B A S M A A

To: Tom Mumley, TMDL Coordinator – San Francisco Bay RWQCB
Bill Johnson, Diazinon TMDL Staff – San Francisco Bay RWQCB
Arty Williams, Office of Pesticide Programs, USEPA
Denise Keehner, Office of Pesticide Programs, USEPA
Jim Pendergast, Office of Water, USEPA
Roger Gorke, Office of Water, USEPA
Alexis Strauss, Region IX, USEPA
Kathleen Goforth, Region IX, USEPA
Marshall Lee, California Department of Pesticide Regulation
Nan Singhasemanon, California Department of Pesticide Regulation
Melinda Marks, California Stormwater Quality Task Force
Bruce Fujimoto, State Water Resources Control Board

From: Geoff Brosseau, Executive Director
CC: BASMAA Executive Board (w/o enclosure)
Date: November 30, 2000
Subject: FY99/00 Annual Report on BASMAA's Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks

The purpose of this letter is to transmit the enclosed Annual Report, which summarizes implementation of the Bay Area Stormwater Management Agencies Association's (BASMAA) Pesticide-Related Toxicity Reduction Strategy (Strategy) during fiscal year 1999/2000. The Strategy, organized into three basic types of actions – education, regulatory, and monitoring – includes actions that are or should be taken by local, regional, state, and federal government agencies to reduce organophosphate pesticide-related toxicity in San Francisco Bay Area urban creeks. The actions are distributed among these various levels of government based on each agency's regulatory authority, constituency, and resources. In accordance with Strategy Action C-1, BASMAA compiled information and is transmitting this annual report on implementation of the Strategy to the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Board). The annual report provides a summary of past, present, and planned efforts of municipalities as well as other organizations responsible for Strategy actions, and updates to Strategy actions.

The basic premise behind the Strategy is that it will take the combined and coordinated effort of each level of government to solve this problem in a way that minimizes duplication of effort, avoids transfer of the problem or risk to other media besides urban runoff, and prevents substitution of the use of organophosphate pesticides with other, possibly more toxic pesticides.

Overall, through its first year of implementation, it appears that the Strategy has provided a comprehensive and correct plan of actions to address pesticide-related surface water toxicity in urban creeks. With a few exceptions, implementation of the actions seems to be proceeding at an acceptable pace. Considering this is the first year of the Strategy's implementation, it is reasonable to assume that those actions that are behind their implementation schedule can be brought back on schedule.

On behalf of BASMAA, thank you for your agency's efforts in addressing this challenging issue. If you have any questions regarding the Strategy, please contact me at (650) 365-8620 or gabrosseau@ispchannel.com.

Sincerely,

ORIGINAL SIGNED BY

Geoff Brosseau, Executive Director

FY 99/00 Annual Report

Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks

November 2000

FY 99/00 Annual Report

Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks

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Appendices

1.0 Introduction

The purpose of this document is to summarize implementation of the Bay Area Stormwater Management Agencies Association's (BASMAA) Pesticide-Related Toxicity Reduction Strategy (Strategy) (BASMAA, 2000a) during fiscal year 1999/2000. The Strategy, organized into three basic types of actions – education, regulatory, and monitoring – includes actions that are or should be taken by local, regional, state, and federal government agencies to reduce organophosphate pesticide-related toxicity in San Francisco Bay Area urban creeks. The actions are distributed among these various levels of government based on each agency's regulatory authority, constituency, and resources. In accordance with Strategy Action C-1, BASMAA compiled information and is transmitting this annual report on implementation of the Strategy to the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Board). The annual report provides a summary of past, present, and planned efforts of municipalities as well as other organizations responsible for Strategy actions, and updates to Strategy actions.

Upon adoption of the Strategy in February 2000, BASMAA transmitted it to all the organizations listed as responsible for Strategy actions and encouraged its use by these organizations (Appendix A). Regional Board staff reviewed the Strategy and provided comments to BASMAA in May 2000 (Appendix B) and BASMAA responded to these comments in June 2000 (Appendix C). In its response, BASMAA committed to updating or clarifying some of the Strategy actions and to reporting on the Strategy's implementation on a set schedule.

There are two kinds of reports documenting implementation of the Strategy actions:

1) Storm water program annual reports - These reports are submitted by individual storm water management programs (SWMPs) in September each year and cover virtually everything the storm water programs did to implement their storm water management plans in the previous year.

2) BASMAA Strategy annual report – This report is specific to pesticides and summarizes the actions of storm water programs as well as other organizations to implement the Strategy.

