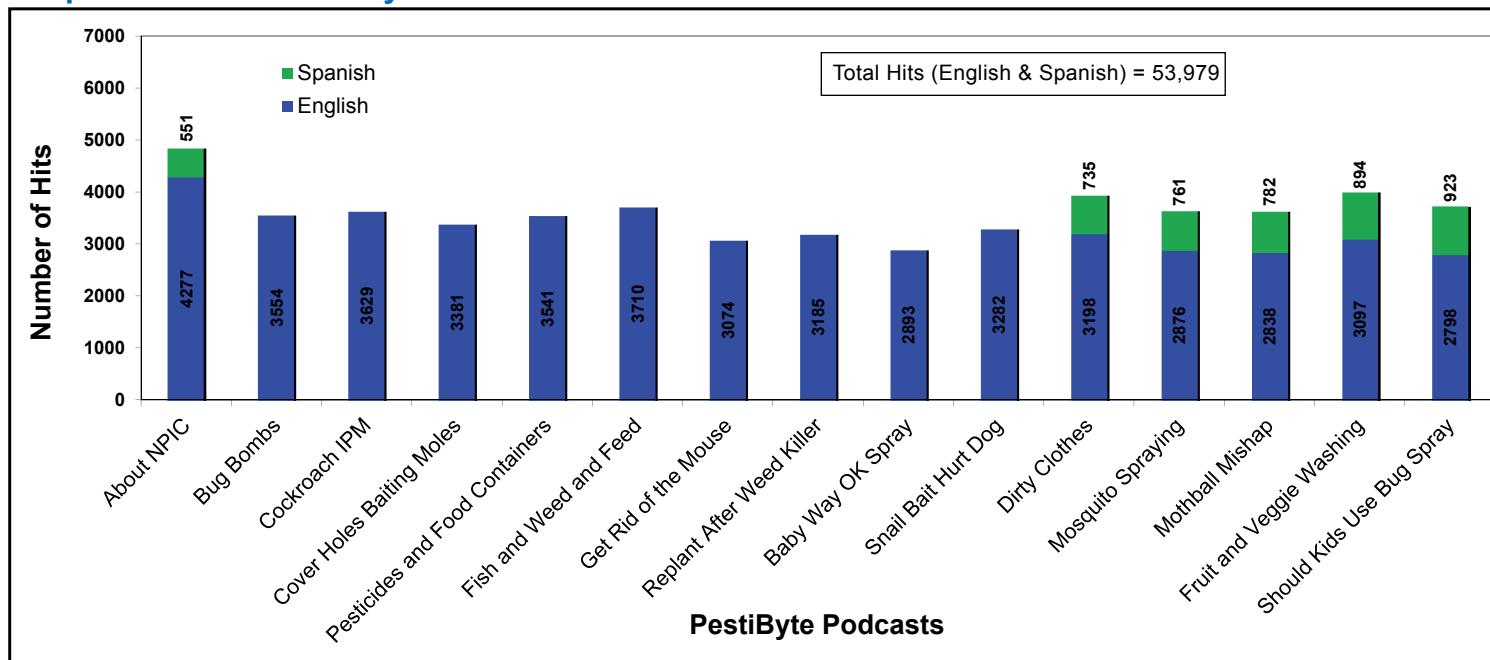
Graph 4.1. Hits to Common Pesticide Questions (CPQs)



What are Common Pesticide Questions (CPQs)?

CPQ's are short documents that turn frequently asked questions into learning opportunities. CPQs describe a caller's question, NPIC's answer, and provide a series of links that allow the reader to learn more about topics of interest.

Graph 4.2. Hits to PestiByte Podcasts

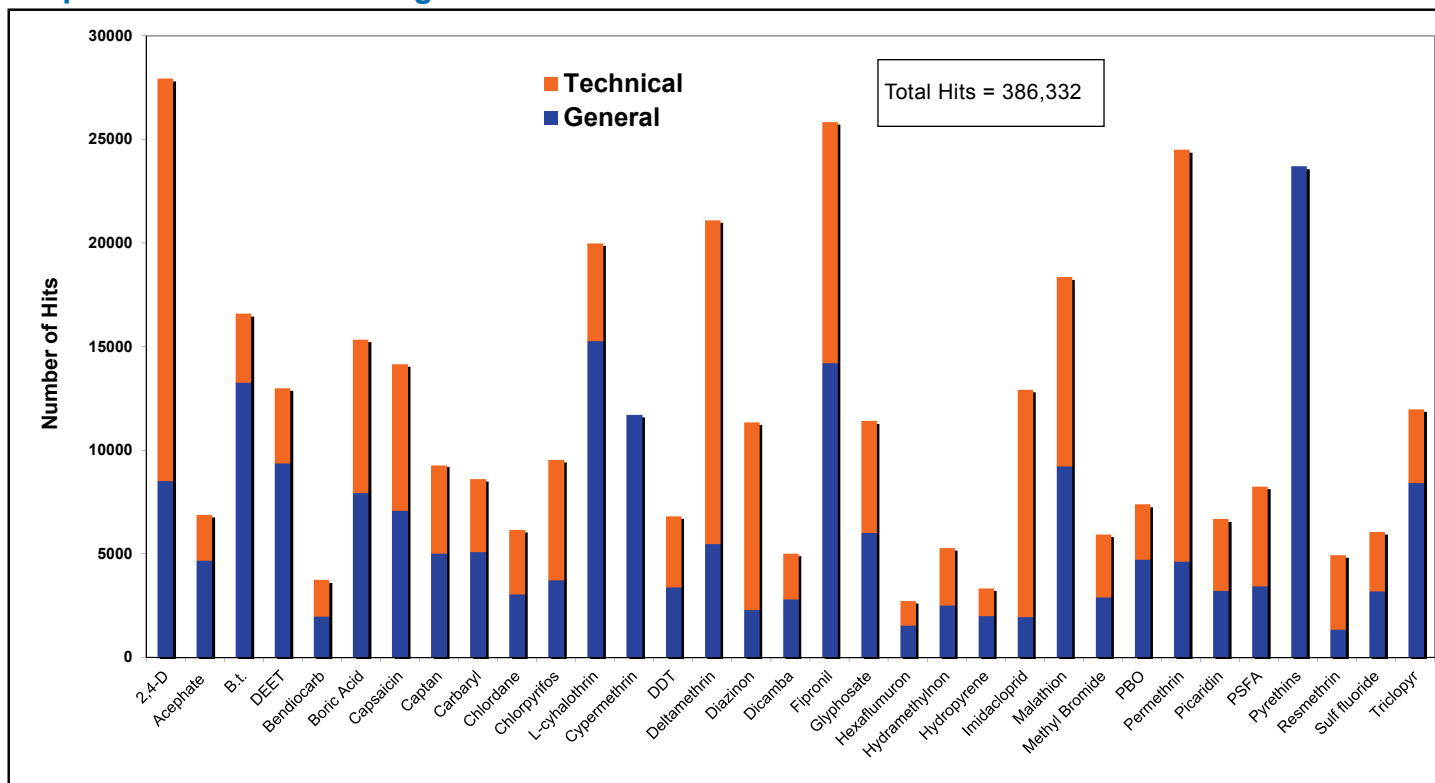


What are PestiByte Podcasts?

PestiBytes are brief audio clips that provide short answers to frequently asked questions. They are produced by NPIC in collaboration with the Environmental Health Sciences Center (EHSC) at Oregon State University.

