

Division of Solid & Hazardous Materials

**FINAL ANNUAL REPORT
FOR
NEW YORK STATE
PESTICIDE SALES AND
APPLICATIONS
2005**

ELIOT SPITZER, *Governor*

Alexander B. Grannis, *Commissioner*

ACKNOWLEDGMENTS

The Department wishes to acknowledge the cooperation and assistance of Cornell University in the preparation and development of this annual report.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	v
I. INTRODUCTION	1
II. IMPLEMENTATION OF THE PESTICIDE REPORTING PROGRAM	
A. Public Outreach and Education	1
B. Quality Control	2
C. Electronic Reporting	3
D. Cornell University	4
E. New York State Department of Health (NYSDOH) and Health Research Science Board (HRSB)	4
F. Breast Cancer Environmental Risk Factors (BCERF)	6
G. Water Monitoring Program	9
H. Enforcement Activities	10
III. REPORTING DATA	
A. Reports Received	11
B. General Synopsis of Data	11
C. Data Summaries Overview	14
(See V. Volumes, For Data Summaries)	
D. Data Qualifications	15
E. Data Management Methodology	17
IV. APPENDICES	
A. Glossary	22
B. Contact List	23

List of Figures

- Figure 1: Pesticide Applications by Weight (in Pounds) for New York State by County During 2005 Following Page 23
- Figure 2: Pesticide Applications by Volume (in Gallons) for New York State by County During 2005 Following Page 23
- Figure 3: Pesticide Sales by Weight (in Pounds) for New York State by County During 2005 Following Page 23
- Figure 4: Pesticide Sales by Volume (in Gallons) for New York State by County During 2005 Following Page 23
- Figure 5: Relative Use (in Pounds) of the Reported Top Ten Pesticide Products Applied by Certified Commercial Applicators - 2005 Following Page 23
- Figure 6: Relative Use (in Gallons) of the Reported Top Ten Pesticide Products Applied by Certified Commercial Applicators - 2005 Following Page 23
- Figure 7: Relative Amount (in Pounds) of Reported Top Ten Restricted and General Use Agricultural Pesticide Products Sold by Commercial Permit Holders to Certified Private Applicators -2005 Following Page 23
- Figure 8: Relative Amount (in Gallons) of Reported Top Ten Restricted and General Use Agricultural Pesticide Products Sold by Commercial Permit Holders to Certified Private Applicators - 2005 Following Page 23

List of Tables

- Table 1: Final Summary of Total Quantities Statewide Page 11
- Table 2: Final Summary of Quantity by County (Applications by Commercial Applicators Only) Page 12

V. VOLUMES

Sales Data (Commercial Permit holders)

Annual Report for Pesticide Sales to Certified Private Applicators (summarized by product).

Annual Report for Pesticide Sales to Certified Private Applicators (summarized by county).

Annual Report for Pesticide Sales to Certified Private Applicators (summarized by zip code).

Manufacturers, Compounders, and Importers Sales Data

Annual Report for Restricted Pesticide Sales to Commercial Permit Holders for Resale (summarized by product).

Annual Report for Restricted Pesticide Sales to Commercial Applicators for End Use (summarized by product).

Usage Data

Applicator/Technician Pesticide Applications in New York State (summarized by product).

Applicator/Technician Pesticide Applications in New York State (summarized by county).

Applicator/Technician Pesticide Applications in New York State (summarized by zip code).

Product Name Data

List of Pesticide Products by Name and EPA Registration Number

Executive Summary

The New York State Department of Environmental Conservation (Department), in conjunction with Cornell University, presents this report on the final 2005 pesticides sales and application data submitted under Environmental Conservation Law Article 33, Title 12, known as the Pesticide Reporting Law (PRL). The finalized data have been incorporated into a master database maintained by Cornell University. This database is accessible by the public and is an information source for health researchers or other users of the data.

The final data show there were greater than 6 million “records” of applications and sales reported for 2005, totaling over 575 million keystrokes of data. The total amount of pesticides reported as applied by commercial applicators in 2005 was 2,818,640 gallons and 17,560,974 pounds. This compares to 2,700,882 gallons and 20,628,470 pounds applied in 2004.

Please note: Although the Department and Cornell have gone to great lengths to assure the quality of the data, there are still concerns regarding the quality of the data received from the regulated community. Users of the data should review Section III.D., Data Qualifications, prior to use. In addition, the Department and Cornell attempt to provide the users with the best data available and, therefore, occasional revisions to the data are required. Users are advised to go to the following website for the most recent data:

www.dec.ny.gov/chemical/8523.html

The detailed data on applications and sales are voluminous, and contained in the eight separate data summaries included as part of this report (see Section III. C. Data Summaries Overview, for a description of each summary). These data summaries are available on the Department’s website www.dec.ny.gov/chemical/8523.html or on CD ROM. For a copy on CD ROM, please call 1-518-402-8748.

For the 2005 report year, the total number of applicators, technicians and permittees reporting was:

16,919 Commercial Applicators and Technicians
289 Commercial Permittees (Sales)

These figures indicate 93 percent of the 18,227 certified applicators and technicians, and 94 percent of the 308 commercial permittees reported for 2005. The Department will continue to provide outreach and education to the regulated community in an attempt to achieve maximum compliance with the reporting requirement.

The Department, in conjunction with Cornell, continues to operate a website for regulated entities to report their sales and applications data. The electronic reporting programs enable users to keep their pesticide records on a computer and to report their sales and applications to the Department. The data can be submitted to the Department via e-mail, floppy disk, zip disk, CD ROM, or FTP (File Transfer Protocol). This user-friendly approach to submission improves the quality of the data received. It is also a more cost effective method of reporting for both the regulated community and the Department.

Electronic submissions of PRL sales and applications reports for 2005 increased by 4.6%, compared with 2004. These submissions contained data for 8,740 applicators/technicians and 161 commercial permit holders, compared to 8,378 applicators/technicians and 131 commercial permit holders in 2004. The total number of 2005 records was 3,897,655 compared to 3,678,059 records in 2004, a 5.5% increase.

As part of our standard quality assurance processes, the Department and Cornell identified reports that contained quantities that appeared to fall outside of accepted parameters. Staff reviewed reports containing these “out-of-range” quantities and the responsible applicators and businesses were contacted. Reporting errors were corrected by staff with the approval of the applicator or business. The corrected data were forwarded to Cornell to supercede the original reports in the database.

Several applicators incorrectly reported applications for some cooling tower and wood preservative products in pounds rather than gallons. Also, some of the data from sales of these type products were reported incorrectly. These errors dramatically inflated the quantities of those products in the data reports. Cornell was able to convert the quantities for 114 of those products from pounds to the liquid quantities. This resulted in converting 839,801 pounds (as originally reported), into 147,693 gallons. The 2005 annual report reflects the corrected data.

The Department’s long-term goal is to continually improve the reporting rate and data quality by raising the threshold for report acceptance each year. The Department continues to refine its front-line quality control program where Department staff evaluate incoming reports to ensure basic criteria were met. The criteria were established to maximize the volume of data that would be transferrable into Cornell’s master database. If a report did not meet these criteria, Department staff sought to correct the report with the person filing the report. If the errors were too numerous, the report was rejected and returned to the business or applicator to be corrected and resubmitted.

The above procedures helped eliminate some of the constraints on data quality identified in previous annual reports; however, some constraints remain. The Department intends to eliminate as many constraints as possible by expanding the list of acceptance

criteria. In this way, the acceptance threshold will rise continuously but gradually, paralleling the learning curve for the regulated community, the Department and Cornell. The goal is to maximize the quantity and quality of data available to health researchers and other users of the data.

