

San Francisco Department of the Environment
Integrated Pest Management Program Report
Combined years 2006 and 2007

San Francisco Department of the Environment
Integrated Pest Management Program

ANNUAL REPORT 2008-2009

Covering pesticide use data and program activities for calendar years 2008 and 2009

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Introduction

Chapter 3, Section 305(g) of the Environment Code (Integrated Pest Management Ordinance) requires San Francisco's Department of Environment (SFE) to report on the progress of its Integrated Pest Management (IPM) Program to the Board of Supervisors. This report is submitted to fulfill that requirement, and summarizes the progress made by San Francisco's IPM Program, analysis of pesticide use data, and specific information on the City's departments doing most of the pest control on City property from January 2008 through December 2009..

Key Accomplishments 2008-09

- Organized San Francisco Facility Managers' Training 4/1/08
- Organized 12th Annual San Francisco Urban IPM Conference 1/23/09 – Full attendance (241 people). Theme: Invasive Species and IPM
- Attended National IPM Symposium 3/26/09; organized session on pest prevention in green buildings
- Organized "IPM Idea Olympics" event 9/10/09 – Revisioning and strategic planning for San Francisco's IPM Program
- Organized 19 monthly meetings of the IPM Technical Advisory Committee; attendance at each ranged from 15-45 people. Most meetings featured speakers and/or trainings and continuing education credits.
- Organized annual weed flaming training (2008) and IPM/Pesticide Safety Trainings (2008 and 2009). The latter were attended by all City pest management personnel.
- Rolled out the new web-based Pesticide Use Reporting System (PURS) database, beginning 1/1/10.
- Maintained the City's Reduced-Risk Pesticides list. Held two special meetings annually to update the list, plus a presentation to the Commission on the Environment.
- Held annual public hearings to enable departments to justify use of non-listed pesticides or pesticide exemptions.

Reduced-Risk Pesticides List

IPM Programs utilize a number of methods to control pests while ensuring a safe environment. *Chemical pesticides represent only a single control strategy and in San Francisco are used only as a last resort.* Sanitation, other pest prevention measures, and non-chemical management approaches should all be implemented *first*.

San Francisco's Reduced-Risk Pesticide List (RRPL) represents the pesticide products approved for use under San Francisco's Integrated Pest Management Ordinance (Adopted 10/96, Chapter 3, San Francisco Environmental Code) when

less toxic alternatives are deemed not feasible. No other pesticide products may be used on properties belonging to SF without an exemption from SFE (see summary of exemptions below).

The list is updated yearly to reflect the availability of new reduced risk products, removal of products with the greatest human health and environmental concern, or products no longer needed. To determine which products present the greatest hazards, SFE employs a robust tier-rating system. This tier system looks beyond the signal word and acute toxicity of a product and evaluates pesticides on such factors as chronic effects (i.e. cancer, reproductive harm), environmental effects (i.e. persistence, bioaccumulation, mobility, water quality), and non-target effects (i.e. impact on wildlife, bees). Using these criteria, products are grouped into tiers with Tier I being the most toxic, Tier III as least toxic, and Tier IV products not having enough information for evaluation.

The tier rating flags potential hazards in a product. The SF IPM Technical Advisory Committee then examines other factors affecting risk, particularly use patterns, the potential for exposure, and hazards of other alternatives, before recommending a pesticide for inclusion on the RRPL. SFE considers this approach to be an example of “anticipatory action to prevent harm,” as required by the City’s Precautionary Principle Ordinance (SF Environment Code, Chapter 1). To see the list, and for more information on the creation of this list see:

http://www.sfenvironment.org/downloads/library/20100420_sf_pesticide_list_red_legged_frog.pdf

Four key points about San Francisco’s list deserve emphasis:

- **A pesticide list is not an IPM program.** Pesticides should be the last resort, when all other tactics have failed.
- **This list is for institutions, not residents.** Many pesticides on the list were added for specialized purposes not found in residential settings. Homeowners will usually need few or no pesticides to successfully manage common pest problems.
- **Fewer listed products is not necessarily better.** IPM programs require a toolbox of alternatives, for example, alternative attractants in least-toxic ant baits. Therefore, a larger list is indicative of the diversity of pest problems encountered, and does not imply that pesticide use is higher. The important measures of success are: Amount of highly toxic chemicals actually used (both active and inert ingredients), and overall effectiveness in pest suppression.
- **The SF RRPL only applies to City and County of San Francisco departments and properties.** Cities are only legally empowered to regulate their own pesticide use, not the pesticide use of residents or businesses.