WEBSITE ACCESS

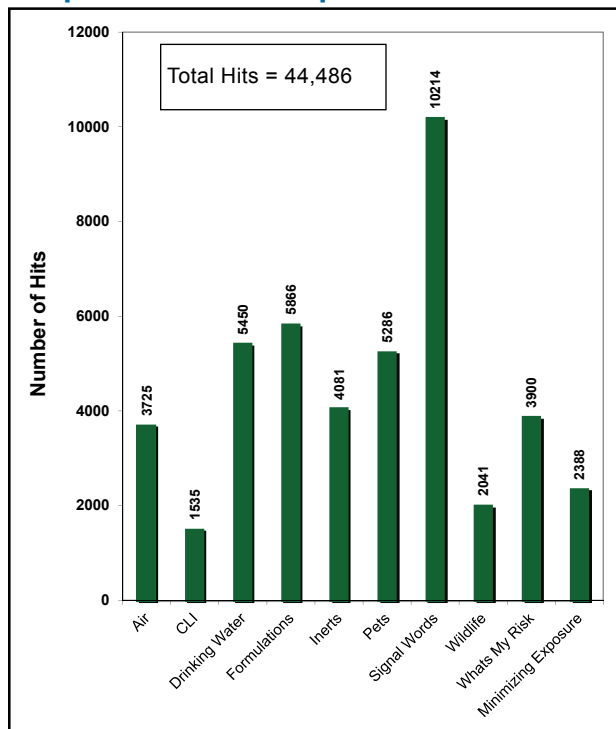
Graph 4.3. Hits to Active Ingredient Fact Sheets



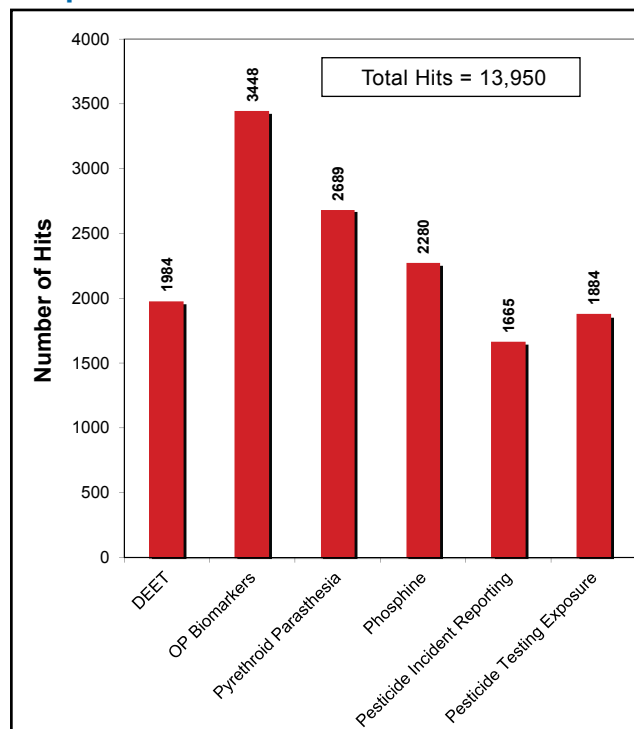
Hits for NPIC fact sheets are summarized in Graph 4.3, which include over 203,000 hits for general fact sheets and over 182,000 hits for technical fact sheets. General fact sheets are written at the 8th grade reading level in a question & answer format. NPIC published 21 new fact sheets in 2010; see page 10.

Hits to medical case profiles are shown in Graph 4.5. Web hits are a major form of inquiry to NPIC, in addition to telephone and e-mail.

Graph 4.4. Hits to Topic Fact Sheets



Graph 4.5. Hits to Medical Case Profiles



TYPE OF INQUIRER

5. Type of Inquirer

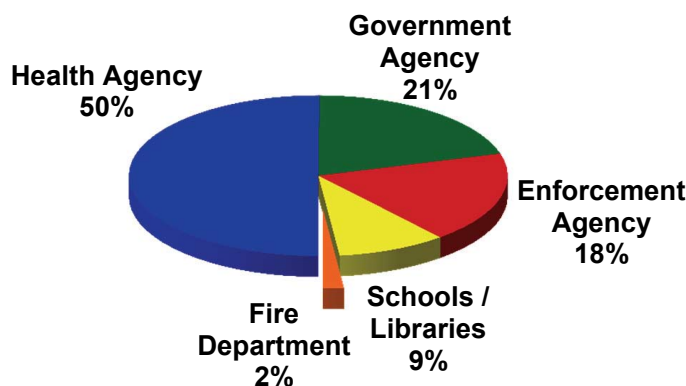
Table 5.1 summarizes the profession/occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the general public. Of the 25,290 inquiries received, there were 21,777 (86.1%) from the general public, 944 (3.7%) from federal, state or local government agencies, 1,191 (4.7%) from human and animal medical personnel, 336 (1.3%) from information groups including the media, unions, and environmental organizations.

Chart 5.1 summarizes the 944 governmental entities that contacted NPIC during the year. Health agencies include health departments, including WIC personnel. Government agencies include city, county, and other government entities without enforcement roles. Enforcement agencies include the US EPA, state lead pesticide agencies and police, among others.

Table 5.1. Type of inquirer

Type of Inquirer	Total
General Public	21777
Federal/State/Local Agencies	
Health Agency	473
Government Agency	193
Enforcement Agency	173
Schools/Libraries	88
Fire Department	17
Medical Personnel	
Human Medical	255
Animal Vet./Clinic	863
Migrant Clinic	73
Information Groups	
Media	66
Unions/Info. Service	215
Environmental Org.	55
Pesticide Mfg./Mktg. Co.	175
Lawyer/Insurance	36
Lab./Consulting	49
Pest Control	167
Retail Store	255
Farm	40
Master Gardener	19
Non-migrant Ag. Worker	7
Other	294
Grant Year Total =	25290

Chart 5.1. Inquiries from federal / state / local agencies (Total: 944)



TYPE OF QUESTION

6. Type of Question

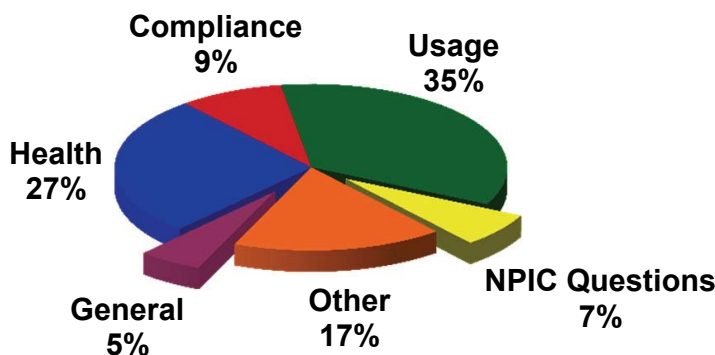
The questions received at NPIC are most often related to health effects and application practices (Chart 6.1 and Table 6.1). Many inquirers to NPIC have more than one question, resulting in 31,057 questions being recorded in 2010. The number of questions per inquirer was limited to two in NPIC's Pesticide Inquiry Database (PID) until January 1, 2011. At that time, improvements made it possible to record as many questions per inquiry as needed.

NPIC responded to 8,416 (27.0%) questions related to health effects of pesticides, including general health, treatment, testing, and laboratory questions. In addition, there were 10,772 (34.7%) requests for pesticide use information, including questions about use on specific pests or crops, chemical information, pros and cons of application, safety and application questions, cleanup, and pre-harvest intervals. NPIC also responded to 2,665 (8.6%) compliance questions, including questions about regulations, disposal, and complaints.

Table 6.1. Type of question

Type of Question	Total
Health Related	
Health	7067
Treatment	1156
Testing Lab.	193
Usage Information	
Pest/Crop	2882
Chemical	1558
Pros and Cons	160
Safety/Application	5104
Cleanup	692
Harvest Intervals	376
Compliance	
Regulations	1489
Complaints	969
Disposal	198
WPS	9
Food Safety	124
General	1647
NPIC Questions	2064
Other	5369

Chart 6.1. 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. Until January 2011, Specialists were able to record up to two actions per inquiry. At that time, improvements made it possible to record as many actions per inquiry as necessary. Most inquiries (22,442) were answered by providing verbal communication. Information was also sent via email in 789 cases, and by postal mail in 148 cases. Upon request, NPIC brochures and other promotional materials were mailed to people 1,456 times in 2010.

Table 7.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2010
Provided Verbal Information	22442
Provided Transfer to:	
Oregon Poison Center	21
Animal Poison Control Center	25
Executive Committee / PC	46
Another Specialist	349
E-mailed Information	789
Mailed / Faxed Information	148
Mailed NPIC Brochures	1456

Referrals to other organizations:

Referrals are a type of action. The number of referrals to various organizations is presented in Table 7.2. Specialists use their training and standard operating procedures (SOPs) to evaluate the need for referrals, providing them only when the requested information is outside NPIC boundaries (i.e. pest control advice, detailed application instructions) and there is an appropriate resource available to provide the information. Local resources are provided whenever possible, and contact information is included. See page 9 for information about how NPIC maintains and delivers appropriate referral information.

