

City of Irvine

Integrated Pest Management Program

2016 Annual Report

Introduction

The City of Irvine initiated its new Integrated Pest Management (IPM) Program in February of 2016 with the City Council approval of the Public Works Integrated Pest Management Policy. This policy set forth the following goals:

City-wide Pest Management Guiding Principles

- a. Use of organic pesticides in all City properties.
- b. Limit exposure to any pesticides where children and the general public congregate.
- c. Incorporate additional guidance on use of pesticides for city rights of way, facilities, and other properties as reflected in the February 23, 2016 staff report.
- d. Use EPA Level pesticides in a targeted manner, and only if deemed necessary to protect public health and economic loss by a licensed pest control advisor and City staff, when pests cannot be managed by other methods that we would have.

This report presents the 2016 IPM program activities and application data. The IPM Program applies to all City departments, although the majority of pest management responsibilities fall within the Public Works Landscape Division.

2016 Program Components

The City of Irvine IPM Policy promotes environmentally sensitive pest management practices while preserving assets and protecting the health and safety of the public and City employees and contractors. All costs and impacts associated with pesticide use, including community and environmental health, will be considered.

Integrated Pest Management (IPM) is a decision-making process for managing pests that uses monitoring to determine pest levels and tolerance thresholds and combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks. The method uses extensive knowledge about pests, such as infestation thresholds, life histories, environmental requirements, and natural enemies to compliment and facilitate biological and other natural control of pests.

As part of an IPM program, pesticides are used when pest thresholds get too high. The definition of a pesticide is any substance, or mixture of substances, used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may be detrimental to vegetation, humans, or animals. Regardless if the pesticide is organic or synthetic, the goal is to rid a pest and caution must be taken when applying the product.

To ensure that the IPM program continues to be an adequate tool to meet the City's pest challenges while upholding the program goals adopted by the City Council; staff continuously reexamines and evaluates components of the program effectiveness. In

addition, all contractors that apply pesticides on the City's behalf are required to subscribe to the IPM Policy.

Alternative Pest Control Projects

The Public Works Landscape Division employs alternative methods of weed control such as mechanical removal through mowing and hand pulling. City landscape maintenance contractors provide up to 29 full-time equivalent employees to hand pull weeds in City parks and public roadway right-of-ways. Other non-pesticide weed control measures include the application of mulch in landscape planter areas to minimize weed growth and operating Smart irrigation controllers to apply the proper amount of water to City landscapes which minimizes disease and weed growth thus limiting pesticide use. City contract services have also moved away from pesticides in drainage facilities to utilizing manual removal of cattails to ensure proper water flow with no pesticide residue.

The City is responsible for maintenance of some fuel modification zones in the Village of Turtle Rock and an open space area in the City of Newport Beach. The use of mechanical discing and motor powered weed cutting tools are utilized to manage these zones. Staff is also exploring the possibility of using goats in the future to graze these areas for weed control.

The Landscape Division also utilizes biological control to reduce pest populations. Biological control uses organisms often referred to as beneficials, natural enemies or biocontrols. They act to keep pest populations low enough to prevent significant economic damage. The most common organisms used for biological control in landscapes are predators, parasites, pathogens and herbivores. In 2016, the City contractor released close to one million beneficial insects in the parks and streetscapes to combat destructive pests instead of relying on pesticides.

Another method employed by staff to control pests is habitat modification which was used on a few median planters in the Spectrum area. Small rodents, called voles, were severely damaging the landscape groundcover and control with an organic pesticide was impractical. So instead of a toxic pesticide application, the City's landscape maintenance contractor converted the landscape palette to another type of ground cover to deter the vole activity. This project eliminated the need for any pesticide and improved the overall appearance of the street median.

City of Irvine 2016 Pesticide Use and Analysis

The City's contractors are all licensed by the State of California to use organic and synthetic pesticides, as required by their contracts with the City. As the party responsible to the State for the application for any pesticide, the City's maintenance contractors researched available organic products approved for use in the State of California. All products used were reviewed by the City's Maintenance Superintendents or Department Managers and approved prior to use. Products under the trade names Avenger, Scythe and Suppress were identified by the contractors for organic weed

control in the right-of-ways. Products under the trade names Rat X and Uncle Ian’s Gopher Repellent were selected for organic rodent control. EcoJet was chosen for emergency control of flying insects including bees and wasps. EcoVia EC and Essentria IC were chosen for ant control. Due to the high acidity of the organic weed control products, applicators must use protective equipment to shield their eyes and skin which can sometimes give the public the perception the pesticide being applied is toxic.

The chart below provides the active ingredient for the approved organic pesticides used in 2016.