Exemptions

Exemptions for 2008-09 are listed in Table 1. Under the IPM Ordinance, SFE has the responsibility of reviewing and granting exemptions for the use of pesticides not listed on the Reduced Risk Pesticide List (RRPL). Applicants must demonstrate a good-faith effort to find alternatives to the banned pesticide; that effective, economic alternatives to the banned pesticide do not exist for the particular use; and that they have developed a reasonable plan for investigating alternatives to the banned pesticide during the exemption period. Exemptions may be granted as “trial,” “regular,” or “emergency” exemptions:

- **Pilot exemptions** are granted for the purpose of testing products that show promise as less hazardous alternatives.
- **Regular exemptions** are considered for managing rare or unforeseen pest problems that cannot be adequately controlled using products on the RRPList.
- **Emergency exemptions** are permitted under the IPM ordinance when a “pest outbreak poses an immediate threat to public health or significant economic damage will result from failure to use a pesticide.” In these cases, a City department will proceed with a pesticide treatment without SFE prior approval, but must still notify SFE afterwards.

Citywide Pesticide Use Trends

Key Citywide Pesticide Use Statistics

Since the beginning of the IPM Program in 1996:

81% reduction (lbs. of product) 88% reduction (gals. of product) 76% reduction (lbs. of active ingr.)	Total pesticide use 1996 through 2009, excluding rodenticides and mosquito treatments
85% reduction (lbs. of active ingr.)	All herbicide active ingredients, 1996 through 2009
83% reduction (lbs. of active ingr.)	Glyphosate (Roundup® active ingredient) use 1996 through 2007

Since 1999 (Beginning of Tier system):

65% reduction (lbs. of active ingr.)	Tier I (highest toxicity) total pesticide (not including rodenticides and mosquito treatments)
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General trends

Pesticide use for calendar years 2008 and 2009 are summarized in Table 2 and Figure 1 (total pesticide active ingredients used since 1996) and Table 2 (pesticide use by City departments). Only pesticides used by City departments or City contractors on City-owned properties are covered by this data.

- The most hazardous pesticides, in the largest amounts, are still consumed by the City's golf courses, and particularly by Harding Park. This is primarily due to the extraordinarily high cosmetic and playability requirements of international tournaments. In 2009, Harding Park managers switched to an herbicide product called K-O-G which contains a much lower concentration of active ingredient – thus posing lower worker health hazard. However, this change also dramatically increases the poundage of herbicides used. Recreation & Park staff have experimented with a variety of less-toxic products in order to control problematic weeds at the course (especially *Soliva sessillus*) but have not been successful. Nevertheless, Harding has received accolades from PGA Tours for using significantly less pesticides than comparable, tournament level courses.
- Another product that accounts for a significant portion of increased pesticide use in 2008-2009 is a least-toxic product called Agrifos. Agrifos is injected into native oak trees threatened with Sudden Oak Death syndrome. Sudden Oak Death is an introduced disease that has reached epidemic proportions, and has been decimating oaks throughout the state.
- The Citywide pest control contractor, Pestec, conducts most structural pest control and mosquito control efforts. 88% of Pestec's site visits in 2009 resulted in non-chemical treatments.

Notes on Pesticide Use Data

The trends noted in this report are drawn from pesticide use data collected by the big seven City departments and the Citywide pest control contractor since the passage of the Integrated Pest Management Ordinance in 1996. Below are some important notes on the data.

Data collection problems

Pesticide use data collection has until recently been accomplished using a customized Microsoft Access database. This tool gradually became outdated, making data collection for 2008 and 2009 exceptionally time-consuming. As a result, some usage details available in previous years are not available for 2008-2009. With the rollout of a new web-enabled database (beginning 1/1/10), these problems should be solved.

Tier Rating System

The tier rating system was not implemented until 1999, when we evaluated all products in use at that time. Tier I product use may therefore be underreported previous to 1999, since those are the products we were most likely to eliminate in the first years of the program. For this reason, we have in some cases only analyzed data collected since 1999 when evaluating Tier levels.

Some products are excluded

The numbers reported throughout this report exclude the use of Bioweed and Suppressa herbicides/mulches, because these products are composed entirely of corn gluten meal, a food grade ingredient that is 100% non-toxic. The use of these Tier III products requires unusually large quantities of material—thousands of pounds with each application—which would skew the graphs if included. Bioweed was used only in 2000 before its use was discontinued (the large amounts needed were not feasible). The use of Suppressa has likewise declined.