The Department took enforcement actions against those entities who failed to report for the year 2005. An Order on Consent was sent to approximately 1,393 certified commercial pesticide applicators and technicians and commercial permit holders who did not report for the year 2005. As a result of this action, many of those entities were assessed a civil penalty. Many other applicators and technicians elected to voluntarily surrender their certification instead of paying a penalty. The result of this surrender is they are no longer certified to make commercial pesticide applications. Those entities who did not settle the violation will not be granted renewal privileges until their violation is resolved.

To make the information presented more easily understood and in response to recommendations, the Department is moving toward translating the volume (gallons) of pesticides reported into pounds. In order to convert the volume of a liquid into pounds, the specific gravity of the liquid must be known. The Department changed its product registration practices to capture the specific gravity of each liquid pesticide product as it is registered for sale or use in New York State. There are currently 13,121 registered products in New York State. Of these, approximately 6,100 are liquid formulations. To date, the specific gravity data for most of those products has been obtained. We expect to complete this transition within the coming months and at that point, will be able to provide the information as pounds only.

The following totals are those most frequently requested:

Total amount of pesticides applied by commercial applicators in New York State in 2005:

- 2,818,640 Gallons
- 17,560,974 Pounds

The three largest total amounts of pesticide products applied by commercial applicators, by weight, were:

- Lesco Pre-M Plus Fertilizer Insecticide (EPA Registration No. 10404-82) *
- Dimension Herbicide 0.10% plus Fertilizer (EPA Registration No. 10404-85) *
- Andersons Fertilizer with Propendi Herbicide (EPA Registration No. 9198-173) *

* This product contains small amounts of pesticides combined with large amounts of fertilizer and other ingredients. The weight reported here is the weight of all ingredients, not the weight of pesticides alone.

The three largest total amounts of pesticide products applied by commercial applicators, by volume, were:

- Superchlor Disinfectant (EPA Registration No. 59074-20001)
- Surchlor Plus Disinfectant (EPA Registration No. 9359-2)
- Hypochlorite Solution (EPA Registration No. 52483-1)

Total amount of pesticides sold to private applicators for agricultural use in New York State in 2005:

- 715,642 Gallons
- 6,155,364 Pounds

The three largest total amounts of pesticide products sold to private applicators, by weight, were:

- Signature Fertilizer with merit 0.2% Insecticide (EPA Registration No. 432-1349-65783)
- Penncozeb 75 DF Fungicide (EPA Registration No. 4581-370)
- Force 3G Insecticide (EPA Registration No. 100-1075)

The three largest total amounts of pesticide products sold to private applicators, by volume, were:

- Lumax Selective Herbicide (EPA Registration No. 100-1152)
- Damoil Dormant and Summer Spray Oil Insecticide (EPA Registration No. 19713-123)
- Prowl 3.3 EC Herbicide (EPA Registration No. 241-337)

Total amount of pesticides sold to distributors for resale in New York State in 2005 was:

- 495,584 Gallons
- 4,303,018 Pounds

Total amount of pesticides sold to applicators for end use in New York State in 2005 was:

- 98,421 Gallons
- 1,535,866 Pounds

I. INTRODUCTION

The Department, in conjunction with work conducted by Cornell University, presents a final data summary for calendar year 2005 of pesticide sales and use. This report also describes refinements made in 2005 to the pesticide reporting program and provides detailed information in eight data summaries. These summaries provide pesticide sales and use information by county, zip code and product.

It is not the Department's role, for purposes of this report, to draw any correlations between pesticide use and health impacts. This critical activity is the prerogative of independent health researchers who elect to use the database.

II. IMPLEMENTATION OF THE PESTICIDE REPORTING PROGRAM

The Department's pesticide reporting program performs a range of functions: outreach to industry, environmental interest groups, cancer research advocacy groups and the public; interpretation and clarification of statutory and regulatory requirements; and development and execution of procedures for reporting, data management, and regulatory compliance.

A. Public Outreach and Education

The Department places primary emphasis on the education of the regulated community to encourage the highest level of compliance and obtain the most accurate data possible.

The Department continues to communicate with regulated entities through an e-mail address (pri@gw.dec.state.ny.us) and telephone number 518-402-8748. Through these outlets, customers can contact the Department, have questions answered, request report forms or conduct other business associated with the pesticide program.

The Department's website (www.dec.ny.gov/chemical/27506.html) is also available for Pesticide Reporting Law information. This website provides internet access to Pesticide Reporting Law information including a link to the electronic reporting website, a copy of the statute, forms that can be downloaded and printed, general guidance materials and copies of past annual reports, with a link to Cornell's website that contains final data for 1997 through 2005.

B. Quality Control

The Department continues to enhance and streamline the process for reporting, as well as the system for managing over 20,000 reports that are received annually.

The Department has continued to refine its front-line quality control program where Department staff quickly evaluate incoming reports to ensure basic criteria were met. The criteria were established to maximize the volume of data that would be transferrable into Cornell's master database. To be accepted, a report must:

- a) be in the Department's standard format;
- b) contain complete data in every column;
- c) have apparently valid certification numbers for all certified commercial applicators and technicians or a commercial permit number;
- d) be legible;
- e) list the "undiluted" quantity of pesticide used;
- f) list an acceptable "unit of measurement";
- g) list the exact date of application; and
- h) contain complete addresses (including house number and street name, full name of city or village and zip code).

If a report did not meet these criteria, Department staff sought to correct the report with the person filing the report. If the errors were too numerous, the report was rejected and returned to the business or applicator to be corrected and resubmitted.

As part of our standard quality assurance processes, the Department and Cornell identified reports that contained quantities that appeared to fall outside of accepted parameters. Staff reviewed reports containing these "out-of-range" quantities and the responsible applicators and businesses were contacted. Reporting errors were corrected by staff with the approval of the applicator or business. The corrected data were forwarded to Cornell to supercede the original reports in the database.

Cornell has developed several computer validation programs which are used to verify certification identification numbers and commercial permit numbers. Those programs also automatically verify and validate several other key elements of the data. Cornell then provides error reports to the Department. Department staff then conduct outreach with the person filing the report and attempt to correct the reports and data.

Several applicators incorrectly reported applications for some cooling tower and wood preservative products in pounds rather than gallons. Also, some of the data from sales of these type products were reported incorrectly. These errors dramatically inflated

the quantities of those products in the data reports. Cornell was able to convert the quantities for 114 of those products from pounds to the liquid quantities. This resulted in converting 839,801 pounds (as originally reported), into 147,693 gallons. The 2005 annual report reflects the corrected data.

The above procedures helped to eliminate some of the constraints on data quality identified in previous annual reports; however, some constraints remain. The Department intends to eliminate as many constraints as possible by expanding the list of acceptance criteria. In this way, the acceptance threshold will rise continuously but gradually, paralleling the learning curve for the regulated community, the Department and Cornell. The goal is to maximize the quantity and quality of data available to health researchers and other users of the data.

C. Electronic Reporting

The Department, in conjunction with Cornell, continues to operate a website that allows regulated entities to report their PRL sales and applications data electronically. The electronic reporting programs enable users to keep their pesticide records on a computer and to report their sales and applications to the Department. The data can be submitted to the Department via e-mail, floppy disk, CD ROM, or FTP. This user-friendly approach to PRL data submission improves the quality of the data received and facilitates the transmission of such data. It is also a more cost effective method of reporting for both the regulated community and the Department.

A website established in 2000 (www.nysprl.com) provides electronic reporting options for the regulated community. The electronic reporting options are also available on CD ROM upon request. We also continue to provide a help desk for electronic reporting that can be accessed both by telephone and e-mail.

