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NATIONAL
PESTICIDE ● INFORMATION
CENTER

-2009-

Environmental & Molecular Toxicology

Oregon State
UNIVERSITY **OSU**

This is the fifteenth annual report for the National Pesticide Information Center (NPIC) since it began operation at Oregon State University in April, 1995. NPIC, a service providing a variety of pesticide and pesticide-related information to the general public and professionals across the United States, Puerto Rico and the Virgin Islands, is a cooperative project between Oregon State University and the US Environmental Protection Agency. This report, the 2009 Annual Report, covers the period April 1, 2009 - March 31, 2010, corresponding to NPIC's fifteenth grant year.

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:

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NPIC 2009 Annual Report

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EXECUTIVE SUMMARY

Operations

- NPIC's fifteenth operational year at Oregon State University was from April 1, 2009 – March 31, 2010. During this period, NPIC received 24,612 inquiries (Table 1.1 - tables and graphs start on page 30). Approximately 90% of the total inquiries were addressed over the telephone. The NPIC websites continue to be an important source of objective information on pesticides. During the fifteenth operational year, these sites received over 2.7 million web hits, which represents a 10% increase in web traffic over the previous year (Graph 4.1).
- Faculty and staff at NPIC developed and submitted a three-year cooperative agreement after a competitive renewal process. Fred Berman, DVM, PhD will join NPIC as a Co-Principal Investigator with expertise in veterinary medicine and occupational toxicology.
- The Foreign Language Team responded to 182 inquiries in Spanish this year, which represents a 72% increase compared with the previous year. NPIC also utilized over-the-phone interpretation services to respond to 69 inquiries in several languages including Spanish, Cantonese, and French.

Notable Items

- NPIC began classifying the severity of reported symptoms on April 1, 2009, using criteria that were adapted from the National Poison Data System (NPDS). Sixty-three percent of reports with symptoms were classified as “minor” and 35% were classified as “moderate” (Tables 14.2 – 14.3). The criteria is defined on page 27.
- NPIC analyzed data for seven special reports requested by EPA personnel this year. These reports included specific details about incidents related to dermal sensitization, lime sulfur, phosphide fumigants and CCA-treated wood, among others.
- In 2009, NPIC developed a Veterinary Incident Reporting Portal (VIRP) for veterinary professionals. NPIC promoted the portal using a variety of methods (see page 18). Veterinarians submitted over 150 reports in the first year. See Tables 19.1 – 19.3 for a summary of the VIRP data.
- NPIC produced ten PestiByte Podcasts in English, and two in Spanish this year in collaboration with the Environmental Health Sciences Center (EHSC) at Oregon State University. PestiBytes are 1-2 minute audio clips based on common pesticide questions. In their first full year of availability, PestiBytes were down-loaded over 36,000 times.
- NPIC launched a new web-based portal to report ecological incidents that may be related to pesticides in October 2009. The site was developed in collaboration with the US EPA. The *Ecological Incident Reporting Portal* is available at <http://npic.orst.edu/eco>.
- Frank Davido, Project Officer for NPIC, visited OSU in October 2009 to meet with NPIC faculty, staff, and other officials at OSU. During the site visit, various projects were discussed, with an emphasis on outreach to broad audiences and optimizing protocols for incident data collection.
- The NPIC Director and Co-Investigators published an article on April 20, 2009 entitled, “Longitudinal trends in organophosphate incidents reported to the National Pesticide Information Center, 1995–2007” in the peer-reviewed journal *Environmental Health*.
- NPIC developed a new data retrieval system called the Pesticide & Active Ingredient Retrieval System (PAIRS). It allows pesticide specialists to access data from the Pesticide Product Information System (PPIS) & Pesticide Product Label System (PPLS).

Highlights in Data

- Inquiries from medical professionals increased significantly from 2008 to 2009, from 248 to 350 for human health care providers (41% increase) and from 265 to 590 for veterinary professionals (123% increase). Inquiries from migrant clinics also increased from 16 (2008) to 59 (2009).

Note: The complete record of NPIC accomplishments for the current operational year includes the 12 monthly reports and four quarterly reports (submitted earlier), in addition to this 2009 Annual Report. This report covers the NPIC grant year April 1, 2009 through March 31, 2010.

EXECUTIVE SUMMARY

- Bed bug-related inquiries increased from 388 in 2007 to 615 in the 2009-2010 grant year, representing a 59% increase. NPIC has been actively updating its web page about bed bugs, as well as its collection of informational resources.
- The highest number of inquiries to NPIC came from California, Texas and New York (Graph 9.1). Of the EPA regions, NPIC received the most inquiries from EPA Region 4, followed by EPA Region 5 and Region 2 (Graph 9.2).

Inquiries

- Most of the inquiries to NPIC came from the general public (85.7%), followed by human and animal medical professionals (4.1%) and government organizations (2.9%). See Table 5.1.
- While most of NPIC inquiries were informational (76.8%), there were 3,962 (16.1%) reports of pesticide incidents in 2009-10 (Table 2.1).
- The top active ingredients involved with incidents were: naphthalene (623), permethrin (280), paradichlorobenzene (243) methoprene (195) and pyrethrins (177) (Table 11.1).
- For the top 25 active ingredients involved in incident inquiries, 8.6% of incidents were assigned a certainty index of “definite” or “probable”, which designates a high probability of association with the pesticide in question (Table 11.1).
- There were 4,735 entities involved in incidents reported to NPIC: 44.7% were human, 37.6% were animals and 17.7% were classified as other (structural or environmental) (Chart 15.1).
- Among the 2,115 humans involved in pesticide incident inquiries, 2 deaths were reported. One hundred (100) animal deaths were reported, with eleven of the incidents assigned a certainty index “definite” or “probable” (Table 17.1).
- For human incidents, 27.4% involved children less than 5 years of age. Approximately 14.9% of incidents involved adults that were 65 years or older (Graph 18.1).
- For informational inquiries, pesticide use (34.1%) and health-related inquiries (29.0%) were the most commonly asked questions. Regulatory compliance comprised 10.0% of questions (Chart 6.1).

- Examples of incidents and inquiries include:

Caller reported she was spraying her fruit trees with an insecticide (carbaryl) when the wind blew some of the mist into her eyes. Caller said her eyes started burning immediately and continued to burn even after she rinsed with water. Caller asked what to do and if there could be other health risks.

Caller said a few minutes ago while putting a cyphe-nothrin flea spot-on product on his dog, some of the liquid from the tube got on his fingers and now he is noticing those two fingers feel numb and tingly. Caller asked what to do.

Caller described skunks living under her house, and asked about using moth balls to repel them. Discussed following the label instructions in order to comply with the law. Discussed potential health effects associated with inhalation of moth ball vapors. Provided skunk control resources.

Web Corner

NPIC received 2,705,371 total web hits this grant year, which represents a 10% increase in web traffic over the previous year.

NPIC increased the content of the Spanish-language version of its website, published two Pesti-Byte Podcasts in Spanish, and observed a 137% increase in Spanish web traffic.

After substantial additions to the pest control section of the NPIC website, the site received a 32% increase in web traffic (226,033 hits). Notably, NPIC's web page about bed bugs received a 112% increase in web traffic.

The top five countries that accessed NPIC's website in 2009 were 1) United States, 2) Canada, 3) China, 4) Great Britain and 5) India.

HISTORY AND INQUIRIES

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 originally used to report pesticide incidents in EPA Region VI through the Pesticide Incident Monitoring System (PIMS). Later, callers from across the United States began using the service to obtain information on pesticides. In 1980, the network was designated as the National Pesticide Information Clearinghouse (NPIC). In 1984, NPIC added the 24-hour responsibilities of South Carolina's National Pesticide Telecommunications Network (NPTN) and changed its name to NPTN.

The NPTN system remained in San Benito until April 1986, when it moved to the Department of Preventative Medicine and Community Health of the Texas Tech University Health Sciences Center in Lubbock, Texas. Following a competitive renewal process for the grant supporting the Cooperative Agreement between the US Environmental Protection Agency and the co-sponsoring university, NPTN moved to Oregon State University on April 1, 1995.

In addition to the telephone, NPTN began to place major emphasis on the internet and e-mail as means of disseminating pesticide information. To more accurately reflect the nature of its service, NPTN was named National Pesticide Information Center (NPIC) in 2001. In March 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 service enables NPIC specialists to provide risk communication in over 170 different languages. In 2008, NPIC released a comprehensive Spanish-language version of its website.

Inquiries and Resources

NPIC receives inquiries from across the US and from Puerto Rico, the Virgin Islands, Canada, Mexico and numerous other countries. Approximately 86% of the inquiries to NPIC are from the general public. NPIC receives requests for information about: the health implications of pesticide use, pesticide toxicology, environmental chemistry, regulations, use practices, product information, environmental effects of pesticides, pesticide safety, protective equipment, cleanup and disposal, and current pesticide-related issues in the news.

NPIC maintains an extensive collection of hard-copy and electronic resources. 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 created InfoBase, a custom search engine that spiders selected websites and databases for archival and searching capabilities. InfoBase is available to the public.

NPIC's library includes: a comprehensive Active Ingredient (AI) file collection containing detailed scientific and regulatory information on over 990 active ingredients; 265 General Files that contain topic information such as "drift" and "IPM"; numerous compendia of pesticide information (e.g., *Code of Federal Regulations - 40 CFR Parts 150-189: Common Sense Pest Control; Crop Protection Handbook; Disinfection, Sterilization and Preservation; Herbicide Handbook; Clinical Veterinary Toxicology; Metabolic Pathways of Agrochemicals; Pest Control Operations; The Pesticide Manual; and the WHO Environmental Health Criteria series*); electronic access to CHEMBANK (HSDB, RTECS, IRIS); and on-line literature-searching capabilities (e.g. Medline, TOXNET, PubMed).



OBJECTIVES

Funding

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

The primary mission of the National Pesticide Information Center is to serve as a source of objective, science-based information on a wide variety of pesticide-related subjects, including:

- recognition and management of pesticide poisonings
- health and environmental effects
- toxicology
- environmental chemistry
- pesticide products
- incident prevention and exposure reduction

In addition, NPIC provides referrals for:

- safe-use practices
- clean-up and disposal
- emergency treatment
- investigation of pesticide incidents
- laboratory analysis
- integrated pest management

A major goal of NPIC is to promote informed decision-making on the part of the inquirer.

Service provided by NPIC is available 10 hours/day from 6:30 am - 4:30 pm Pacific Time, 7 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:

- 1) To operate a toll-free telephone service to inquirers in the United States, Puerto Rico, and the Virgin Islands, including a recording device to capture off-hour inquiries.
- 2) To provide access to NPIC and pesticide-related information via the internet and email.
- 3) To serve as a source of factual, unbiased information on pesticide chemistry, toxicology and environmental fate to all who inquire, including industry, government, medical and agricultural personnel, in addition to the general public.
- 4) To provide the medical community with diagnostic and crisis management assistance involving pesticide incidents in situations pertaining to both human and animal patients.
- 5) To acquire accurate and complete information on all inquiries considered to be pesticide incidents.
- 6) To computerize all inquiry information as well as pesticide incident data for easy retrieval.



Open minds. Open Doors.™

ACHIEVEMENTS

Of Special Interest

Veterinary Incident Reporting Portal (VIRP) - NPIC developed a web-based portal for veterinarians to report adverse reactions to pesticides, and launched the new site in late 2008. The portal is located at <http://npic.orst.edu/vet>. To help promote this new service, NPIC mailed information to over 4,600 veterinarians, exhibited a booth at the American Veterinary Medical Association (AVMA) Annual Convention, gave an oral presentation at the veterinary forum of the annual American Public Health Association meeting, posted information to on-line veterinary resources and list-serves and developed a poster for outreach events (see Figure 1).

Veterinary professionals submitted over 150 reports into the VIRP in its first year of operation. They re-

ported adverse reactions to pesticides in 128 dogs and 43 cats, including seven deaths. Most of the pesticides involved were insecticides (82%), and 63% were formulated in spot-on applicator tubes. See Tables 19.1 - 19.3 on pages 53 and 54 for more detailed information about the incidents reported by veterinarians.

In response to the April 16, 2009 press release from the US Environmental Protection Agency, titled "U.S. and Canada to Increase Scrutiny of Flea and Tick Pet Products," NPIC received 299 inquiries, 164 of which were incidents. To increase our reporting capacity, NPIC developed procedures to collect incident data from veterinary professionals in real time that integrates with VIRP.

Figure 1. NPIC poster presented at outreach events

A new tool for veterinary professionals at the National Pesticide Information Center

Kaci Buhl, MS; Sean Ross, PhD; Dave Stone, PhD; Department of Environmental & Molecular Toxicology



BACKGROUND

SIGNS AND SYMPTOMS REPORTED

HIGHLIGHTS FROM REPORTS RECEIVED IN 2009

Thousands of adverse reactions are reported to the US Environmental Protection Agency (EPA) each year related to animal pesticide applications. Reports vary in the quality and quantity of information provided. In 2009, the National Pesticide Information Center (NPIC) collaborated with EPA and the American Veterinary Medical Association (AVMA) to develop an incident reporting mechanism for veterinarians that would increase the utility of incident reports. The Veterinary Incident Reporting Portal (VIRP) was designed to capture the optimal amount of relevant information, balanced with a quick and user-friendly interface for busy practitioners. Support is provided by NPIC pesticide specialists.



1.800.858.7378

Neurological Signs Reported	Frequency in 2009
tremor	47
excitability	21
seizure	20
depression	15

The US Environmental Protection Agency (EPA) is the agency responsible for regulating pesticide products in the United States. They utilize incident information to identify products and practices that cause harm to people, pets and the environment. In the past, incident information has led the EPA to implement risk mitigation measures including product label changes, limited use patterns and product cancellations.

The American Veterinary Medical Association (AVMA) is the largest association of veterinary professionals in the United States. Information about trends in pesticide incidents will inform its membership, providing the opportunity to identify behavioral changes that could minimize risk.

PRODUCT FORMULATION

INCIDENT DATA INFORMS RISK ASSESSMENT

OUTREACH

Spot-on: 63%

liquid: 14%

pellet: 12%

powder: 4%

other: 4%

aerosol: 2%

shampoo: 1%

The VIRP site was launched in April 2009

The US EPA published a press release encouraging vets to report

The Journal of the American Veterinary Medical Association (AVMA) published a notice encouraging veterinarians to report

NPIC promoted the VIRP at the annual meeting of the AVMA

NPIC mailed VIRP promotional materials to over 10,000 vets

NPIC collaborated with the American Society for Prevention of Cruelty to Animals (ASPCA) and Veterinary Information Network (VIN) to reach their memberships

NPIC will continue efforts to solicit valid reports from veterinary professionals. Promotional cards and other materials are available upon request.

ACKNOWLEDGEMENTS

This project is funded by US EPA's Office of Pesticide Programs and OSU. The reporting site was developed by Sean Ross (NPIC) using input from the AVMA Practitioner Advisory Committee and the US EPA's Office of Pesticide Programs.

Make a Difference

Report Adverse Reactions to Pesticides!

There is a new reporting mechanism online, and it was designed to be quick and easy for busy veterinarians.

About 10,000 reports of adverse effects to pets are received by the EPA each year. Reports vary in quality, and this portal is intended to generate more reliable data on pesticide incidents, from veterinarians like you.

<http://npic.orst.edu/vet>

HOW TO REPORT...

adverse reactions to pesticides

- 1) Go to <http://npic.orst.edu/vet>
- 2) Answer required questions
- 3) Click "Save"

If you have questions, call 1.800.858.7378, seven days a week

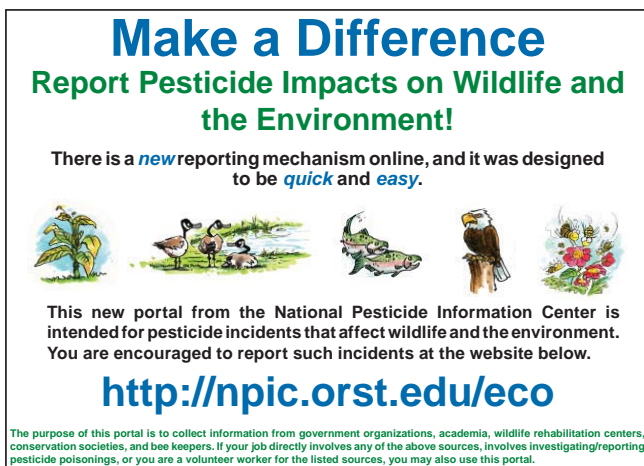
Thank you for your time!




ACHIEVEMENTS


Ecological Incident Reporting Portal (EIRP) - NPIC launched a new web-based portal for professionals in ecology and wildlife sciences to report adverse reactions to pesticides in October 2009. The site was developed in collaboration with NPIC's Project Officer, Frank Davido, incorporating ideas from scientists and regulators in the US EPA's Environmental Fate and Effects Division (EFED) and wildlife policy stakeholders. It was designed to capture useful information about the number and nature of adverse effects observed in the field by professionals in wildlife conservation, regulation, and animal husbandry. The Ecological Incident Reporting Portal is available at <http://npic.orst.edu/eco>.

Figure 2. Eco-Portal Card (front & back)



Make a Difference
Report Pesticide Impacts on Wildlife and the Environment!

There is a *new* reporting mechanism online, and it was designed to be *quick* and *easy*.



This new portal from the National Pesticide Information Center is intended for pesticide incidents that affect wildlife and the environment. You are encouraged to report such incidents at the website below.

<http://npic.orst.edu/eco>

The purpose of this portal is to collect information from government organizations, academia, wildlife rehabilitation centers, conservation societies, and bee keepers. If your job directly involves any of the above sources, involves investigating/reporting pesticide poisonings, or you are a volunteer worker for the listed sources, you may also use this portal.

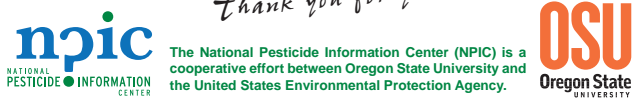
HOW TO REPORT...

pesticide impacts on wildlife and the environment


- 1) Go to <http://npic.orst.edu/eco>
- 2) Answer required questions
- 3) Click "Save"

If you have questions, call 1-800-858-7378, seven days a week

Thank you for your time!



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The National Pesticide Information Center (NPIC) is a cooperative effort between Oregon State University and the United States Environmental Protection Agency.



OSU Oregon State UNIVERSITY

Dr. Jennifer Gervais, an NPIC specialist and Ph.D. in wildlife ecology, delivered a presentation at the annual meeting of the Oregon chapter of The Wildlife Society. She showcased the capabilities and format of EIRP.