Rodenticides are presented separately

Rodenticide use is presented separately from other pesticide data due to both their public health importance, their unusually small amount of active ingredient (not visible when graphed with other products), and the fact that they are generally required as a response to a public health problem. The latter point means that SFE has more limited control over rodenticide use than over herbicides and insecticides.

Public health mosquito treatments are considered separately

Like rodenticide use, mosquito treatments are made in response to public health concerns, such as the West Nile virus, and are therefore not under the control of SFE. For this reason, public health treatments are excluded from some analyses.

Muni coach insecticide treatments

SFE currently only has four years worth of data for insecticidal treatments of Muni coaches (which consist of gel baits applied in inaccessible points for cockroach control). While the amount of active ingredient used is relatively small, we did not include it in some graphs because it would confound year-to-year comparisons.

Important factors to consider in analysis

The goals of the SF IPM program are to effectively manage pests, emphasize prevention and non-chemical controls, and in so doing to reduce both the amount and toxicity of pesticides used. However, measuring the success of an IPM program is a complex task. Before drawing conclusions from pesticide use statistics, it is important to consider these factors:

- **Long-term trends are more important than short-term.** Pesticide use always varies somewhat from year to year due to weather, pest pressure, special renovation projects, staffing or other factors. A change in pesticide use from the previous year does not necessarily indicate a long-term trend.
- **Exposure potential is as important as toxicity in determining risk.** A key aim of a pest management program is the reduction of risk. Risk is primarily determined by two factors: Toxicity (for example, how much chemical is required to impair a human or other animal) and exposure (for example, how much of the chemical is likely to actually reach a

human or other animal). This means that the formulation and use of the products is all-important. For example, pesticides applied as aerosol sprays have much higher exposure potential—and therefore pose a greater risk—than pesticides encased in tamperproof bait boxes.

- **Amount of active ingredient used is the preferred performance measure for pesticide reduction efforts.** Referring only to pounds and gallons used can be deceptive. Use statistics expressed in pounds and gallons mask specific products used, and do not necessarily reflect levels of risk posed by pesticides. For example, some products—such as elemental sulfur fungicide, or corn gluten meal—may be relatively nontoxic, but require high application rates to be effective. Another factor not illuminated by overall use statistics is the varying amount of active ingredient (ai) in different formulations. For example, Vanquish (active ingredient=dicamba 57%) and Proturf New KOG Weed Control (active ingredient=dicamba 0.7%) both contain the same active ingredient, but Vanquish is a concentrate. The total pounds remains important to reflect the amount of so-called inert ingredients applied, since these chemicals pose undocumented hazards.
- **Administrative/budget impacts are also important.** Increases in the number of buildings or outdoor acres maintained, decreases in landscaping staff, or underfunding can increase the pressure for herbicide spraying, which often requires less labor than non-chemical methods. Conversely, maintenance delayed (for example, by budgetary restraints) can lead to more serious problems in the future.
- **Ineffective pest management also poses risks.** West Nile virus or encephalitis transmitted by mosquitoes, allergies or asthma caused by cockroaches, and enteric diseases spread by rats are a few examples of hazards posed by pests themselves. It is important to remember that San Francisco's IPM Program has dual aims: Reduction of pesticide hazards and effective pest management.
- **These data do not represent residential or commercial pest management trends.**

Future Activities

Database improvements: Once completed, the web-enabled pesticide use database will provide:

- Standardization of several fields to improve reporting
- Continue improving our ability to track pesticide use based on pounds of *active ingredient* used.
- Streamlined report generation to enable users to print out pesticide use reports required by state regulators without additional effort.
- Implementation of new web-enabled database, including training of IPM personnel.

Pesticide use data collection improvements:

- We plan to continue implementing a system where we can identify specific non-toxic actions such as sanitation, trapping, mechanical weed control, exclusion, and more.

Harmonizing the IPM program with broader sustainable landscape standards.

- In the "Idea Olympics" event, IPM practitioners clearly expressed the need to broaden the scope of our activities to include such closely related subjects as water conservation, soil conservation, landscape design elements, and plant selection. For this reason, the IPM Program will take steps to become more involved with the Bay Friendly Landscaping Guidelines and the LEED Sustainable Sites Initiative.

Table 1. Summary of exemptions requested in 2008 and 2009.