Electronic submissions of PRL sales and applications reports for 2005 increased by 4.6% over 2004. These submissions contained data for 8,740 applicators/technicians and 161 commercial permit holders, compared to 8,378 applicators/technicians and 131 commercial permit holders in 2004. The total number of 2005 records was 3,897,655 compared to 3,678,059 records in 2004, a 5.5% increase.

D. Cornell University

The Pesticide Management Education Program (PMEP) at Cornell validates the report data in accordance with the Department's requirements. Cornell produces all the data summaries required by the legislation and any additional statistical summaries requested by the Department. The database tracks the quantities and locations of pesticides applied by commercial applicators. It also tracks the quantities and application locations of restricted use and agricultural general use pesticides purchased by private applicators, as well as quantities of restricted use pesticides sold by manufacturers in New York State.

An offshoot of the pesticide sales and use reporting database has been the enhancement of several databases that track pesticide product registrations in New York State. The Product, Ingredient, and Manufacturer System (PIMS) located at <http://pmepp.cce.cornell.edu/pims/> provides access to currently registered and archived (registered since 1987) pesticide products. The database can be queried by various indexes, including active ingredient, product label name, EPA registration number and registrant/manufacturer/payer. Label images are now accessible for those products registered (or previously registered) in New York and access is also available to primary labels registered by the Environmental Protection Agency (EPA). A separate database developed by the National Pesticide Information Retrieval System (NPIRS) Office at Purdue University is available and allows for crop/site/pest/label searches using the New York State product registration data.

E. New York State Department of Health (NYSDOH) and Health Research Science Board (HRSB)

The HRSB was established within NYSDOH by legislation in 1996 (Chapter 279 of the Laws of 1996), with amendments in 1997 (Chapter 219 of the Laws of 1997). The Board's major responsibilities include reviewing requests for access to confidential Pesticide Registry and pesticide application information by researchers engaged in human health related research, awarding grants for research and education projects financed by the Breast Cancer Research and Education Fund, and advising on pesticide related issues and the operations of the Pesticide Sales and Use Database.

Researcher Access to Confidential Pesticide Registry or Pesticide Application Information for Human Health Research

Confidential information from the Pesticide Sales and Use Data Base (also called the Pesticide Registry) collected by NYSDEC and pesticide application information maintained by private applicators are, with certain restrictions, available to scientists

involved in human health research. Any information, including name and address, that could identify a commercial or private applicator of pesticides, including a farmer, or anyone who receives the services of a commercial applicator is considered confidential information. Documents for researchers interested in obtaining confidential pesticide registry information, or pesticide application information, were modified in 2004. The revised documents are available at the NYSDOH website <http://www.health.state.ny.us/environmental/pesticide/reporting/index.htm> or by calling NYSDOH toll-free at 1-800-458-1158 extension 2-7820.

The Board's Committee on Access to Pesticide Registry and Pesticide Application Information meets to discuss each application by a researcher for confidential information. The Committee makes recommendations to the Board, which decides whether or not to approve the request. The process requires four to six months.

Recent Applications for Confidential Pesticide Registry Information

The Board received one application for confidential pesticide registry information during 2004. The request was from Dr. Tammo Steenhuis of the Cornell University Department of Biological and Environmental Engineering and was for a project entitled "Surveying Upstate New York Well Water for Pesticide Contamination (Schenectady County)." The Board approved the request with conditions, which were met by the researcher. The data was provided to the researcher.

No requests were received by the Board during 2005 for confidential pesticide registration information.

Evaluation of Pesticide Reporting and Board Recommendations

One of the duties of the Board is to report to the Legislature in the biennial report on "an evaluation of the basis, efficiency and scientific utility of the information derived from pesticide reporting." To fulfill this mandate, the Board prepared the document "Results of the 2002-2003 Survey on Pesticide Reporting and Board Recommendations," in which the results of a survey of interested parties are discussed and recommendations are made. One recommendation made by the Board was that the possibility be explored of using pesticide poisoning data in New York State in conjunction with the Pesticide Sales and Use Database.

To provide the Board with more information about the Pesticide Poisoning Registry, a presentation was made by Robert Stone, Ph.D., of the New York State Department of Health at the November 4, 2005 meeting of the Board. Dr. Stone described the legislated reporting requirements, the investigation procedure, case follow-up activities, outreach

activities, and information contained in the database.

Information on the Pesticide Poisoning Registry

The NYSDOH Pesticide Poisoning Registry (PPR) was established by regulation in 1990. Physicians, health facilities and clinical laboratories are to report suspected or confirmed pesticide poisonings and certain laboratory results that could be indicative of pesticide over-exposure to the NYSDOH within 48 hours. The 48-hour reporting requirement allows NYSDOH staff to investigate and intervene, in a timely fashion, in any situation where there is a continued risk of pesticide over-exposure or potential poisoning. The PPR was also developed as a surveillance system to identify individuals or groups at risk of acute pesticide poisoning and to develop strategies to reduce those risks. Another goal of the PPR is to increase the medical community's awareness of pesticide-related health effects and monitor the acute effects of pesticide over-exposure.

F. Breast Cancer Environmental Risk Factors

The Cornell University Program on Breast Cancer and Environmental Risk Factors (BCERF) is part of the Sprecher Institute for Comparative Cancer Research at the College of Veterinary Medicine. BCERF was created in 1995 to respond to growing public concern regarding elevated breast cancer rates in certain counties in New York State (NYS). BCERF has continued its mission to address the relationship between environmental factors and breast cancer risk through integrated research and education strategies, and outreach to targeted groups throughout NYS.

BCERF critically evaluates the scientific information on environmental chemicals, diet, obesity, and lifestyle factors, and the relationship of these factors to breast cancer risk. This translational research allows for the synthesis and interpretation of a wide range of research on these environmental factors, and whether they may affect breast cancer risk. BCERF has also conducted research on cancer risk perception in target populations, including teachers (who have a higher risk of breast cancer) and lawn care pesticide applicators. Research highlights include:

- * In cooperation with the Cornell PMEP, developed a on-line, searchable database on the cancer risk classification of 111 active ingredients used in over 2,800 turf-grass pesticide products registered for use in NYS (see <http://envirocancer.cornell.edu/turf/index.cfm>)
- * Completed a risk communication pilot study evaluating perceptions of cancer risk in turf pesticide applicators and educators using survey questionnaire and focus group methodology. Results of this study were presented at the December 2006 Society

for Risk Analysis meetings, and have been submitted for publication.

- * Together with funding from the US Dept. of Agriculture formula funds, completed a study of perceptions of breast cancer risk in a state-wide survey of teachers (results based on 1,100 returned questionnaires). This study was done in collaboration with the Cornell Department of Communication, and the National Educational Association (this union is now the New York State United Teachers). A summary of study results appeared in the May-June 2006 issue of the NEA newsletter that was distributed state-wide, and was published in the BCERF newsletter (<http://envirocancer.cornell.edu/BCERResearch/TeachersStudy.pdf>).
- * Published a critical evaluation of the cancer risk (emphasis on breast cancer risk) of a mycotoxin found in foods called ochratoxin A (*Journal of Toxicology and Environmental Health, Part B: Critical Reviews*, vol. 9, pg. 265-296, 2006).
- * Completed compilation of data on scenarios for workplace exposures to 33 mammary carcinogens as a part of the Chemicals in the Workplace project.
- * Completed a critical review on “Chemical Exposures in the Workplace; Effect on Breast Cancer Risk Among Women,” published in the *American Association for Occupational Health Nurses Journal*, vol. 54, pg. 270-279, 2006.
- * Through funding from the US Dept. of Agriculture/Cooperative State Research, Education and Extension Service, BCERF conducts intervention research and outreach programming on obesity prevention in communities. Obesity is a preventable breast cancer risk factor. A summary of this project can be viewed at: (<http://envirocancer.cornell.edu/BCERResearch/obesity.cfm>).