Table 7.2. Referrals to other organizations

Organization Name	Number of Inquiries
	2010
Manufacturer/Distributor	6002
Cooperative Extension	1663
Human Poison Control	880
State Lead Agency	826
Non-Governmental	535
Animal Poison Control	398
Other State Agency	286
EPA Headquarters	260
Department of Health	257
Other Federal Agency	89
EPA Region	85
OSHA	15

Risk reduction actions:

In 2011, NPIC started tracking elements of each conversation related to reducing risk. While these are not the only topics that are frequently discussed, they support the US EPA's Strategic Goal #4: Ensuring the safety of chemicals and preventing pollution. In the first three months of 2011, Specialists documented 1,223 risk reduction actions, detailed in Table 7.3.

Table 7.3. Risk reduction actions

Risk Reduction Action Taken	Number of Inquiries
	January - March 2011
Discussed Following the Label	476
Discussed Ways to Minimize Exposure	474
Discussed IPM Concepts	242
Discussed Environmental Protection	31

INQUIRIES BY STATE

8. Inquiries by State

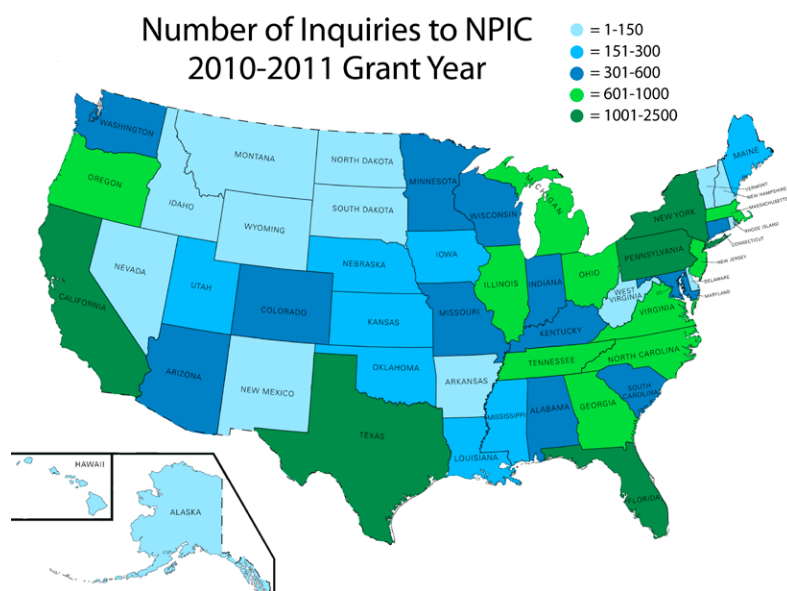
Table 8.1 lists the number of inquiries received by NPIC from each state. The largest number of inquiries came from California, followed by New York, Texas and Florida.

Graph 8.2 summarizes inquiries by EPA region. NPIC received 18.9% of inquiries from Region 4, 10.9% from Region 5, 11.9% from Region 2, 10.8% from Region 9, and 10.4% from Region 6.

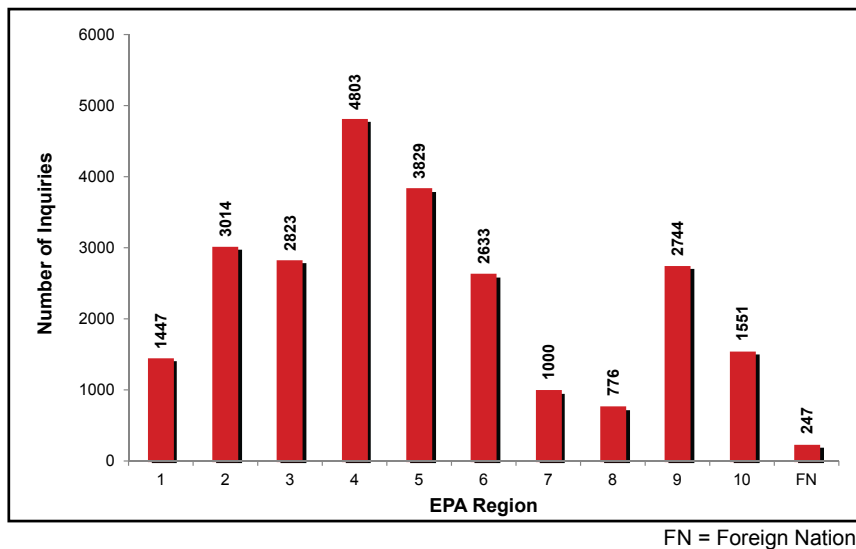
Table 8.1. Listing of states and foreign nations using NPIC

EPA Region	State Code	State	# of Inquiries
10	AK	Alaska	33
4	AL	Alabama	513
6	AR	Arkansas	123
9	AZ	Arizona	353
9	CA	California	2249
0	CN	Canada	84
8	CO	Colorado	365
1	CT	Connecticut	377
3	DC	DC	143
3	DE	Delaware	105
4	FL	Florida	1318
0	FN	Foreign	163
4	GA	Georgia	654
9	HI	Hawaii	46
7	IA	Iowa	220
10	ID	Idaho	132
5	IL	Illinois	794
5	IN	Indiana	381
7	KS	Kansas	190
4	KY	Kentucky	358
6	LA	Louisiana	233
1	MA	Massachusetts	656
3	MD	Maryland	544
1	ME	Maine	154
5	MI	Michigan	875
5	MN	Minnesota	386
7	MO	Missouri	432
4	MS	Mississippi	151
8	MT	Montana	98
4	NC	North Carolina	867
8	ND	North Dakota	41
7	NE	Nebraska	158
1	NH	New Hampshire	115
2	NJ	New Jersey	894
6	NM	New Mexico	124
9	NV	Nevada	96
2	NY	New York	2070
5	OH	Ohio	898
6	OK	Oklahoma	204
10	OR	Oregon	804
3	PA	Pennsylvania	1178
2	PR	Puerto Rico	44
1	RI	Rhode Island	88
4	SC	South Carolina	330
8	SD	South Dakota	51
4	TN	Tennessee	612
6	TX	Texas	1949
0	UN	Unknown	490
8	UT	Utah	168
3	VA	Virginia	712
2	VI	Virgin Islands	6
1	VT	Vermont	57
10	WA	Washington	582
5	WI	Wisconsin	495
3	WV	West Virginia	141
8	WY	Wyoming	53