Status of Exemption	Date DECIDED STATUS	Name of APPLICANT	SF City Dept.	Product Name	EPA Registration #	Address of pesticide use	Pest
APPROVED-Regular	2/5/2008	Ralph Montana	Recreation and Park Department	Garlon 4 Ultra	62719-527	Natural areas	Weeds
DENIED- Regular	3/20/2008	Ralph Montana	Recreation and Park Department	Roundup Pro Dry	524-505-AA	Candlestick Park parking lot - 8 acres?	Weeds
APPROVED- Pilot	4/18/2008	Merle Goldstone	Public Works, Department	OvoControl P	80224-1	Portsmouth Square (Pilot study)	Pigeons
PILOT EXEMPTION	4/24/2008	Ralph Montana	Recreation and Park Department	Mycotrol	70810-10	GGP nursery	soft bodied insects
APPROVED-Regular	5/17/2008	Kristen Natoli	Cal Academy of Sciences	Cleary's 33336 WP	1001-63-AA	Palms in front of new Cal Academy bldg	Pink rot - Gleocladium spp.
APPROVED-PilotAPPROVED	6/12/2008	Don Thomas	Public Utilities Commission (Water)	Stalker	241-398	Watershed lands	Weeds, esp. yellow star thistle
APPROVED-Regular	6/17/2008	Ralph Montana	Recreation and Park Department	ProZap Insect Guard	5481-338-36208	Irrigation control boxes at Harding/Fleming Park Golf Courses	Earwigs
APPROVED-Regular	8/8/2008	Sean Sweeny	Recreation and Park Department	Sapphire	62719-547	Fairways and green surrounds at Harding, Fleming, Golden Gate, Sharp Park and Lincoln Park golf courses	Bellis perennis (ENGLISH LAWN DAISY) AND WHITE CLOVER
APPROVED-Regular	9/15/2008	Juan Carrasco, Bartlett Tree Experts	Redevelopment Agency	Subdue Maxx	100-796	6th St. between Mission & Folsom	Phytophthora root rot and pythium
APPROVED-Regular	9/15/2008	Juan Carrasco, Bartlett Tree Experts	Redevelopment Agency	Cleary's 33336 WP	1001-69	6th St. between Mission & Folsom	Pink rot (Gliocladium vermoesini)
PRODUCT NOT USED YET- Pilot	9/15/2008	Luis Agurto	Public Health, Department of	OvoControl P	80224-1	Laguna Honda Hospital	Pigeons
DENIED- Regular	10/29/2008	Ralph Montana	Recreation and Park Department	Proxy Growth Regulator	432-1230	Harding Park Golf Course	Weeds
APPROVED-Regular Exemption	1/1/2009	Don Thomas	Public Utilities Commission (Water)	Habitat (BASF)	241-426	Watershed lands	Jubata grass (Cortaderia jubata)
APPROVED- Pilot	1/16/2009	Don Thomas	Public Utilities Commission (Water)	Habitat (BASF)	241-426	Watershed lands	Jubata grass (Cortaderia jubata)
APPROVED-Regular Exemption	3/2/2009	Ralph Montana	Recreation & Park	Primo	100-752	Harding Park Golf Course	Weeds
APPROVED-Regular Exemption	3/2/2009	Ralph Montana	Recreation & Park	Trimmit	100-1014	Harding Park Golf Course	Weeds
APPROVED-Regular	3/2/2009	Ralph Montana	Recreation and Park Department	Primo	100-752	Harding Park Golf Course	Weeds
APPROVED-Regular	3/2/2009	Ralph Montana	Recreation and Park Department	Trimmit	100-1014	Harding Park Golf Course	Weeds
APPROVED-Regular Exemption	4/23/2009	Luis Agurto, Jr.	Recreation & Park	Quintox	12455-57	Exploratorium -eating area	Mice