BCERF translates scientific findings and data into understandable and accessible information and educational programming for target populations. A summary of educational programming developed and outreach efforts conducted in 2006 follows:

- * Fact sheet no. 54 on “Farm Family Pesticide Exposure: New Pathways for Understanding Risk” was distributed to farm families at Empire Farm Days in August 2006.
- * The quarterly newsletter, *The Ribbon*, with a symposium-like format, was distributed to over 3,500 print subscribers, and can be accessed electronically on the BCERF web site (<http://envirocancer.cornell.edu/newsletter/c2006.cfm>).

- * An article on health risks of pesticides and use of precautionary approaches was developed for horticulturalists and nursery-greenhouse workers, and was published in the *American Nurseryman* magazine (pg. 26-28, 30-31, February 1, 2006).
- * Two Regional Cancer and Environment Forums were held in 2006, one at the Roswell Park Cancer Center, Buffalo, NY in June, 2006 (70 attendees), and the second in September 2006 at Planting Fields Arboretum State Historic Park in Oyster Bay, NY (65 attendees). (See summaries at <http://envirocancer.cornell.edu/program/adhocarchive.cfm>).
- * Two long-distance learning workshops were held in February 2006 in cooperation with the NYS Breast Cancer Support and Education Network, on the themes of biomonitoring and endocrine disrupting chemicals. CDs with transcripts of the presentations, PowerPoint slides, and PDFs of all handouts were distributed to 56 individuals and cancer organizations in NYS, and new web pages featuring biomonitoring resources were developed (<http://envirocancer.cornell.edu/learning/biomonitor/biomonitor.cfm>).
- * The BCERF web site (<http://envirocancer.cornell.edu>) received an average of 75,000 hits per month in 2006 (monthly total for hits to internal pages). Monthly hits to the BCERF home page increased 30% from January 2005 to December 2006. Usability testing of the BCERF site was conducted during 2006, and results are being compiled.
- * The searchable Environmental Risk Factor Bibliographic Database was expanded to include over 10,800 citations on the environment and cancer risk (<http://envirocancer.cornell.edu/erf/libsearch.cfm>).
- * A new feature called “Frequently Asked Questions” (FAQs) were added to the BCERF web site with questions on diet, lifestyle, biology, biomonitoring, environmental monitoring, environmental chemicals, hormones, pets and cancer, and cancer clusters (<http://envirocancer.cornell.edu/faq/qa.cfm>).
- * Outreach promoting BCERF’s web site and resource materials was provided via an extensive mailing to NYS breast cancer organizations (n=125), American Cancer Society Offices in the Northeast (n=88), and Cornell Cooperative Extension contacts and county offices (n=194).
- * BCERF informed policy makers of educational resources available for legislators’ and constituents’ use by distributing packets to NYS Assembly members and

Senators on the Agriculture, Environmental Conservation, and Health Committees (121 members). Educational resource packets were provided to all members of the US Congress through “Dear Colleague” letters via the offices of Senator Hillary Rodham Clinton, and Representatives Nita Lowey and Maurice Hinchey.

BCERF may be contacted by e-mail at *breastcancer@cornell.edu* or by telephone at (607) 254-2893. The BCERF mailing address is: BCERF Program, Vet Box 31, College of Veterinary Medicine, Cornell University, Ithaca, New York 14853.

G. Water Monitoring Program

The Environmental Conservation Law §33-0714, Water Quality Monitoring for Pesticides, requires the Department to conduct a water quality monitoring program on Long Island, and throughout the State, to provide an adequate understanding of the health and environmental impacts of pesticide use in the State. The Department uses this program to make pesticide registration decisions, review suspensions and cancellations of State pesticide registrations and assess the status, trends and health impacts of any pesticide contamination in the ground and surface water of NYS. The Department works with the United States Geological Survey (USGS), the NYS Water Resources Institute (NYSWRI) and any other parties necessary to accomplish these goals.

Given the very broad mandate in the PRL and the large area of NYS to be investigated, the Department decided to first investigate the impacts of long-term pesticide use in several areas with high groundwater usage. These areas generally include current and past agricultural use areas, golf courses, vineyards and urban areas with high pesticide use. To that end, the Department contracted with the USGS, the Suffolk County Department of Health Services (SCDOHS) and the NYSWRI to perform various ground and surface water studies. Once adequate information has been gathered from these areas, the focus of the program will move toward other areas of the State to determine impacts from pesticide use to ground and surface water.

The Department conducts a statewide ambient groundwater sampling program through USGS which includes analysis for pesticide and pesticide degradate occurrence. Other categories of analysis include field parameters, major ions, trace metals, VOCs, radon, bacteria, and nutrients. Sampling is conducted on a rotating basis in major watersheds in a five year cycle. For the USGS reports, go to <http://ny.usgs.gov/> for information.

The SCDOHS has been investigating the impact of pesticide use on groundwater in Suffolk County, Long Island. It has also analyzed a limited number of samples of groundwater from Nassau County, Long Island. For the most recent report by the Suffolk

County Department of Health Services, e-mail ppr@gw.dec.state.ny.us or call 1-518-402-8768.

The NYSWRI is assessing the status, trends and health impacts of any pesticide contamination in the groundwater of aquifers in upstate New York. It is also developing a five-year plan for evaluating the health and environmental impacts of groundwater in upstate New York.

H. Enforcement Activities

The Department used a variety of methods in 2005 to bring regulated entities into compliance with reporting as required under the Pesticide Reporting Law. Reporting forms and information were available through the internet, telephone, e-mail and direct mailings from the Department.

As a supplement to the education and outreach efforts, the Department took enforcement actions against those entities who failed to report for 2005. An Order on Consent was sent to approximately 1,393 certified commercial pesticide applicators and technicians and commercial permit holders who did not report for 2005. As a result of this action, many of those entities were assessed a civil penalty. Many other applicators and technicians elected to voluntarily surrender their certification instead of paying a penalty. The result of this surrender is they are no longer certified to make commercial pesticide applications. Those entities who did not settle the violation will not be granted renewal privileges until their violation is resolved.

In addition, the Department also addressed other areas of concern regarding pesticide activities discovered while reviewing annual reports (i.e., expired or unregistered businesses; application of unregistered pesticide products; applications of pesticides by non-certified applicators; etc.).

III. REPORTING DATA

A. Reports Received

For the 2005 report year, the total number of applicators, technicians and permittees reporting was:

16,919 Commercial Applicators and Technicians
289 Commercial Permittees (Sales)

These figures indicate that 93 percent of the 18,227 certified applicators and technicians, and 94 percent of the 308 commercial permittees reported for 2005. The Department will continue to provide outreach and education to the regulated community in an attempt to achieve maximum compliance with the reporting requirement.

B. General Synopsis of Data

The following tables provide an overview of major data categories:

Table 1
Calendar Year 2005
Final Summary of Total Quantities Statewide

Category	Number of Pesticide Products	Amount	
		gal.	lbs.
Applied by Commercial Applicators	3,948	2,818,639.90 gal.	17,560,974.13 lbs.
Sold for Resale*	318	495,584.17 gal.	4,303,017.66 lbs.
Sold for End Use*	296	98,420.84 gal.	1,535,865.99 lbs.
Sold to Private Applicators	1239	715,642.13 gal.	6,155,363.93 lbs.