Graph 8.1. Inquiries by state



Graph 8.2. Inquiries by EPA region



FN = Foreign Nation

TOP 25 AIs FOR ALL INQUIRIES

9. Top 25 Active Ingredients for All Inquiries

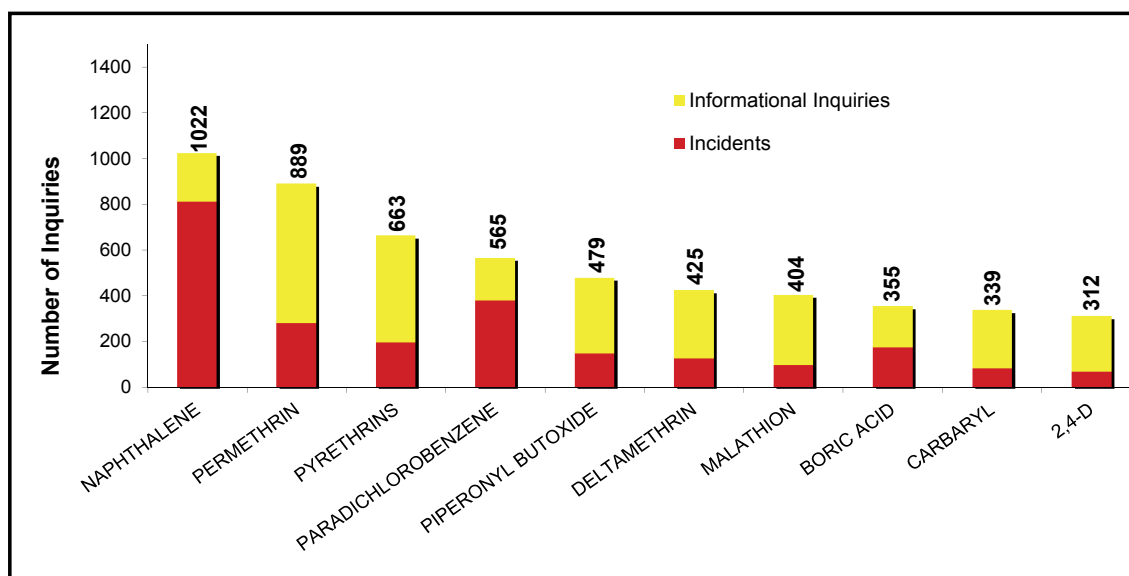
When inquiries to NPIC involve discussion of a specific product or active ingredient, Specialists record the product and the active ingredient in the PID. Naphthalene was discussed in more inquiries than any other single active ingredient this year (Table 9.1, Graph 9.1). Of the 1,022 inquiries involving naphthalene, 809 (79.1%) were incident inquiries. Note that an inquiry may involve discussion of several active ingredients. Graph 9.1 illustrates the number of informational inquiries and incidents for the top active ingredients that NPIC received in the 2010 grant year.

Table 9.1. Top 25 active ingredients for all inquiries

Active Ingredient	Total Inquiries	Incidents ¹	Information Inquiries
NAPHTHALENE	1022	809(31)	213
PERMETHRIN	889	281(28)	608
PYRETHRINS	663	198(17)	465
PARADICHLOROENZENE	565	380(5)	185
PIPERONYL BUTOXIDE	479	149(15)	330
DELTAMETHRIN	425	128(6)	297
MALATHION	404	99(5)	305
BORIC ACID	355	176(2)	179
CARBARYL	339	83(4)	256
2,4-D	312	69(2)	243
IMIDACLOPRID	305	95(7)	210
FIPRONIL	293	95(6)	198
ZINC PHOSPHIDE	261	195(14)	66
DICAMBA	260	58(3)	202
CAPTAN	258	58(2)	200
BIFENTHRIN	209	54(1)	155
BACILLUS THURINGIENSIS	208	44(1)	164
CAPSAICIN	205	101(38)	104
MECOPROP	203	43(2)	160
GLYPHOSATE	193	58(0)	135
CHLOROTHALONIL	185	21(0)	164
METHOPRENE	181	121(22)	60
SULFUR	173	43(0)	130
SILICON DIOXIDE	166	53(3)	113
POTASSIUM SALTS OF FATTY ACIDS	162	72(3)	90
Total =	8715	3483(217)	5232

¹ First number represents the total number of purported incidents regardless of certainty index. The numbers in parentheses indicate the total number of incidents with certainty index of "definite" or "probable."

Graph 9.1. Top 10 pesticide active ingredients for all inquiries



INCIDENT TYPE

10. Incident Type

A pesticide incident may involve a spill, misapplication and an exposure, or one of these alone. In 2010, there were 3,620 pesticide exposures, and 1,259 accidents. Charts 10.1 and 10.2 provide further details. Among reported exposures, dermal contact with pesticides was most common (37%), followed by ingestions (30%) and inhalation exposures (17%). When a specific exposure route could not be identified, Specialists documented a “possible exposure” (7%).

Chart 10.1. Pesticide exposures

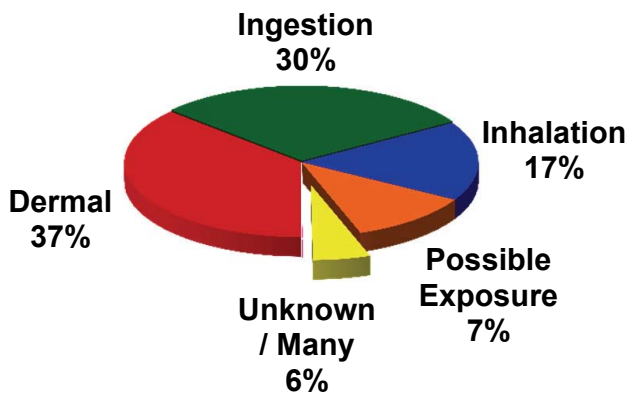


Chart 10.2. Pesticide accidents

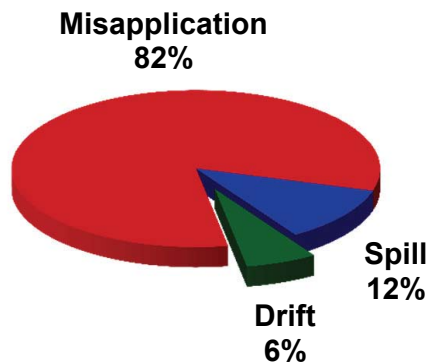


Table 10.1. Incident Type

Type of Incident	Total
Incident	
Exposures	
Dermal	1031
Ingestion	1071
Inhalation	819
Exposure Possible	391
Unknown/Many	289
Occupational	19
Accidents	
Misapp. - Homeowner	886
Misapp. - PCO	39
Misapp. - Other	110
Spill - Indoor	113
Spill - Outdoor	30
Drift	79
Fire - Home	0
Fire - Other	2
Industrial Accident	0
Other	39
N/A - Unknown	1167

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 11.1 and Graph 11.1. 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, with 809 and 380 reported incidents, respectively. These are the active ingredients found in mothballs and similar products. Among these, humans were more commonly involved than animals, including a noteworthy number of children under five years old (199).

For animal incidents, zinc phosphide, permethrin and methoprene were involved in the highest number of incidents, with 158, 123, and 100 reported animal incidents, respectively. Note that methoprene is rarely used singly. It is almost exclusively used in conjunction with other active ingredients like fipronil.

