Status Report: Bay Area Municipal Urban Runoff Management Agencies' Pesticide-Related Activities

Prepared by Laura Speare
UP3 Project Manager
Urban Pesticide Pollution Prevention Project
San Francisco Estuary Project

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Preface:

In 2005, the UP3 project reviewed the pesticide-related activities of urban runoff management agencies throughout the Bay Area as reported in 2003/2004 annual reports to the San Francisco Bay Water Board. The primary goal of this review, which is also the goal of this report, was to identify and present the tools and resources that the UP3 project can provide to best support municipalities with their efforts to prevent pesticide-related toxicity in urban surface waters. A review of current practices provided key information to help shape UP3 Project priorities for its remaining grant resources as well as identify areas that need continued funding. This report is not intended to be used to determine compliance with NPDES permit requirements. While this review was a thorough as possible, it is limited in its scope and there are a few important caveats to keep in mind:

- This review only reflects "current practices" according to 2003/2004 annual reports. 2004/2005 fiscal year reports were not available at the time this review was completed.
- This report only covers actions that were explicitly reported in 2003/2004 annual reports. Among the counties and cities, reporting varied significantly with regards to ease of finding pesticide-related information, clarity, and completeness.
- Activities listed in annual reports as planned or something the municipality will be or is considering doing in the future were not included in this report. In some cases when it was not clear whether the action was planned or completed, the review assumed the action was completed.
- This report does not attempt to evaluate how effective specific actions taken by specific municipalities were at preventing pesticide-related toxicity in urban surface waters.
- Percentages used include some uncertainty due to variability in reporting practices. They are meant to provide a quantifiable sense of what proportion of municipalities practice a certain activity as opposed to providing a statistically valid survey.
- San Mateo County municipalities' reports focus on tasks relating to the following specific pesticides of concern: DDT, dieldrin, chlordane, and diazinon.

For additional detail on these caveats as well as how this review was conducted, please see Section II: Scope of Review/Methodology. Also, please see the introduction for additional background.

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I. INTRODUCTION

Bay Area municipalities have been working to prevent and reduce pesticide-related water-quality pollution since the mid 1990s. Efforts have included the Our Water—Our World Program, which conducts outreach at point of purchase to the general public as well as retailers and distributors of pesticides, and the formation in 1995 of the Urban Pesticide Committee, a diverse group of federal, state, and local government staff, nonprofits, and other stakeholders who work together to prevent pesticide-related water quality pollution. In September 2004, the Urban Pesticide Pollution Prevention Project was created to help prevent pesticide-related toxicity in Bay Area urban creeks through encouraging proactive regulation, tracking the latest science and monitoring, and fostering effective education and outreach. One of the UP3 project's goals is to provide tools and resources to municipalities to help them continue and improve their efforts to prevent pesticide-related toxicity. Funded by a Prop 13 grant from the State Water Resources Control Board to the San Francisco Estuary Project, the UP3 Project is tasked with reviewing municipal pesticide plans and annual reports in order to identify how best to focus grant resources.

The year 2005 saw two key milestones relating to urban pesticides and water quality in the Bay Area. The first was the publication of new data showing the prevalence of sediment toxicity in urban creeks that was attributed to pyrethroid insecticides, a class of chemicals that has replaced diazinon in the marketplace. A study published in January 2006 showed similar toxicity in Bay Area urban creeks. The second milestone was the Regional Water Board's adoption of the Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks Total Maximum Daily Load and Water Quality Attainment Strategy Basin Plan Amendment. The Basin Plan Amendment and the implementation section of the supporting staff report include actions for municipal urban runoff agencies to implement in order to prevent pesticide-related toxicity. These two milestones increased interest in urban runoff management agency activities to prevent pesticide-related toxicity in urban surface waters.

Purpose of Report

The primary goal of this status report is to identify and present the tools and resources that the UP3 project can provide to best support municipalities with their efforts to prevent pesticide-related toxicity in urban surface waters. A review of current practices (as of 2003/2004) provides key information to help shape UP3 Project priorities for its remaining grant resources as well as identify areas that need continued funding. This report is not intended to be used to determine compliance with NPDES permit requirements. Potential future actions recommended in this report are based on review of 2003/2004 annual reports as well as discussions of regional needs with municipal staff.

Report Contents

The report structure and contents are as follows:

Section I: Introduction—Reviews the background and purpose for this report.
Section II: Scope of Review/Methodology—Provides the scope of this review, including the list of potential actions being evaluated and the sources used to develop this list, as well as the method used for annual report review and analysis.
Section III: Current Practices—Reviews the current practices as they relate to the list of potential actions being evaluated. Provides quantitative information on what percentage of municipalities report completing these actions in fiscal year 2003/2004.

Section IV: Analysis and Potential Actions—Identifies differences between the list of potential actions identified in Section 2 and activities reported in 2003/2004 annual reports and identifies future potential actions that could be taken to assist municipal urban runoff management programs.
Section V: Recommendations—Provides recommendations for focusing the UP3 Projects resources.
Section VI: References—Includes sources cited for this report.