Organic Pesticides			
Product	Active Ingredient	Target Pest	EPA Category
Avenger	Limonene citrus oil	Weeds	Caution
Scythe	Pelargonic acid	Weeds	Warning
Suppress EC	Caprylic acid	Weeds	Warning
Rat X	Corn gluten meal	Rodents	N/A
Uncle Ian’s Gopher Repellent	Dried blood	Gophers	N/A
Eco Exempt Jet	2 Phenethyl proprionate, Rosemary oil	Insects	N/A
Eco Via EC	Thyme oil, rosemary oil , 2 phenethyl proprionate	Insects	Caution
Essentria IC3	Rosemary oil	Insects	Caution

Parks, Fields and Playgrounds

Since the Policy implementation in February 2016, the Landscape Division has managed to maintain a healthy turf grass population with no weed killer applications on any turf areas and no landscape pesticide applications in any park. The City has discontinued the use of weed killer “Speedzone” (2,4-D) and pesticide spray “Round-Up” (glyphosate). Table 1 below shows the amount of pesticides that were applied in 2015 as well as other synthetic weed control products that were previously used in park areas compared to 2016. The practice of using contract labor to mechanically and manually control weeds has proved effective in the parks.

The lone exception for pesticide applications thus far has been the use of the organic products for rodent, insect and algae control. Staff has noted adequate control for insects and algae using the organic products, but rodent control has proven to be only slightly effective. Tables 3 and 4 (Appendix 1) highlight the amount of pesticides that were used for rodent and insect control in 2015 compared to the organic products in 2016, respectively.

Table 1 City of Irvine Pesticide Usage Summary Parks and Athletic Fields				
Location	Product	Pest	Total Use in 2015	Total Use in 2016
Parks and Athletic Fields	3336 F	Disease	47 oz	0
	3336 WP	Disease	4 lbs	0
	Aqua Shade	Algae	2 gal	0
	Arrow 2EC	Weeds	10 oz	0
	Fosetyl-A1 80 WDG	Disease	22 lbs	0
	Glyphosate 4 Plus	Weeds	1,564 oz	0
	Power Zone	Weeds	57 oz	0
	Revolver	Weeds	432 oz	0
	Round Up Custom	Weeds	1,104 oz	0
	Sedge Hammer	Weeds	18 gal	0
	Speed Zone	Weeds	17 oz	0
	Stone Wall 65 WDG	Weeds	12 lbs	0
	SurflanXL 2G	Weeds	400 lbs	0
Location	Product	Pest	Total Use in 2015	Total Use in 2016
OC Great Park	Glyphosate 4 Plus	Weeds	1,438 oz	0
	Orazylin 4	Weeds	128 oz	0
	Power Zone	Weeds	331 oz	0
	Speed Zone	Weeds	137 oz	0
	Turf Wash	Bacteria	6 oz	0
	Phycomycin*	Algae	16,400 oz	12,000 oz

**Phycomycin, an organic product for control of algae in the ponds and basins, is the sole organic product on this table. All other products are synthetic pesticides.*

Right of Way

In the Right of Way, effective manual hand weeding in this area has been a challenge for contract staff due to the vast acreage and the abundance of weed seed that gets dispersed daily by the winds and traffic. The Landscape Division’s previous use of synthetic pre-emergent pesticides to prevent germination, and the use of the synthetic pesticide, “Round-Up” (glyphosate), to kill established weeds was an effective, low-cost treatment for weed control. The synthetic pre-emergent prevented a majority of the

weeds from germinating and becoming a pest. The weeds that did grow were treated with Round Up effectively working through the plant and killing the roots in one to two treatments including the tough perennial weeds with rhizomes and tubers like Bermuda grass. The elimination of synthetic pre-emergent pesticides (with no organic option available) has resulted in a heavy germination of weeds too abundant for successful hand removal. Organic weed killer products were utilized to assist the contractors with weed control, but unlike “Round-Up”, the organic pesticides are unable to kill the root and only prove effective on the leaf of the weeds. With this in mind, staff noted regrowth of the weeds which then required multiple follow up applications to control existing weeds and the constant growth of new weeds. Staff also found the organic products could not adequately control perennial weeds such as field bindweed, nutsedge and Bermuda grass. Table 2 lists the pesticides used in the right of way in 2015 compared to 2016. Rodents and insect control in right-of-way areas achieved similar results as in parks utilizing the products in Tables 3 and 4 (see Appendix 1).

Table 2 City of Irvine Pesticide Usage Summary Right of Ways			
Product	Pest	Total Use in 2015	Total Use in 2016
Synthetic Pesticides			
Round Up	Weeds	8,139 oz	0
Arrow 2EC	Grassy Weeds	115 oz	0
Speed Zone	Turf Weeds	227.9 oz	0
Power Zone	Turf Weeds	14,848 oz	0
Turflon Ester	Turf Weeds	56oz	0
Sedge Hammer	Nutgrass Weeds	432 oz	0
Gallery 75	Pre-emergent	16 oz	0
Orazylin 4	Pre-emergent	89 oz	0
Organic Pesticides			
Avenger	Weeds	0	20,672 oz
Scythe	Weeds	0	9,538 oz
Suppress EC	Weeds	0	17,316 oz

Public Facilities

The Facilities Maintenance Division of Public Works has implemented an integrated and tiered approach to manage pests in compliance with the City’s IPM policy. Facilities Maintenance performs routine inspections to identify, report and manage pest activity. Compliance has been achieved using existing contractors and ongoing staff training. Facilities Maintenance communicates more frequently with building operators and tenants to identify and control pest activity. Staff is continually working with facility

operators to improve food storage, sanitation and waste management practices. Exclusion methods and barriers have been deployed at several City facilities to minimize pest intrusions and staff is dedicating additional time to pest management research, planning and response.