Graph 11.1. Top 10 active ingredients for incidents

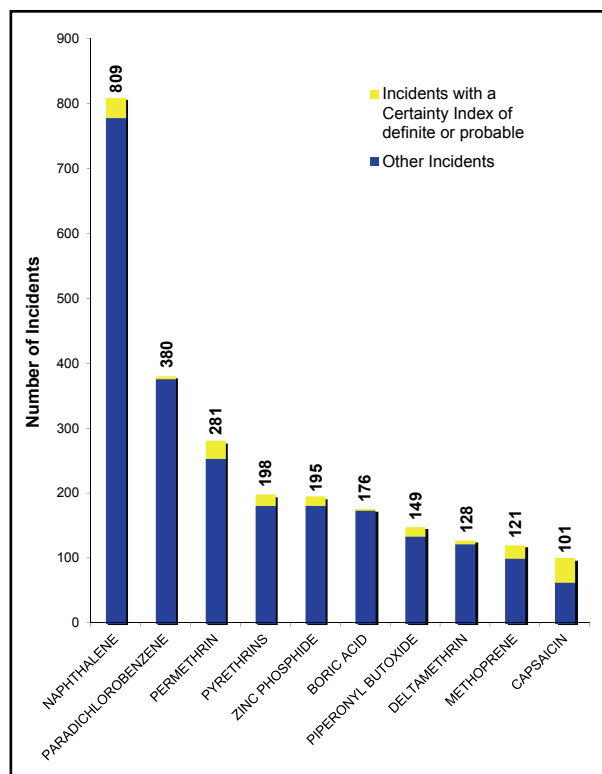


Table 11.1. Top 25 active ingredients for incidents to NPIC

Active Ingredient	Total Incidents ¹	Human Incidents ¹	Animal Incidents ¹	Other Incidents
NAPHTHALENE	809(31)	535(29)	65(2)	153
PARADICHLOROBENZENE	380(5)	242(5)	22(0)	89
PERMETHRIN	281(28)	97(5)	123(23)	43
PYRETHRINS	198(17)	117(9)	46(8)	22
ZINC PHOSPHIDE	195(14)	10(0)	158(14)	10
BORIC ACID	176(2)	77(0)	60(2)	9
PIPERONYL BUTOXIDE	149(15)	85(9)	38(6)	17
DELTAMETHRIN	128(6)	85(6)	23(0)	10
METHOPRENE	121(22)	11(0)	100(22)	0
CAPSAICIN	101(38)	66(38)	18(0)	11
MALATHION	99(5)	59(4)	9(1)	30
FIPRONIL	95(6)	27(1)	52(5)	10
IMIDACLOPRID	95(7)	15(0)	50(7)	18
IRON PHOSPHATE	94(2)	14(0)	71(2)	0
CARBARYL	83(4)	40(3)	11(1)	30
PYRIPROXYFEN	82(30)	5(0)	67(30)	2
POTASSIUM SALTS OF FATTY ACIDS	72(3)	39(3)	23(0)	7
2,4-D	69(2)	29(2)	19(0)	20
CAPTAN	58(2)	28(1)	5(1)	23
DICAMBA	58(3)	24(3)	18(0)	16
GLYPHOSATE	58(0)	30(0)	10(0)	16
METALDEHYDE	57(5)	8(0)	39(5)	5
BIFENTHRIN	54(1)	24(1)	17(0)	12
SILICON DIOXIDE	53(3)	25(3)	17(0)	5
DIPHACINONE	52(0)	4(0)	42(0)	1
Total =	3617(251)	1696(122)	1103(129)	559

¹ First number represents the total number of purported incidents regardless of certainty index (categorized by humans, animals, and other). The numbers in parentheses indicate the total number of incidents with certainty index of "definite" or "probable."

LOCATION OF INCIDENT

12. Location of Incident

For incidents, Specialists record the location of the reported exposure or accident. Of the 4,105 known locations where incidents occurred, 93.2% occurred in the home or yard, and 1.6% occurred in an agricultural setting. Table 12.1 identifies the number of incidents reported to NPIC in a variety of other locations.

Table 12.1. Location of pesticide incident

Location	Total
Unclear/Unknown	43
Home or Yard	3825
Agriculturally Related	64
Industrially Related	5
Office Building, School	39
Pond, Lake, Stream Related	5
Nursery, Greenhouse	4
Food Service/Restaurants	5
Retail Store/Business	30
Roadside/Right-of-Way	9
Park/Golf Course	8
Health Care Facility	2
Treated Water	5
Other	61
Total =	4105

13. Environmental Impact

Table 13.1 includes a 3-month snapshot of a new mechanism, presenting the type of incidents reported for each environmental entity. By far, the most common environmental incident reported to NPIC involves pesticide misapplications to buildings by the residents (86 in three months). Many of these are related to mothballs and similar products.

Table 13.1 - Reported environmental impacts (Jan - Mar 2011)

	Misapplication by Resident	Misapplication by PCO	Misapplication by Other	Misapplication by Unknown	Spill - Indoor	Spill - Outdoor	Drift	Plant Exposure	Other
Soil / Plants / Trees	7	0	0	0	0	0	0	5	0
Home Lawn	3	0	0	0	0	1	2	1	0
Home Garden	3	1	1	0	0	0	1	3	0
Agricultural Crop	1	0	0	0	0	0	1	0	0
Treated Water	0	0	0	0	0	0	0	0	0
Natural Water	0	0	0	0	0	0	0	0	0
Building - Home / Office	86	4	8	4	10	1	0	0	8
Vehicle	3	2	4	2	1	2	1	0	0
Property	14	1	3	0	4	0	2	1	1

CERTAINTY INDEX

14.1. Certainty Index

Table 14.1 and Graph 14.1 summarize the certainty index assignments for all incidents. Human incidents are stratified by gender and group. Multiple entities may be discussed and documented for each incident.

Of the total number of entities discussed in incidents (3,774), 7.2% of the cases were assigned a certainty index of definite or probable, 16.9% of the cases were assigned a certainty index of possible, 15.0% of the cases were assigned a certainty index of unlikely, and none of the cases were considered unrelated. Because none of the information reported to NPIC has been verified or substantiated by independent investigation, high levels of certainty are not common. As a result, the certainty index assignments at both ends of the spectrum (definite and unrelated) are rarely assigned.

Over half (60.9%) of the cases were not classifiable in terms of certainty. See the text box below for a list of circumstances that fall into the “unclassifiable” category.

All certainty index assignments are reviewed by a quality assurance specialist, Carmen Boone. Dr. Sudakin provides additional consultation for human incidents, and Dr. Berman does the same for animal incidents. In this way, NPIC makes every effort to maintain a consistent, objective approach.

Table 14.1. 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
Unclassifiable	1172	675	2298	472	578	117	5
Definite	1	3	4	0	1	0	0
Probable	148	121	269	60	80	8	0
Possible	358	279	637	149	193	16	0
Unlikely	341	224	566	148	188	4	1
Unrelated	0	0	0	0	0	0	0

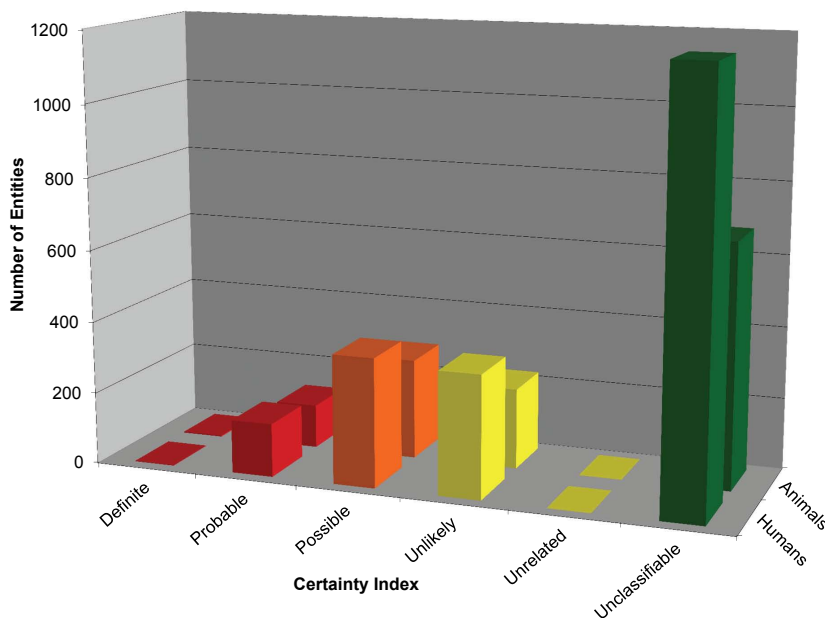
What is the Certainty Index?

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

Graph 14.1. Certainty index for incidents



SEVERITY INDEX

14.2. Severity Index

Table 14.2 and Graph 14.2 summarize the severity of symptoms for all human incidents reported to NPIC. Specialists started classifying the severity of animal symptoms in 2011 using the same criteria as the ASPCA National Animal Poison Center.

For all symptoms reported in human pesticide incidents, 29.9% were minor, 20.6% were moderate, 0.3% were major, and one death was reported. In 46.4% of human incidents, the person reported that they did not experience any symptoms. Symptoms were unknown in 2.7% of human incidents.