Pesticide & Active Ingredient Retrieval System (PAIRS) – With the discontinuation of Pest-BANK, NPIC developed a unique tool that would allow for pesticide information retrieval. Sean Ross developed the framework and programming to support PAIRS, which allows pesticide specialists to search and retrieve data about pesticide products from two databases published by the US EPA: the Pesticide Product Information System (PPIS) and the Pesticide Product Label System (PPLS). Specialists can readily search for multiple parameters including: active ingredient, target pest, acceptable use sites, formulation and signal word. Furthermore, PAIRS converted labels to a new file format, enabling additional options for viewing product labels.



Sean - IT Specialist

Foreign Language Capabilities - NPIC employs three Spanish-speaking pesticide specialists, capable of responding to inquiries and translating NPIC publications. Since Fall 2008, NPIC has offered a mirrored, comprehensive version of its website in Spanish. In its first full year, NPIC's Spanish website received over 100,000 hits.

Under a contract with Language Line Services, Inc., NPIC is also capable of responding to inquiries in over 170 languages. Interpreters are familiar with medical terminology and capable of translating technical information about the potential health effects of pesticides. In 2009-2010, NPIC utilized the service to provide risk communication to 69 people in Spanish, Cantonese and French.

ACHIEVEMENTS

NPIC posted seven new web pages describing NPIC capabilities to handle calls in foreign languages. Website visitors can learn how to utilize NPIC services in Cantonese, French, Chinese, Russian, Japanese, Vietnamese, and Farsi.

Project Officer Site Visit - Frank Davido, Project Officer for NPIC, visited OSU on October 6-8, 2009 to meet with NPIC management and staff. He also met with Dr. Craig Marcus, the Head of OSU's Environmental and Molecular Toxicology Department. NPIC staff delivered several presentations highlighting new developments, Spanish resource expansion, outreach efforts, fact sheets and more. Mr. Davido also participated in discussions about how to improve upon incident reporting portals for veterinarians and ecological professionals.

NPIC also hosted visitors from EPA Region 10 in January 2010. Scott Downey and Linda Liu met with faculty and staff as representatives of the Pesticides & Toxics Unit. Following the meeting, NPIC was invited to participate in the Pesticide Inspector's Forum and soil fumigant training, both in Salem, Oregon.

Special Reports Provided to EPA - NPIC provides special reports from its Pesticide Inquiry Database (PID) to EPA personnel, typically in less than one week. This year, NPIC developed and delivered the following reports:

- All incidents in Puerto Rico and/or the Virgin Islands, with analysis on the victims' ages and any involvement with illegal pesticide products
- All incidents involving dermal sensitization
- Human incidents involving lime sulfur (calcium polysulfide)
- Human incidents involving certain phosphide fumigants
- All incidents involving naphthalene moth balls
- All incidents involving *Agrobacterium radiobacter*
- Human incidents involving CCA-treated wood that was burned or sanded

PestiBytes - In an effort to provide information in a wide variety of modern formats, NPIC produces Podcasts known as "PestiBytes." They are 1-2 minute audio clips featuring common pesticide questions and answers. NPIC produced ten PestiBytes in English, and two Pesti-



Bytes in Spanish this year. They are available for radio public service announcements nationwide and have been broadcast by community and university stations.



Andrea - CPQ / Podcast Facilitator

PestiBytes are produced by NPIC in collaboration with the Community Outreach and Education Core of the Environmental Health Sciences Center (EHSC) at OSU. 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." When released, each Podcast is posted on the NPIC website, the EHSC website and the OSU channel on iTunes®.

Inquiry Update

NPIC responded to 24,612 inquiries, 3,962 of which were classified as pesticide incidents (16%). A pesticide spill, a misapplication, a contamination of a non-target entity, or any purported exposure to a pesticide (regardless of injury) is classified as an incident. Based on information provided by the inquirer, and with reference to established criteria, all incident inquiries are assigned a certainty index (CI). This is NPIC's assessment as to whether the effects were definitely (1), probably (2), possibly (3), unlikely (4) or not related (5) to the reported pesticide exposure.

Pesticide specialists assign a certainty index to each incident inquiry. Dr. Sudakin reviews the certainty index for all human incidents. Suzanne Phillips reviews the certainty index for all human, animal, and other incidents.

ACHIEVEMENTS

Topics of interest in this grant period included questions or concerns related to mothball products (1,160), fleas/ticks (1,137), bed bugs (615), mosquitoes (488), and the EPA's press release on pet spot-on products (299).

Mothball Products – During the year, NPIC received 1,160 inquiries regarding the use of mothballs. Of these inquiries, 818 (71%) were incidents, including 518 reports of misapplication. Inquiries primarily involved off-label use of mothballs to repel cats, rats, squirrels, and snakes in and around the home. Three hundred eight (308) inquiries were recorded as “incident prevention,” whereby the inquirer describes the intent to use mothballs for an off-label use and NPIC provided information in an attempt to avert the inappropriate application.

Naphthalene and paradichlorobenzene are the active ingredients currently found in mothballs. Six hundred twenty-three (623) incidents were reported involving naphthalene, including 470 human incidents. For paradichlorobenzene, 243 incidents were reported, most of which (193) involved humans. Some incidents involved both active ingredients. Between them, 17 incidents were assigned a certainty index of 1 or 2 (definite or probable). The certainty index is defined on page 45.

Fleas and Ticks - In 2009, NPIC received 1,137 inquiries related to controlling fleas and ticks on or around pets. This represents a 60% increase from last year. About half of these inquiries (545) were incidents. The informational inquiries primarily involved questions about what types of products can be used on pets or around the home and yard and the potential health effects from use of these products. Some of these inquiries were also related to the EPA's press release about spot-on products for pets (see below).

Bed Bugs - NPIC has been tracking a steady rise in the number of inquiries related to bed bugs. The number of bed bug-related inquiries to NPIC rose from 388 in 2007 to 615 this grant year, which represents a 59% increase over two years. Many of these inquiries were related to control measures and the potential health effects of pesticides. NPIC also observed a 112% increase in web traffic to the NPIC bed bug web page.

Mosquitoes - NPIC responded to 488 inquiries related to mosquitoes during this grant period. Most of these inquiries involved questions about the potential effects from using products to kill or repel mosquitoes or callers seeking a product recommendation, for which NPIC provides an appropriate referral.

EPA's Press Release About Pet Spot-on Products - NPIC responded to 299 inquiries this year related to the EPA press release. Of those inquiries, 164 were incidents, including 21 reported deaths. NPIC also saw a general increase in reported animal deaths related to pesticides, and increased interest from the public involving flea and tick control.

Project and Information Review

Pesticide Incident Database (PID) - Pesticide specialists perform data entry on a daily basis, documenting inquiries and incidents. Suzanne Phillips performs weekly QA/QC on data and collaborates with Dr. Sudakin on the characterization of human incidents. Together, nearly 4000 pesticide-related incidents were reviewed this year. The PID team also provided detailed feedback to each pesticide specialist about his/her performance in data entry and incident classification.



Suzanne - PID Facilitator

NPIC evaluates each pesticide incident to determine whether the reported signs and symptoms, as well as circumstances surrounding the scenario, were related to a given pesticide; these are assigned a certainty index for each case report. This year, NPIC expanded its evaluation to include a severity index. To define severity descriptors such as “Minor,” “Moderate,” and “Major,” NPIC adapted similar criteria used by the National Poison Data System. Pesticide specialists began assigning the severity index to human incidents on April 1, 2009. See Tables 14.2 and 14.3 on pages 46 and 47 for detailed information about incidents with high severity and high certainty.

NPIC began building a new framework for the Pesticide Inquiry Database (PID) to streamline procedures for data entry, quality assurance, and report generation.

ACHIEVEMENTS

Monthly and Quarterly Reports - NPIC provides regular updates to the Office of Pesticide Programs through its Project Officer, Frank Davido. NPIC publishes monthly, quarterly and annual reports, which include updates on project activity and detailed traffic reports to describe the number and type of inquiries to NPIC. Monthly reports include strange and/or interesting inquiries; quarterly reports include details for any reported deaths (human or animal) that may or may not have been related to pesticides. Special reports are available upon request. See page 10 for a list of special reports provided to OPP this year.



Melody - PID Team Member

NPIC Website - NPIC received 2,705,371 total web hits this grant year, which represents a 10% increase in web traffic. NPIC's Spanish website received over 100,000 hits in its first full year of operation. Sean Ross, the Supervisor of NPIC Information Resources & Capacity (SNIRC), Bryan Harper, the Website Facilitator, and four new team members cooperated to maintain and develop the NPIC website, which contains over 150 pages of pesticide-related information and resources. After substantial additions to the Pest Control section of the NPIC website, web hits increased 32% to 226,033 this year.

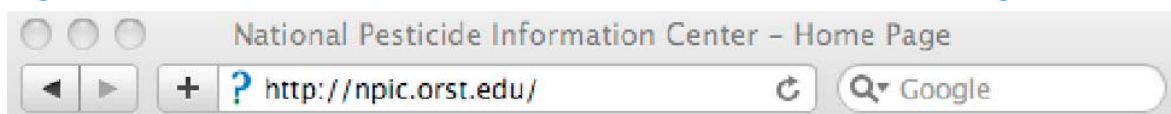


Bryan H. - Website Facilitator

NPIC developed and posted twenty-five (25) new web pages to its English website this year, in addition to eight Common Pesticide Questions, eight fact sheets and ten PestiByte Podcasts. New web pages included:

- A-Z index
- Ecological Incident Reporting Portal
- Website Satisfaction Survey
- Controlling Snakes In and Around the House
- Flea Control
- Understanding and Selecting Antimicrobial Pesticides
- Regulating Antimicrobials
- Selecting the Right Antimicrobial Product
- Antimicrobials for Pathogens in Blood and Body Fluids
- Antimicrobials for Food Processing and Drinking Water Systems
- Controlling Mold with Antimicrobial Pesticides
- Toxicology and Health Effects of Antimicrobial Pesticides
- Pesticide Use Around Pets
- Using Pesticides on Pets
- Pesticide Poisoning in Pets
- Managing Ticks and Preventing Tick Bites
- Lyme Disease
- What Happens to Pesticides Released in the Environment

Figure 3. With this new "favicon," NPIC aims to further its brand recognition



ACHIEVEMENTS

NPIC also performed comprehensive updates of the following web pages in response to emerging issues and new research:

- Poison Prevention
- Understanding and Controlling Bed Bugs

NPIC expanded the Spanish website this year by conducting a comprehensive revision of all content, including over 30 pages and 300 links. NPIC developed and posted three new web pages to the Spanish site this year, in addition to 21 Common Pesticide Questions and two PestiByte Podcasts. New web pages included:

- A-Z index
- Reading Pesticide Labels
- PestiByte Podcasts – Index page

NPIC developed a Wikipedia page describing the Center and its services. See http://en.wikipedia.org/wiki/National_Pesticide_Information_Center. NPIC also developed a favicon, which is a small icon that appears when a person visits or bookmarks the NPIC website. See Figure 3.

The NPIC home page includes a “New & Notable” section, designed to draw visitors to new resources that address timely topics. For example, NPIC highlighted antimicrobials and flu-related resources during the H1N1 influenza outbreak in 2009. NPIC also used this feature to highlight Poison Prevention Week, Drinking Water Awareness Week, and the new web page entitled, “Reporting Pesticide Problems.” NPIC routinely updates the “New & Notable” features to keep returning visitors interested, to provide seasonally appropriate resources and to announce new publications.

Dozens of links were added throughout the year as new resources were published about pesticides or related topics. Each new link was evaluated by a pesticide specialist, the Website Facilitator and the Project Coordinator. NPIC maintained and updated its pesticide manufacturer database containing contact information for 440 manufacturers with current addresses, telephone numbers and websites. In addition, hundreds of broken links were replaced or repaired throughout the year.

Foreign Language Team - Members of NPIC's foreign language team responded to 182 inquiries in Spanish this year, including 19 email inquiries. Humberto Nation led the team, which completed several new initiatives including a farm worker outreach campaign, Spanish Podcasts and a comprehensive revision of NPIC's Spanish website.



Humberto - Foreign Language Team Member

This year, the team completed translations for twenty-one Common Pesticide Questions and three web pages, in addition to the comprehensive revision of the whole Spanish site (over 30 pages). They also translated cover letters used in outreach, the Pesticide Emergency Card (see page 18), and began translating NPIC general fact sheets. Team members also produced the first two PestiByte Podcasts in Spanish this year:

- ¿Cómo reducir los residuos de pesticidas en frutas y verduras? Lo que debe saber sobre el lavado de frutas y verduras. (How can I wash pesticides from fruits and vegetables?)
- Acerca de NPIC (About NPIC)



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Fact Sheets – Bryan Luukinen and Jennifer Gervais served as the Fact Sheet Team Facilitator and Senior Editor, respectively. They mentored several team members, created guidance documents, and continued to further advance the project.



Jennifer - Senior Fact Sheet Editor

During this grant year, NPIC completed eight (8) fact sheets:

Technical fact sheets:

- Deltamethrin

General fact sheets:

- Fipronil
- Permethrin
- Resmethrin
- Picaridin
- Deltamethrin

Topic fact sheets:

- Pesticides – What’s My Risk?
- Pets & Pesticides

The following **technical** fact sheets were in development during this grant year: Acephate, Aliphatic Petroleum Hydrocarbons, *Bacillus thuringiensis*, Bifenthrin, Boric Acid, Bromadiolone, Carbaryl, Captan, Chlorpyrifos, Copper Sulfate, D-phenothrin, Glyphosate, Imidacloprid, Malathion, Metaldehyde, Naphthalene, Paradichlorobenzene, and Zinc Phosphide.

The following **general** and **topic** fact sheets were in development this year: Acephate, Carbaryl, Chlorpyrifos, Glyphosate, and Ways to Minimize Exposure.

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 26 CPQs are often provided to email inquirers, and they are utilized as the basis for PestiByte Podcasts.

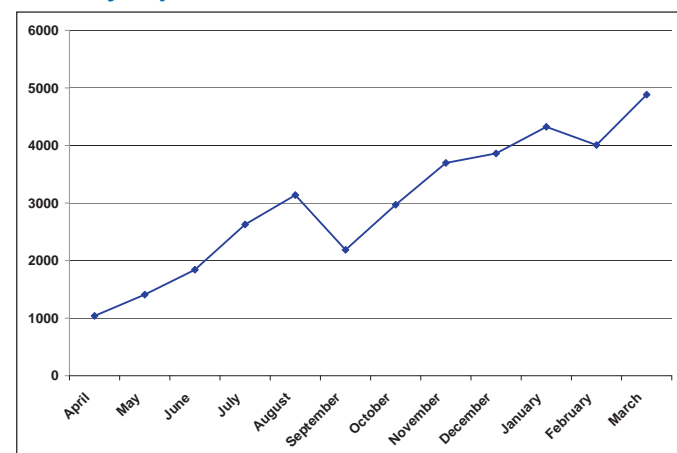
Under Andrea Christiansen’s leadership, the team completed seven (7) new CPQs this year:

- Cover the holes when baiting for moles (or gophers)!
- Toxic when eaten or by touch? Does the way I’m exposed matter that much?
- Don’t distress over uninvited guests (roaches)!
- Rat bait stored with tack: Will the horse think it’s a snack?
- Fasten the lid, protect your kids!
- Mouse poison without directions.... Is that a bad sign?
- The crop was just sprayed. Can I work there today?

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 1-2 minute audio clips, often based on common pesticide questions.

Figure 4. Monthly web hits for NPIC’s PestiByte podcast collection



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NPIC posted the following ten (10) PestiBytes this year:

- Could snail bait hurt my dog?
- When to plant after using weed killer?
- Dirty work clothes: how should I wash out pesticides?
- With a baby on the way... is it okay to spray?
- Get rid of the mouse! With kids in the house?
- Would I hurt the fish by weeding & feeding the lawn?
- Pesticides and food containers just don't mix!
- Cover the holes when baiting for moles (and gophers)!
- Don't distress over uninvited guests (roaches)!
- Can bug bombs really explode?

The PestiByte Facilitator, Andrea Christiansen, worked closely with the foreign language team and EHSC coordinators to develop the procedures necessary to produce PestiByte Podcasts in Spanish. The first two episodes in Spanish were completed this year. Seven additional episodes have been translated.

In the first full year of the PestiBytes' availability, they received about 36,000 web hits. Figure 4 shows the monthly increase in web hits throughout the year.

Active Ingredient (AI) Files – In order to respond to inquiries efficiently, NPIC maintains a collection of active ingredient files that contain reputable, science-based information. NPIC acquired 240 new documents for inclusion in the AI file collection this year, including all relevant EPA Fact Sheets, Risk Assessments and Reregistration Eligibility Decisions (REDs). NPIC added twelve (12) new AI files to its collection, totaling 991 files at the conclusion of the grant year. The AI team updated sixteen (16) AI files by adding new and relevant data obtained from literature searches.

Humberto Nation monitored the Federal Register (epa-pest), and modified procedures when the list-serve was terminated. NPIC subscribed to the RSS feed for new pesticide-related announcements, and AI team members evaluated notices and dockets for new science and regulatory information. They also maintain a comprehensive library of REDs and Registration Review Documents (RRDs).

NPIC hired an undergraduate student assistant, Eva Arndt, to assist the AI team with opening new files and updating others. Ms. Arndt is studying toxicology, and she serves as President of the OSU chapter of Minorities in Agriculture & Natural Resource-Related Sciences (MANRRS).

“Other” Ingredient Files - NPIC continues to update its inert or other ingredient files by addition of NTP, ATSDR, WHO, and other relevant scientific hard-copy documents.

General Files - NPIC maintains 265 general files that span the range of pesticide-related topics. Examples include Agent Orange, the Endocrine Disruptor Screening Program, Drift and Multiple Chemical Sensitivity. Suzanne Phillips coordinated the efforts of student assistants performing data entry, quality control activities and filing.

Intranet (Inet) - NPIC's internal web pages, referred to as the Inet, were updated weekly to provide the team with real-time access to updated schedules, standard operating procedures, data recording guidance, and quick-reference tools. Human incident reports were also posted regularly.

NPIC maintained and improved its collection of SOPs this year, making changes throughout the course of the grant year. Several processes were streamlined and/or updated to define and incorporate the new severity index and incident reporting portals. Three SOPs were new or significantly updated, including “Documenting Incidents in the Veterinary Incident Reporting Portal (VIRP),” “Updating Active Ingredient Files,” and “Transferring Limited English Speaking Callers.”

Resource Book - NPIC expanded and updated the “Resource Book” throughout the year. This resource provides specialists with quick access to frequently requested information, including contact information for health departments, educational resources, local, state, and federal agencies, state contacts for WPS questions, healthy homes-state program coordinators, organic certifiers, household hazardous waste contacts, occupational and wildlife agencies.



Jessica - Resource Book Facilitator

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Andrea Christiansen led the project this year, and she supervised a thorough update of the Resource Book. She also trained Jessica Perry to take over the project. The team verified contact information, web sites, and mailing addresses for thousands of resources.

Training and Continuing Education

Training - Bryan Harper, pesticide specialist trainer, updated NPIC's training manual to include information about the new severity index and the new PAIRS pesticide product database (see page 9). He also continued to update all aspects of the training program in response to inquiry trends and regulatory changes.