II. SCOPE OF REVIEW/METHODOLOGY

This report provides a review of urban runoff management agency practices as reported in 2003/2004 urban runoff management agency annual reports to the San Francisco Bay Water Board. In order to focus this review and provide a consistent picture, a list of potential actions was compiled based on actions previously identified as being likely to reduce or eliminate pesticide-related toxicity in surface waters; the annual reports were reviewed against this list of actions. The sources used to develop this list were:

- The Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks Total Maximum Daily Load and Water Quality Attainment Strategy Basin Plan Amendment, 2005 (Water Board, 2005)
- Municipal Pesticide Toxicity Reduction Plans for 2003/2004 and, where available 2004/2005
- BASMAA Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks, 2000 (BASMAA, 2000)
- IPM Partnership Our Water,--Our World Program Regional Evaluation Report 2003-2004 (IPM Partnership, 2006)
- Personal communications with Water Board staff (Johnson, 2005)
- Regional needs assessments conducted during meetings held in September 2004, October 2004, and April 2005
- UP3 Project's 2005 Annual Science Update and 2005 Urban Pesticides Use Trends Report, and 2004 and 2005 Annual Regulatory Updates

The list was further refined during the review of annual reports to ensure that, to the extent possible, significant actions relating to pesticides were captured.

List of Potential Actions

1) Reducing pesticide use in municipal operations.

   A. Adopt and implement written integrated pest management (IPM) policy or ordinance that includes provisions to minimize pesticide use and require the use of IPM in municipal operations and on municipal property, including both staff and contract use.
   B. Prepare and implement pesticide toxicity control plans.
   C. Use IPM practices/procedures (unwritten/informal)
   D. Track pesticide use by employees and contractors, including grouping pesticides by hazard, and evaluating trends.
   E. Develop and implement contract provisions or other actions to ensure contractor's compliance with IPM policy/contractor's use of IPM
   F. Train municipal staff in IPM and require IPM training for contractors.

2) Encouraging others to reduce pesticide-related toxicity.
   A. Conduct outreach to:
      i) *Public and distributors:* Including in-store retail outreach program and direct outreach to residents, including working with household hazardous waste agencies to support, enhance, and publicize proper pesticide disposal.
      ii) *Pest Control Operators (PCOs)*
      iii). *Businesses:* Target outreach to large businesses, multi-family residences, and homeowners associations.
      iv). Schools and special districts
      v.) Municipal employees
   B. Participate in efforts to encourage proactive regulation, including:
      i) Tracking U.S. Environmental Protection Agency (U.S. EPA) activities and, when necessary, encouraging them to coordinate implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Clean Water Act (CWA) to accommodate water quality concerns in pesticide registration process.
      ii). Assembling and submitting information to the California Department of Pesticide Regulation (DPR) as needed to ensure pesticide applications comply with water quality standards.
      iii) Encouraging pesticide regulators and distributors to curtail pesticide use that poses water quality risks.
      C. Encourage public and private landscape irrigation management that minimizes pesticide runoff to storm drains, including new and redevelopment projects.

3) Evaluate effectiveness of all above actions, including an assessment of level of effort versus effectiveness.

Monitoring was identified as a key action, but is not covered in this report. A review of regional monitoring efforts is included in the UP3 Project's 2005 and 2006 annual research and monitoring reports. (TDC Environmental, 2005a, 2006)

Using a spreadsheet that included the list of actions and the names of municipalities, annual reports were reviewed against the list of actions. Quantitative analysis was conducted using this spreadsheet to determine the percentage of municipalities conducting particular activities. Percentages were rounded to the nearest one percent.

The activities of ninety cities, counties, countywide programs, and water/flood control districts were reviewed for this report. This does not represent all of the Bay Area municipalities. Municipalities included in this review were under Phase I NPDES stormwater permits and selected Phase II NPDES permittees. In the case of Contra Costa County, two cities, Brentwood and Oakley, were excluded from this review since these cities fall outside the jurisdiction of the San Francisco Bay Water Board. Phase II permittees included in this report were the municipalities, such as those in Marin County, who had more established programs where enough information was available to allow meaningful comparisons with activities of Phase I permittees. City and County of San Francisco's activities were not reviewed for this report for two reasons: most of their urban runoff flows to a combined sewer system that is not subject to stormwater permitting; San Francisco now has a Phase II stormwater permit that covers the portion of their stormwater that does not flow into a sanitary sewer, but this permit was in the early stages when this report review was conducted. (The San Francisco Department of the Environment does have a comprehensive

IPM program.) Sonoma County was included in this review due to recent efforts to establish an IPM policy and conduct outreach. Napa County was not included since its IPM program is in its early stages and there was not enough information available to allow consistent review. The 90 cities and counties whose plans were reviewed are listed in Table 1. This review covers the activities of countywide programs as well as cities, counties and water/flood control districts that are "co-permittees" with the countywide programs.