Status of Exemption	Date DECIDED STATUS	Name of APPLICANT	SF City Dept.	Product Name	EPA Registration #	Address of pesticide use	Pest
APPROVED- Regular Exemption	4/23/2009	Luis Agurto, Jr.	Recreation & Park	Top Gun Bait Block	67517-66-56	Exploratorium -eating area OUTSIDE	Rats
APPROVED- Regular	4/23/2009	Luis Agurto, Jr.	Recreation and Park Department	Top Gun Bait Block	67517-66-56	Exploratorium -eating area OUTSIDE	Rats
APPROVED- Regular	4/23/2009	Luis Agurto, Jr.	Recreation and Park Department	Quintox	12455-57	Exploratorium -eating area	Mice
DENIED- Regular Exemption	6/9/2009	Ralph Montana	Recreation & Park	PROXY	EPA Est. No. 264-PA-01	Harding Park Golf Course	Poa annua seed heads
APPROVED- Regular Exemption	6/24/2009	Ralph Montana	Recreation & Park	Sapphire	62719-547	Golden Gate Golf Course...9 holes	English Daisy
APPROVED- Regular Exemption	7/10/2009	sean glover	Port	Fastrac All Weather Blox	12455-95	PIER 17	Rats and Mice
APPROVED- Trial Use Exemption	7/15/2009	Ralph Montana	Recreation & Park	Acelepryn	352-731	Polo Fields In Golden Gate Paark	Ravens
APPROVED- Regular Exemption	8/2/2009	Ralph Montana	Recreation & Park	Coretect	432-1457	Arboretum, Conservatory, Nursery	Thrips, whiteflies, scale, aphids, mealybugs, and more
APPROVED- Regular Exemption	8/30/2009	Ralph Montana	Recreation & Park	Merit 0.5G	432-1328	Candlestick Park...and Polo/Soccer Fields	Crows
APPROVED- Trial Use Exemption	9/23/2009	Luis Agurto	Public Health	PiginX	84418-1	San Francisco General Hospital	Pigeon
APPROVED- Regular Exemption	9/23/2009	Ralph Montana	Recreation & Park	Daconil FF	50534-209-100	Harding Golf Course	Algae
APPROVED- Trial Use Exemption	9/23/2009	Ralph Montana	Recreation & Park	Regalia	84059-2	Golden Gate Park Nursery	fungal and bacterial diseases
APPROVED- Trial Use Exemption	9/28/2009	Ralph Montana	Recreation & Park	Rejex-it /Migrate	exempt	Harding Golf Course	Ravens
APPROVED- Regular Exemption	10/5/2009	Joseph Ossai	Public Health	CB-80 EXTRA INSECTICIDE	9444-175	bedbug-infested rooms	Bedbugs
APPROVED- Regular Exemption	11/10/2009	Carlos Agurto	Small Business, Office of	Gentrol Igr Concentrate	2724-351	SFFD Station 41	Drain flies

Table 2. Citywide pesticide use since establishment of the IPM Program. Unless otherwise noted, numbers are presented as pounds of active ingredient used. Only pesticide applications by City departments and contractors on City properties are included.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Reduction
Herbicides	3100	1745	2615	2421	1147	438	999	643	294	523	525	451	780	579	85%
Herbicides (lbs ai)	306	27	1183	1104	347	22	40	164	126	156	142	107	346	109	64%
Herbicides (gals ai)	335	206	172	158	96	50	115	57	20	44	46	41	48	46	86%
Glyphosate only	2141	1410	1227	624	370	249	830	362	212	361	331	275	505	368	83%
Fungicides	155	45	51	31	74	16	14	8	0	4	3	0	**	**	**
Insecticides (no publ health)	109	168	314	33	195	285	129	59	126	930	94	125	**	**	**
Public Health															
Insecticides	11	267	14	10	2	298	96	564	1502	433	1188	1517	1942	938	NA*
Rodenticides	0.93	0.85	0.53	0.07	0.09	0.15	0.16	0.11	0.08	11.85	0.12	2.07	0.06	0.03	NA*
Total Pesticides - no public health (active ingredients)	3366	1958	2980	2485	1416	739	1142	710	421	1468	622	579	1049	818	76%

*Use of public health insecticides and rodenticides fall primarily under the jurisdiction of the Department of Public Health and the San Mateo Co. Mosquito Abatement District. For ease of interpretation, these data are not included in the total pesticide use figures.

**Data not yet available for 2008-09. Fungicides, molluscicides, and other pesticides are lumped under "Total Pesticides Active Ingredients."

Figure 1. Citywide pesticide use, total pounds of active ingredient. Fungicides, rodenticides, and molluscicides are included in the total.