Specialists – 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.

Each new specialist who has not been formally trained in toxicology attended university courses as part of a three-term series in graduate-level toxicology. These courses are offered within the Environmental & Molecular Toxicology Department at OSU. Four specialists attended Fundamentals of Toxicology (TOX 511), three specialists attended Target Organ Toxicology (TOX 512) and Environmental Toxicology and Risk Assessment (TOX 513).



Ann - Pesticide Specialist

Continuing Education - NPIC places emphasis on continuing education for pesticide specialists in order to maintain the highest level of service, relying on the most up-to-date science and regulatory information. Building and maintaining a strong knowledge base is a significant part of each specialist's position description. Four out of five weekly staff meetings include some kind of professional development event.

NPIC hosted or attended 40 continuing education events this year. Examples include campus seminars, invited speakers, regional conferences and staff development initiatives. Figure 6 summarizes some of this year's continuing education events.

Each week the NPIC staff meets to further their knowledge of pesticide-related topics, to discuss data consistency and QA/QC activities, and to discuss trends in inquiries. Oregon State University also provided diverse opportunities for continued learning, including graduate seminars, visiting lecturers, faculty presentations, and regional conferences.

Specialists stay current with the scientific, regulatory and industrial 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.

Outreach

Overview - NPIC employed new approaches to reach targeted groups this year including farm workers, veterinary professionals, and under-served audiences. NPIC attended three conferences to promote its services to professionals in public health, veterinary medicine and regulation.

As a result of both proactive outreach activities and requests from NPIC clientele, NPIC distributed 178,394 brochures this year including 145,737 in response to the annual outreach campaign (see Figure 7). NPIC proactively provided 32,617 brochures this year using a variety of techniques, summarized in Figures 8 and 10.

Nineteen percent (19%) of proactive outreach activities were aimed at reaching under-served audiences such as low-income families and Spanish-speakers. Fifteen percent (15%) of activities were intended to reach farmers, workers and pesticide applicators. Eleven percent (11%) of activities were aimed at veterinarians. Of those

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Figure 5. Selected continuing education events (April 1, 2009 - March 31, 2010)

Date	Speaker/Source	Speaker's Affiliation	Event Title
4/6-4/7	Paul Axtell	Oregon State University	Communication Skills
4/28/09	Dr. Dewey Caron	Cornell University, University of Delaware	Epidemic of bee losses: what it means for pollination
4/30/09	Several	AAAS/NSF	Communicating Science: Workshop for Communicators and Researchers
5/14/09	Dr. Kim Patten	Washington State University	Insect pest management research on two unconventional crops – cranberries and oysters
5/20/09	Dr. Abby Benninghoff	Oregon State University	Environmental factors modulating carcinogenesis: estrogen-like action of perfluoroalkyl acids
7/2/09	Several	Academic, regulatory, etc.	Pesticide Risk Communication: PREP Course
7/9/09	Dr. Michael Burgett	Oregon State University	Bees and Colony Collapse Disorder
7/11-7/14	Several	Academic, regulatory, etc.	American Veterinary Medical Association Annual Convention
7/14/09	Dr. Robert Tanguay	Oregon State University	Advancing the 21st Century Toxicology Discipline by Thinking Outside the Tank
7/23/09	Kaci Agle	NPIC	School IPM Project in Salem Oregon
8/20/09	Several	City of Corvallis Treatment Plant	Drinking Water Treatments
10/8, 10/15, 11/5	Bryan Luukinen	NPIC	Fact Sheet Training
10/15/09	Several	EPA Region 7 and School Officials	Chemicals in Schools: Real Problems, Real Solutions
10/22/09	Garnet Cooke	Oregon OSHA	Worker Protection Standard: Common Violations
11/3/09	Leigh Anne Jasheway-Bryant	Oregon State University	Lighten Up at Work
11/7-11/11	Several	Academic, regulatory, etc.	American Public Health Association Annual Meeting and Exposition
11/19/09	Paul Biwan	Oregon State University	Project Management Training
12/2/09	Dr. John Willinsky	Stanford School of Education, University of British Columbia	Open Access to Knowledge and the Intellectual Properties of Learning
12/17/09	Carried Foss, Carol Ramsay	Washington State University	The Homeowners Guide to Integrated Pest Management
1/7/10	Dr. Dini Miller	Virginia Tech University	A Whole-House Approach to Bed Bug Treatments
1/20/10	Jennifer Gervais	NPIC	Ecotoxicology
1/26-1/27	Several	Academic, regulatory, etc.	Non-crop Vegetation Management Course
1/28/10	Bryan Harper	NPIC	Pesticides and Pet Poisonings
1/29/10	Nancy Kerkvliet	Oregon State University	Ah Receptors and T cells: A link between the environment and autoimmunity?
2/2-2/3	Several	Academic, regulatory, etc.	Pesticide Chemistry Toxicology Short Course
2/10/10	Several	Academic, regulatory, etc.	Urban Pest Management Course
2/11/10	Dale Mitchell	Oregon Department of Agriculture	ODA - Investigations and Regulations
2/18/10	Derek Drechsel	University of Colorado Denver	Mitochondrial Redox Mechanisms of Paraquat Neurotoxicity: Implications in Parkinson's Disease
2/18/10	Chris Winson	Univar	Vikane Structural Fumigation
3/4/10	Ally Taisey, Tom Neltner	National Center for Healthy Housing	Bed Bug Control in Multifamily Housing
3/17/10	Several	EPA	Webinar - EPA's Evaluation of Pet Spot-On Products: Analysis and Mitigation Plan

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individuals requesting NPIC brochures by mail or phone, 26% were public health professionals, 18% were health care providers, and 17% were extension professionals.

The outreach team developed two new resources for parents: a pesticide emergency card and a small magnetic dry-erase board with important referral information. These were designed to be posted on bulletin boards, refrigerators, and similar locations. The new card was promoted as part of Poison Prevention Week in March (see Figure 6).

Figure 6. Pesticide emergency card (English & Spanish)

Pesticide Emergency Card		
Human Poisoning	Animal Poisoning	Pesticide Cleanup & Disposal
Poison Control 1-800-222-1222 Personal Doctor: _____ phone number	National Animal Poison Control Center (ASPCA) 1-888-426-4435 <small>*There may be a fee</small> Pet Poison Hotline: 1-800-213-6680 <small>*There may be a fee</small>	<small>For cleanup and disposal information call the product manufacturer. If the manufacturer's phone number is not on the label, call NPIC.</small> 1-800-858-7378 Earth 911: 1-800-253-2687
<small>For non-emergency information about pesticides, or to report a pesticide problem, call NPIC at: 1-800-858-7378 or visit us on the web at: npic.orst.edu</small>		

Ficha para Emergencias con Pesticidas		
Envenenamientos de Humanos	Envenenamientos de Mascotas	Limpieza y Disposición de Pesticidas
Centro de Control de Envenenamientos: 1-800-222-1222 Doctor Personal: _____ Número de teléfono	Centro Nacional de Control de Envenenamiento de Animales 1-888-426-4435 <small>*puede haber un costo</small> Pet Poison Hotline: 1-800-213-6680 <small>*puede haber un costo</small>	<small>Para información sobre limpieza y disposición llame al fabricante del producto. Si el número no está en la etiqueta, llame a NPIC al:</small> 1-800-858-7378 Earth 911: 1-800-253-2687
<small>Para información no relacionada con emergencias, o para reportar un problema con pesticidas, llame a NPIC al 1-800-858-7378 o visite nuestra página web npic.orst.edu</small>		

NPIC monitors the internet to track the number and type of references to NPIC in the media. This year, NPIC was mentioned in 72 newspapers, magazines and online news sites. Approximately 20 articles were related to the US EPA's Press Release on April 16, 2009 titled, "US and Canada to Increase Scrutiny of Flea and Tick Products."

Annual Outreach Campaigns - Every March, NPIC performs an outreach campaign by mail, which aims to increase awareness of NPIC services among "gate-keeper" organizations capable of distributing its phone number to under-served audiences. In 2009, NPIC evaluated the effectiveness of the campaign conducted in the previous grant year and used that evaluation to plan its 2010 campaign.

NPIC received the largest response to date from its 2009 outreach campaign, which included 663 requests for NPIC brochures. County WIC Coordinators in Oregon responded at the highest rate, and as a result, NPIC mailed information to all 3,971 County WIC Coordinators in the nation in 2010. Occupational health nurses responded to their first contact from NPIC in 2009 with 130 requests for NPIC brochures.

NPIC added two audience groups to its 2010 campaign: members of the US EPA's Pesticide Environmental Stewardship Program (PESP) and all known vector control agencies in the United States (756). NPIC also developed a web page to disseminate vector control contact information to the public.

Outreach to Veterinary Professionals - To promote awareness and utilization of NPIC's Veterinary Incident Reporting Portal (VIRP), NPIC reached out to veterinary professionals in a variety of ways. NPIC exhibited a booth at the Annual Meeting of the American Veterinary Medical Association (AVMA) and mailed information to over 4900 attendees. Mailings included a custom cover letter, NPIC brochure, and a promotional card about the VIRP. The VIRP promotional card was also mailed to:

- All state chapters of the AVMA (54)
- Regional offices of The Humane Society (10)
- State Animal Health Officials (50)
- Small veterinary practices and hospitals (over 2000)
- AVMA members in Missouri, Oregon, and New Jersey (over 2000)

NPIC also delivered an oral presentation about VIRP 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.

The US EPA published a press release on April 16, 2009 entitled, "U.S. and Canada to Increase Scrutiny of Flea and Tick Pet Products", which referenced the VIRP. NPIC received 299 inquiries, 164 of which were incidents.

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Figure 7. 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	281	20731	2177	707
Emergency Management Services	8	815	1225	143
Environmental and Municipal Agencies	12	2750	1500	2479
Environmental Protection Agency	7	3002	502	1228
Farmers, Workers and Applicators	28	4176	1971	2785
Gardeners	179	17950	4495	527
General Public	2	100	220	123
Industry	7	700	300	277
Other	12	914	691	497
Parents & Children	131	14130	2875	312
Physicians	194	20966	7726	3261
Public Health Information Services	25	8576	1860	266
State Pesticide Agencies	21	3850	350	217
Tribes	137	13400	7735	1154
Under-served	25	2453	4638	1038

Figure 8. 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	10	9783	250	29599
Emergency Management Services	2	129	0	258
Environmental and Municipal Agencies	2	150	100	270
Environmental Protection Agency	1	80	0	160
Farmers, Workers, and Applicators	13	1320	150	2259
Gardeners	2	2981	0	5962
General Public	3	1323	0	2606
Industry	4	155	10	261
Other	1	54	0	108
Parents & Children	2	5083	0	10166
Physicians	11	3290	350	8665
Public Health Information Services	6	308	106	585
State Pesticide Agencies	2	660	0	1320
Tribes	12	6821	100	13717
Under-served	17	3287	696	6268

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Outreach to Farm Workers - NPIC has been reaching out to Spanish-speakers, particularly farm workers, in an effort to provide more science-based information to this under-served audience. This year, NPIC mailed promotional materials to the following groups:

- Farm worker unions and advocacy groups (171)
- Members of the Association of Farm Worker Opportunity Programs (73)
- State regulators responsible for the Worker Protection Standard (55)
- State pesticide safety educators (88)
- Members of the Association of Occupational Health Nurses (2927)
- Members of the Association of Occupational and Environmental Clinics (54)
- National Migrant Clinics (627)
- Minority Health Consultants (64)
- Offices of Multicultural Health (53)



Foreign Language Team Member

Figure 9. NPIC poster presented at the annual meeting of NACCT in September 2009

Organophosphate Incidents Reported to the National Pesticide Information Center: the Role of Regulation



Dave Stone, PhD and Daniel Sudakin, MD, MPH

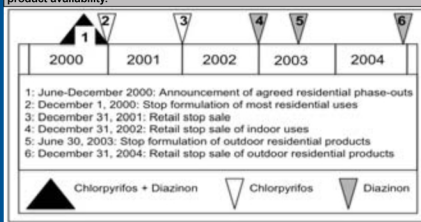
Department of Environmental & Molecular Toxicology, Oregon State University, Corvallis, OR

INTRODUCTION

The National Pesticide Information Center (NPIC) is a cooperative agreement between the U.S. Environmental Protection Agency and Oregon State University. NPIC provides objective risk communication that enables people to make informed decisions about pesticide use and safety. In addition NPIC serves to collect incident data related to human exposures to pesticides.

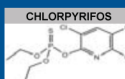
The purpose of this study was to analyze trends in total reported exposures to all organophosphates (OP), as well as three OP active ingredients: chlorpyrifos, diazinon and malathion. These three compounds accounted for 85% of the total OP exposure incidents reported to NPIC. Trends were examined for human exposure reports related to significant regulatory action that limited the availability and use of chlorpyrifos and diazinon in residential settings (Table 1).

Table 1. Timeline for the phase-out of chlorpyrifos and diazinon residential product availability.



METHODS

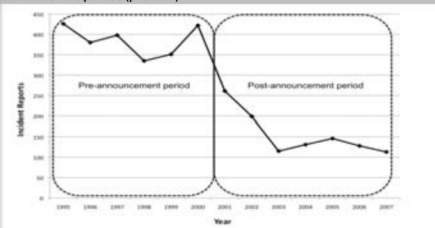
The criteria for including incidents for analysis were: 1) an OP was identified as the primary active ingredient involved in a reported exposure incident and 2) the incident was residential in nature and not occupational. Incident reports were grouped into two categories: a pre-announcement period (1995-2000) and a post-announcement period (2001-2007) for regulatory changes in residential availability of diazinon and chlorpyrifos. Malathion was analyzed as a reference compound, since no regulatory action was initiated for this compound during the time period of interest. Data were analyzed using Levene's Test for Equal Variance, followed by an independent means test to determine differences in pre- and post-announcement periods.



RESULTS

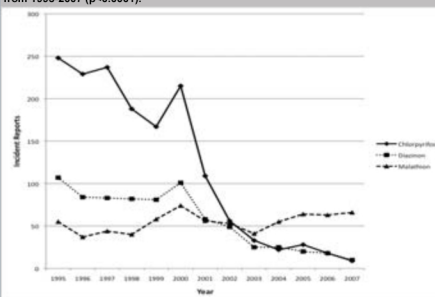
NPIC received a total of 3,385 OP-related human incident reports between 1995-2007. A statistically significant difference was observed in the average annual number of reported OP incidents between the pre- and post-announcement periods ($p < 0.0001$, Figure 1).

Figure 1. Trend in total OP incidents reported during regulatory pre- and post-announcement periods ($p < 0.0001$).



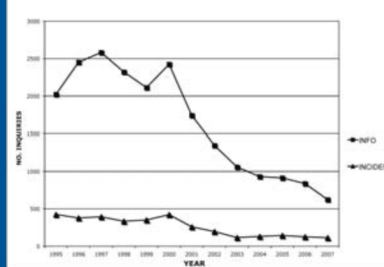
A statistically significant difference was observed in the number of reported incidents for both diazinon and chlorpyrifos between the pre- and post-announcement periods ($p < 0.0001$, Figure 2). No significant difference was noted for malathion ($p = 0.4$, Figure 2).

Figure 2. Trends in chlorpyrifos, diazinon and malathion incidents reported to NPIC from 1995-2007 ($p < 0.0001$).



Similar to the decline in incident reports, NPIC received a decreasing number of OP-related informational inquiries following the residential phase-out announcement (Figure 3). The overall informational inquiries and incident reports received by NPIC for all pesticides has steadily increased over the years and should not be related to the declines noted in Figure 3.

Figure 3. Informational and incident inquiries related to OPs reported to NPIC from 1995-2007.



CONCLUSIONS

- The major finding of this study was a significant decrease in the number of OP-related incidents following public announcement of residential phase-outs for chlorpyrifos and diazinon.
- Human incident reports for both chlorpyrifos and diazinon began to decline steeply in 2001 and continued to decrease until 2003.
- Malathion, an OP with numerous residential uses, was not targeted in EPA's phase out. No significant decrease in human exposure incidents was observed between the pre- and post-announcement period.
- Consistent with other longitudinal studies of OP incidents using Poison Control data, our study supports the notion that targeted regulatory actions can affect the number of human exposure incident reports.
- Limitations to this study include: 1) the self-reported nature of the data received by NPIC; 2) inability to confirm the accuracy of data collected or collect all relevant information during emergent cases; and 3) the possibility that public awareness of NPIC services may vary geographically and over time.

ACKNOWLEDGEMENTS
This project is funded as a cooperative agreement between the United States Environmental Protection Agency and Oregon State University (X9-83238701-5).

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Kristina Wick, a bi-lingual pesticide specialist, has key roles on NPIC's outreach and foreign language teams. Ms. Wick has been focusing her continuing education efforts on occupational exposure issues, and developing publications for farm workers. The first such publication was released this year, a "common pesticide question" entitled, "*The crop was just sprayed... Can I work there today?*"

Collaborations - NPIC collaborated with the AVMA to distribute promotional materials related to the veterinary incident reporting portal (VIRP) in the AVMA booth. Elizabeth Curry-Galvin, DVM was an original collaborator in development of the portal. She and Rupa Brosseau were ambassadors for NPIC during the annual AVMA convention distributing over 1000 VIRP cards to veterinary professionals.

Dave Stone and Kaci Buhl attended a collaborative meeting in July intended to establish Oregon's first pilot school IPM (integrated pest management) program at an elementary school in Salem, Oregon. National experts in IPM, local leaders, and school officials met to evaluate the school and plan appropriate actions. NPIC is working to enhance its ability to provide IPM resources.

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. PestiBytes are 1 to 2 minute audio clips, often based on common pesticide questions.

The Office of Children's Health, within EPA's Office of the Administrator, was planning to exhibit a booth on the Capitol Mall for Earth Day. NPIC collaborated with Kathy Seikel to distribute dry erase boards for parents, which include contact information for human and animal poisonings, NPIC, and Earth 911 (see Figure 6).

NPIC collaborated with the National Association of Local Boards of Health (NALBOH) to develop an article for the *NALBOH Newsbrief*, a quarterly magazine distributed to thousands of Board members. The article, called "*Pesticide DOs & DONTs*," was published in May 2009.

Conferences & Presentations - Dr. Dave Stone and Dr. Dan Sudakin gave an oral presentation entitled "Organophosphate Incidents Reported to the National Pesticide Information Center: The Role of Regulation" at the annual meeting of the North Ameri-

can Congress of Clinical Toxicology (NACCT) in San Antonio, TX on September 24, 2009 (see Figure 9).

Kaci Buhl, NPIC's Project Coordinator, delivered an oral presentation at the annual meeting of the American Public Health Association (APHA) entitled, "National Pesticide Information Center's web-based portal for veterinarians: a new tool to report pesticide incidents among animals." NPIC also exhibited a booth at the conference, distributing thousands of promotional materials to a national audience of public health professionals.