Table 1: Municipalities Whose 2003/2004 Annual Reports Were Reviewed

Alameda Countywide Clean Water Program

City of Alameda
City of Albany
City of Berkeley
City of Dublin
City of Emeryville
City of Fremont
City of Hayward
City of Livermore
City of Newark
City of Oakland
City of Piedmont
City of Pleasanton
City of San Leandro
City of Union City
Alameda County
Alameda County Flood Control and Water Conservation District
Zone 7 of the Alameda County Flood Control and Water Conservation District

Contra Costa Clean Water Program

City of Clayton
City of Concord
Town of Danville
City of El Cerrito
City of Hercules
City of Lafayette
City of Martinez
Town of Moraga
City of Orinda
City of Pinole
City of Pittsburg
City of Pleasant Hill
City of Richmond
City of San Pablo
City of San Ramon
City of Walnut Creek
Contra Costa County

San Mateo County Stormwater Pollution Prevention Program

Town of Atherton
City of Belmont
City of Brisbane
City of Burlingame
Town of Colma
City of Daly City
City of East Palo Alto
City of Foster City
City of Half Moon Bay
Town of Hillsborough
City of Menlo Park
City of Millbrae
City of Pacifica
Town of Portola Valley
City of Redwood City
City of San Bruno
City of San Carlos
City of San Mateo
City of South San Francisco
Town of Woodside
San Mateo County

Santa Clara Valley Urban Runoff Pollution Prevention Program

City of Campbell
City of Cupertino
City of Los Altos
Town of Los Altos Hills
Town of Los Gatos
City of Milpitas
City of Monte Sereno
City of Mountain View
City of Palo Alto
City of San Jose
City of Santa Clara
City of Saratoga
City of Sunnyvale
Santa Clara County
Santa Clara Valley Water District

Table 1: Municipalities Whose 2003/2004 Annual Reports Were Reviewed

City of American Canyon

Fairfield-Suisun Urban Runoff Management Program

Vallejo Sanitation and Flood Control District

Marin County
City of Belvedere
Town of Corte Madera
Town of Fairfax
City of Larkspur
City of Mill Valley
City of Novato
Town of Ross
Town of San Anselmo
City of San Rafael
City of Sausalito
Town of Tiburon

Marin County

Caveats:

As noted in the preface, while this review was a thorough as possible, it is limited in its scope and there are a few important caveats to keep in mind:

- This review only reflects "current practices" according to 2003/2004 annual reports. 2004/2005 fiscal year reports were not available at the time this review was completed.
- This report only covers actions that were explicitly reported in 2003/2004 annual reports. Among the counties and cities, reporting varied significantly with regards to ease of finding pesticide-related information, clarity, and completeness. In some cases, it was a straightforward exercise to determine which activities related to pesticides were conducted; in others, it involved sifting through many pages to glean the desired information. Actions may have been taken that either were not included in 2003/2004 reports or were not described clearly or with enough specificity to determine their status. In both cases, these actions were not included in this status report. For example, an agency may have a written IPM policy in place, but not have mentioned it in the 2003/2004 report. Or an agency might mention contract language to ensure whether IPM was used, but not specify whether this language was in development or in use.
- Activities listed in annual reports as planned or something the municipality will be or is considering doing in the future were not included in this report. In some cases when it was not clear whether the action was planned or completed, the review assumed the action was completed.
- This report does not attempt to evaluate how effective specific actions taken by specific municipalities were at preventing pesticide-related toxicity in urban surface waters.
- Percentages used include some uncertainty due to variability in reporting practices. They are meant to provide a quantifiable sense of what proportion of

municipalities practice a certain activity as opposed to providing a statistically valid survey.

- San Mateo County municipalities' reports focus on tasks relating to the following specific pesticides of concern: DDT, dieldrin, chlordane, and diazinon.

III: CURRENT PRACTICES

The following section provides analysis of reported activities in the 2003/2004 fiscal year. The analysis is based on the list of actions above. This section of the report is structured based on this list of actions.

1) Reducing pesticide use in municipal activities

The following section describes actions municipalities took in the 2003/2004 fiscal year to reduce pesticide us in municipal activities.

A. Written policies and/or ordinances

Written IPM policies serve a number of purposes. They explain or document an agency's use or non-use of pesticides, establish procedural guidelines for an agency, assure that laws and regulations are adhered to and help document that proper procedures were followed. Policies also help employees gain a better understanding of their jobs, can help reduce an agency's reliance on pesticides, and protect the environment, applicators, and coworkers. (UC-IPM, 2003) Adopting a written policy also demonstrates support for and commitment to IPM at the upper management level and, in the case of formally adopted ordinances, the elected officials' level.

About 60% of municipalities reported having written IPM policies or ordinances. Included in this 60%, are 19% of municipalities who mentioned countywide policies, but did not specify whether the city had taken formal steps to adopt the countywide policy. In most cases, policies and ordinances were referenced, but not included with the annual reports, and this report does not attempt to evaluate how effective or comprehensive existing policies and ordinance are, but rather to document the percentage of agencies that have taken this step. However, the few IPM policies included with annual reports showed a range of level of specificity. In addition, it was not always clear what steps were taken or planned to ensure implementation of the policy.

B. Plans

Written pesticide toxicity reduction plans provide lists of specific goals and actions for municipalities to complete. The vast majority of municipalities, 79%, reported having a written pesticide toxicity reduction plan. Most municipalities followed plans developed by countywide programs, sometimes with modifications specific to their needs. Many municipalities in San Mateo County follow plans that relate only to pesticides specifically listed in permit (DDT, dieldrin, chlordane, and diazinon).

C. Practices/Informal policies

Eighty-three percent of municipalities reported some form of informal policy or procedure relating to IPM or reducing pesticide use. Included in this total are:

- 23% who reported using specific IPM practices for managing weeds in parks, landscaping, median strips and rights of way, including using goats, mulching, using wood chips, hand pulling, mechanical mowing, and planting wildflowers.
- 9% who reported practices specific to ant management, including caulking cracks and crevices, monitoring, establishing action levels, and using baits.
- 2% who reported having a policy of not applying any pesticides
- 9% who reported informal policies that reduced the amount of pesticides used and/or reduced the level of toxicity of pesticides used (by reducing use of the most toxic pesticides).
- 10 % who reported having an informal policy of using IPM. (Municipalities who reported considering a range of IPM activities but did not mention any specific actions are included in the total, but not the specific percentages.)