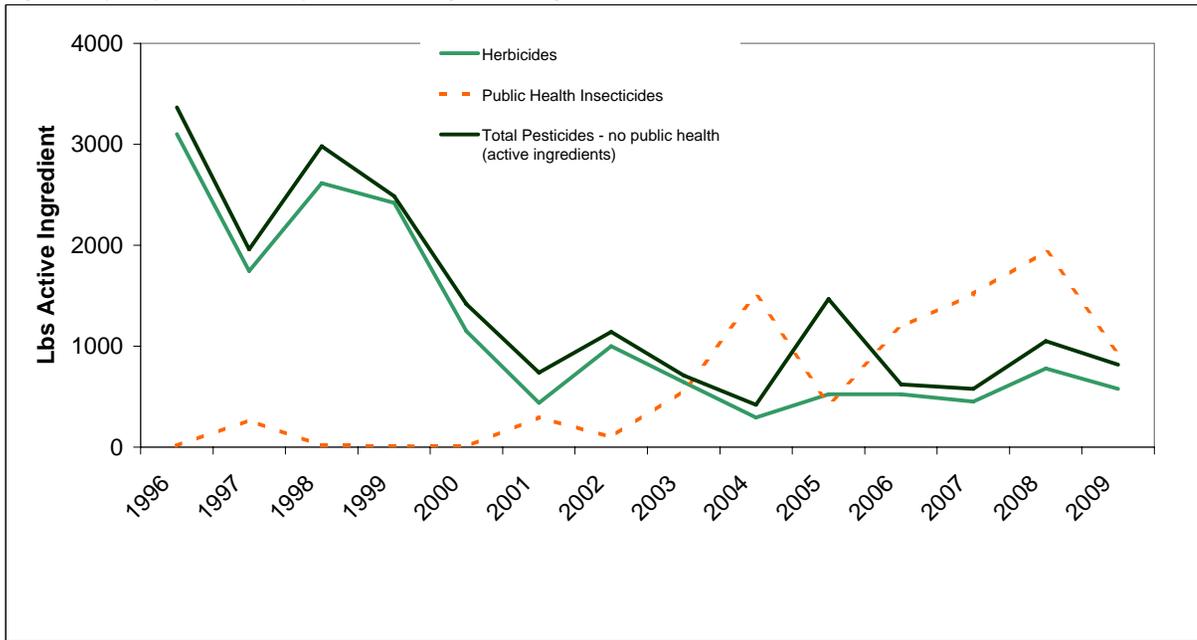


Table 3. Breakdown of pesticide use by department, 2008-2009

DEPT	Total Lbs of Pesticides No Rodenticides or Mosquito Treatments	Total Lbs of Pesticide Active Ingredients No Rodenticides or Mosquito Treatments	Total Lbs of Tier I (Highest Hazard) Active Ingredients No Rodenticides or Mosquito Treatments	Total Lbs of Rodenticides Active Ingredient	Total Lbs Herbicides Active Ingredient	Total Lbs of Glyphosate Active Ingredient (Roundup)	Total Lbs of Mosquito Treatments Active Ingredient	NOTES
2008								
CITYWIDE	3320.75	1049.08	76.24	0.064	779.55	505.19	1942.32	
Public Health	0.00	0.00	0.00	0.000	0.00	0.00	0.05	
Public Works	258.00	180.78	0.00	0.000	180.78	180.78	0.00	Includes treatments for Muni
Port	0.00	0.00	0.00	0.000	0.00	0.00	0.00	
Public Utilities Commission	389.01	169.56		0.001	96.83	89.82		Most non-herbicide pesticide use is Agrifos, used for treating oak trees
Rec & Parks	2075.13	517.00	76.05	0.010	328.94	95.50		Change of herbicide products in golf accounted for large increase in poundage - 1,155 lbs of total (8.088 lbs of active ingredient)
Airport	396.52	177.42	0.00	0.002	173.00	139.10	1516.89	Extensive use of oils for mosquito treatments
Contractor	202.08	4.33	0.19	0.051	0.00	0.00	425.38	
2009								
CITYWIDE	2227.84	818.31	148.56	0.033	578.69	367.94	938.13	
Public Health	0.00	0.00	0.00	0.000	0.00	0.00	0.03	
Public Works	141.83	79.61	0.00	0.000	79.61	79.61	0.00	Includes treatments for Muni
Port	0.00	0.00	0.00	0.000	0.00	0.00	0.00	
Public Utilities Commission	258.86	112.19		0.001	84.97	67.17		Most non-herbicide pesticide use is Agrifos, used for treating oak trees
Rec & Parks	1241.39	456.43	148.56	0.004	249.66	73.66	0.55	
Airport	400.71	166.23	0.00	0.001	164.44	147.50	628.33	Extensive use of oils for mosquito treatments
Contractor	185.05	3.84	0.00	0.027	0.00	0.00	309.22	Mostly Advance Liq Ant Bait, Gentrol Point Source, and Terro PCO for structural pest control treatments: All Tier III (lowest hazard). 88% of visits resulted in nonchemical treatment.