NPIC attended the annual meeting of the American Veterinary Medical Association (AVMA), exhibited a booth, discussed incident reporting with hundreds of veterinarians and mailed promotional materials about the new Veterinary Incident Reporting Portal (VIRP) to all registered attendants (over 4,900). Hundreds of promotional materials were distributed at the conference, and veterinarians were particularly interested to hear about the kinds of information that are freely available from NPIC.

On July 2, Kaci Buhl presented "An Overview of NPIC: Training Risk Communicators" at the Pesticide Risk Communication PREP Course at UC Davis. She also served as a panelist with Claire Gesalman of the Communication Services Branch on a panel entitled: "Risk Communication in the Dawning Age of Social Media." Panelists discussed the role of social media platforms in risk perception and communication. Ms. Buhl also facilitated a group exercise highlighting the challenges of risk communication in controversial public meeting scenarios.



Kaci Buhl - Project Coordinator

Figure 10. Proactive outreach events (April 1, 2009 - March 31, 2010)

Date	Project Name	Project Activity	English Brochures	Spanish Brochures	Other Materials
04/16/09	NPIC Veterinary Reporting Cards to EPA	Mailed a custom cover letter and 100 cards promoting NPIC's veterinary incident reporting portal.	0	0	100
04/17/09	Veterinary Medical Association	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	54	0	162
04/17/09	Humane Society of the United States	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	10	0	30
04/17/09	Veterinary Professional Organizations	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	12	0	36
04/17/09	State Animal Health Officials	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	50	0	150
04/17/09	Small Veterinary Practices and Hospitals	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	2,363	0	7,089
04/17/09	Missouri Veterinarians	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	836	0	2,508
04/17/09	Oregon Veterinarians	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	882	0	2,646
04/17/09	New Jersey Veterinarians	Mailed a custom cover letter, brochure, flyer, business reply card, and a card promoting NPIC's veterinary incident reporting portal.	426	0	1,278
04/21/09	Pesticide Safety Educators - Train the Trainer in Spanish	Provided Spanish NPIC brochures, flyers and other outreach materials for a training event.	0	50	150
04/21/09	OSU Earth Day Fair	Provided English NPIC brochures, tear-off flyers, magnets and flyswatters	50	0	60
04/23/09	Pesticide Safety Educators - Train the Trainer in English	Provided English NPIC brochures, flyers and other outreach materials for a training event.	50	0	150
05/04/09	Aquatic Weed Short Course	Provided English and Spanish brochures	150	50	10
05/13/09	OSU Agricultural Career Showcase	Provided English NPIC brochures, flyswatters and business cards	25	0	50
06/10/09	California DPE School IPM Workshop	Provided English NPIC brochures and magnets	45	0	90
07/11/09	American Veterinary Medical Association Conference	Attended, exhibited a booth, and participated in scientific sessions. Provided NPIC outreach materials including brochures, informational flyers, magnets, flyswatters, and veterinary incident reporting information cards.	250	250	1000
07/15/09	American Veterinary Medical Association	Mailed NPIC English brochures, business reply mailers, tear-off flyers, and veterinary incident reporting cards to AVMA attendees.	4,900	0	14700
07/15/09	Beating Back Bed Bugs Seminar	Provided NPIC English and Spanish outreach materials including brochures, business reply mailers, tear-off flyers, and magnets.	50	50	150
07/15/09	Pesticide Regulatory Education Program (PREP)	Attended, presented two talks, and facilitated an exercise on pesticide risk commucation. Provided NPIC English brochures and business reply mailers.	35	0	35

Figure 10 (cont'd). Proactive outreach events (April 1, 2009 - March 31, 2010)

Date	Project Name	Project Activity	English Brochures	Spanish Brochures	Other Materials
10/14/09	2009 New England Regional Minority Health Conference	Mailed NPIC English brochures, business reply mailers, tear-off flyers, and veterinary incident reporting cards to AVMA attendees.	100	100	275
10/21/09	Southern Oregon Occupational Safety & Health Conference	Mailed NPIC English and Spanish brochures, business reply mailers, English and Spanish magnets, and NPIC business cards.	100	100	200
10/26/09	2009 Oregon Public Health Association Conference	Mailed NPIC English and Spanish brochures, business reply mailers, English and Spanish magnets, and NPIC business cards.	100	50	125
11/04/09	Washington State Department of Agriculture	Mailed NPIC English and Spanish brochures, business reply mailers, and magnets.	6	6	14
11/05/09	1st Statewide IPM Coordinator Symposium (Texas)	Mailed NPIC English and Spanish brochures, business reply mailers, English and Spanish magnets, and NPIC business cards.	250	50	400
11/07/09	2009 American Public Health Association Conference	Attended, presented a talk, exhibited a booth, and participated in sessions. Distributed thousands of NPIC outreach materials in English and Spanish.	300	150	2750
12/02/09	Safer Pest Control Project - Bed Bug Training	Mailed NPIC English brochures and English magnets.	40	0	40
12/03/09	Portland Parks & Recreation Continuing Education	Delivered a presentation about NPIC services. Provided NPIC outreach materials in English and Spanish.	100	100	120
12/04/09	Alaska Department of Environmental Conservation	Mailed NPIC English brochures, magnets, and other materials.	50	0	27
01/15/10	Hollywood Health and Society	Added NPIC to their list of resources for television producers who may produce episodes related to pesticides. Mailed NPIC outreach materials.	1	0	2
01/26/10	Healthy Homes Practitioners Course	Provided English NPIC brochures, business reply mailers, and magnets to conference attendees.	50	0	60
02/02/10	OSU Pesticide Toxicology Short Course	Attended, presented talks, and provided English NPIC brochures, business reply mailers, and magnets to conference attendees.	150	0	40
02/10/10	Urban Pest Management Course	Attended, presented talks, and provided English NPIC brochures, business reply mailers, and magnets to conference attendees.	100	0	20
03/18/10	California School IPM Workshops	Mailed NPIC English brochures and magnets to attendees of the school IPM workshops	40	0	41
03/22/10	Office of Children's Health - EPA	Mailed emergency contact dry erase boards for poison prevention week.	0	0	700
03/29/10	Association of Farmworker Opportunity Programs	Mailed custom cover letters, English brochures, Spanish and English tear-off flyers, and business reply cards.	73	0	219
03/29/10	Worker Protection State Contacts	Mailed custom cover letters, English brochures, Spanish and English tear-off flyers, and business reply cards.	55	0	165
03/29/10	Farm Worker Unions and Advocacy Groups	Mailed custom cover letters, English brochures, Spanish and English tear-off flyers, and business reply cards.	171	0	513

ACHIEVEMENTS

Bryan Luukinen, a pesticide specialist, delivered a presentation about NPIC services on October 14th to 180 employees of Portland Parks & Recreation in Portland, Oregon.

Jennifer Gervais, a pesticide specialist, delivered a presentation about NPIC at the annual meeting of the Oregon chapter of The Wildlife Society in Bend, OR on February 12th. She highlighted the availability of NPIC's new Ecological Incident Reporting Portal.

NPIC staff and faculty delivered ten presentations at various Oregon events for pesticide applicators in support of their continuing education. Topics ranged from "The Health Effects of Herbicides" to "Ecotoxicology."

NPIC also exhibited booths at three events on the Oregon State University campus this year, including a career fair, an Earth Day exposition, and University Day.



Kristina - Outreach Team Member

Resources

Books acquired or purchased during the 2009-2010 grant year include: Environmental Chemistry in Society, James M. Beard, 01/01/2009; Crop Protection Handbook 2009, MeisterPro, 2009; Risk Communication: A Handbook for Communicating Environmental, Safety & Health Risks, Regina Lundgren, 1/1/2009; Code of Federal Regulations 21, Parts 170-199, Food and Drugs, Office of the Federal Register National Archives and Records Administration, 4/1/2009; Diccionario De La Lengua Española: Real Academia Española (a/g), Real Academia Española, 2001, 01/01/2009; Diccionario De La Lengua Española: Real Academia Española (h/z), Ortografía de la Lengua Española; Code of Federal Regulations 40, Parts 150-189, Protection of Environment, Office of Federal Register National Archives and Records Administration, 7/1/2009; The Pesticide Manual, C D S Tomlin, 1/1/2009; The Manual of Biocontrol Agents, British Crop Protection Council, 1/1/2009; Study Toxicology Through Questions, John A. Timbrell, 12/2/2009; Pesticide Residues in Food and Drinking Water: Human Exposure and Risks, Denis Hamilton, Stephen Crossley, Ed., 1/1/04; Guidelines for Foodborne Disease Outbreak Response, CIFOR, 1/6/2009; Communicating Public Health Information Effectively, American Public Health Association, 1/1/2002; Medical Toxicology Review, McGraw Hill, 1/1/2006; Oregon 2009 Agripedia, 12/1/2009; Medical Toxicology of Natural Substances; Foods, Fungi, Medicinal Herbs, Plants, and Venomous Animals, Donald G. Barceloux, 1/1/2008; Pesticide Data Program Annual Summary- Calendar Year 2008, United States Department Agriculture, 12/1/2009, Video: Working Safely in the



ACHIEVEMENTS

Greenhouse, Washington State University, 2008; Green Directory 2010, UMASS Amherst, 1/1/2010; Interactive Program for Teaching Larval Mosquito Morphology; Interactive Program for Teaching Tick Morphology; Interactive Program for Teaching Adult Mosquito Morphology: Videos, www.afpmb.org, 3/5/2010.

NPIC acquired the following US EPA, Office of Pesticide Program documents, including Reregistration Eligibility Decisions (REDs) and Registration Review Documents (RRDs): Malathion (RED) 05/01/2009, Citric Acid (RRD) 05/01/2009 and Sodium Hydroxide (RRD) 06/01/2009; L-Lactic Acid Final (RRD) 06/01/2009; Alkyl trimethylenediamines (Case 3014) (RED), 9/01/2007; Naphthaleneacetic Acid, its Salts, Ester, and Acetamide (RED), 10/01/2007; RRD Citric Acid (Case 4024) (RRD), 11/01/2009; Grotan (HHT) (RED), 6/27/2008; Bromine (RED), 3/1/2010.

Facilities

To replace an aging graphics workstation, an HP Z600 workstation was purchased. To improve speed and compatibility with visiting speakers, a Lenovo Thinkpad T400 was purchased for use in the NPIC conference room. To

enhance delivery of web services, a Sun Microsystems X4600 server and J4200 storage array were purchased.

Personnel Update

NPIC hired one full-time pesticide specialist this year. One pesticide specialist resigned during this period. In addition, one pesticide specialist, Melody Johnson, reduced her appointment to 0.25 FTE.

NPIC's current staff includes a full-time project coordinator, ten 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 two part-time undergraduate student assistants. In addition, the NPIC Executive Committee includes the Director and two 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 hydrogeology. See the centerfold of this report for more detailed information about the staff members at NPIC.



Data Summary

Specialists record pertinent information for every inquiry received at NPIC via telephone or e-mail. This information is entered into the NPIC Pesticide Inquiry Database (PID), a database designed by NPIC to allow for data storage, retrieval and reporting. Generally, there are two types of inquiries received by NPIC: 1) those for general or specific information about pesticides and related issues and 2) inquiries or reports about pesticide incidents. For example, an inquirer might ask a question about pesticides in foods (a general information inquiry) or about the toxicity of a particular pesticide (a pesticide-specific information inquiry). A person reporting an exposure to a pesticide is an example of an incident report.

The type and amount of information entered into the PID depends on the type of inquiry. Information collected and entered into the PID for information inquiries includes:

- origin of inquiry (e.g., telephone or e-mail)
- state from which the inquiry originated
- type of person (e.g., general public, government agency, or medical personnel)
- type of inquiry (e.g., incident, information or other)
- reason for inquiry (e.g., concern/knowledge in the case of information inquiries)
- action required (e.g., verbal information, referral, or mailed information)

If a specific pesticide product or active ingredient is discussed, the product and/or active ingredient are also recorded. The inquirer's question and the pesticide specialist's response(s) are recorded as a narrative in the PID. When incidents are reported, more detailed and specific information is recorded, including:

- type of incident (e.g., exposure, spill, drift)
- location of the incident
- circumstances surrounding the incident
- information about the person or animal, including age and gender
- route of exposure
- reported signs and symptoms
- onset, duration and recovery of reported signs and symptoms
- product information, including EPA registration number whenever possible
- type of application
- caller's contact information

For incidents involving reported health effects in humans or animals, and for environmental incidents, a certainty index is assigned. The certainty index is an estimate by NPIC (based on information provided by the inquirer) as to the likelihood that the described signs and symptoms were caused by the reported exposure to the pesticide. Additionally, if an incident involves an environmental impact, the type and magnitude of the effects are recorded (e.g., impact to air, water, or soil).

When symptoms are reported in relation to human incidents, NPIC characterizes the severity of symptoms by assigning a "severity index." Criteria were adapted from a similar mechanism used in the National Poison Data System (NPDS). This severity index classification system is detailed on the following page.

Summary of Tables, Charts, and Graphs

There are three main mechanisms to submit inquiries to NPIC: telephone, e-mail, and on-line. For purposes of this report, the terms "inquiry" and "inquirer" generally refer to use of the telephone or e-mail to contact NPIC. Unless otherwise specified, inquiries to NPIC via the web are referred to as "hits."

NPIC received 24,612 inquiries during its fifteenth year of operation (April 2009 - March 2010) at Oregon State University. Many of the inquiries received by NPIC are complex, requiring expertise on the part of the specialists to be able to provide answers that are objective, science-based and, at the same time, conveyed in an understandable manner.

Inquiries and web hits are summarized in tables, charts, and graphs on pages 30 through 54.

Severity Index (SI) Definitions

The severity index provides criteria for assigning a severity outcome to cases of acute and chronic pesticide-related illness.

A severity index is only applied when:

- The inquiry is an incident
- The primary victim is a human or group of humans

NPIC DATA

NPIC began classifying the severity of reported human symptoms on April 1, 2009, using criteria that were adapted from the National Poison Data System (NPDS). Definitions of the criteria used to classify reported symptoms are presented below. See page 46 for more detailed information.

Definitions:

Asymptomatic: The person(s) reported no signs or symptoms

Minor: The person(s) developed signs or symptoms:

- Generally resolves quickly (≤ 24 hours)
- Generally resolves without treatment
- Often limited to skin, eye, or upper respiratory irritation and mucous membranes
- No residual disability or disfigurement

Moderate: The person(s) developed signs or symptoms that were:

- More pronounced or prolonged than in 'minor' category (duration > 24 hours)
- Generally more systemic in nature
- Not life-threatening
- In general, some form of medical treatment was received
- No residual disability or disfigurement

Major: The person(s) developed signs or symptoms that were:

- Life threatening
- Typically requiring treatment and/or hospitalization to prevent death
- Can result in significant disability or disfigurement

Death: The person(s) died.

Unknown: The presence or absence of symptoms is unknown

Additionally, the severity index is assigned based on the most severe symptom reported and is assigned independently from the certainty index.

See the table (Figure 11.) below for some examples of symptoms for each applicable severity index.

Figure 11. Examples of symptom severity categories

Minor	Moderate	Major
<ul style="list-style-type: none"> • Skin irritation, swelling, rash, pain, hives • Headache • Dizziness • Mild GI symptoms (ex. nausea, vomiting, diarrhea, abdominal pain) • Eye pain, irritation, inflammation, lacrimation, conjunctivitis • Mild respiratory irritation - cough • Drowsiness • Bitter taste (denatonium benzoate only) 	<ul style="list-style-type: none"> • Gastrointestinal symptoms causing dehydration • Corneal Abrasion, Ocular burn • Seizure – isolated, brief • Disorientation • High Fever • Low blood pressure 	<ul style="list-style-type: none"> • Seizure - repeated • Respiratory problems requiring intubation • Cardiac or Respiratory Arrest • Renal Failure • Coma • Hospitalization

MONTHLY INQUIRIES

1. Monthly Inquiries

NPIC received 24,612 inquiries during the 2009-2010 grant year. Graph 1.1 shows the number of inquiries received for each month. Eighty-three percent (83%) of the inquiries were received between March and October, coinciding with the part of the year when pest pressures are highest. Total inquiries received during previous grant and calendar years are provided for comparison in Table 1.1. The highest number of inquiries was received in June. The lowest number of inquiries was received in December.

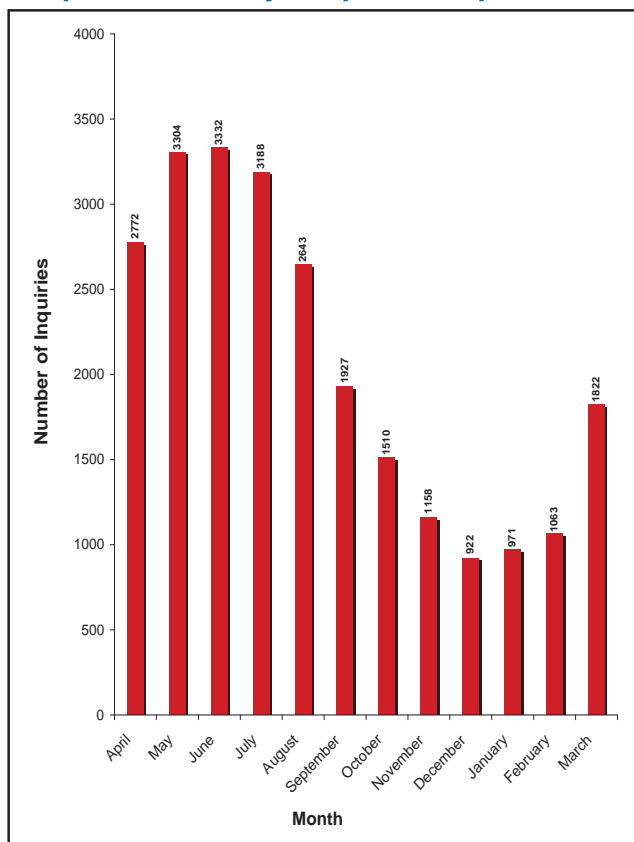
Table 1.1. Monthly telephone inquiries

Month	Number of Inquiries				
	2005	2006	2007	2008	2009
April	2556	2494	2391	2749	2772
May	2620	3140	2950	4775	3304
June	3602	3400	3229	3912	3332
July	3071	3241	2906	3243	3188
August	2951	2716	2713	2478	2643
September	1952	1807	1859	1866	1927
October	1638	1640	1764	1697	1510
November	1211	1149	1239	1106	1158
December	818	838	818	798	922
January	1145	1075	1012	917	971
February	1106	1045	1250	1137	1063
March	1752	1928	1662	1763	1822
Calendar¹ Year Total =	24484	24428	23917	26548	24573
Grant² Year Total =	24422	24473	23793	26441	24612

¹ January 1 through December 31.

² April 1 through March 31.