D. Pesticide Use Tracking

Municipalities documented their 2003/2004 pesticide use, both to report to county agricultural commissioners and to comply with NPDES permits. Eighty-nine mentioned tracking their pesticide use in their annual reports to the Water Board. The type of pesticide tracking varied greatly among municipalities, with some municipalities including with their annual reports copies of the required reports that were sent to the county agricultural commissioners documenting type of pesticide and amount applied, while others tracked year over year trends, grouped pesticides by hazard and used this information to help them refine their pesticide toxicity reduction plans. About two-thirds of these municipalities included this pesticide tracking with their reports to the Water Board (the other one-third referenced sending reports to the county agricultural commissioners). Thirty-three percent of municipalities (included in the 89% total) also specifically mentioned tracking their contractor's use of pesticides. In a few cases, municipalities reported tracking pesticide use, but did not specify whether it was staff use or contractor use or both. Eight percent of municipalities reported tracking trends in pesticide use. Four percent of municipality's group pesticides by hazard, while two percent reported evaluating their pesticide use trends and using the results to guide outreach efforts.

E. Contract Provisions

Many municipalities contract out for structural pest control and have a need for mechanisms to ensure that the contractors they hire practice IPM. Thirty-three percent of municipalities reported some form of contract provision or other action to ensure that contractors were using IPM. Of these municipalities,

- 13% noted that the contract included specific language requiring IPM or compliance with their IPM policy (in some cases the policy was included as part of the contract).
- I5% mentioned contract language developed that would be included in contracts as they were renewed.
- 8% mentioned contract language in development.
- 15% noted that their contractors had been given their IPM policy and/or related information.
- 1%t noted that staff reviewed contractors' recommendations before allowing work.
- 1% mentioned that contract language made the contractor liable for pesticide use.
- 6% required regular IPM training as a condition of their contract.

F. Training

Training is considered to be a key element in ensuring IPM use. Fifty-seven percent of municipalities reported that their staff and/or contractors received some form of IPM training in fiscal year 2003/2004. An additional 11 percent mentioned that their staff received training in pesticide use (in order to maintain licenses), but did not specifically mention whether this training involved IPM. Pest control applicators are required to receive continuing education credits to maintain their licenses, but these requirements do not specifically dictate IPM training. Training could be in safe use and disposal of pesticides or other areas and not include IPM. Types of training varied and included tailgate/staff meetings; workshops/seminars; large-scale conferences, and small group hands-on trainings. The audiences for these trainings also varied and included municipal staff, PCOs, public, landscapers, and school employees. Providers of training were numerous and included county stormwater programs, individual municipalities, the California Agricultural Production Consultants Association (CAPCA), the Pesticide Applicators Professional Association (PAPA), the Department of Pesticide Regulation (DPR), the IPM Partnership, the *Our Water—Our World* (OWOW) project, the University of California Extension, regional partnerships (such as the group that hosted the June 2004 Regional IPM conference), Master Gardeners, and The Watershed Project.

In addition to training on IPM practices, there is training of staff and contractors on IPM policies. Twenty-seven percent of municipalities reported training or providing information to staff and/or contractors about their IPM policies and procedures.

2) Encouraging others to reduce pesticide-related toxicity

Actions that have been identified in this area include outreach and education and encouraging proactive regulation. The category of outreach is so broad that it is useful

for the purposes of this review to divide up the category based on target audience. This review is divided into outreach to the general public, to PCOs and landscapers, to businesses, to municipal employees, and to schools and special districts. One other category of outreach specifically related to household hazardous waste disposal was also evaluated.

A. Conduct Targeted Outreach to Specific Audiences

Public

All municipalities included in this review participate in outreach to the general public through the OWOW Program. Almost all municipalities reported some additional forms of public outreach. Varying levels of efforts exist (sometimes depending on the size of city) with some municipalities providing literature racks and attending one community event and others having comprehensive, multi-faceted outreach campaigns. Thirty percent of municipalities mentioned specific outreach efforts (workshops, demonstration gardens, etc.) relating to landscaping and gardening issues. Only one municipality mentioned a structural pest control specific "Got Ants" campaign. (Structural pest control outreach is frequently part of broader campaigns mentioned, such as OWOW's "Got Bugs" campaign). A wide variety of types of outreach exists, including:

- Point-of-purchase outreach, including shelf-talkers, fact sheets
- Training of retail store staff and pesticide distributors
- Newsletters and newspaper articles
- Displays and literature racks at city buildings
- Community events such as Earth Day, Art & Wine Festivals, Pollution Prevention Weeks, County Fairs
- Web sites
- IPM and native plant demonstration gardens
- Advertising, including billboards, bus and BART ads, print, TV, Radio and Cable
- Video and DVDs
- Booklets (e.g., Healthy Home and Garden)
- Mailings, including bill inserts and calendars
- Public workshops

PCOs:

Eighteen percent of municipalities mentioned some form of outreach specifically targeted to PCOs, including developing contact lists, working with PAPA and CAPCA, and hosting or funding workshops and conferences. Countywide programs tended to take the lead on this outreach.