Table 14.2. Incident inquiries by severity index (SI)

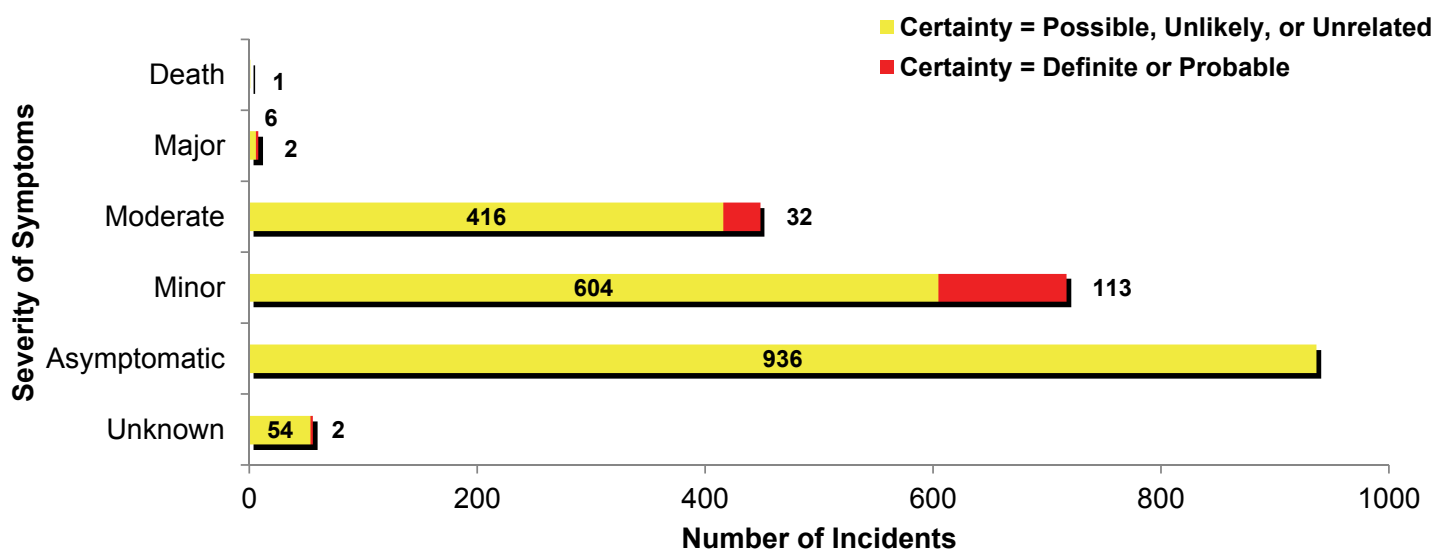
SI for All Categories of Entities		Breakdown of Human-Entity Incident Inquiries			
Severity Index (SI)	Humans	Male	Female	Groups	Gender Not Stated
Unknown	54(2)	25(0)	17(1)	9(1)	3(0)
Asymptomatic	936(0)	395(0)	447(0)	92(0)	2(0)
Minor	604(113)	234(44)	342(64)	28(5)	0(0)
Moderate	416(32)	170(14)	231(16)	14(2)	1(0)
Major	6(2)	5(2)	1(0)	0(0)	0(0)
Death	1(0)	0(0)	1(0)	0(0)	0(0)

¹ First number represents the total number of purported incidents regardless of certainty index. The numbers in parentheses indicate the total number of incidents with certainty index of "definite" or "probable."

What is the Severity Index?

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

Graph 14.2. Severity index for incidents



SELECTED INCIDENTS

14.3 Description of Entities

Table 14.3 represents a novel way of identifying noteworthy pesticide incident scenarios. For human incidents, it presents the number of cases in each certainty and severity category. One hundred fifty-one cases (151) are included in the shaded area; they had symptoms that were moderate or major. Their symptoms were considered to be consistent with published literature, with a reasonable time relationship between exposure and symptom onset. As such, they were assigned a certainty index of possible or probable.

Details about these cases are presented in NPIC's quarterly reports.

For information on deaths, regardless of certainty, see table 17.1.

Table 14.3. Number of *human* exposures classified according to the severity of symptoms and the certainty of the relationship between the reported exposure and symptoms.

Severity Index	Death	0	0	1	0	0	0
	Major	1	0	3	0	2	0
	Moderate	101	0	167	117	32	0
	Minor	81	0	170	240	112	1
	Asymptomatic	936	0	0	0	0	0
		Unclassifiable	Unrelated	Unlikely	Possible	Probable	Definite

Certainty Index

15. Description of Entities

Table 15.1 presents the number of entities involved in reported incidents. Incidents involving environmental entities are not assigned a certainty index.

Table 15.1. Description of entities

Description of Entities	Total ¹
HUMANS	
Females	1095(80)
Pregnant females	24(1)
Males	905(60)
Family	147(5)
Non-Family	23(3)
Child - Sex Unknown	5(0)
Adult - Sex Unknown	2(0)
TOTAL ALL HUMANS =	2201(149)
ANIMALS	
Single Animal	1337(116)
Group of Animals	74(8)
Wildlife	10(0)
TOTAL ALL ANIMALS =	1421(124)
OTHER ENTITIES	
Environmental Entities	20
Built Environmental Entities	474
Other Entities	486
TOTAL OTHER ENTITIES =	980

¹ First number represents the total number of purported incidents regardless of certainty index. The numbers in parentheses indicate the total number of incidents with certainty index of "definite" or "probable."

DESCRIPTION OF ENTITIES

Chart 15.1 and graphs 15.1 - 15.3 below provide a summary of entities involved in incidents. Of the 4,602 entities involved in incidents reported to NPIC this year, 47.8% were human, 30.9% were animal, and 21.3% were other types of non-target entities (buildings or gardens, for example).

Graph 15.1. Humans involved in incidents

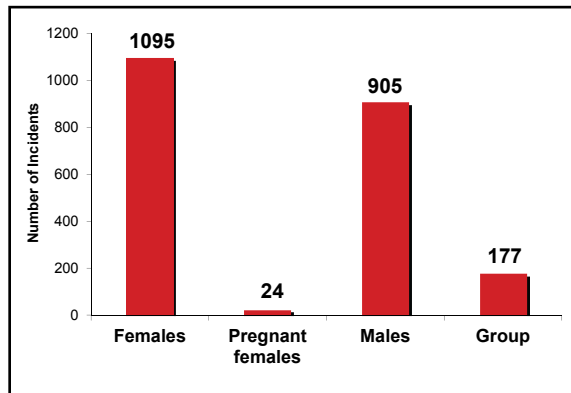
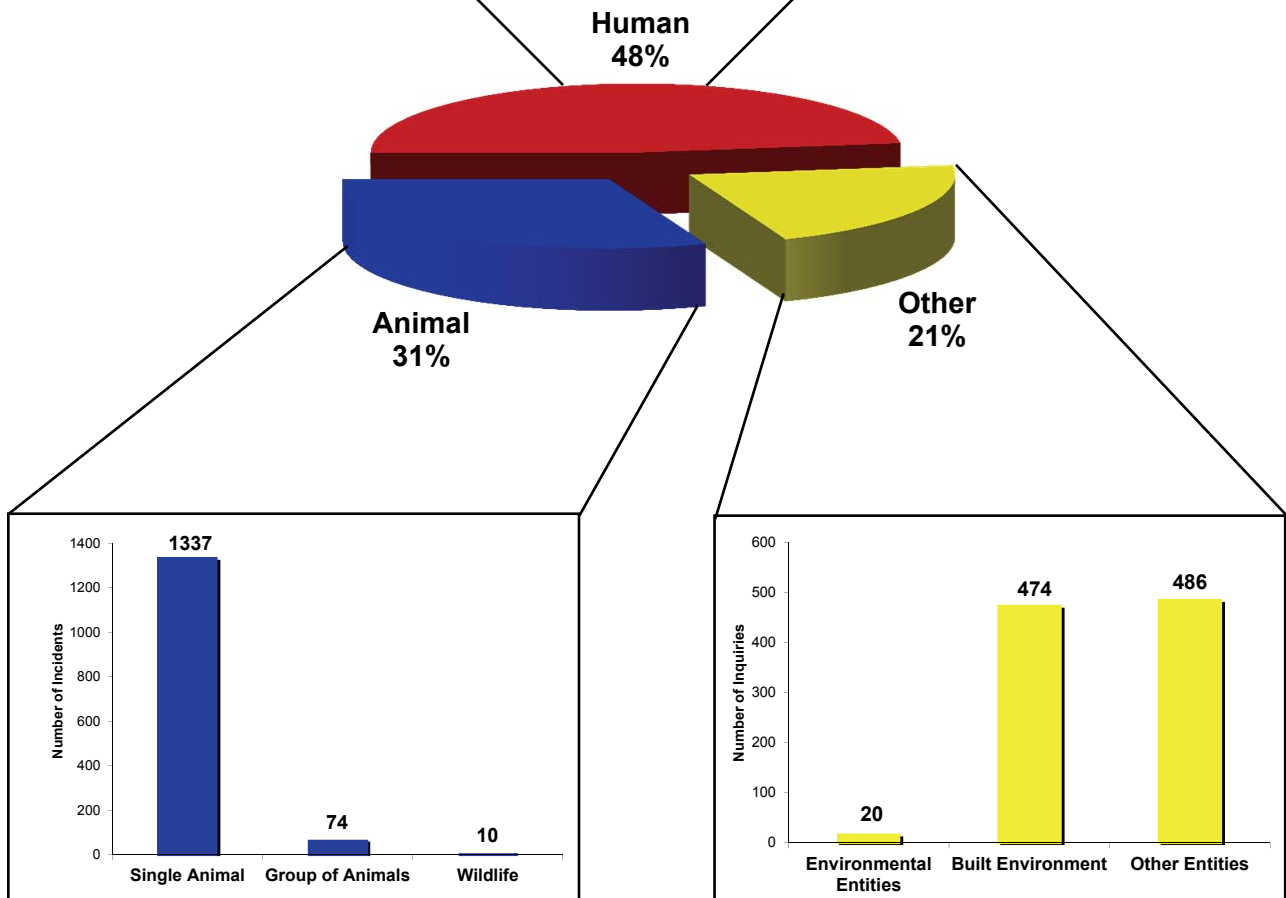
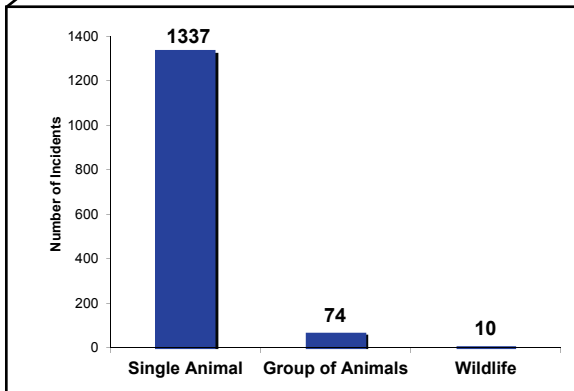