Graph 1.1. Monthly telephone inquiries



TYPE OF INQUIRY

2. Type of Inquiry

NPIC classifies inquiries as information, incident, or other (non-pesticide) inquiries. The types of inquiries are summarized in Table 2.1 and Chart 2.1.

The majority of inquiries (18,910 or 76.8%) to NPIC were informational inquiries in which the inquirer requested information about pesticides or related issues (Chart 2.1). Information inquiries may involve a discussion of a specific pesticide or of pesticides in general. NPIC responded to 6,325 (25.7%) infor-

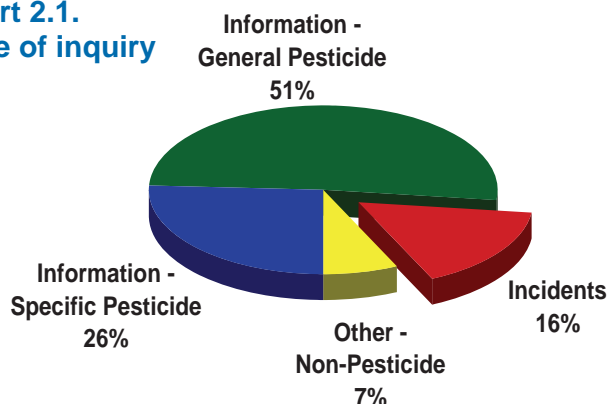
mation inquiries about specific pesticides. NPIC responded to 12,585 (51.1%) inquiries relating to pesticides in general.

NPIC documented 3,962 (16.1%) incidents involving pesticides. A pesticide incident is a spill, a misapplication, a contamination of a non-target entity or any purported exposure to a pesticide, regardless of injury. NPIC also addressed 1,740 (7.0%) inquiries that were not related to pesticides.

Table 2.1. Type of inquiry

Type of Inquiry	Number of Inquiries				
	2005	2006	2007	2008	2009
Information - Specific Pesticide	8692	8304	7642	10366	6325
Information - General Pesticide	9731	10706	10952	10904	12585
Incidents	3190	3394	3327	3444	3962
Other - Non-Pesticide	2809	2069	1872	1727	1740
Grant Year Total =	24422	24473	23793	26441	24612

Chart 2.1. Type of inquiry



ORIGIN OF INQUIRY

3. Origin of Inquiry

Table 3.1 summarizes the origin of inquiries received by NPIC. Of the 24,612 inquiries, 22,245 (90.4%) were received by telephone, 496 (2.0%) were recorded by a voice mail system, 961 (4.0%) were received by postal mail, seven were walk-in inquiries, and 903 (3.7%) were e-mail inquiries.

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.

Table 3.1. Origin of inquiry

Origin of Inquiry	Number of Inquiries				
	2005	2006	2007	2008	2009
Telephone	22871	22910	22177	24675	22245
Voice Mail	521	484	464	582	496
Mail	121	266	274	310	961
Walk-In	2	3	5	3	7
E-Mail	906	810	873	871	903
Other	1	0	0	0	0
Grant Year Total =	24422	24473	23793	26441	24612



WEBSITE ACCESS

4. Website Access

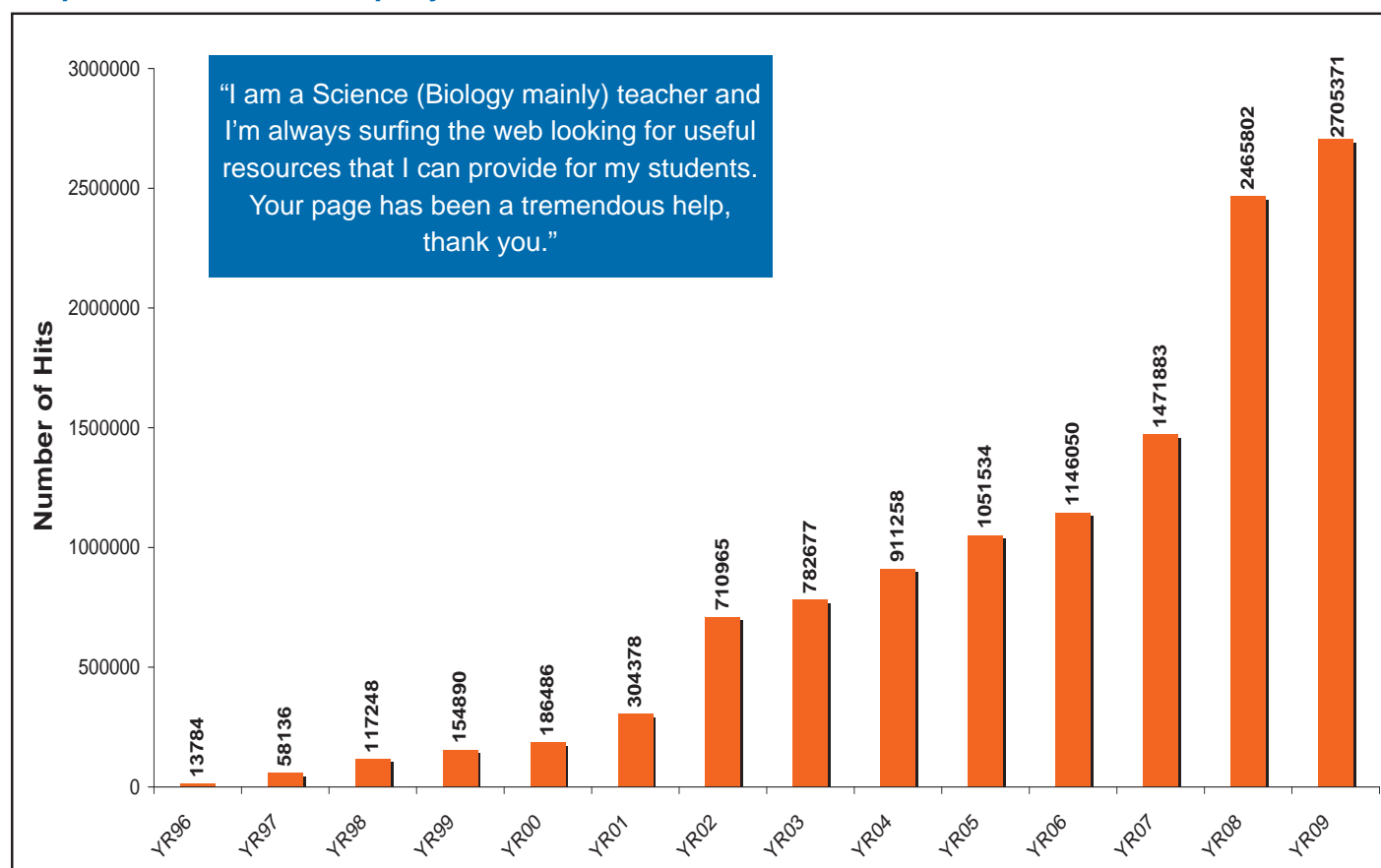
The NPIC website is an increasingly popular source of information for the public and professionals. The NPIC website received 2,705,371 total web hits this grant year, which represents a 10% increase in web traffic over the previous year.

Graph 4.1 shows the number of total hits per grant 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 4.2. Hits to medical case profiles are shown in Graph 4.3. Graphs 4.4 and 4.5 detail the number of hits for NPIC fact sheets (>345,000 hits). Web hits are a major form of inquiry to NPIC, in addition to telephone and e-mail. The NPIC InfoBase received 192,660 hits this year.

Table 4.1. Selected web hits

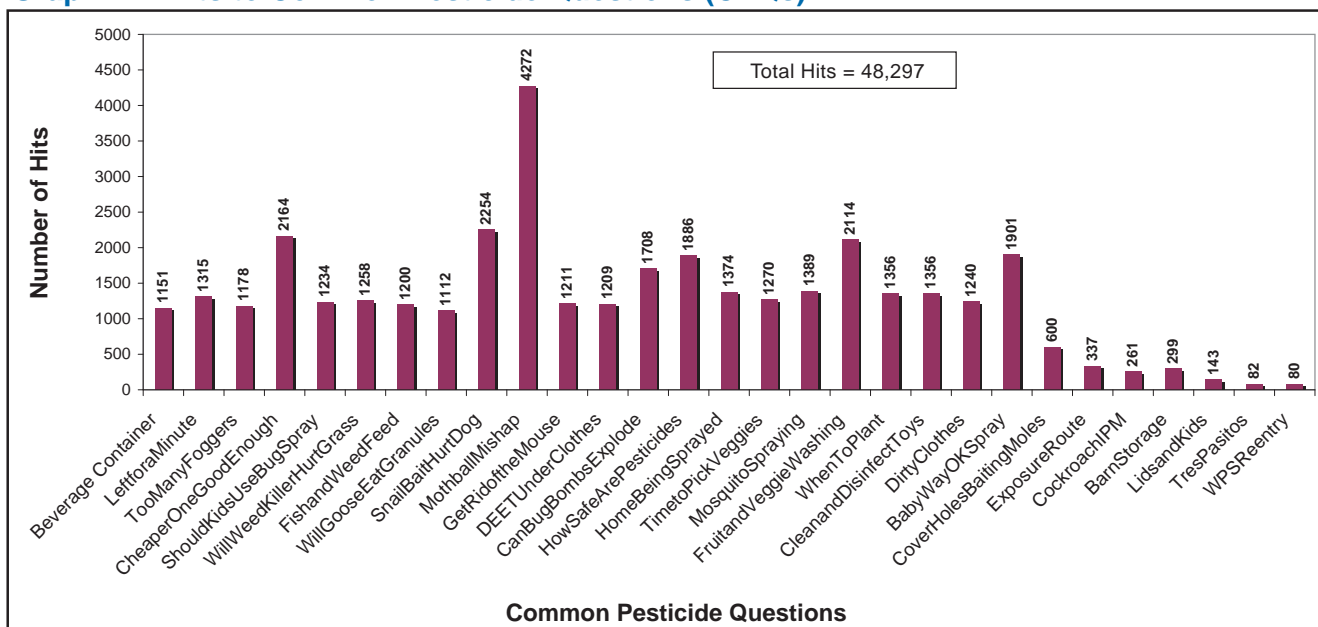
Page Accessed	English Web Hits	Spanish Web Hits
General Information	44630	3378
Technical Information	67013	2438
Fact Sheets	374421	N/A
Regulatory	25633	7132
Recognition & Management of Pesticide Poisonings	79939	N/A
Manufacturer Information	43553	3451
Pest Control	226033	20088
FAQ's	11550	2155

Graph 4.1. NPIC total hits per year



WEBSITE ACCESS

Graph 4.2. Hits to Common Pesticide Questions (CPQs)



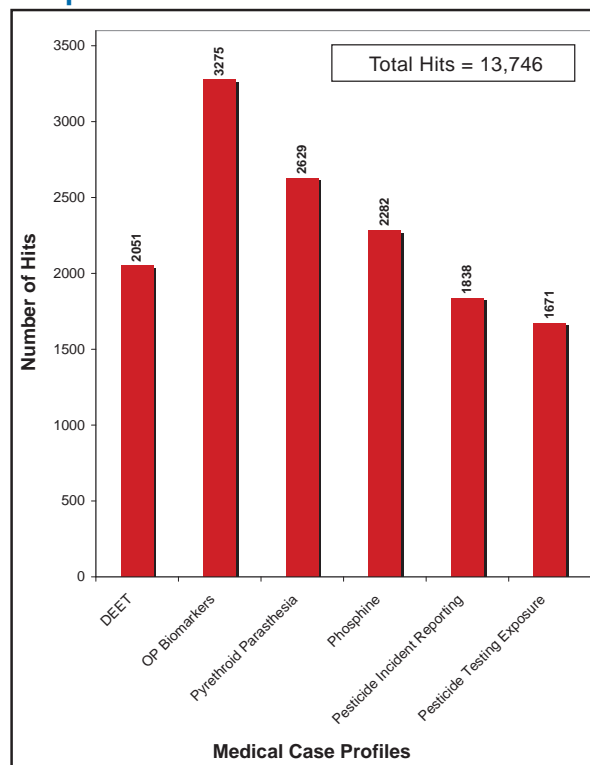
What are Common Pesticide Questions (CPQs)?

Formerly known as “Case Profiles”, these short documents were developed in 2003 to 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 specific topics of interest. Some describe mishaps and ways to prevent accidental exposures or incidents.

What are Medical Case Profiles?

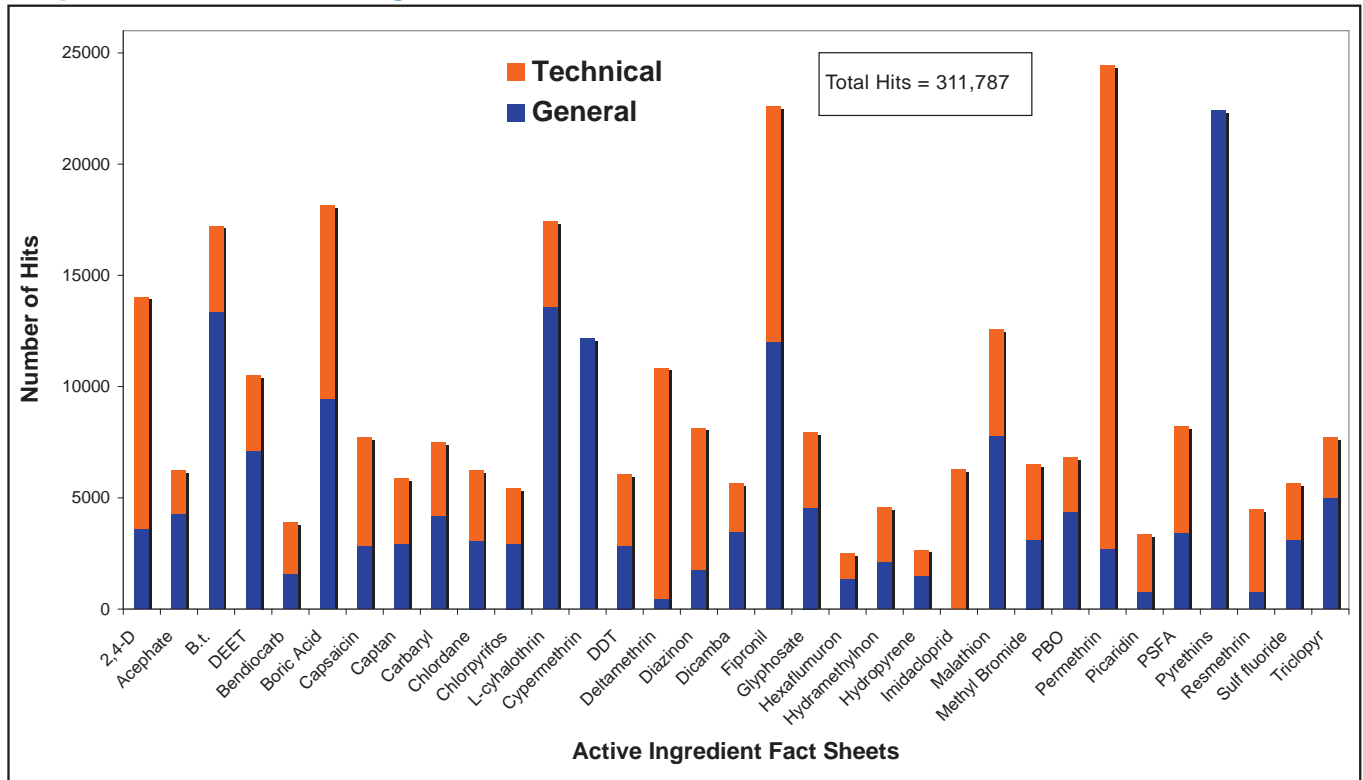
Medical Case Profiles are directed toward health care providers and convey clinical information useful to this audience. Dr. Daniel Sudakin produces these resources in order to raise awareness of pesticide-related issues in the medical community.

Graph 4.3. Hits to Medical Case Profiles

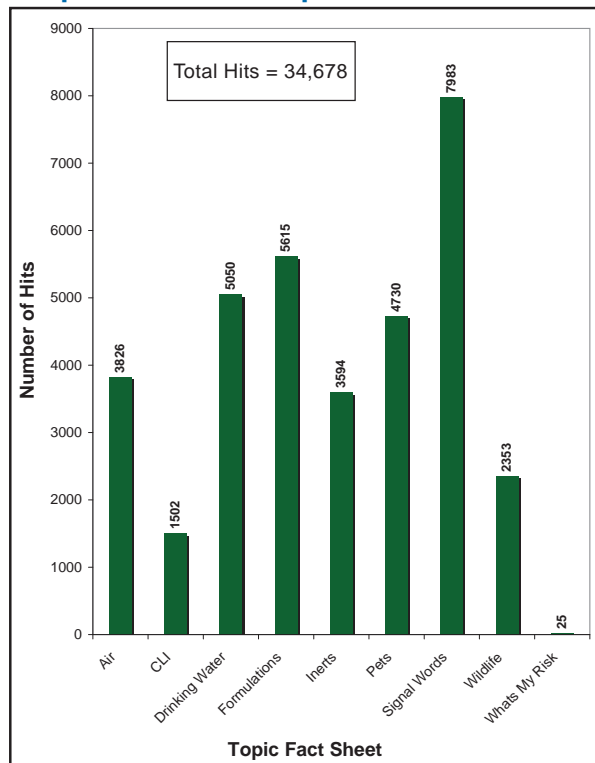


WEBSITE ACCESS

Graph 4.4. Hits to Active Ingredient Fact Sheets



Graph 4.5. Hits to Topic Fact Sheets



“Just wanted to let y’all know that your website has great information... Easily understandable and searchable, even in a pinch! Great job.”

TYPE OF INQUIRER

5. Type of Inquirer

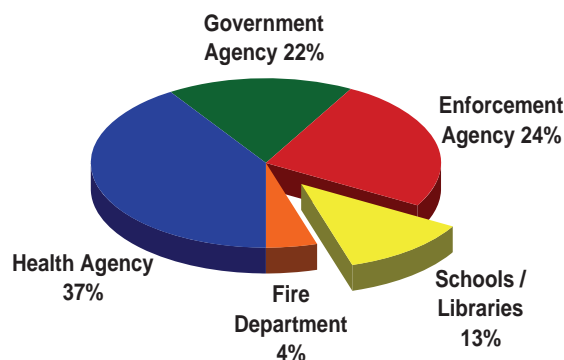
Table 5.1 summarizes the profession/occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the general public. Of the 24,612 inquiries received, there were 21,097 (85.7%) from the general public, 716 (2.9%) from federal, state or local government agencies, 999 (4.1%) from human and animal medical personnel, 647 (2.5%) from information groups including the media, unions, environmental organizations and pesticide manufacturing or marketing companies, 730 (3.0%) from consumer users including legal or insurance representatives, laboratory or consulting personnel, pest control operators, retail store personnel or farm personnel, and 423 (1.7%) inquiries from other professions/occupations.