*Note: Restricted use pesticide only

Table 2
Summary of Commercial Pesticide Applications by County
for Calendar Year 2005

County	Amount**	
Albany	86,704.00 gal.	618,330.96 lbs.
Allegany	4,989.18 gal.	6,913.25 lbs.
Bronx	9,671.07 gal.	103,109.36 lbs.
Broome	8,260.06 gal.	185,563.64 lbs.
Cattaraugus	10,054.53 gal.	26,746.39 lbs.
Cayuga	55,932.06 gal.	63,918.60 lbs.
Chautauqua	30,493.28 gal.	76,770.73 lbs.
Chemung	2,874.62 gal.	59,498.05 lbs.
Chenango	7,960.07 gal.	90,505.51 lbs.
Clinton	20,252.68 gal.	40,842.95 lbs.
Columbia	19,900.16 gal.	36,296.53 lbs.
Cortland	6,068.96 gal.	36,974.10 lbs.
Delaware	7,179.14 gal.	19,534.12 lbs.
Dutchess	17,542.38 gal.	430,024.53 lbs.
Erie	53,904.80 gal.	1,033,915.55 lbs.
Essex	249,819.43 gal.	33,150.57 lbs.
Franklin	11,699.57 gal.	23,088.34 lbs.
Fulton	2,914.97 gal.	17,524.39 lbs.
Genesee	20,790.28 gal.	29,664.98 lbs.
Greene	129,435.06 gal.	364,305.72 lbs.
Hamilton	208.44 gal.	21,425.75 lbs.
Herkimer	19,675.85 gal.	44,811.92 lbs.
Jefferson	19,891.34 gal.	67,150.30 lbs.
Kings	22,041.66 gal.	170,854.48 lbs.
Lewis	14,441.30 gal.	48,351.43 lbs.
Livingston	9,434.32 gal.	16,874.53 lbs.
Madison	11,253.90 gal.	73,952.20 lbs.
Monroe	59,647.26 gal.	1,153,480.87 lbs.
Montgomery	6,176.22 gal.	44,223.98 lbs.
Nassau	140,807.70 gal.	1,880,657.18 lbs.
New York	116,762.61 gal.	289,184.40 lbs.
Niagara	53,422.91 gal.	191,059.86 lbs.
Oneida	15,861.39 gal.	269,880.28 lbs.
Onondaga	69,753.09 gal.	684,937.75 lbs.
Ontario	22,527.05 gal.	169,356.20 lbs.

County	Amount**	
Orange	49,822.67 gal.	474,879.28 lbs.
Orleans	5,247.43 gal.	15,240.08 lbs.
Oswego	114,555.17 gal.	41,537.33 lbs.
Otsego	9,263.78 gal.	27,892.49 lbs.
Putnam	5,909.80 gal.	188,700.17 lbs.
Queens	111,528.30 gal.	184,586.78 lbs.
Rensselaer	21,793.08 gal.	110,239.11 lbs.
Richmond	10,333.80 gal.	92,681.11 lbs.
Rockland	26,985.64 gal.	626,237.63 lbs.
Saratoga	55,952.79 gal.	494,419.16 lbs.
Schenectady	10,865.73 gal.	302,695.92 lbs.
Schoharie	3,195.54 gal.	5,325.49 lbs.
Schuyler	1,784.45 gal.	5,249.86 lbs.
Seneca	10,084.96 gal.	21,780.71 lbs.
St. Lawrence	39,585.23 gal.	71,500.56 lbs.
Steuben	4,356.06 gal.	55,977.67 lbs.
Suffolk	255,722.51 gal.	3,310,351.25 lbs.
Sullivan	3,409.27 gal.	43,581.55 lbs.
Tioga	2,195.64 gal.	16,485.73 lbs.
Tompkins	6,276.25 gal.	57,111.34 lbs.
Ulster	8,775.11 gal.	205,697.49 lbs.
Warren	6,403.15 gal.	225,317.57 lbs.
Washington	38,570.08 gal.	41,623.74 lbs.
Wayne	68,711.27 gal.	110,685.89 lbs.
Westchester	578,550.61 gal.	2,303,960.12 lbs.
Wyoming	22,556.32 gal.	31,062.04 lbs.
Yates	3,029.87 gal.	18,330.43 lbs.

**Note: The quantity of pesticides commercially applied in a county is the sum of the gallons and pounds reported above. In other words, the gallons and pounds in the chart do not reflect two ways of speaking about a single volume of pesticides.

The above table does not include quantities which were reported where the county information was either missing, invalid or illegible.

C. Data Summaries Overview

In conjunction with Cornell University, the Department has summarized final data for calendar year 2005 pesticide sales, the quantity of pesticides used, the category of applicator and region of application. Detailed information is provided in eight data summaries. These final summaries can be found at www.dec.ny.gov/chemical/8523.html on the Department's website.

Sales Data (Commercial Permit holders)

- ▶ Annual Report for Pesticide Sales to Certified Private Applicators (summarized by product). These are data summaries of sales to certified private applicators, of restricted use pesticides and general use pesticides used in agricultural crop production. These sales were made by pesticide distributors that are licensed to sell both restricted use pesticides and general use pesticide products identified as being used in agricultural crop production. The data are summarized by pesticide product.
- ▶ Annual Report for Pesticide Sales to Certified Private Applicators (summarized by county).
- ▶ Annual Report for Pesticide Sales to Certified Private Applicators (summarized by zip code).

Manufacturers, Compounders, and Importers Sales Data

- ▶ Annual Report for Restricted Pesticides Sales to Commercial Permit Holders for Resale (summarized by product). These are data summaries of sales made by pesticide distributors that are licensed to sell restricted use pesticides to other pesticide sales distributors, who are also licensed to sell restricted use pesticides. The data are summarized by pesticide product.
- ▶ Annual Report for Restricted Pesticides Sales to Commercial Applicators for End Use (summarized by product). These are data summaries of sales made by pesticide distributors that are licensed to sell restricted use pesticides to commercial pesticide applicators, who are licensed to purchase and apply restricted use pesticides. The data are summarized by pesticide product.

Usage Data

- ▶ Applicator/Technician Pesticide Applications in New York State (summarized by product).
- ▶ Applicator/Technician Pesticide Applications in New York State (summarized by county).
- ▶ Applicator/Technician Pesticide Applications in New York State (summarized by zip code).

Product Name Data

- ▶ List of Pesticide Products by Name and EPA Registration Number.

As required by law, these final summaries exclude the name, address or any other information that would otherwise identify a commercial or private applicator, any person who sells or offers for sale restricted use or general use pesticides to a private applicator, or any person who received the services of a commercial applicator.

D. Data Qualifications

The reporting community, the Department, and the Department's computer consultants at Cornell University work together to provide the best information possible for health researchers. However, the data are neither be perfect nor complete and, therefore, occasional revisions to the data are required. Users are advised to go to the Department's website at www.dec.ny.gov/chemical/8523.html for the most recent data. Users of the data are cautioned about limitations of the data, including the following:

1. The information is accepted by the Department as it is reported by the applicators and distributors. Neither the Department nor Cornell can attest to the accuracy of the data provided. However, the data are reviewed manually and with various computer applications for obvious or likely errors. Follow-up with the applicators and distributors is conducted and corrections are made where possible.
2. The PRL requires the Department to accept data from the regulated community on handwritten forms. Some of the data on these forms is difficult for the data-entry operators to decipher. The quality of these data is not as reliable as data submitted on typed or computer-generated forms. Data that are unreadable are stored in the database as "Illegible" (see Data Management Methodology section).

3. Use of zip code to define application and sales locations creates a number of problems. Zip codes are postal delivery locations, but large wilderness areas or farmland may have few, if any, delivery points. Since mail is not delivered to these locations, they are technically not located in a zip code. Determination of what zip code to report for an application or intended application in one of these locations is problematic for the businesses and applicators.