Businesses (other than PCOs, landscapers, and retailers)

Fifty-seven percent of municipalities mentioned some form of outreach to restaurants and other businesses. This total includes the following percentages of municipalities who reported specific types of outreach to business:

- 27% specifically mentioned inspectors distributing outreach material such as the *Don't Set a Table for Pests* brochure to restaurants.
- 2% mentioned specific mailings to restaurants.
- 18% reported outreach to (other) businesses, including mailings and materials distributed by inspectors.
- 7% mentioned articles in newsletters targeted to businesses (e.g. Chamber of Commerce).
- 2% mentioned mailings specifically to property management agencies.
- 4% reported attending business sponsored events. A few municipalities noted that they are primarily residential and don't have businesses or restaurants.

In a number of cases, it was not possible to determine from reports whether outreach was conducted to businesses in general or specifically targeted to certain types of businesses, such as commercial and multi-family residences.

HHW-specific outreach

Sixty-nine percent of municipalities reported having household hazardous waste (HHW) facilities or events in place. This relatively low total probably reflects a reporting issue since all municipalities are likely to have some form of HHW collection. Seventy-six percent of municipalities reported HHW education through at least one of the following means: web site, newsletters, bill inserts, door hangers, outreach materials (including HHW specific and general urban runoff outreach that mentioned HHW), and school outreach (1 program). Eighteen percent reported specific collection events. Most HHW collection and education was coordinated at the county level, with cities providing support for countywide programs and conducting some of their own outreach.

Municipal employees

Outreach to municipal employees could include any of the following: training and instruction on which staff is allowed to apply pesticides (i.e., that staff are not allowed to apply pesticides unless licensed to do so) or outreach to staff on preventing pollution from pesticides outside of work. Forty-eight percent of municipalities reported some form of outreach to municipal employees. It is not always clear whether this outreach specifically mentioned IPM or was more general. Types of outreach methods included e-mail, internal web sites (Intranets), literature racks, memoranda, and staff meetings. Topics included pollution prevention, IPM, and/or reminders that only licensed staff may apply pesticides.

Schools and other special districts

Fifty-six percent of municipalities reported some form of school outreach, including staff giving presentations, teacher "train the trainer" workshops, and assemblies and performances by contractors. In many cases, it was unclear how much of this school outreach focused on IPM (as opposed to general stormwater

pollution prevention messages). A few municipalities mentioned working with special districts such as vector control districts.

B. Encouraging proactive regulation

Annual reports provided little information about regulatory activities. Some municipalities fund the California Stormwater Quality Association (CASQA), which sends comment letters to U.S. EPA on behalf of California urban runoff management agencies. In 2003/2004, CASQA provided "bridge" funding for TDC Environmental to track relevant U.S. EPA and DPR processes and provide talking points. More detail on regional regulatory activities can be found in the UP3 Projects 2004 and 2005 annual regulatory reports. (TDC Environmental, 2004 and 2005d)

C: Encourage public and private landscape irrigation management that minimizes pesticide runoff to storm drains, including new and redevelopment projects

Another way municipalities can encourage pollution prevention is by encouraging public and private landscape irrigation management that minimizes pesticide runoff, including specific measures as part of new and redevelopment projects.

- Forty percent of municipalities reported specific measures to ensure that new and redevelopment projects were designed to reduce pesticide runoff.
- Of this 40%, more than 19% noted providing specific information to prospective developers and residents, including 2% who provided a list of recommended plants.
- Nine percent reported having specific provisions in their conditions of approval.
- Ten percent noted specific review of new and redevelopment landscaping plans by key staff members.
- Two countywide programs noted providing significant guidance to municipalities on new and redevelopment provisions.

3) Evaluating Effectiveness

Evaluating the effectiveness of urban runoff management agencies source control actions is a challenging exercise; however, it is an important way to help direct limited resources to the activities that have the greatest potential to prevent pesticide-related toxicity in surface waters. Sixty-three percent reported evaluating the effectiveness in the following ways:

- Tracking numbers of outreach material distributed (39%), attendees at outreach events (19%), web site hits/visitors (3%), and/or residential or business mail recipients (3%). Tracking these numbers provides documentation of levels of effort and numbers of people reached through outreach; it does not document whether attendees or members of the public who received outreach materials became more aware of issues and/or adopted pollution prevention behaviors based on outreach.

Specific measures to ascertain behavior change or raised awareness aside from the surveys mentioned below were reported.
- Conducting surveys, including countywide phone-in surveys (3 countywide programs), event-based surveys, mail-in surveys (including surveys mailed to residents along with calendars supplying information on stormwater pollution prevention), employee surveys
- Evaluations from workshops and/or school events.

There was no mention in the 2003/2004 reports of evaluation methods used for other types of source control actions.

Other Actions

A number of municipalities mentioned other pesticide-related actions that did not fall into the above categories, including working specifically with golf courses to reduce pesticides use and runoff.

Budget and Other Issues

A few issues were raised in annual reports that affected the municipality's ability to complete planned actions. The most significant recurrent issue was the effect of recent budget cuts. One municipality mentioned losing 38% of its full time staff and 71% of its part time staff. Another issue raised was that the significant amount of time it takes for municipalities to evaluate and report on their activities takes time away from actually conducting the activities.