Chart 5.1 summarizes the 716 governmental entities that contacted NPIC during the 2009-2010 grant year.

Table 5.1. Type of inquirer

Type of Inquiry	Number of Inquiries				
	2005	2006	2007	2008	2009
General Public	21733	21795	20946	23375	21097
Federal/State/Local Agencies					
Health Agency	108	251	322	337	292
Government Agency	173	157	115	125	124
Enforcement Agency	184	169	152	225	181
Schools/Libraries	155	93	168	167	85
Fire Department	27	31	22	26	34
Medical Personnel					
Human Medical	250	279	218	248	350
Animal Vet./Clinic	238	281	261	265	590
Migrant Clinic	8	4	8	16	59
Information Groups					
Media	79	69	75	75	72
Unions/Info. Service	121	106	102	114	290
Environmental Org.	97	88	70	57	51
Pesticide Mfg./Mktg. Co.	179	194	186	239	234
Consumer Users					
Lawyer/Insurance	46	46	52	27	37
Lab./Consulting	62	37	49	88	78
Pest Control	163	155	198	228	212
Retail Store	302	316	349	386	342
Farm	54	39	53	62	38
Master Gardener	29	26	35	19	15
Non-migrant Ag. Worker	2	10	9	8	8
Other	412	327	403	354	423
Grant Year Total =	24422	24473	23793	26441	24612

Chart 5.1. Inquiries from federal / state / local agencies (Total: 716)



TYPE OF QUESTION

6. Type of Question

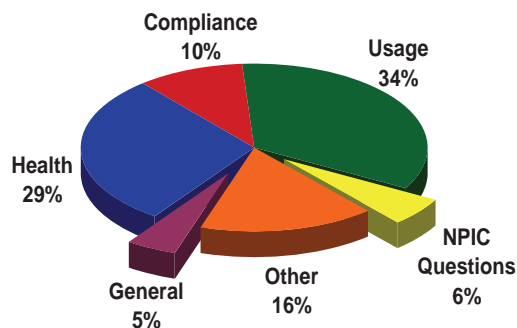
The questions received at NPIC are most often related to health effects and use practices (Chart 6.1 and Table 6.1). Each inquirer may have more than one question, and NPIC currently records up to two questions for each inquiry. NPIC responded to 8,620 (29.0%) questions related to health effects of pesticides, including general health, treatment, testing, and laboratory questions. In addition, there were 10,123 (34.1%) 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, pre-harvest intervals, and lawn care use.

NPIC also responded to 2,937 (10.0%) compliance questions, including questions about regulations, disposal, and complaints. There were 118 (0.4%) questions about other food safety issues, 1,404 (4.7%) general pesticide questions, 1,652 (5.6%) questions about NPIC, and 4,831 (16.3%) questions that were related to other topics.

Table 6.1. Type of question

Type of Question	Number of Inquiries				
	2005	2006	2007	2008	2009
Health Related					
Health	7586	8065	7472	8643	7144
Treatment	930	1137	1053	1351	1335
Testing Lab.	268	226	202	193	141
Usage Information					
Pest/Crop	2296	2336	2480	2625	2713
Chemical	1135	1066	1369	1396	1399
Pros and Cons	68	102	132	129	124
Safety/Application	4969	5233	4535	4836	4745
Cleanup	593	613	708	679	752
Harvest Intervals	180	245	294	391	376
Lawn Care	39	41	32	639	14
Compliance					
Regulations	1645	1512	1573	3101	1635
Complaints	1045	821	782	1002	1118
Disposal	226	181	206	189	179
WPS	6	6	8	13	5
Food Safety	166	86	124	131	113
FQPA	1	0	4	0	5
General	6063	345	375	695	1404
NPIC Questions	787	933	847	987	1652
Other	6114	4967	4780	4877	4831
Grant Year Total =	34117	27915	26976	31877	29685

Chart 6.1. Type of question



REASON FOR INQUIRY

7. Reason for Inquiry

Specialists identify up to two “reasons” for all inquiries received by NPIC (Table 7.1 and Charts 7.1 and 7.2). The reason for all informational inquiries is recorded as “Concern/Knowledge.” The reason for incident inquiries varies according to the nature of the

incident. Of the 6,375 reasons recorded for incident inquiries, there were 3,673 (57.6%) pesticide exposures, and 1,230 (19.3%) accidents. There were 20 (0.3%) incidents about odor only, and 23 (0.4%) incidents involving other reasons.

Chart 7.1. Pesticide exposures

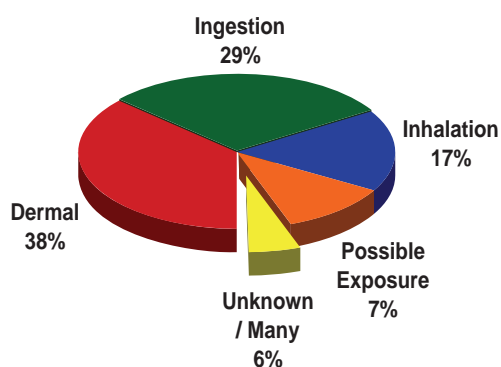


Chart 7.2. Pesticide accidents

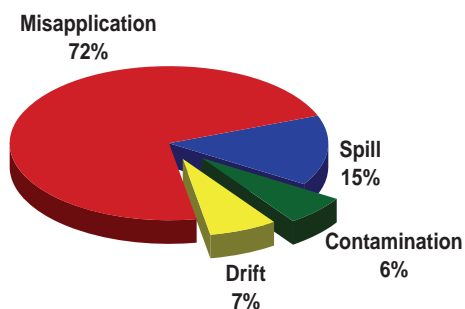


Table 7.1. Reason for inquiry

Type of Inquiry	Number of Inquiries				
	2005	2006	2007	2008	2009
Information Inquiries					
Concern/Knowledge	19486	20569	19113	21757	19273
Incident Inquiries					
Exposures					
Dermal - Acute	920	832	940	959	1288
Dermal - Chronic	23	56	72	55	63
Ingestion - Acute	944	1039	1075	951	1069
Ingestion - Chronic	14	17	12	13	13
Inhalation - Acute	378	374	410	443	457
Inhalation - Chronic	106	172	166	138	171
Exposure Possible	293	362	223	424	413
Unknown/Many	167	206	172	205	193
Occupational	29	10	13	10	6
Accidents					
Misapp. - Homeowner	642	685	706	710	796
Misapp. - PCO	59	42	33	27	29
Misapp. - Other	65	62	63	76	60
Spill - Indoor	95	97	140	136	132
Spill - Outdoor	27	51	69	49	50
Contamination - Home	9	19	33	35	19
Contamination - Other	10	22	71	81	58
Drift	50	52	46	46	86
Fire - Home	1	2	1	1	0
Fire - Other	1	1	1	3	0
Industrial Accident	0	1	1	0	0
Odor Only	143	109	64	22	20
Other	17	11	26	21	23
N/A - Unknown	8451	638	1381	1293	1429
Grant Year Total =	31930	25429	24831	27455	25648

ACTIONS TAKEN

8. Actions Taken

Primary Actions:

NPIC specialists respond to inquiries through verbal communication, transfer to poison control, referrals to other agencies or organizations, and via postal or e-mail. The primary actions taken by specialists are summarized in Table 8.1. Most inquiries (21,962; 89.2%) were answered by providing verbal communication, while 1,886 (7.7%) of inquirers were sent information by e-mail, mail, or fax.

Some inquiries (102; 0.4%) were transferred to Oregon Poison Control Center or the Animal Poison Control Center in emergent situations, or referred to the National Pesticide Medical Monitoring Program (NPMMP) as appropriate. Foreign language inquiries (241; 0.9%) were either transferred to a Spanish-speaking specialist, or interpreted via Language Line Services, Inc.

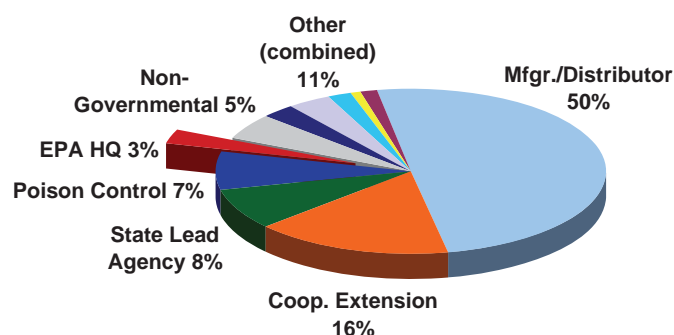
Table 8.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2009
Provided Verbal Information	21962
Referred to NPMMP	36
Provided Transfer to:	
Oregon Poison Center	20
Animal Poison Control Center	46
Executive Committee / PC	93
Another Specialist	181
Spanish Resource / Spanish Audix	173
E-mailed Information	777
Mailed / Faxed Information	50
Mailed NPIC Brochures	1059
Interpreted via Language Line Services, Inc.	68
Unable to Contact Inquirer	147
Grant Year Total =	24612

Secondary Actions:

When the needs of the inquirer could best be met by another organization, NPIC made appropriate referrals by providing contact information to the inquirer in addition to other information. These referrals are summarized in Chart 8.1. Occasionally, specialists may provide multiple referrals to an inquirer. Of the total referrals made in 2009-2010 (14,553), there were 526 (3.6%) to the EPA, 1,177 (8.1%) to state lead agencies, 2,368 (16.3%) to cooperative/county extension service, 1,090 (7.5%) to Poison Control, 537 (3.7%) to Animal Poison Control, and 7,235 (49.7%) to the manufacturer/distributor.

Chart 8.1. Contact information provided



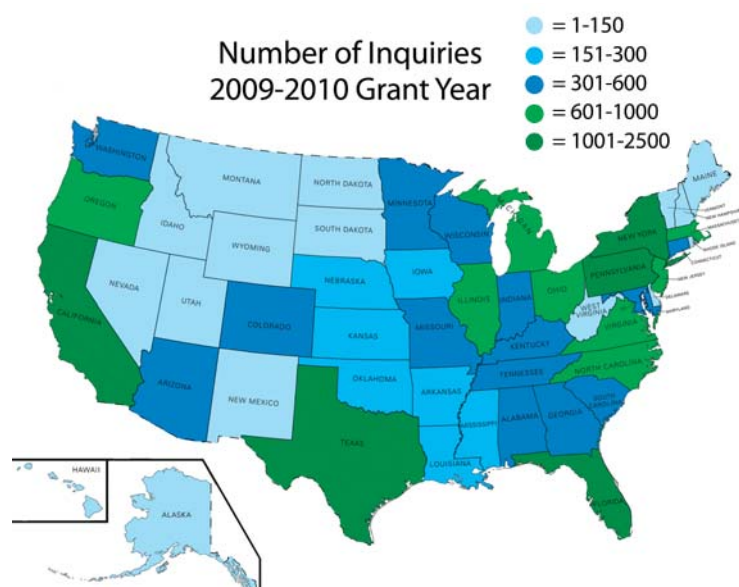
INQUIRIES BY STATE

9. Inquiries by State

Table 9.1 lists the number of inquiries received by NPIC from each state. The largest number of inquiries came from California, followed by Texas, New York and Florida.

Graph 9.2 summarizes inquiries by EPA region. NPIC received 18.4% of inquiries from Region 4, 14.8% from Region 5, 11.3% from Region 2, 11.1% from Region 9, and 11.0% from Region 6.

Graph 9.1. Inquiries by state



Graph 9.2. Inquiries by EPA region

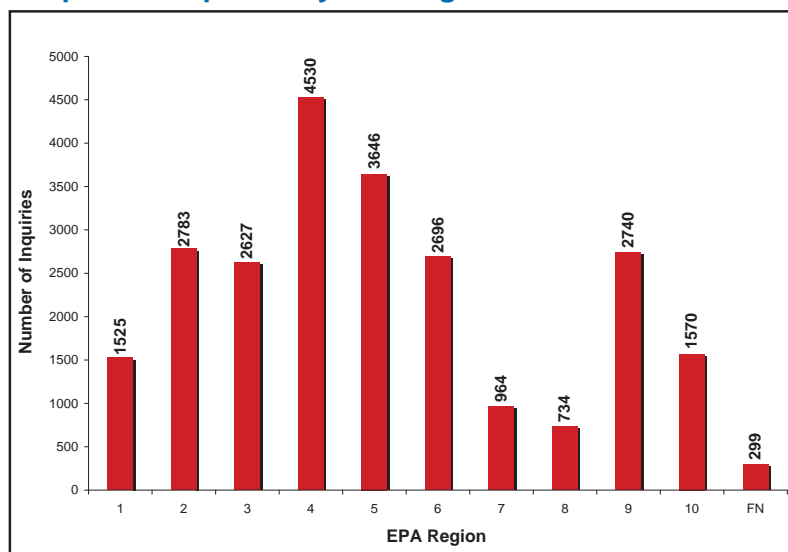


Table 9.1. Listing of states and foreign nations using NPIC

EPA Region	State Code	State	# of Inquiries
10	AK	Alaska	29
4	AL	Alabama	304
6	AR	Arkansas	156
9	AZ	Arizona	355
9	CA	California	2211
0	CN	Canada	94
8	CO	Colorado	353
1	CT	Connecticut	379
3	DC	DC	126
3	DE	Delaware	88
4	FL	Florida	1465
0	FN	Foreign	205
4	GA	Georgia	590
9	HI	Hawaii	58
7	IA	Iowa	242
10	ID	Idaho	136
5	IL	Illinois	715
5	IN	Indiana	345
7	KS	Kansas	187
4	KY	Kentucky	352
6	LA	Louisiana	220
1	MA	Massachusetts	695
3	MD	Maryland	548
1	ME	Maine	150
5	MI	Michigan	872
5	MN	Minnesota	406
7	MO	Missouri	380
4	MS	Mississippi	157
8	MT	Montana	101
4	NC	North Carolina	842
8	ND	North Dakota	41
7	NE	Nebraska	155
1	NH	New Hampshire	118
2	NJ	New Jersey	916
6	NM	New Mexico	137
9	NV	Nevada	116
2	NY	New York	1796
5	OH	Ohio	846
6	OK	Oklahoma	217
10	OR	Oregon	833
3	PA	Pennsylvania	1017
2	PR	Puerto Rico	64
1	RI	Rhode Island	109
4	SC	South Carolina	333
8	SD	South Dakota	49
4	TN	Tennessee	487
6	TX	Texas	1966
0	UN	Unknown	498
8	UT	Utah	140
3	VA	Virginia	693
2	VI	Virgin Islands	7
1	VT	Vermont	74
10	WA	Washington	572
5	WI	Wisconsin	462
3	WV	West Virginia	155
8	WY	Wyoming	50
Total =			24612

TOP 25 AIs FOR ALL INQUIRIES

10. Top 25 Active Ingredients for All Inquiries

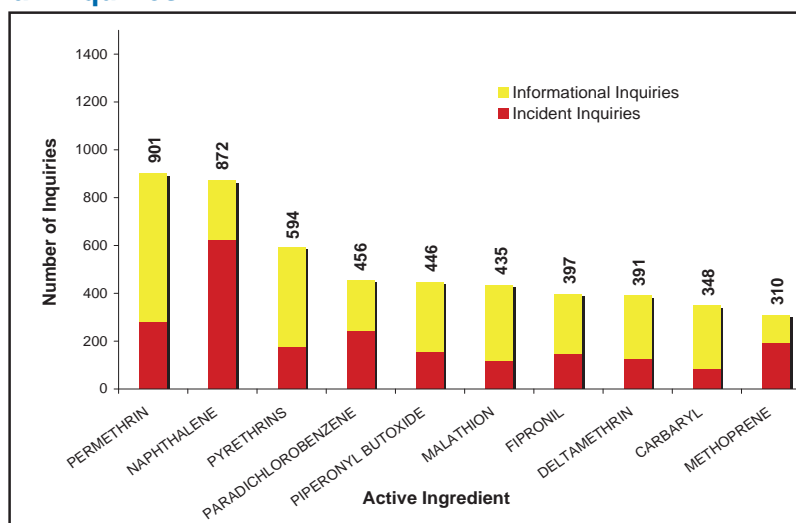
When inquiries to NPIC involve discussion of a specific product or active ingredient, specialists record the product and the active ingredient in the PID. Permethrin was discussed in more inquiries than any other single active ingredient this year (Table 10.1, Graph 10.1). Of the 901 inquiries involving permethrin, 280 (31.1%) were incident inquiries. Note that an inquiry may involve discussion of more than one active ingredient; thus totals reflect the number of times active ingredients are discussed during all inquiries. Graph 10.1 illustrates the number of informational inquiries and incident inquiries for the top active ingredients that NPIC received in the 2009 grant year.

Table 10.1. Top 25 pesticide active ingredients for all inquiries to NPIC

Active Ingredient	Total Inquiries	Incident Inquiries ¹	Information Inquiries
PERMETHRIN	901	280(36)	621
NAPHTHALENE	872	623(15)	249
PYRETHRINS	594	177(10)	417
PARADICHLOROBENZENE	456	243(2)	213
PIPERONYL BUTOXIDE	446	156(12)	290
MALATHION	435	118(3)	317
FIPRONIL	397	149(3)	248
DELTAMETHRIN	391	125(10)	266
CARBARYL	348	83(1)	265
METHOPRENE	310	195(23)	115
2,4-D	296	69(1)	227
BORIC ACID	294	106(0)	188
IMIDACLOPRID	267	85(5)	182
CAPTAN	253	56(1)	197
ZINC PHOSPHIDE	251	162(14)	89
BACILLUS THURINGIENSIS	220	42(0)	178
POTASSIUM SALTS OF FATTY ACIDS	214	91(1)	123
DICAMBA	207	39(1)	168
PYRIPROXYFEN	201	143(57)	58
CAPSAICIN	198	88(21)	110
BIFENTHRIN	197	46(7)	151
MECOPROP	187	37(1)	150
SULFUR	182	29(0)	153
GLYPHOSATE	177	50(0)	127
GARLIC OIL	167	62(2)	105
Total =	8461	3254(226)	5207

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 10.1. Top 10 pesticide active ingredients for all inquiries



TOP 25 AIs FOR INCIDENT INQUIRIES

11. Top 25 Active Ingredients for Incident Inquiries

The most common active ingredients reported during incident inquiries are listed in Table 11.1 and Graph 11.1. Also, Table 11.1 summarizes the number of reported incidents involving human and animal entities exposed to specific active ingredients. Naphthalene was reported to be involved in more incidents (623) than any other active ingredient (2.4% of these incidents had a certainty index “definite” and “probable”). Permethrin was involved in the second largest number (280) of incidents.

The active ingredients with the highest percentage of high-certainty incidents were cyphenothrin and pyriproxyfen, with 49.1% and 39.9%, respectively. Note that pyriproxyfen is rarely used singly. It is almost exclusively used in conjunction with pyrethroids like cyphenothrin. Of the total active ingredients listed in Table 11.1, 8.6% of incident inquiries were assigned a certainty index of “definite” and “probable”.