2.0 Strategy Elements

The Strategy is a multi-faceted effort including:

- Education/outreach - Educating residents and other audiences about pesticide-related toxicity, less-toxic methods for pest control, and proper use and disposal of pesticides

- Regulatory – Identifying opportunities to reduce toxicity and advocating state and federal agencies to seize these opportunities through regulation and re-registration; limiting or prohibiting pesticide use by municipal staff and contractors; and regulating the discharge of pesticides to storm drains
- Monitoring - Investigating the extent and causes of toxicity, and assessing impacts on beneficial uses

To respond to the Regional Board's request for "an inventory of municipal storm water programs and each municipal entity in the programs that identifies who is implementing each of the Strategy actions attributable to municipalities and the extent that these actions are currently implemented," BASMAA developed a "Municipal Activities Template" to gather and provide this information in an organized, consistent, and comprehensive way (Appendix C). Appendix D provides the templates as filled out by the BASMAA member agencies.

The following provides a summary on implementation of Strategy actions during fiscal year 1999/2000. Information provided by the municipalities in the templates was compiled with information about the activities of the other organizations implementing the Strategy to produce this report. The three basic types of actions organize the summary – education, regulatory, and monitoring. Information is also provided on the coordination and evaluation actions. Actions listed for "Bay Area storm water management programs" are not necessarily meant to be implemented by all such programs. For some actions, one program or BASMAA is taking the lead or completing the work.

2.1 Education

The education/outreach element of the Strategy includes the following major efforts:

2.1.1 Household hazardous waste collection

E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	Lead - SWMPs	Ongoing

Summary - Bay Area storm water management programs provided household hazardous waste (HHW) information on most of their educational materials. Many of these materials include information specific to pesticide disposal. The IPM Partnership, which is supported by many storm water management programs, includes a *Safe Use and Disposal of Pesticides* fact sheet. Some storm water management programs funded and helped manage their communities' HHW collection programs.

E-2: Investigate with the appropriate oversight agencies ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly (e.g., joint advertising).	Lead – SWMPs Support – BASMAA	By June 2001

Summary – Several storm water management programs initiated meetings with HHW agencies to explore options for coordination. Many cities within Contra Costa County are meeting with neighborhood communities on ways to enhance pesticide collection. A couple of programs funded and promoted an "amnesty day" for removal and disposal of chlorpyrifos from retail store shelves. A couple of storm water management programs also actively tracked USEPA's Consumer Labeling Initiative and are working to help resolve conflicts between federal and state disposal regulations.

2.1.2 Pesticide-related toxicity / proper use and disposal / less-toxic methods

E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Lead – SWMPs Support – DPR, BASMAA	Ongoing

Summary – Bay Area storm water management programs, along with several wastewater treatment agencies developed and implemented the IPM Partnership or *Our Water, Our World* Promotion in both 1999 and 2000. The IPM Partnership – which promotes less-toxic pest control to nursery and hardware store customers – has won several environmental program awards, has been well received by the participating stores and their customers, and may have contributed to a reduction in toxic product sales and been responsible for an increase in less-toxic product sales (Regional IPM Partnership Committee, 2000). Several programs supplemented the 10 *Our Water, Our World* Promotion fact sheets by developing and distributing a Spanish version of the "Ants" fact sheet.

Storm water management programs also developed or reprinted and distributed various outreach pieces including: *Pests Bugging You?*, *Grow It!*, *Control It!*, and *Kids Guide to Backyard Bugs*. The programs also supported the BASMAA Regional Advertising Campaign's *When Ants Invade* campaign and some programs supplemented the ads locally. The programs supported the BASMAA/BADA Regional Media Relations project that pitched stories regarding pesticides to regional media and some programs also pitched stories to their local media. Most storm water management programs provided public education at community events. At least one program worked with Master Gardeners to present workshops to the community and teachers on less-toxic gardening. A couple of programs help fund *Kids in Gardens* programs,

and distributed educational material related to pesticide use to children at local elementary schools.

E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.	Lead – SWMPs Support – DPR, BASMAA	By June 2001

Summary – The most significant and widespread effort to enhance accessibility to information about pesticide-related problems and solutions is the IPM Partnership (described under Action E-3). A couple of programs ran ads at local movie theaters. One storm water management program and a municipality included pesticide-specific information on their web site. Several municipalities provided IPM information at community composting workshops, or through a direct mail flyer with a coupon. One agency attached pesticide fact sheets to employee paychecks and retiree newsletters.

E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Lead – SWMPs Support – BASMAA	Pilot FY 99/00

Summary – Several municipalities have policies that encourage less-toxic pest management. At least one city prohibits use of pesticides and one storm water management program's survey of its agencies showed chlorpyrifos was not used at all and diazinon was not used on a regular basis. Several agencies trained their employees in least toxic, effective herbicide alternatives and several programs plan to train employees in FY 00/01.

E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Lead – San Francisco Support – BASMAA	Pilot FY 99/00

Summary – San Francisco took the lead in developing a pollution prevention program for restaurants focused on pesticide use (San Francisco Public Utilities Commission, 2000). The program produced a laminated poster and companion fact sheet for restaurants and visited 650 San Francisco restaurants. During each visit, less toxic pest control methods were discussed with the restaurant manager/supervisor. Bilingual English/Spanish fact sheets were given to the owners/managers, and posters in English and/or Spanish were placed on the kitchen walls. One program distributed BMP booklets that include a section on pesticides to restaurants in English and Spanish. One other storm water management program updated its information for restaurants to include BMPs for pesticide use and disposal. Several municipalities trained their

inspectors to look for improper use and disposal and to educate businesses as part of their pretreatment programs.