Regional Collaborations

Regional collaborations, such as the IPM Partnership's OWOW Program, provide a means for implementing tasks that are region wide in scope. Municipalities can pool resources, avoid duplication of effort, and achieve results that would be beyond the capabilities of an individual city or county. Certain activities, such as monitoring and point-of-purchase outreach, can be conducted by region-wide programs. Almost all municipalities reported participating in some form of regional collaboration, and many participated in multiple efforts, including:

- OWOW/IPM Partnership
- Clean Estuary Partnership
- Surface Water Ambient Monitoring Program
- California Stormwater Quality Association (CASQA)
- Bay Area Clean Water Agencies/Bay Area Stormwater Management Agencies Association (BASMAA) media relations
- BASMAA regional advertising campaign
- Urban Pesticide Committee
- Countywide efforts, including workgroups
- Collaborations with neighboring cities for activities such as environmental calendar for residents or trainings

IV: ANALYSIS AND POTENTIAL FUTURE ACTIONS TO ASSIST MUNICIPAL URBAN RUNOFF PROGRAMS

This section provides an analysis of the differences between potential municipal urban runoff management program actions listed in section II of this report and municipal activities as reported in the 2003/2004 fiscal year annual reports. It also provides potential future actions that the UP3 Project or others could take to assist municipal urban runoff programs. In addition, this section notes two "big-picture" needs relating to municipal urban runoff programs' activities, including the need for continuing and additional funding for pollution prevention activities.

A. Written IPM policies or ordinances. As noted above, while the majority of municipalities reported some form of written policy or ordinance, many municipalities (40%) did not report having written policies as of June 30, 2004.

Potential Actions:

- Compile sample IPM policies and ordinances and make available to municipalities.
- Prepare a list of key elements of an IPM policy
- Provide template or "boiler-plate" language for an IPM policy

B. Contract mechanisms to ensure IPM use. The majority of municipalities in the Bay Area contract out for structural pest control (an exact percentage is not possible to determine as reporting of contractor use was inconsistent in annual reports). Structural pest control has been identified as a significant current source of pyrethroids in urban creeks (TDC Environmental, 2005c). In 2003-2004 annual reports, 33% of municipalities mentioned some form of contract mechanism or action. Municipalities report challenges in structuring the bid and contracting process to ensure that their contractors are practicing IPM (UP3 Project, 2005b). Regional needs assessments have identified assistance with contracting as a priority. (UP3 Project, 2005a).

Potential Actions:

- Prepare a list of key elements for IPM bids/contracts.
- Compile "tried-and-true" sample RFPs, RFQs, and contract specifications.
- Strengthen networks of Northern California professionals and host workshops. In December 2005, the UP3 Project hosted nearly 25 IPM coordinators, pest managers, and others for a meeting of the Public Agencies IPM Exchange that featured a discussion of contract issues. A follow up discussion was held at the June 27, 2006 IPM Exchange meeting and a sub workgroup to discuss IPM Contracting issues in more detail was formed.
- Prepare "boiler-plate" language for contract specifications, including language for building and lease agreements.
- Prepare case studies of successful IPM contracting and lists of contacts.
- Provide a list of certified IPM providers. The EcoWise Certified Project (formerly the Making IPM Mainstream Project), also funded by a State Water Resources Control Board grant, is working on a certification program for structural pest control operators that would enable municipalities to hire a pest control operator that is "IPM certified" by a third party. The Pest Control Operators of California is discussing developing its own certification program for structural pest control.

The Alameda County Bay-Friendly landscaping program is planning a certification program for landscape professionals, and has discussed working with the EcoWise Certified program.

C. Tools for effectiveness evaluation. While 60 percent of municipalities mentioned some method of evaluating the effectiveness of outreach, there was no mention of methods used to evaluate other source control actions (with the exception of pesticide use tracking as noted above). Evaluating effectiveness in a meaningful way is a challenging exercise and one in which municipalities have expressed interest in additional tools and resources. Resources currently available to assist municipalities include the Water Environment Research Report "Tools to Measure Effectiveness of Source Control Actions," and a CASQA white paper "An Introduction to Stormwater Program Effectiveness Assessment."

Potential actions:

- Research existing tools and mechanisms for evaluating effectiveness.
- Work with CASQA to provide municipalities with information and analysis.

D. Training focusing on IPM. Regional needs assessments have highlighted the need for training in IPM (UP3 Project, April 2005). In 2003/2004 annual reports, many municipalities list training for staff or contractors, but it is not always clear whether this training focuses on IPM (as opposed to safe use and disposal or other topics).

Potential actions:

- Provide hands-on trainings in ant management.
- Make curriculum resources available through UP3 web site. Curriculum materials developed as part of pilot ant management trainings are available at http://www.up3project.org/up3_training.shtml and municipalities are welcome to use these materials for their own trainings.
- Offer trainings on pests other than ants.
- Foster regional collaboration on IPM conferences and trainings.
- Create and make available ant training video
- Facilitate discussion of what types of conferences and trainings are most cost-effective and effective at achieving behavior change.