Graph 11.1. Top 10 active ingredients for incident inquiries

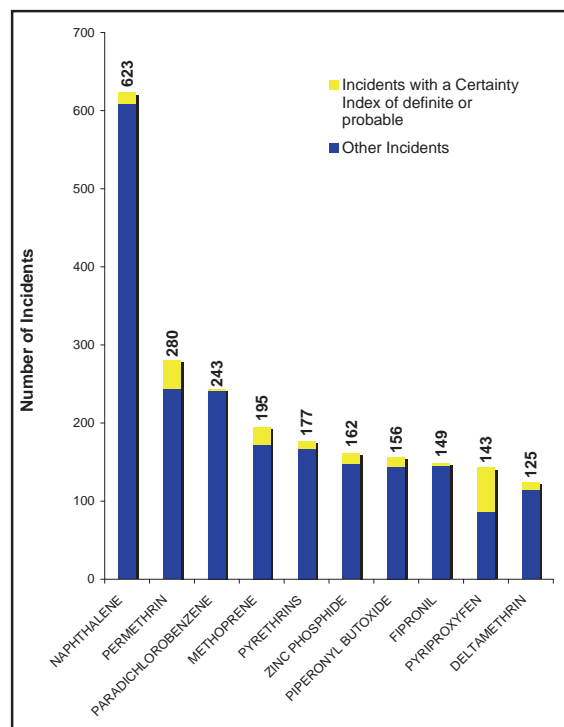


Table 11.1. Top 25 active ingredients for incident inquiries to NPIC

Active Ingredient	Total Incidents ¹	Human Incidents ¹	Animal Incidents ¹	Other Incidents
NAPHTHALENE	623(15)	470(13)	78(2)	75
PERMETHRIN	280(36)	97(7)	143(29)	40
PARADICHLOROBENZENE	243(2)	193(2)	15(0)	35
METHOPRENE	195(23)	10(1)	184(22)	1
PYRETHRINS	177(10)	106(5)	60(5)	11
ZINC PHOSPHIDE	162(14)	5(0)	143(14)	14
PIPERONYL BUTOXIDE	156(12)	96(6)	50(6)	10
FIPRONIL	149(3)	13(0)	132(3)	4
PYRIPROXYFEN	143(57)	15(0)	127(57)	1
DELTAMETHRIN	125(10)	80(8)	38(2)	7
MALATHION	118(3)	69(3)	10(0)	39
BORIC ACID	106(0)	60(0)	43(0)	3
CYPHENOTHHRIN	106(52)	2(0)	104(52)	0
METALDEHYDE	97(9)	15(0)	76(9)	6
POTASSIUM SALTS OF FATTY ACIDS	91(1)	61(1)	19(0)	11
CAPSAICIN	88(21)	55(21)	20(0)	13
IMIDACLOPRID	85(5)	11(0)	58(5)	16
CARBARYL	83(1)	42(1)	11(0)	30
2,4-D	69(1)	35(1)	15(0)	19
GARLIC OIL	62(2)	15(2)	22(0)	25
PUTRESCENT WHOLE EGG SOLIDS	57(2)	15(2)	20(0)	22
CAPTAN	56(1)	34(1)	2(0)	20
D-PHENOTHHRIN	56(7)	16(0)	38(7)	2
N-OCTYL BICYCLOHEPTENE DICARBOXIMIDE	55(5)	23(1)	32(4)	0
NEEM OIL	55(2)	40(2)	10(0)	5
Total =	3437(294)	1578(77)	1450(217)	409

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 incident inquiries, NPIC specialists record the location of the reported exposure or accident. Of the 3,962 known locations where incidents occurred, 93.9% occurred in the home or yard, 1.6% occurred in an agricultural setting, 0.7% occurred in an office building or school, and 0.6% occurred in a retail store or business (Table 12.1).

Table 12.1. Location of pesticide incident

Location	Number of Incident ¹ Inquiries				
	2005	2006	2007	2008	2009
Unclear/Unknown	33(2)	13(0)	33(5)	34(8)	36(4)
Home or Yard	2929(136)	3197(114)	3077(229)	3220(281)	3719(220)
Agriculturally Related	42(4)	35(1)	52(1)	49(6)	64(6)
Industrially Related	11(0)	9(0)	15(2)	8(0)	4(0)
Office Building, School	46(0)	31(2)	35(2)	23(1)	29(0)
Pond, Lake, Stream Related	4(0)	12(0)	4(1)	10(1)	7(0)
Nursery, Greenhouse	8(0)	4(0)	2(0)	6(2)	5(0)
Food Service/Restaurants	10(0)	6(0)	2(0)	5(0)	2(0)
Retail Store/Business	29(2)	20(0)	31(1)	27(3)	25(4)
Roadside/Right-of-Way	19(0)	8(0)	16(3)	8(0)	10(0)
Park/Golf Course	5(1)	6(0)	12(3)	8(2)	7(0)
Health Care Facility	0(0)	1(1)	2(0)	7(0)	8(2)
Treated Water	0(0)	3(0)	9(0)	13(0)	2(0)
Other	54(3)	48(2)	37(5)	26(7)	44(3)
Total =	3190(148)	3393(120)	3327(252)	3444(311)	3962(239)

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."

ENVIRONMENTAL IMPACT

13. Environmental Impact

NPIC specialists record reported environmental impacts discussed in incident inquiries. The most common reported environmental impacts are damage to property and plants, including food crops and other plants or trees (Table 13.1).

Table 13.1 - Reported environmental impact

Environmental Impact	Number of Incident Inquiries				
	2005	2006	2007	2008	2009
Air	2	34	66	63	7
Water	10	12	9	17	10
Soil	12	13	25	22	13
Food Crops/Process	120	99	158	177	184
Property	284	219	465	349	368
Poultry/Livestock	6	1	3	4	5
Plants/Trees	51	25	59	40	47
Other	11	7	19	8	10
Total =	496	410	804	680	644



CERTAINTY INDEX

14.1. Certainty Index

Table 14.1 and Graph 14.1 summarize the assignment of the certainty index for all incident inquiries received by NPIC. Human incident reports are stratified by gender and group. Multiple entities may be discussed in one incident inquiry; thus totals reflect the number of entities, as opposed to number of incidents.

Of the total number of entities discussed in incident inquiries to NPIC (3962), 6.0% of the cases were

assigned a certainty index of “definite” or “probable,” 17.7% of the cases were assigned a certainty index of “possible,” 17.5% of the cases were assigned a certainty index of “unlikely,” and none of the cases were assigned a certainty index of “unrelated.” Fifty-nine percent (59%) of the cases were unclassifiable (see text box below). Certainty index assignments for human incidents are reviewed by Suzanne Phillips and Dr. Sudakin.

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	Other	Total	Male	Female	Groups	Gender Not Stated
Total Inquiries in Operational Year = 24612								
Unclassifiable	1094	740	493	2327	445	580	66	3
Definite	1	0	0	1	1	0	0	0
Probable	92	146	0	238	50	39	3	0
Possible	374	329	0	703	148	213	13	0
Unlikely	329	364	0	693	128	195	6	0
Unrelated	0	0	0	0	0	0	0	0
TOTAL =	1890	1579	493	3962	772	1027	88	3

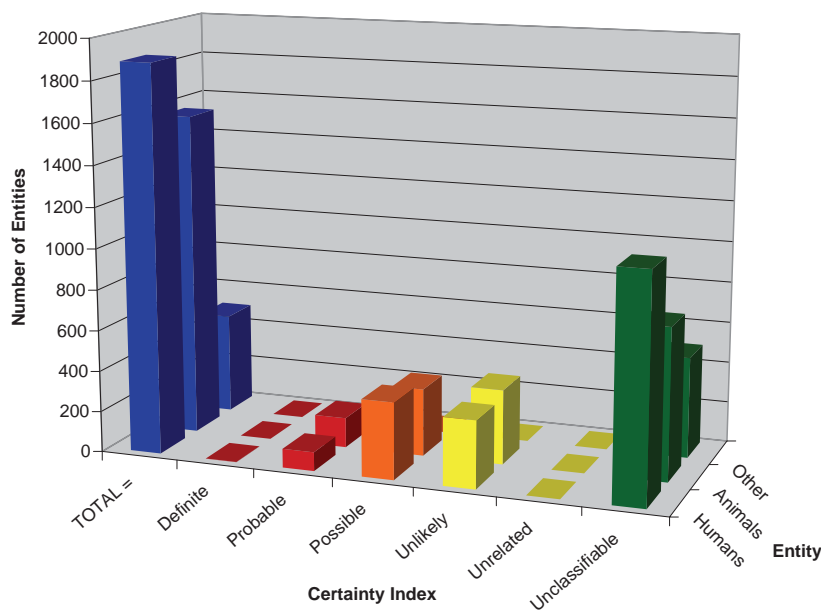
What is the Certainty Index?

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 incident involved an object, such as a building
- 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 incident inquiries received by NPIC. Specialists started classifying the severity of reported symptoms in April 2009. For all symptoms reported in human pesticide incidents, 31.8% were minor, 17.6% were moderate, 0.8% were major, and 0.1% were reported deaths. In 47.6% of human incidents, the person reported that

they did not experience any symptoms. Symptoms were unknown in 2.2% of human incidents.

Table 14.3 (following page) shows all human incidents with a high level of certainty (definite or probable) and a high level of symptom severity (moderate, major, or death). For information on deaths, regardless of certainty, see Table 17.1.

Table 14.2. Incident inquiries by severity index (SI)

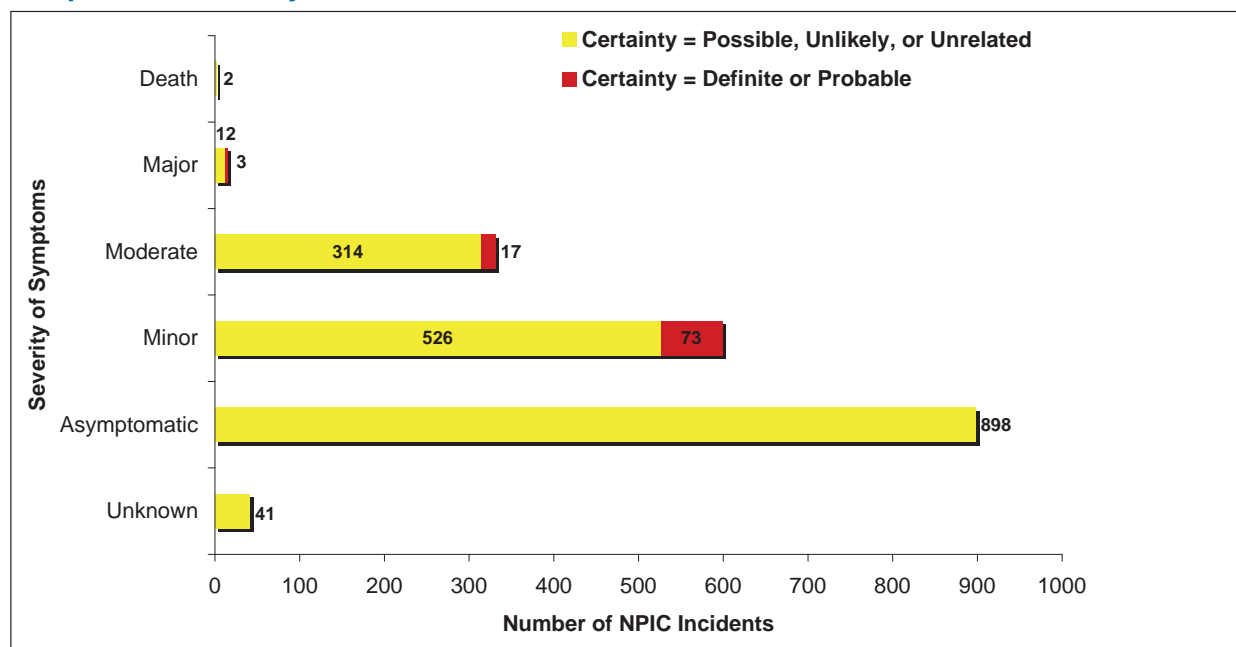
SI for All Categories of Entities	Breakdown of Human-Entity Incident Inquiries				
Severity Index (SI)	Humans	Male	Female	Groups	Gender Not Stated
Total Inquiries in Operational Year = 24612					
Unknown	41(0)	20(0)	17(0)	2(0)	2(0)
Asymptomatic	898(0)	370(0)	467(0)	60(0)	1(0)
Minor	599(73)	249(42)	335(28)	15(3)	0(0)
Moderate	331(17)	124(9)	196(8)	11(0)	0(0)
Major	15(3)	6(0)	9(3)	0(0)	0(0)
Death	2(0)	2(0)	0(0)	0(0)	0(0)
TOTAL =	1886(93)	771(51)	1024(39)	88(3)	3(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

Table 14.3. Summary of human incidents with high certainty and high severity

Pesticide Product	Active Ingredient	Formulation	Reason for Incident	Entity	Certainty Index	Severity Index	State
N/A	PARADICHLOROBENZENE, NAPHTHALENE	Fumigant	Misapplication - Homeowner, Inhalation - Acute	Female	Probable	Moderate	TX
LORSBAN	CHLORPYRIFOS	Liquid	Dermal Exposure - Acute, Ingestion - Acute	Male	Probable	Moderate	MO
WEEVIL-CIDE TABLETS	ALUMINUM PHOSPHIDE	Fumigant	Inhalation - Acute	Male	Probable	Moderate	CA
PHOSFUME PELLETS	ALUMINUM PHOSPHIDE	Fumigant	Inhalation - Acute	Male	Probable	Moderate	CO
N/A	BRODIFACOUIM	Baits	Ingestion - Acute	Male	Definite	Moderate	MI
BONIDE HOUSEHOLD INSECT CONTROL READY-TO-USE	DELTAMETHRIN	Liquid	Dermal Exposure - Acute	Female	Probable	Moderate	FL
BONIDE A COMPLETE FRUIT TREE SPRAY	CAPTAN, CARBARYL, MALATHION	Liquid	Ingestion - Acute, Dermal Exposure - Acute	Male	Probable	Moderate	MS
KT CHLORINATING TABLETS	TRICHLORO-S-TRIAZINETRIONE	Other	Inhalation - Acute	Male	Probable	Moderate	OR
GREEN LIGHT FRUIT TREE SPRAY	PYRETHRINS, PIPERONYL BUTOXIDE, NEEM OIL	Liquid	Dermal Exposure - Acute	Male	Probable	Moderate	WA
MALATHION 50% EC	MALATHION	Liquid	Inhalation - Acute, Dermal Exposure - Acute	Female	Probable	Moderate	MO
N/A	NAPHTHALENE	Fumigant	Misapplication - Homeowner, Inhalation - Chronic	Female	Probable	Moderate	TX
N/A	PERMETHRIN	Liquid	Dermal Exposure - Acute, Ingestion - Acute	Female	Probable	Major	TN
ENOZ OLD FASHIONED MOTH BALLS	NAPHTHALENE	Fumigant	Misapplication - Homeowner, Inhalation - Acute	Male	Probable	Moderate	AL
LESLIE'S SWIMMING POOL SUPPLIES 3" JUMBO TABS	TRICHLORO-S-TRIAZINETRION	Granular	Inhalation - Acute	Female	Probable	Moderate	TX
TEC - 5000	ADBAC	Liquid	Misapplication - Other or Unknown, Exposure - Possible	Female	Probable	Major	FL
PHOSTOXIN	PHOSPHINE, ALUMINUM PHOSPHIDE	Fumigant	Dermal Exposure - Acute, Inhalation - Acute	Male	Probable	Moderate	TN
BONIDE TOTAL RELEASE INDOOR FOGGER	PERMETHRIN, TETRAMETHRIN, PIPERONYL BUTOXIDE	Aerosol	Inhalation - Acute, Dermal Exposure - Acute	Female	Probable	Moderate	WV
FRONTIERSMAN BEAR ATTACK DETERRENT	CAPSAICIN	Liquid	Dermal Exposure - Acute	Female	Probable	Moderate	NC
N/A	NAPHTHALENE	Fumigant	Misapplication - Homeowner, Inhalation - Chronic	Female	Probable	Major	MI
CYGON 2-E	DIMETHOATE	Liquid	Spill - Indoor, Inhalation - Chronic	Female	Probable	Moderate	ID

DESCRIPTION OF ENTITIES

15. Description of Entities

Table 15.1 presents the number of entities involved in reported incidents. The totals at the bottom of each column represent the total number of entities involved in NPIC incidents each year. For each incident, up to two entities are currently recorded in the NPIC database; therefore the number of entities may not be the same as the number of incidents reported.

Table 15.1. Description of entities

Description of Entities	Number of Entities ¹				
	2005	2006	2007	2008	2009
ALL FEMALES -					
Female	822(10)	955(9)	988(67)	1021(98)	1092(39)
Female-Pregnant	29(0)	28(0)	34(0)	28(1)	24(0)
Female Suicide Attempt	1(1)	3(0)	0(0)	1(1)	0(0)
TOTAL ALL FEMALES =	852(11)	986(9)	1022(67)	1050(100)	1116(39)
ALL MALES -					
Male	650(8)	751(8)	784(63)	792(81)	863(51)
Male Suicide Attempt	4(1)	4(0)	0(0)	3(2)	1(0)
TOTAL ALL MALES =	654(9)	755(8)	784(63)	795(83)	864(51)
ALL GROUPS -					
Family	77(3)	131(0)	93(4)	126(7)	112(3)
Non-Family Group	28(0)	32(1)	21(2)	11(2)	20(0)
TOTAL ALL GROUPS =	105(3)	163(1)	114(6)	137(9)	132(3)
GENDER NOT STATED -					
Child - Sex Unknown	12(0)	10(0)	8(0)	8(0)	2(0)
Adult - Sex Unknown	0(0)	1(0)	0(0)	3(0)	1(0)
TOTAL GENDER NOT STATED =	12(0)	11(0)	8(0)	11(0)	3(0)
TOTAL ALL HUMANS =	1623(23)	1915(18)	1928(136)	1993(192)	2115(93)
ALL ANIMALS -					
Single Animal	1279(119)	1279(96)	1160(108)	1267(112)	1687(136)
Group of Animals	82(4)	69(6)	68(8)	64(7)	88(9)
Wildlife	4(2)	6(0)	3(0)	7(0)	5(1)
TOTAL ALL ANIMALS =	1365(125)	1354(102)	1231(116)	1338(119)	1780(146)
OTHER ENTITIES:					
Building-Home/Office	317(0)	219(0)	342(0)	405(0)	261(0)
Other Places	334(0)	395(0)	453(0)	451(0)	579(0)
TOTAL OTHER ENTITIES =	651(0)	614(0)	795(0)	856(0)	840(0)
TOTAL ALL ENTITIES =	3639(148)	3883(120)	3954(252)	4187(311)	4735(239)

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

The chart and graphs (15.1.1 - 15.1.3) below provide a summary of entities involved in incident inquiries. Of the 4,735 entities involved in incidents reported to NPIC this year, 44% were human, 38% were animal, and 18% were other types of non-target entities (buildings or gardens, for example).