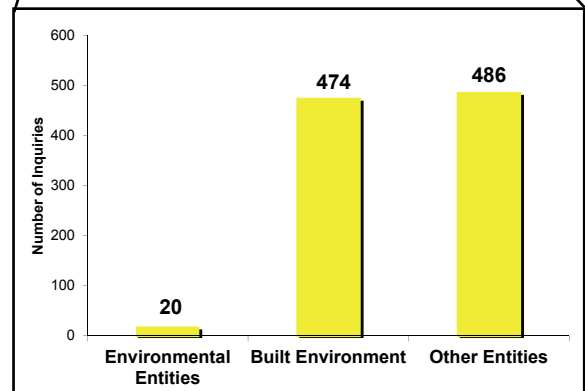
Chart 15.1. Description of entities



Graph 15.2. Animals involved in incidents



Graph 15.3. Other entities involved in incidents



ENTITY SYMPTOMS

16. Entity Symptoms

Of the human entities involved in incidents reported to NPIC, information about their symptoms was reported for 1,839 entities (Table 16.1). Of these, 29.7% reported health effects that were consistent with a significant exposure to the pesticide in question (symptomatic), 50.9% were unclassifiable (asymptomatic or symptoms were unknown), and 19.4% reported atypical health effects (Chart 16.1). Table 16.1 and Chart 16.2 provide similar information for animal entities.

Table 16.1. Reported symptoms of entities

Reported Symptoms	Total ¹
Human Symptoms -	
Symptomatic	546(149)
Asymptomatic/Unknown	936
Atypical	357
Total Humans =	1839(149)
Animal Symptoms -	
Symptomatic	442(124)
Asymptomatic/Unknown	640
Atypical	241
Total Animals =	1323(124)
Total Symptoms =	3162(273)

¹ First number represents the total number of purported incidents regardless of certainty index. The numbers in parentheses indicate the total number of incidents with certainty index of "definite" or "probable."

Chart 16.1. Reported symptoms in humans

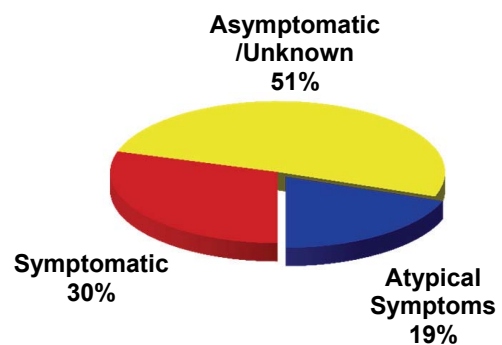
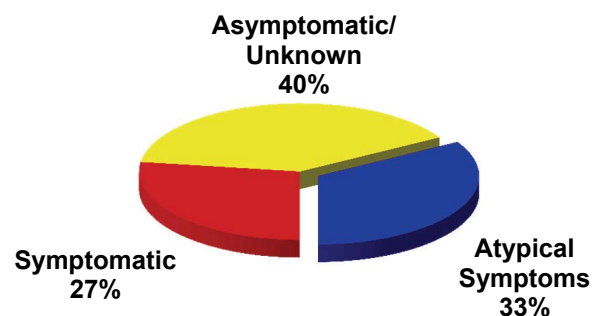


Chart 16.2. Reported symptoms in animals



REPORTED DEATHS

17. Reported Deaths

In 2010, one human death was reported (Table 17.1). NPIC notified its Project Officer at the time of that report, and additional details were included in the second quarterly report (July – September) of the year.

Of the 1,421 animal entities involved in pesticide incidents, there were 64 reported deaths. Table 17.1 summarizes this information. Table 17.2 shows the active ingredients involved in the majority of the animal deaths. Methoprene, ethofenprox, fipronil, and pyrethrins were reported to be associated with the largest number of animal deaths.

Table 17.1. Reported deaths

Reported Deaths	Total
Human Deaths -	
Male	0
Female	1
Total Human Deaths =	1
Animal Deaths -	
Single Animal	51
Group of Animals	6
Wildlife	7
Total Animal Deaths =	64
Total =	65

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

Active Ingredient ¹	Number of Deaths	Active Ingredient ¹	Number of Deaths
METHOPRENE	10(2)	PIPERONYL BUTOXIDE	4(0)
ETHOFENPROX	6(3)	ZINC PHOSPHIDE	3(2)
FIPRONIL	6(1)	COPPER SULFATE	3(1)
PYRETHRINS	6(1)	IMIDACLOPRID	3(0)
TETRACHLORVINPHOS	5(2)	IRON PHOSPHATE	3(0)
PYRIPROXYFEN	4(1)	NAPHTHALENE	3(0)
PERMETHRIN	4(0)		

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

18. Entity Age

Table 18.1 and Graph 18.1 summarize information about the ages of people involved in incidents reported to NPIC. Of these 1,595 people with ages available, 24.6% were less than 5 years of age (primarily consisting of ages 1 to 2), 5.2% were between the ages of 5 and 14, 5.8% were between the ages of 15 and 24, 48.9% were between the ages of 25 and 64, and 15.4% were over the age of 65.