E. Outreach targeted on ant management and for PCOs and landscapers. Many municipalities reported innovative hands-on programs for lawn and garden use, but did not mention corresponding outreach focused specifically on ants. Outreach on less-toxic ant management is, however, part Our Water—Our World point-of-purchase outreach, including a fact sheet entitled "Controlling Ants in Your House" and "shelf talkers" in major retail establishments such as Orchard Supply Hardware call attention to less toxic products. Ant control around buildings is the most common urban insecticide application in California (TDC Environmental, 2005b). In addition, recent research highlights the relative current contribution to water quality impacts of structural pest control applications, due to the greater washoff fractions of runoff from impervious surfaces and the quantity of pyrethroids used. Based on this information, additional outreach to structural pest control operators has been identified as a potential action. (TDC Environmental, 2005c)

Potential actions:

- Develop/update a list of PCO contacts in the region
- Develop "key messages" and outreach strategies
- Prepare and develop outreach materials
- Share resources regionally
- Training for landscapers
- Training for maintenance department of schools

"Big-Picture" Needs

Clear, Consistent Reporting of Urban Runoff Management Practices Relating to Pesticides
As noted above, among the counties and cities, reporting varied significantly with regards to ease of finding pesticide-related information, clarity, and completeness. In some cases, it was a straightforward exercise to determine which activities related to pesticides were conducted; in others, it involved sifting through many pages to glean the desired information. A consistent reporting format for all Bay Area municipalities could be structured in such a way as to provide S.F. Bay Water Board staff with clear, comprehensive information that can be reviewed easily and simultaneously allow municipalities to spend less time preparing reports. One municipality mentioned that the time needed to prepare reports documenting their efforts took valuable staff time away from conducting implementation actions.

Potential actions:

- Water Board staff and municipalities could work together to develop and implement a standardized template for reporting.

Additional and continuing funding for pollution prevention activities. A number of municipalities noted that their ability to complete pesticide-related toxicity pollution prevention activities was affected by budget cuts. The UP3 Project is currently providing tools and resources to assist municipalities with pollution prevention activities, yet project grant resources are limited and current grant funding expires in July 2007[1]. There is a need for continuing funding for efforts including providing technical assistance to water agencies' regulatory activities relating to urban pesticides and water quality; and providing regional coordination, tools, training, and resources and other organizational support for municipal IPM programs beyond the life of this current grant cycle. In addition, opportunities exist to further municipalities' current efforts through pilot projects and other activities that would require additional funding.

Potential actions:

- Identify and pursue continuing funding for UP3 efforts, including maintaining UP3 web site
- Identify and provide information and assistance to municipalities applying for grant funding. (For example, the UP3 Project provided information on grant opportunities through the Western Integrated Pest Management Center and a letter of support for a San Francisco Department of Environment grant application)

[1] The UP3 Project has applied for a time extension, which is currently in process at the State Board. If approved, this time extension would provide funds until approximately July 2007.

V. RECOMMENDATIONS:

Based on the information and analysis in this report, the UP3 Project has the following recommendations to focus resources to assist municipal urban runoff programs as well as continue and expand on existing activities to prevent pesticide-related toxicity. In many cases, the UP3 Project is currently providing resources to address these recommendations and will continue to dedicate resources. UP3 resources are, however, limited and are scheduled to expire in July 2007. In addition to general recommendations, this section provides specific actions the UP3 has already completed as well as actions it plans to complete between May 2006 and July 2007 with its current resources; it also provides recommendations for activities that would require additional resources. Recommendations are numbered for ease of reference and *do not represent priority order*.

Recommendation #1: Assist municipalities who have not already done so to adopt and implement written IPM policies or ordinances.

- *UP3 Project actions to date*
  - Created list of Bay Area municipalities with IPM policies
  - Compile sample policies
  - Posted sample policies on the UP3 web site at http://www.up3project.org/up3_tools.shtml
- *UP3 Project planned actions (07/06-07/07):*
  - Compile additional sample ordinances and policies
  - Post additional sample polices on web site.
  - Assist municipalities with developing procedures to implement policies.
- *Actions that would require additional resources:*
  - Developing a list of "key elements" of an IPM policy.
  - Creating a template for IPM policies

Recommendation #2: Assist municipalities with contract mechanisms to ensure IPM is used.

- *UP3 Project actions to date*
  - Hosted discussions of contract process at December 2005 and June 2006 IPM Exchange meetings.
  - Compiled sample contracts, RFPs, and RFQs.
  - Created link on UP3 web site to contract language on the IPM Toolkit prepared by the Sacramento Stormwater Quality Partnership.
  - Provided municipalities with information about certification and qualification programs, including the EcoWise Certified Program (March 2006 UPC meeting) and the Bay Friendly landscaping program (May 2006 UPC meeting)
- *UP3 Project planned actions (07/06-073/07):*
  - Work with EcoWise Certified project to prepare a list of key elements for contract specifications, Requests for Proposals, and Requests for Qualifications.
  - Work with EcoWise Certified project to compile additional "tried-and-true" sample RFPs, RFQs, and contract specifications. (A few samples are already available through the UP3 web site through the IPM Toolkit prepared by the Sacramento Stormwater Quality Partnership).
  - Plan, organize, and lead semi-annual Public Agencies IPM Exchange meetings through July 2007 that include discussions of contract issues.
  - Provide a list of certified IPM providers. The Making IPM Mainstream Project, also funded by a State Water Resources Control Board grant, is working on a certification

program for structural pest control operators that would enable municipalities to hire a pest control operator that is "IPM certified" by a third party.

- *Activities that would require additional resources:*
  - Organizing and leading Public Agencies IPM Exchange meetings after July 2007
  - Preparing case studies of successful IPM contracting and lists of contacts.
  - Providing updated lists of certified IPM providers after July 2007.