Throughout many City facilities, it has been necessary to increase the use of snap traps and glue traps with non-toxic baits, pesticide applications using Essential IC3 an organic insecticide and Rat-X, a non-toxic rodenticide. The Landscape Division has been working closely with the Facilities Maintenance to reduce the density of foliage around facilities where increase in pest activity is reported. The effectiveness of the modified program has provided tolerable control of structural pests in most cases. On a few occasions, Facilities Maintenance had difficulty controlling pests for several weeks. Rodent, roach and ant activity has increased noticeably at the facilities routinely serving food to the public. Rodent and roach activity has increased in storage areas and outdoor trash enclosures.

Behavioral and operational changes will be necessary to achieve tolerable pest control under the new IPM Policy. The availability of compliant insecticides and rodenticides are limited. There are also cost concerns regarding non-toxic methods associated with the treatment for termites. The City's current pest control contractor recommends heat treatments or removing and restoring affected portions of structures to address termites. The structural program needs further development and improvement in seasonal planning, preventive control measures, monitoring and reporting.

Other City Properties

City Open Space and City farm lease property is also covered by the new organic pesticide policy. The control of artichoke thistle and castor bean remain a concern, as significant progress has been made over the past ten years to reduce the proliferation of these non-native, invasive plant species. The effectiveness of "Suppress" in maintaining control of artichoke thistle and castor bean will likely take two years. Other City properties, including agricultural field leases managed by the City's Community Development department were in compliance with the City's organic pesticide policy.

IPM Program Cost Impacts

Manual hand weeding and organic pesticides require the use of more labor, more product, and increased frequency of applications to provide a similar result as compared to past pesticide practices. The budget impact is anticipated to be in the range of a 5.6% increase to the Public Works \$21.2 million annual landscape maintenance budget.

The following chart provides a comparative example of the difference in costs between the use of Round Up (synthetic pesticide) and alternative organic pesticides.

Product	Cost per Gallon	Dilution Rate	100 gallons of Solution	Total Cost
Synthetic Pesticides				
Round Up	\$26	2%	2 gallons	\$52
Organic Pesticides				
Avenger	\$80	25%	25 gallons	\$2,000
Scythe	\$95	7%	7 gallons	\$665
Suppress EC	\$70	9%	9 gallons	\$630

In accordance with the tiered structure of the IPM Policy, synthetic pesticides may be used to control pests after non-toxic practices and organic pesticides have proven ineffective in controlling weeds, insects, rodents or disease. Such limited applications shall only be employed if deemed necessary to protect public health and economic loss by a licensed pest control advisor and City staff, when pests cannot be managed by other methods.

All City staff involved with pest control will continue to evaluate non-toxic options to control pests and associated costs to adhere to the new Citywide Pest Management Guiding Principles.

Appendix 1

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Table 3 City of Irvine Pesticide Usage Summary Citywide – Rodents			
Product	Pest	Total Use in 2015	Total Use in 2016
Synthetic Pesticides			
Fumitoxin Tablets	Rodent	1.09 lb	0
Diphacinone	Rodent	69.0 lb	0
Rozol Vole	Rodent	2 lb	0
Maki Mini	Rodent	6.0 lb	0
Avalon Strchnine	Rodent	1.44 lb	0
Omega Gopher Grain	Rodent	30 lb	0
*Contract Bait Block	Rodent	28oz	52 oz
Organic Pesticides			
Rat X	Rodent	1.25 lb	60 lb
Uncle Ian's Gopher Repellant	Rodent	1.0 lb	212 lb

*Synthetic pesticides used prior to adoption of organic pesticide policy.

Appendix 1

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Table 4 City of Irvine Pesticide Usage Summary Citywide – Insects			
Product	Pest	Total Use in 2015	Total Use in 2016
Synthetic Pesticides			
Temprid	Insects	8 ml	0
Transport GHP	Insects	74.9 oz	0
PT Wasp Freeze	Insects	8 oz	0
P.I. Contact	Insects	156 oz	0
Demand CS	Insects	24.5 oz	0
Tengard	Insects	12.2 oz	0
Tempo SC Ultra	Insects	7.5 oz	0
UP Star Gold	Insects	6 oz	0
*Talstar	Insects	71.7 oz	208 oz
*Masterline Bifenthrin	Insects	95.93 oz	6.49 oz
Organic Pesticides			
Essentria IC3	Insects	0	13,516 oz
Eco EXEMPT Jet	Insects	0	1625 oz
EcoVia	Insects	0	43 oz

*Synthetic pesticides used prior to adoption of organic pesticide policy.

Appendix 2

**Contractor daily application logs and reports for 2016
(XXX pages are available for review in the Public Works
department)**