4. Some zip codes contain more than one contiguous location. Without additional address data than that currently required to be collected by the PRL, there is no way to divide application or intended application quantities between the separate locations included in these zip codes.

5. Data reported for selected zip codes have deliberately not been reported under that zip code. These selected zip codes are unique to a location and could be used to identify where an application or intended application occurred. Identification of the specific location of a pesticide application is not allowed by the PRL. In these instances, these data have been reported under the "Private" zip code. Note that this manipulation was not necessary for the data reported by county. All the data have been reported under the county that was submitted on the report form by the business or applicator.

6. Quantities for some pesticides were reported using both weight and volume-based units of measure. Rather than reject quantities reported under a unit of measure inappropriate for a particular product, the reports list both measurements as they were reported to the Department.

7. Products with a quantity of zero reflect that applications or intended applications of the product were made, but that the quantity was indecipherable on the report form, the reported unit of measure was invalid, or the quantity was negligible (less than 0.01).

8. The database may contain an overestimate of the volume of pesticides actually used or sold. Several factors contribute to this potential overestimate. Data are not available to indicate the quantity of pesticides that may be involved in the factors identified below:

- It is fairly common for private applicators to return unused pesticides. They may even do so in a different year than the one in which they made the initial purchase. The current reporting system does not account for returns. Only the original sale is reported.
- Commercial permittees report sales of restricted pesticides to other distributors. These distributors sell the same pesticide a second time, possibly to another distributor, who may sell it yet a third time. Each sale is reported. There is no way of identifying reports of multiple sales of a single volume of pesticide.

- Many products are routinely diluted with an inert material prior to application. Some applicators report the diluted amount of material applied, not the undiluted amount as required by the Department. The Department and Cornell review reports in an attempt to identify obvious occurrences of this error; however, not all occurrences are obvious. This error can inflate the estimates of total pesticides applied in a given year.

9. Data are not reported by active ingredient. This makes the database different from most other pesticide use tracking databases, which may cause difficulties in comparing NYS reporting data with data from other states. The Department and Cornell are working toward developing a mechanism for displaying active ingredient summaries for those products being reported.

10. Commercial Permit Holders (sellers of restricted-use pesticides), under the PRL, must record and report sales of general use agricultural pesticides to certified private applicators. However, certified private applicators can purchase general use agricultural pesticides from non-commercial permit holders. Under these circumstances, those sales and the associated use information, would not be captured by the PRL.

E. Data Management Methodology

The following statements summarize the methodology that was used to produce the Pesticide Annual Report data for 2005:

1. Pesticide products were summarized using the EPA registration number, not the product name.
2. It is not uncommon for a pesticide product to be registered with one EPA number, but have multiple product names. All registered product names are listed in a separate report (Supplement to Data Summaries - Pesticide Products by Name and EPA Registration Number).
3. Non-standard applications and sales are flagged for separate reporting when:
 - sales or applications did not occur during the report year;
 - sales reflected a return of merchandise;
 - applications or sales occurred outside of New York State;
 - a general use product was reported on Form 25.
4. All quantities are rounded to two decimal positions before the values are used for the Annual Report.

5. The Data Summaries include data that were reported incompletely or incorrectly. These data have been identified by using a set of standard descriptions. The reason for including the data is that partial data may still have some informational value. The descriptions used are:

- | | | |
|--------------|---|---|
| “Unreported” | – | no value reported for this field |
| “Illegible” | – | unreadable value reported for this field |
| “Invalid” | – | an invalid EPA Registration Number is a number that did not match those EPA Registration Numbers for pesticide products registered at any time in New York State. An invalid county or zip code is a county or zip code that does not exist in New York State |
| “Irregular” | – | two values reported for one field on the report form or a value that could not be mapped to the report form field for any reason |

6. Extensive data quality assurance processes are followed in producing the reports. A brief description of these processes is outlined below.

Prior to submission to the service bureau, most of the electronic data are formatted using one of the bureau's software applications. When the pesticide reports are received at the data entry vendor or the electronic service bureau a number of validation processes are performed.

The service bureau validates the file formats and checks the data values. This preliminary validation process enables the bureau to contact the report submitters for corrections in a timely fashion.

The service bureau also accepts a limited number of reports that were not created in one of the bureau's software applications. These reports are closely reviewed and manually reformatted. These reviews include:

- County and zip code look ups
- EPA Registration Numbers looked up
- Outreach to businesses/applicators

The contractor who performs the data entry of the paper reports also has a data quality process. This includes:

- Decipher non-standard form submissions
- Code illegible/irregular values
- Reformat dates
- Validate Certification & Permit IDs
- Standardize city using zip code look up
- Duplicate dittoed fields

After the files are received at Cornell and logged in, the next step is to verify the file formats. Briefly, this involves:

- Verifying whether files are readable by the PSUR applications
 - Required number of fields present
 - Files named so the type of data can be identified (applications, sales etc.)
 - Fields contain required data types (numbers, characters etc.)
Ex.: Zip code is numeric
 - Field lengths
 - ...

When the files have been verified, two batch data cleansing processes are run. These are:

- Convert applications of cooling tower and wood treatment products back to gallons
- Convert liquid products reported as dry ounces (OZ) into fluid ounces (FL)

Next, the reported pesticide quantities are scanned for quantities above a threshold value. The businesses are contacted for each out-of-range value and corrections made as appropriate. Common errors include:

- Misplaced or incorrectly data-entered decimal points
- Systematic computer-generated errors

The primary data quality assurance process is our data validation application. What is data validation?

- Fields checked against set up tables
 - Ex., Zip code valid?
- Value checks
 - Ex., Date month and day within valid ranges?
- Presence checks
 - Ex., Required fields reported?

The following types of edits are performed:

- Presence checks
- Ex., Required fields reported?
- Format error
- Validation error
- Illegible value reported
- Irregular value reported
- Null value reported
- Formulation state
- Density error
- Report year, date mismatch
- Date range greater than 1 year
- Out of state
- ...

Some data cleansing is also done by the data validation application. The initial reported value is always retained whenever a correction is made. Examples of data cleansing are:

- California revision codes stripped from EPA Registration Numbers
- Units of measure are matched against known spelling and punctuation variants

The audits generated by the data validation application are compiled in a report. Many of the businesses that appear on the report are contacted and asked to provide corrections.

The final layer of data quality checking is a series of reviews performed by:

- PSUR programmers
- PSUR management
- DEC pesticide reporting management
- DEC management

In addition to the annual report itself, there are two reports used to assist the review process. They are:

- County totals comparison report
- 5 year county totals report

IV. APPENDICES

A. Glossary

B. Contact List

Appendix A Glossary

(From ECL and 6NYCRR Parts 325 and 326)

“Business registration” means the requirement of each person or business providing services of commercial application of pesticides, either entirely or as a part of the business, to register with the Department.

“Commercial application” means any application of any pesticide except as defined in private or residential application of pesticides.

“Certified commercial pesticide applicator” means a certified applicator who is certified by the Department to use or supervise the use of any commercial application of pesticides or to sell or supervise the sale of a restricted use pesticide as described in subdivision 325.16(1).

“Certified commercial pesticide technician” means an individual who is at least 17 years of age and is certified to engage in the following:

- (1) commercial use of any general use or unclassified pesticide without supervision; or
- (2) use of any pesticide when working under the direct supervision of a certified commercial pesticide applicator.

“Commercial permit” means the permit issued by the Commissioner, pursuant to the Environmental Conservation Law, Section 33-0901, for the distribution, sale, offer for sale, purchase for the purpose of resale, or possession for the purpose of resale, of a restricted pesticide.

“General use pesticide” means a pesticide which does not meet the State criteria for a restricted pesticide as established under authority of Section 33-0303 of Article 33 of the New York State Environmental Conservation Law.