Graph 18.1. Age of people involved in reported incidents

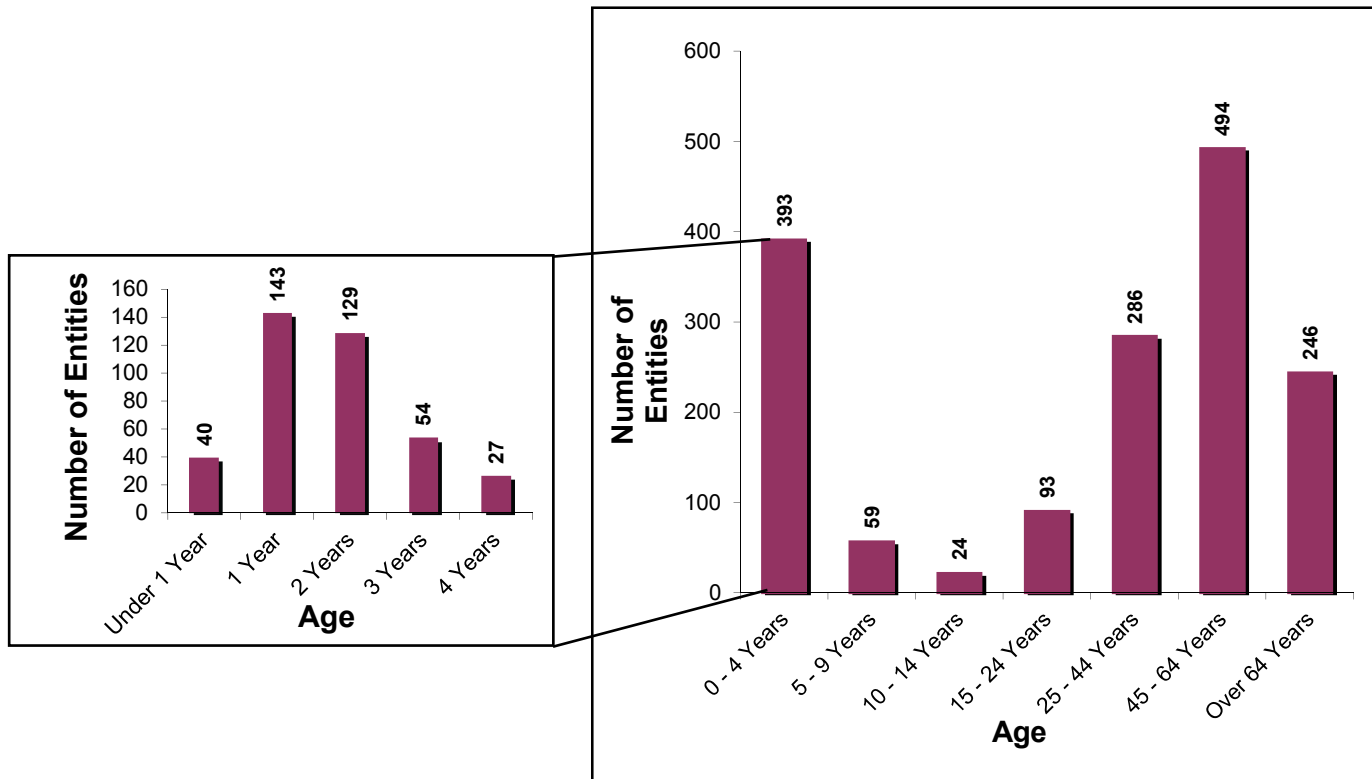


Table 18.1. Age distribution of people involved in reported incidents

Age Category	Total
Under 1 Year	40
1 Year	143
2 Years	129
3 Years	54
4 Years	27
Total (0 - 4 Years) =	393
5 - 9 Years	59
10 - 14 Years	24
15 - 24 Years	93
25 - 44 Years	286
45 - 64 Years	494
Over 64 years	246

19. Veterinary Incident Reporting Portal (VIRP)

NPIC developed a web-based portal for veterinarians to report adverse reactions to pesticides among animals in 2009. NPIC does not verify and/or correct the information submitted by veterinary professionals into the VIRP. NPIC provides more detailed reports about VIRP incidents to its Project Officer and to Dr. Kit Farwell (US EPA, Office of Pesticide Programs, Health Effects Division) upon request.

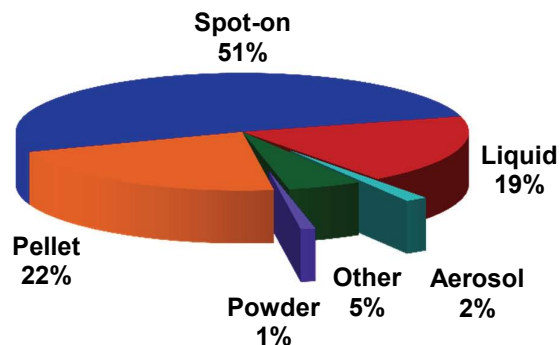
In 2010, veterinarians submitted 178 incident reports to the Veterinary Incident Reporting Portal (VIRP) involving 193 animals. Of those, 135 were dogs and 56 were cats.

Table 19.1 and Chart 19.1 summarize the formulation of products involved in VIRP incidents. The majority of incidents (51%) involved spot-on products, down from 63% last year. Other formulations included liquid (19%), pellet (22%), other (5%), powder (1%), and aerosol (2%).

Table 19.1. Product formulations as reported in VIRP

Formulation	Number of Products
	2010
Spot-on	97
Pellet	41
Liquid	36
Other	10
Aerosol	3
Powder	2
Total =	189

Chart 19.1. Product formulations reported in VIRP



VETERINARY REPORTING

Table 19.2 and Chart 19.2 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, 40% were classified as neurological. Seventeen (17%) percent were classified as dermatological, 18% as gastrointestinal, 14% as other and 12% as none. Incident reports with no symptoms are often related to unintended exposures.

Table 19.3 and Chart 19.3 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, 55% of the cases were ongoing or the affected animals had recovered (33%) at the time of the report. Seven percent (7%) of the animals experienced continuing illness, 5% resulted in the death of the animal, and one animal recovered with sequelae.

Table 19.2. Animal symptoms as reported in VIRP

Symptom	Number of Animals
	2010
Dermatological: Irritant	40
Dermatological: Sloughing	4
Dermatological: Ulcer	8
Dermatological Total	52
Gastrointestinal: Diarrhea	17
Gastrointestinal: Vomiting	38
Gastrointestinal total	55
Neurological: Depression	33
Neurological: Excited	26
Neurological: Seizure	16
Neurological: Tremor	48
Neurological Total	123
None	36
Other	44
Total =	310

Chart 19.2. Animal symptoms as reported in VIRP

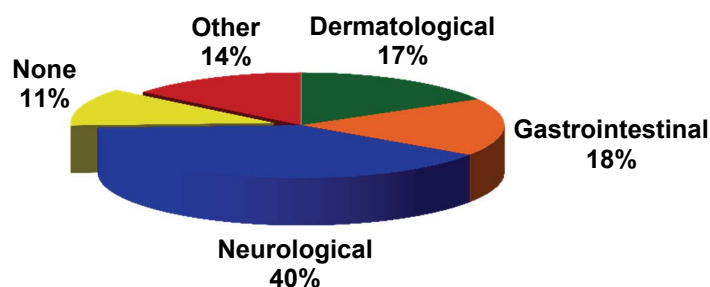
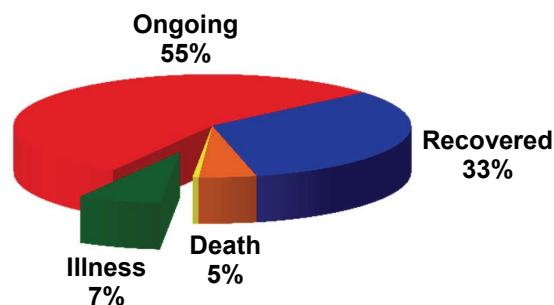


Table 19.3. Incident outcomes as reported in VIRP

Outcome	Number of Animals
	2010
Ongoing	107
Recovered	63
Illness	13
Death	9
Sequelae	1
Total =	193

Chart 19.3. Incident outcomes as reported in VIRP



Oregon Poison Center

NPIC Specialists transferred 21 inquiries to the Oregon Poison Center. These inquiries were transferred to the center because the Specialists deemed that the inquirer's situation represented an acute poisoning emergency. The NPIC quarterly reports present detailed information for the inquiries transferred in each quarter.

Animal Poison Control Center

In 2010, 25 inquiries were transferred to the Animal Poison Control Center (APCC). The situation presented in each inquiry was considered to be an emergency; therefore, the inquiry was transferred to APCC.

Language Line Services, Inc.

Language Line Services, Inc. provides real-time access to over-the-phone interpretation services. Interpretation is possible in over 170 languages, including Spanish, Vietnamese, Chinese, Russian and Korean. NPIC made arrangements to work with medically trained interpreters, capable of translating technical information about the potential health effects of pesticides. For the 2010 grant year, NPIC utilized the service to provide risk communication to 41 people in Spanish, French, Mandarin, Turkish, Arabic, and Russian.

NPIC is a cooperative agreement between Oregon State University and the United States Environmental Protection Agency.

Environmental & Molecular Toxicology
Extension Services
Oregon State University
310 Weniger Hall
Corvallis, OR 97331-6502
www.npic.orst.edu