Recommendation #3: Assist municipalities with tools and resources to evaluate effectiveness of source control actions.

- *UP3 Project actions to date*
  - Initiated research on existing tools and mechanisms.
  - Hosted presentation by Betsy Elzufon of Larry Walker Associates on "Tools to Measure Effectiveness of Source Control Actions," at the November 2005 Urban Pesticide Committee meeting and June 2006 Public Agencies IPM Exchange meetings.
  - Facilitated discussion of evaluation tools at June 2006 IPM Exchange meeting.
- *UP3 Project planned actions (07/06-07/07):*
  - Work with CASQA to research existing tools and mechanisms municipalities can use to evaluate effectiveness of source control actions, with a focus on outreach actions.
  - Prepare summary of tools and resources to evaluate effectiveness; make summary available to municipalities through UP3 web site.
- *Activities that would require additional resources.*
  - Provide additional information on evaluating effectiveness beyond the scope of the UP3 Project report.

Recommendation #4: Assist municipalities with IPM trainings and workshops.

- *UP3 Project actions to date*
  - The UP3 project hosted three hands-on trainings in ant management in February and March 2006. These hands-on trainings represent a pilot effort that will also result in IPM training for more than 50 municipal staff who manage ants. Trainings are limited to 20 participants and designed to rotate to different locations in the Bay Area to make them convenient and accessible to municipal staff. The first three trainings are being held in Marin, Contra Costa, and San Mateo Counties. Additional trainings in other parts of the Bay Area as well as trainings targeted to pest control operators could be offered.
  - Provided hand outs and curriculum materials to municipalities via UP3 web site at http://www.up3project.org/up3_training.shtml
- *UP3 Project planned actions (07/06-07/07):*
  - Provide two additional hands on pilot ant management trainings (Fall 2006)
  - Provide limited staff support for November 2006 Regional IPM conference and February 2007 San Francisco Urban IPM conference
- *Activities that would require additional resources.*
  - Additional ant management trainings for both municipal staff and PCOs
  - Trainings and workshops on other structural pest control topics
  - Trainings and workshops on landscape topics
  - Additional regional IPM conference
  - Provide trainings for managers and IPM coordinators showing big picture.

Recommendation #5: Assist municipalities with targeted outreach on ant management and targeted outreach to PCOs and landscapers.

UP3 Project actions to date:

- Facilitated resource sharing through Urban Pesticide Committee and Public Agencies IPM Exchange meetings.
- Provided municipalities with QA/QC review of draft outreach materials upon request.

- *UP3 Project planned actions (07/06-07/07):*
  - Facilitate resource sharing through Urban Pesticide Committee and Public Agencies IPM Exchange.
  - Provide municipalities with targeted "key messages."
  - Provide municipalities with QA/QC review of draft outreach materials upon request.
  - Maintain/update web site.
  - Coordinate activities with EcoWise Certified program to conduct outreach to PCOs.
- *Activities that would require additional resources:*
  - Developing specific, targeted outreach strategies focused on ant management.
  - Developing specific, targeted outreach strategies for PCOs.
  - Developing and printing targeted outreach materials.
  - Facilitating regional resource sharing after July 2007.

Recommendation #6: Assist municipalities with pesticide use tracking, including tracking year to year trends in pesticide use and grouping pesticides by hazards.

- *UP3 Project actions to date:*
  - Provided municipalities with information on pesticide tracking database (UP3 has provided information on pesticide tracking databases through presentations at the January 17, 2006 Urban Pesticide Committee).
  - Facilitated regional resource sharing through Urban Pesticide Committee and Public Agencies IPM Exchange.
- *UP3 Project planned actions (07/06-07/07):*
  - Facilitate regional resource sharing through Urban Pesticide Committee and Public Agencies IPM Exchange.
- *Activities that would require additional resources:*
  - Creating case studies of keys to success and lessons learned from programs that are using innovative tracking methods.
  - Identifying barriers to pesticide tracking.
  - Facilitating regional resource sharing after March 2007.

Recommendation #7: Assist municipalities with conducting periodic review and needs assessments to assist with both individual and regional priority setting. There is a need for municipalities to set priorities and focus efforts in light of limited resources. A number of municipalities mentioned the adverse affect of recent budget cuts on their pesticide-related activities.

- *UP3 Project Actions to Date*
  - Facilitated discussions of municipalities' priorities and needs for pest management tools and resources at April 2005 Public Agencies IPM Exchange and October 2004 meeting of IPM coordinators and pest managers in Marin.
- *UP3 Project planned actions (07/06-07/07):*
  - Facilitate follow-up discussion of municipalities' priorities and needs for pest management tools and resources at fall 2006 Public Agencies IPM Exchange.

    - Continue to facilitate ongoing resource sharing through Urban Pesticide Committee and Public Agencies IPM Exchange.
- *Activities that would require additional resources:*
    - Facilitating periodic assessments of municipal needs and priorities after March 2007.
    - Work with municipalities on priority setting.
    - Encourage and assist with pilot IPM projects.

VI. REFERENCES

The primary sources used for this report were the 2003/2004 annual reports and pesticide toxicity reduction plans submitted to the San Francisco Bay Water Board by the municipalities listed in Table 1. Additional sources are listed below.

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UP3 Project (2005b). "Public Agencies IPM Exchange Meeting Notes, December 6.