Graph 15.1.1. Humans involved in incidents

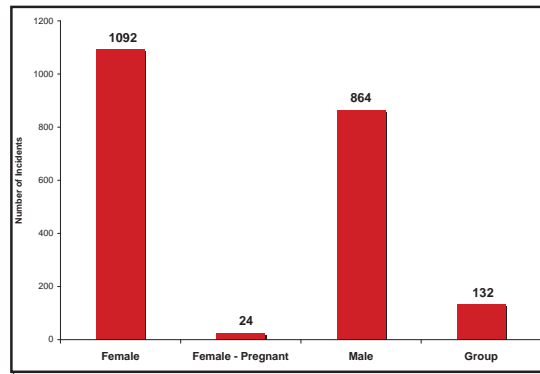
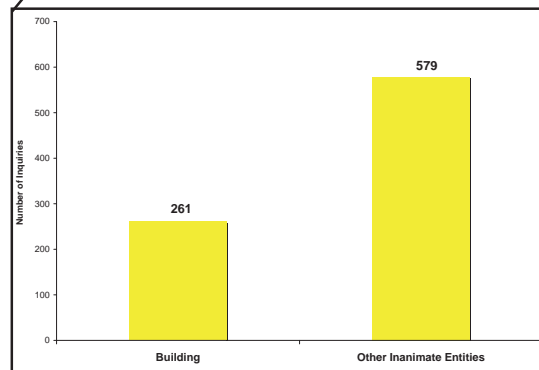
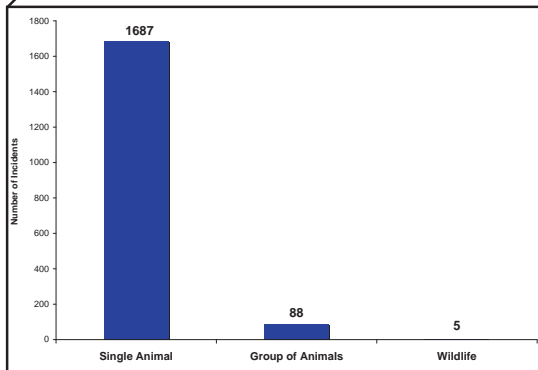
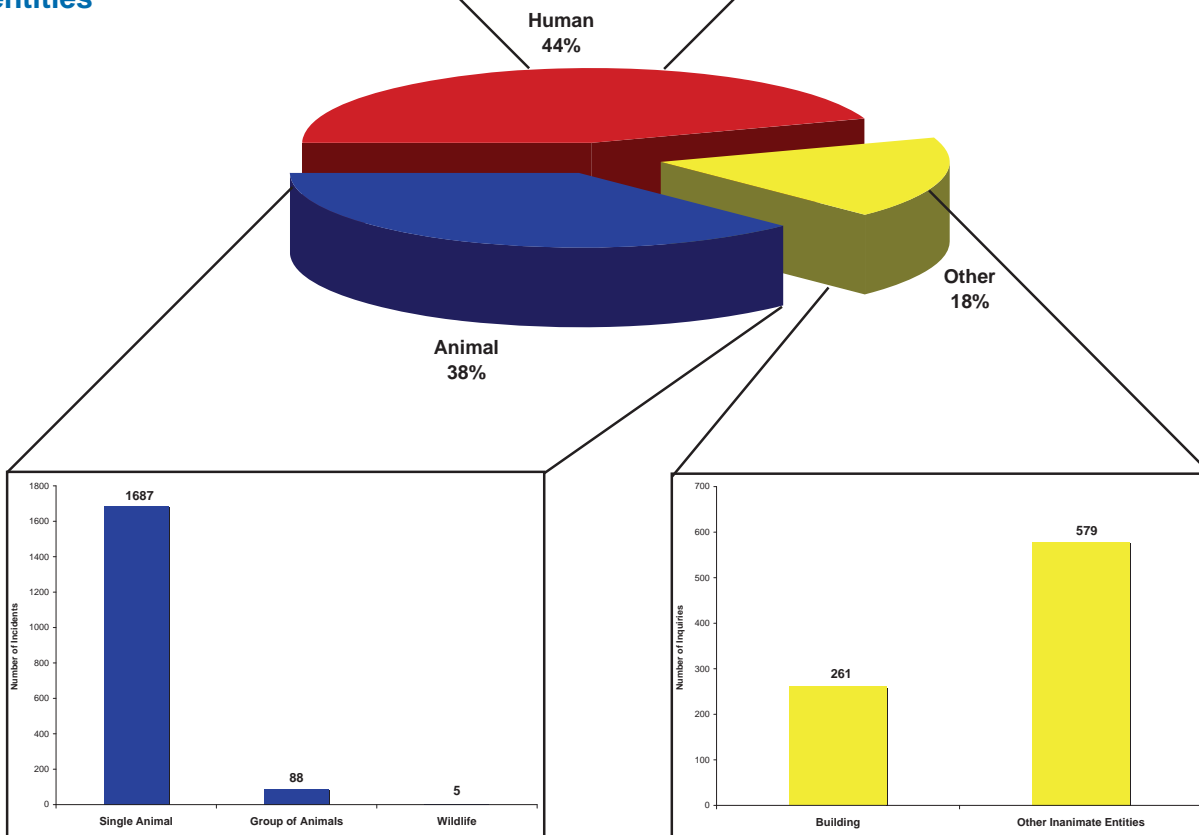


Chart 15.1. Description of entities



Graph 15.1.2. Animals involved in incidents

Graph 15.1.3. Other entities involved in incidents

ENTITY SYMPTOMS

16. Entity Symptoms

Of the 2,115 human entities involved in incidents reported to NPIC, information about their symptoms was reported for 1801 entities (Table 16.1). Of these, 28.0% reported health effects that were consistent with exposure to the pesticide in question (symptomatic), 52.1% were unclassifiable (asymptomatic or symptoms were unknown), and 19.9% reported atypical health effects (Chart 16.1). Chart 16.2 provides similar information for animal entities.

The number of animals involved in incidents reported to NPIC increased by 29% this year, which may reflect increased reporting after the US EPA's Press Release on April 16, 2009 entitled, "U.S. and Canada to Increase Scrutiny of Flea and Tick Pet Products."

Table 16.1. Reported symptoms of entities

Reported Symptoms	Number of Entities ¹				
	2005	2006	2007	2008	2009
Human Symptoms -					
Symptomatic	527(23)	472(18)	478(136)	527(192)	504(93)
Asymptomatic/Unknown	625	844	853	841	938
Atypical	352	363	390	399	359
Total Humans =	1504(23)	1679(18)	1721(136)	1767(192)	1801(93)
Animal Symptoms -					
Symptomatic	479(125)	375(101)	327(115)	375(119)	525(146)
Asymptomatic/Unknown	577	653	601	568	654
Atypical	187	219	178	289	412
Total Animals =	1243(125)	1247(101)	1106(115)	1232(119)	1591(146)
Total Symptoms =	2747(148)	2926(119)	2827(251)	2999(311)	3392(239)

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

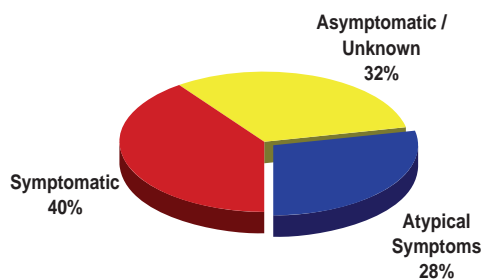
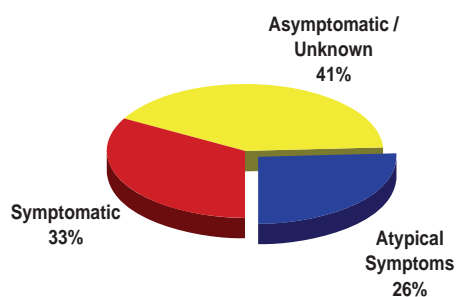


Chart 16.2. Reported symptoms in animals



DEATHS AND OTHER OUTCOMES

17. Deaths and Other Outcomes

In 2009, two human deaths were reported (Table 17.1).

There was a marked increase in reported animal deaths from 2009-2010. Of the 1,591 animal entities, there were 100 deaths, a 54% increase from last year. This may reflect increased reporting after the US EPA's Press Release on April 16, 2009 entitled, "U.S. and Canada to Increase Scrutiny of Flea and Tick Pet Products." Eleven of the animal

deaths were assigned a certainty index of "definite" or "probable." Table 17.1 summarizes this information and also lists the number of entities associated with unusual circumstances.

Table 17.2 shows the active ingredients involved in the majority of the animal deaths. Methoprene, fipronil, and permethrin were reported to be associated with the largest number of animal deaths.

Table 17.1. Reported fatalities

Reported Fatalities	Number of Entities ¹				
	2005	2006	2007	2008	2009
Human Deaths -					
Male	2(1)	2(0)	1(0)	0(0)	2(0)
Female	0(0)	0(0)	1(0)	0(0)	0(0)
Total Human Deaths =	2(1)	2(0)	2(0)	0(0)	2(0)
Animal Deaths -					
Single Animal	50(9)	51(12)	45(11)	65(3)	85(8)
Group of Animals	19(2)	12(1)	13(3)	9(1)	13(2)
Wildlife	2(2)	2(0)	0(0)	3(0)	2(1)
Total Animal Deaths =	71(13)	65(13)	58(14)	77(4)	100(11)
Other -					
Interesting/Strange	143(10)	172(10)	185(20)	176(30)	121(12)
Total Additional Outcomes =	216(24)	239(23)	245(34)	253(34)	226(23)

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."

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	21(2)	PIPERONYL BUTOXIDE	4(1)
FIPRONIL	16(0)	D-PHENOTHRIN	4(0)
PERMETHRIN	13(3)	ZINC PHOSPHIDE	3(2)
ETHOFENPROX	8(0)	BIFENTHRIN	3(1)
IMIDACLOPRID	8(0)	D-TRANS-ALLETHRIN	3(0)
MGK 264	7(2)	NAPHTHALENE	3(0)
PYRIPROXYFEN	7(2)	METALDEHYDE	3(0)
PYRETHRINS	6(2)		

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

ENTITY AGE

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 1,498 people, 27.4% were less than 5 years of age (primarily consisting of

ages 1 - 2 years), 4.8% were between the ages of 5 and 14, 4.5% were between the ages of 15 and 24, 48.5% were between the ages of 25 and 64, and 14.9% were over the age of 64.

Graph 18.1. Age of people involved in reported incidents

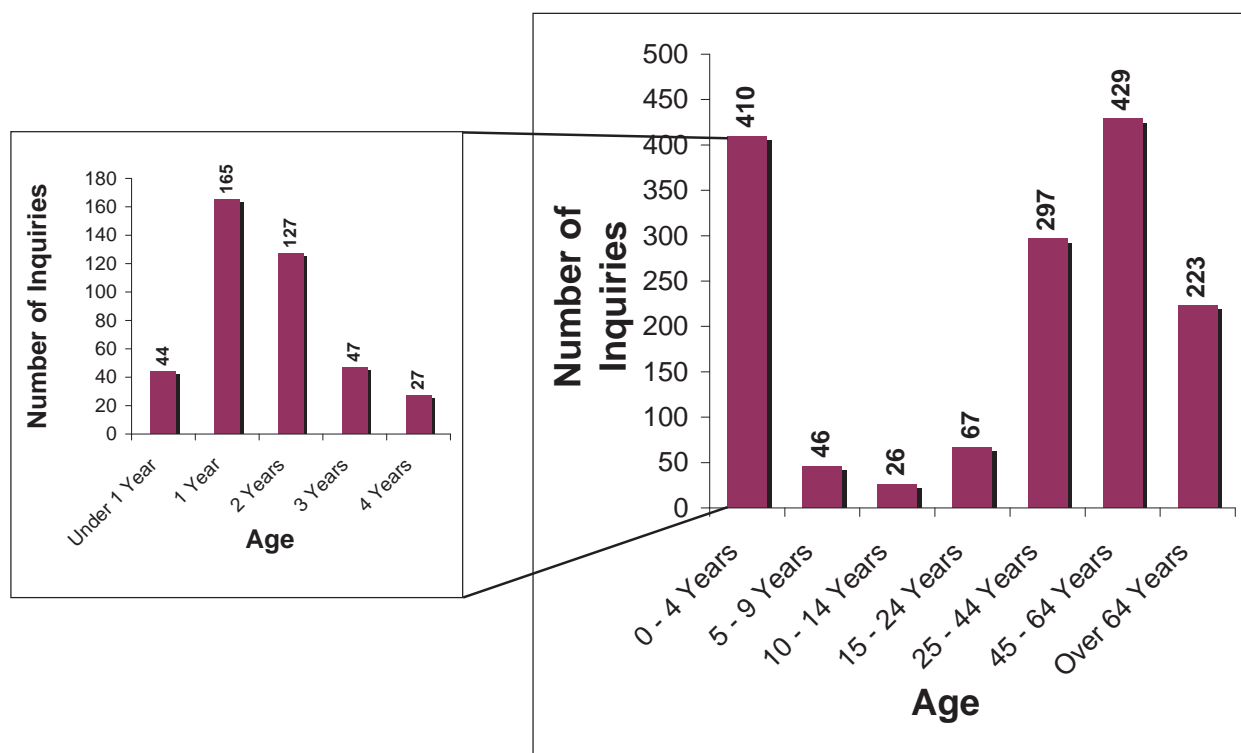


Table 18.1. Age distribution of people involved in reported incidents

Age Category	Number of People				
	2005	2006	2007	2008	2009
Under 1 Year	27	35	47	43	44
1 Year	91	119	125	135	165
2 Years	90	113	107	130	127
3 Years	42	53	54	45	47
4 Years	22	22	14	17	27
Total (0 - 4 Years) =	272	342	347	370	410
5 - 9 Years	40	46	47	43	46
10 - 14 Years	20	14	21	26	26
15 - 24 Years	57	58	70	59	67
25 - 44 Years	256	270	279	322	297
45 - 64 Years	326	346	413	434	429
Over 64 years	146	215	200	198	223

VETERINARY REPORTING

19. Veterinary Incident Reporting Portal (VIRP)

NPIC developed a web-based portal for veterinarians to report adverse reactions to pesticides among animals. The Veterinary Incident Reporting Portal (VIRP) is designed to collect medical information including the animal's breed, age, symptoms, treatment, specific pesticide information and case outcome. NPIC does not verify or QA/QC the information submitted by veterinary professionals into the VIRP. NPIC provides more detailed reports about VIRP incidents to its Project Officer, Frank Davido, and to Dr. Kit Farwell, upon request.

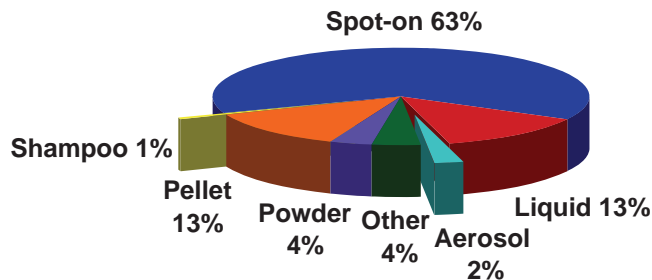
In the 2009-2010 grant year, NPIC received 156 reports from veterinarians to the VIRP involving 171 animals. Of those, 128 were dogs and 43 were cats.

Table 19.1 and Chart 19.1 summarize the formulation of products involved in VIRP incidents. The majority of incidents (63%) involved spot-on products. Other formulations included liquids (13%), pellets (13%), other (4%), powders (4%), aerosols (2%), and shampoos (1%).

Table 19.1. Product formulations as reported in VIRP

Formulation	Number of Products
	2009
Spot-on	105
Liquid	22
Pellet	21
Other	7
Powder	6
Aerosol	4
Shampoo	1
Grant Year Total =	166

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; thus totals reflect the number of symptoms reported as opposed to the number of animals. Of the reported symptoms, 46% were classified as neurological. Twenty-one percent were classified as dermatological, 17% as gastrointestinal, 15% as other and 1% as none.

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, 46% of the cases were ongoing. Thirty-eight percent of the affected animals had recovered (38%) at the time of the report. Six percent of the animals experienced continuing illness, 4% resulted in the death of the animal, 3% were recovered with sequelae, and 3% were classified as unknown outcomes.

Table 19.2. Animal symptoms as reported in VIRP

Symptom	Number of Animals
	2009
Dermatological: Irritant	44
Dermatological: Sloughing	3
Dermatological: Ulcer	8
Dermatological Total	55
Gastrointestinal: Diarrhea	8
Gastrointestinal: Vomiting	37
Gastrointestinal total	45
Neurological: Depression	16
Neurological: Excited	25
Neurological: Seizure	23
Neurological: Tremor	58
Neurological Total	122
None	4
Other	41
Grant Year Total =	267

Chart 19.2. Animal symptoms as reported in VIRP

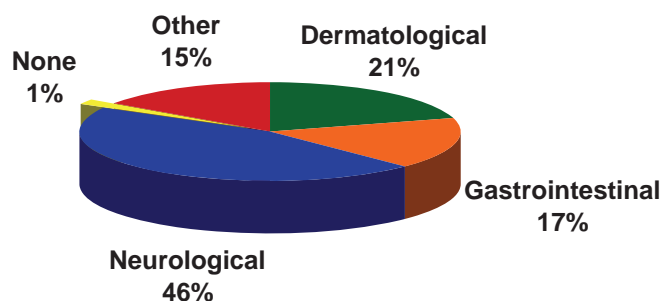
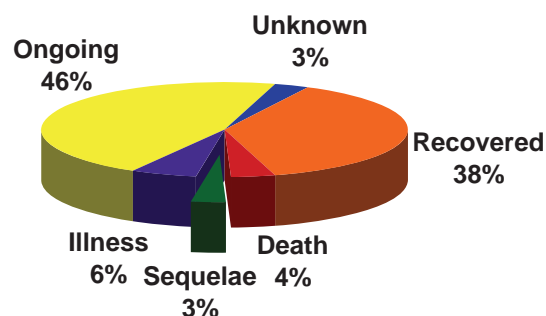


Table 19.3. Incident outcomes as reported in VIRP

Outcome	Number of Animals
	2009
Ongoing	79
Recovered	65
Illness	10
Death	7
Sequelae	5
Unknown	5
Grant Year Total =	171

Chart 19.3. Incident outcomes as reported in VIRP



REPORT ON SUBCONTRACTS

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 the current year, 43 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. The nature of transferred inquiries is detailed in the NPIC quarterly reports.

Language Line Services, Inc.

Language Line Services, Inc. provides real-time access to over-the-phone interpretation services, seven days per week. 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 2009 grant year, NPIC utilized the service to provide risk communication to 69 clients in Spanish, Cantonese or French.



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



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