“Pesticide” means:

- a. Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; and
- b. Any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.

“Private application” means any application of any pesticide for the purpose of producing an agricultural commodity

- a. On property owned or rented by the applicator or the applicator’s employer, or
- b. If applied without compensation other than the barter of personal services between producers of agricultural commodities, on property owned or rented by a party to such a barter transaction.

“Restricted use pesticide” means a pesticide that is classified for restricted use under the provisions of Article 33 of the Environmental Conservation Law or under Section 3(d)(1)© of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended.

Appendix B
Contact List
for More
Information on Pesticides

New York State Department of Environmental Conservation

Pesticide Certification, Registration, Permits	(518) 402-8748
Pesticide Annual Reporting	(518) 402-8748
Pesticide Product Registration	(518) 402-8768
Pesticide Compliance and Integrated Pest Management	(518) 402-8781

New York State Department of Health

Environmental Health Information	1-800-458-1158
Health Research Science Board	(518) 402-7511

<u>Breast Cancer and Environmental Risk Factors</u>	(607) 254-2893
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Pesticide Management Education Program (Cornell University)

Pesticide Management Education	(607) 255-1866
Pesticide Reporting Law Database	(607) 257-5708

Figure 2
Pesticide Applications by Volume
(in Gallons) for New York State
by County During 2005

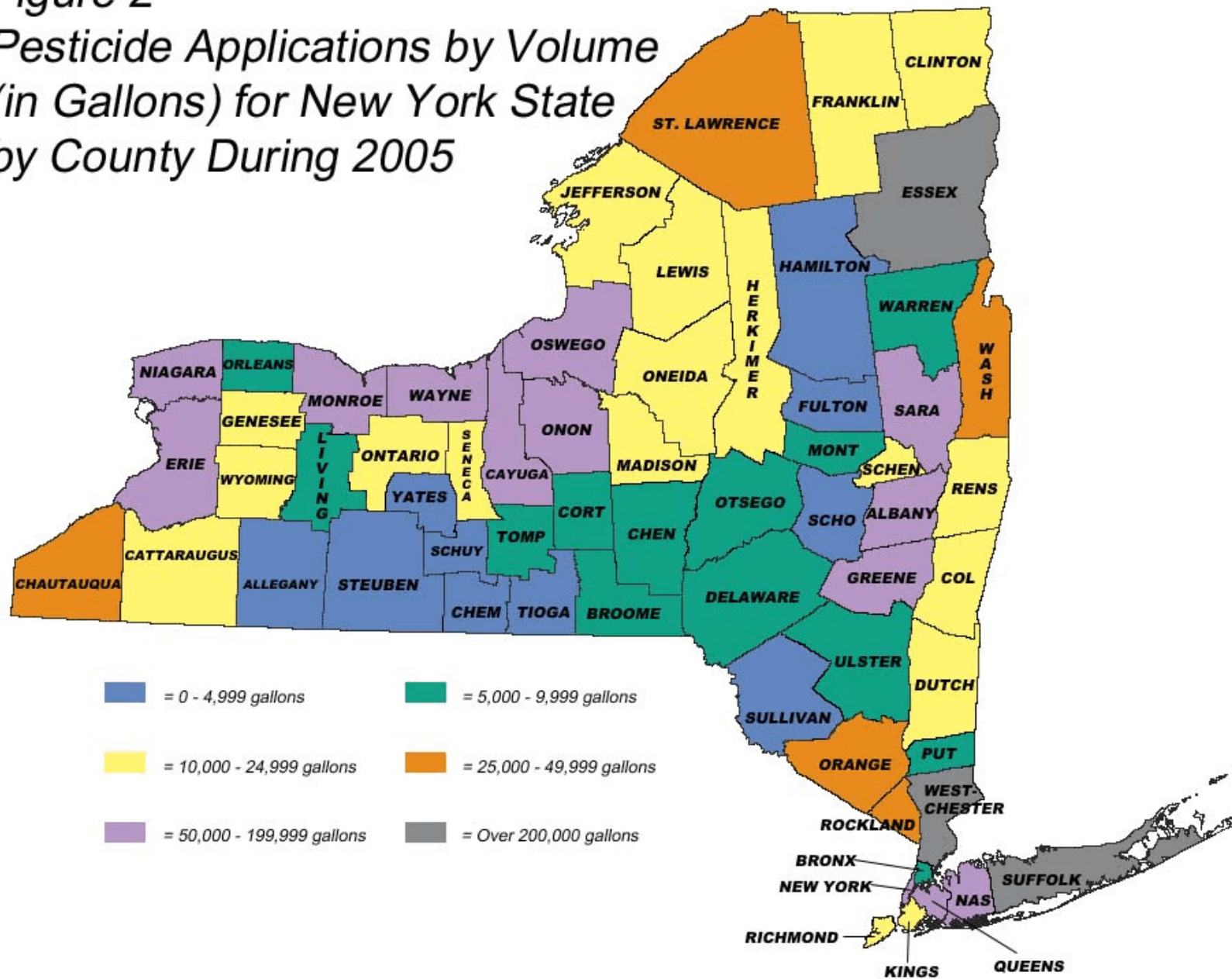


Figure 4
 Pesticide Sales by Volume
 (in Gallons)
 for New York State
 by County During 2005

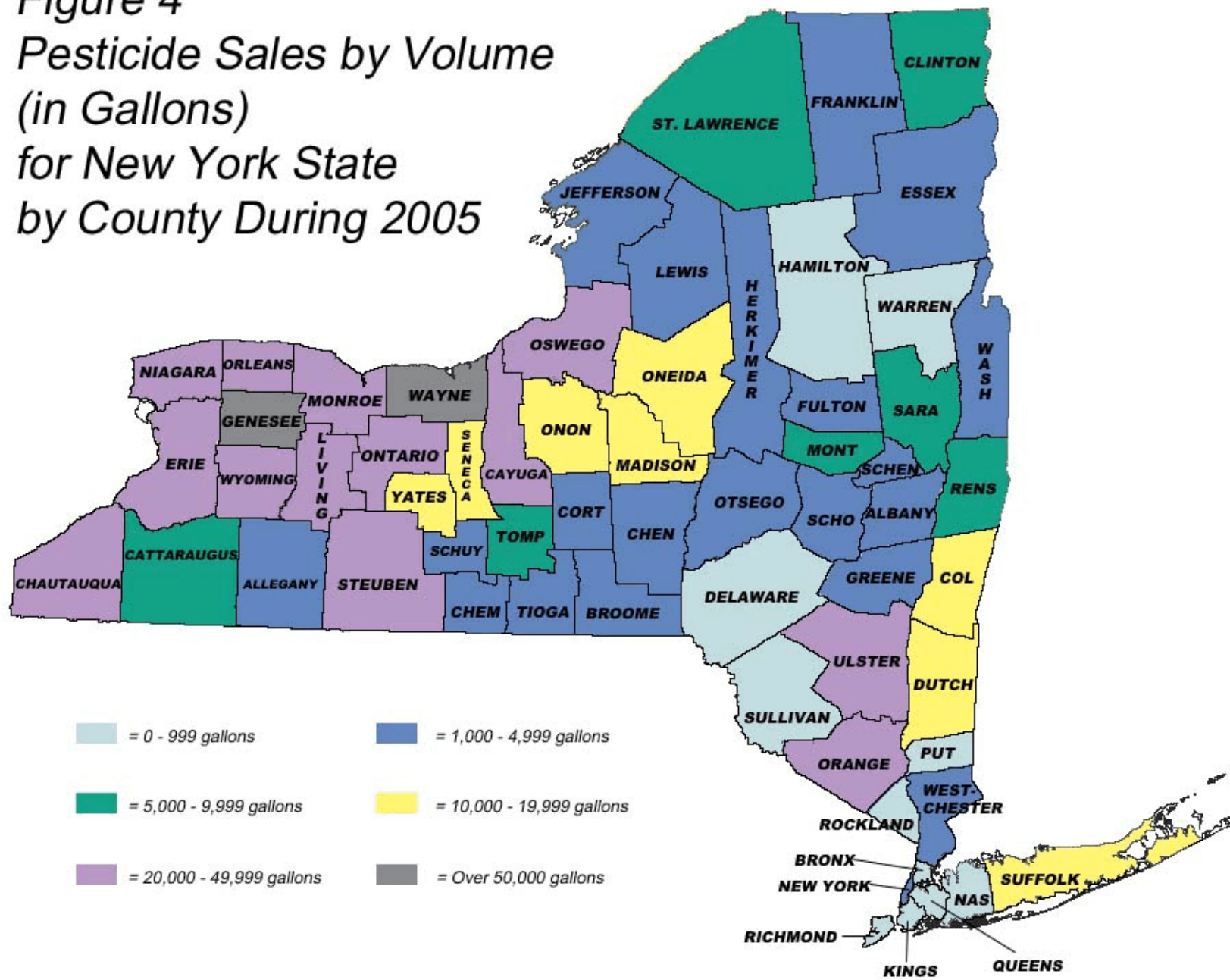


Figure 5

**Relative Use (in Pounds) of the Reported Top Ten Pesticide Products
Applied by Certified Commercial Applicators - 2005***

EPA Registration Number	Product Name	Weight Quantity (pounds)	Percentage of All Products
10404-82 **	Lesco Pre-M Plus Fertilizer Insecticide (with various Fertilizer combos)	2,010,093.53	11.446%
10404-85 **	Dimension Herbicide 0.10% plus Fertilizer	904,706.82	5.152%
9198-173 **	Andersons Fertilizer with Propendi Herbicide	705,348.95	4.017%
10404-88 **	Lesco Stonewall Herbicide 0.20% plus Fertilizer	683,793.69	3.894%
432-1349-10404 **	Lesco Merit Insecticide plus Turf Fertilizer	629,678.88	3.586%
3125-474-10404 **	Merit Insecticide 0.2 Plus Fertilizer	559,003.39	3.183%
279-3216-10404 **	Talstar Insecticide 0.069% plus Fertilizer	502,922.95	2.864%
3125-474-9198 **	Fertilizer with Merit Insecticide	476,086.82	2.711%
62190-9	Dricon Fire Retardant Fungicide	344,327.00	1.961%
279-3168	Talstar Granular Insecticide	337,593.14	1.922%
Top 10 Products - Total Quantity (Pounds) Used:		7,153,555.17	Pounds
All Products - Total Quantity (Pounds) Used:		17,560,973.11	Pounds
Top 10 Products as a Percentage of Total Quantity (Pounds) Used:			40.74%

* Excluding Illegible, Invalid, Irregular, and Unreported Categories (See Page 16 for Definitions)

** These products consist of small amounts of pesticides combined with large amounts of fertilizer. The weight reported here is the weight of all ingredients not just pesticides.

Figure 6

**Relative Use (in Gallons) of the Reported Top Ten Pesticide Products
Applied by Certified Commercial Applicators - 2005***

EPA Registration Number	Product Name	Volume Quantity (gallons)	Percentage of All Products
59074-20001	Superchlor Disinfectant	392,899.05	13.939%
9359-2	Surchlor Plus Disinfectant	247,224.62	8.771%
52483-1	Hypochlorite Solution Disinfectant	240,506.59	8.533%
19713-123	Drexel Damoil Insecticide	136,809.52	4.854%
75506-4	Wolman-E Fungicide	122,624.00	4.350%
100-1152	Lumax Selective Herbicide	118,401.78	4.201%
9613-20001	Shock Chlorinating Solution Disinfectant	64,673.60	2.294%
5905-368	Omni Supreme Spray Oil Insecticide	49,818.43	1.767%
74655-19	Spectrum XD 9400 Antimicrobial	41,453.00	1.471%
35317-20001	Sodium Hypochlorite Solution	41,023.00	1.455%
Top 10 Products - Total Quantity (Gallons) Used:		1,455,433.59	Gallons
All Products - Total Quantity (Gallons) Used:		2,818,638.79	Gallons
Top 10 Products as a Percentage of Total Quantity (Gallons) Used:			51.64%

* Excluding Illegible, Invalid, Irregular, and Unreported Categories (See Page 16 for Definitions)

Figure 7

Relative Amount (in Pounds) of Reported Top Ten Restricted and General Use Agricultural Pesticide Products Sold by Commercial Permit Holders to Certified Private Applicators - 2005*

EPA Registration Number	Product Name	Weight Quantity (pounds)	Percentage of All Products
432-1349-65783	Signature Fertilizer with Merit 0.2% Insecticide	542,850.00	8.819%
4581-370	Penncozeb 75 DF Fungicide	405,635.00	6.590%
100-1075	Force 3G Insecticide	329,673.00	5.356%
62719-486-65783	Signature Dimension Herbicide 0.10% plus Fertilizer	300,700.00	4.885%
51036-166	Captan 50 Wettable Powder Fungicide	270,743.00	4.398%
62719-289-65783	Signature Fertilizer with 0.86% Team Pro Herbicide	267,300.00	4.343%
62719-34	Lorsban Insecticide	224,816.00	3.652%
6325-13	Yellow Jacket Wettable Dusting Sulphur Fungicide/Miticide	223,995.00	3.639%
62719-402	Dithane Rainshield Agricultural Fungicide	179,073.00	2.909%
66222-58-51036	Captan 80 WDG Fungicide	139,680.00	2.269%
Top 10 Products - Total Quantity (Pounds) Sold:		2,884,465.00	Pounds
All Products - Total Quantity (Pounds) Sold:		6,155,363.85	Pounds
Top 10 Products as a Percentage of Total Quantity (Pounds) Sold:			46.86%

* Excluding Illegible, Invalid, Irregular, and Unreported Categories (See Page 16 for Definitions)

Figure 8

Relative Amount (in Gallons) of Reported Top Ten Restricted and General Use Agricultural Pesticide Products Sold by Commercial Permit Holders to Certified Private Applicators - 2005*

EPA Registration Number	Product Name	Volume Quantity (gallons)	Percentage of All Products
100-1152	Lumax Selective Herbicide	71,166.09	9.944%
19713-123	Damoil Dormant and Summer Spray Oil Insecticide	35,871.49	5.012%
241-337	Prowl 3.3 EC Herbicide	27,237.75	3.806%
524-539	Roundup Original Max Herbicide	25,110.29	3.509%
65564-1	JMS Stylet Oil Fungicide	24,890.50	3.478%
1812-416	Pentathlon LF Fungicide	21,642.50	3.024%
69526-1	Spray Oil 10 Insecticide	15,562.00	2.175%
5481-468	Vapam HL Soil Fumigant Fungicide/Herbicide/Insecticide	14,173.00	1.980%
71368-20	Nufarm Credit Systemic Herbicide	13,518.38	1.889%
524-344	Micro-Tech Herbicide	13,185.04	1.842%
Top 10 Products - Total Quantity (Gallons) Sold:		262,357.04	Gallons
All Products - Total Quantity (Gallons) Sold:		715,642.06	Gallons
Top 10 Products as a Percentage of Total Quantity (Gallons) Sold:			36.66%

* Excluding Illegible, Invalid, Irregular, and Unreported Categories (See Page 16 for Definitions)