E-15: Continue to support the outreach efforts of other agencies and organizations through grant programs. Funding priority should be given to projects and programs focused directly on reducing organophosphate pesticide-related toxicity in urban surface waters.	Lead – DPR	Ongoing

Summary – The California Department of Pesticide Regulation runs a couple of grant programs focused on reducing risk from pesticide use:

The Pest Management Grants program provides funding to public and private entities interested in investigating and developing innovative pest management practices that will lead to adoption of reduced-risk pest management systems. The intent of the program is to encourage voluntary group efforts to develop pest management practices that reduce pesticide risks, through local and regional demonstration and applied research projects. Emphasis is placed on projects that can be implemented and clearly demonstrate reduced-risk. Appendix E provides descriptions of two projects funded in FY 99/00.

The Pest Management Alliance program provides funding to address important pest management issues on a statewide scale. The Alliance is devoted to reducing pesticide risks, while at the same time, establishing a dialogue between the Department of Pesticide Regulation and the regulated community. Commodity groups, trade associations, and others are encouraged to submit proposals to address priority areas of concern – such as finding alternatives to highly toxic pesticides, protecting surface and ground water quality, developing IPM policy for public schools and other public buildings, and dealing with pesticide problems in urban situations.

2.1.3 Pest control operators

E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Lead – San Francisco Support – DPR, BASMAA	Pilot FY 99/00; Workshops by June 2001

Summary – Working with Central Contra Costa Sanitary District (CCCSD) and the Contra Costa Clean Water Program (CCCWP), San Francisco took the lead in developing and conducting accredited pest control operator (PCO) training workshops that promoted practices protective of water quality. In concert with CCCSD and CCCWP, San Francisco sponsored two complementary workshops for PCOs – the first workshop was used to highlight the water quality issues related to pesticide use and provide training on the technical aspects of IPM. This technical workshop was lead by staff from the Bio-Integral Resource Center and included training by leading IPM providers in the Bay Area. The second workshop was focused on helping PCOs sell IPM services and was based on a similar workshop developed by Rutgers University. The primary instructor for the Rutgers workshop was brought in to lead the San Francisco and CCCSD/ CCCWP workshops. The workshops received accreditation from the State Department of Pesticide Regulation and Structural Pest Control Board (SPCB) and PCOs attending the workshops received continuing education credits – good towards fulfilling their licensing requirements. Several storm water management programs plan to host and help coordinate training for pest control operators in FY 00/01.

E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.	Lead – San Francisco Support – DPR, BASMAA	Pilot FY 99/00

Summary – San Francisco took the lead in investigating ways to integrate information into the State's licensing procedures and continuing education curriculum for PCOs. The program reviewed a draft study guide on IPM for Pest Control Advisors being developed by University of California - Davis Extension. San Francisco also contacted both DPR and SPCB staff about adding IPM and surface water quality-related information into the requirements for the continuing education curriculum. The tests administered at the end of the San Francisco and CCCSD/CCCWP workshops (described under Action E-7) focused on IPM and surface water quality-related issues. These efforts will continue and the rest of the Bay Area storm water management programs are tracking these efforts.

E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.	Lead – SWMPs Support – DPR, BASMAA	Pilot FY 99/00

Summary – Staff from a couple of the County Agricultural Commissioners offices have been semi-regular participants in the Urban Pesticide Committee. Bay Area storm water management programs are in various phases of coordination with their County Agricultural Commissioners. One program attends IPM Commission meetings and has a working

relationship with the Agricultural Commissioner, while others have either contacted their Agricultural Commissioner or plan to in FY 00/01 or FY 01/02.

E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.	Lead – San Francisco Support – DPR, BASMAA	Pilot FY 99/00

Summary – San Francisco developed and made an awareness-raising presentation to a chapter meeting of CAPCA (California Agricultural Production Consultants Association). CCCSD has made presentations to the local PCOC (Pest Control Operators of California) chapter as well. Materials from these presentations as well as others should be sufficient to create a canned presentation. These efforts will continue and the rest of the Bay Area storm water management programs are tracking these efforts.

E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."	Lead – San Francisco Support – DPR, BASMAA, RWQCB	By June 2001

Summary – Working from best management practices originally developed by CCCSD and the PCOC, San Francisco developed draft BMPs protective of both wastewater and storm water. These efforts will continue and the rest of the Bay Area storm water management programs are tracking these efforts.

E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	Lead – San Francisco Support – DPR, BASMAA	Pilot FY 99/00

Summary – San Francisco developed and published an article in their *Water Warriors* newsletter, which is sent to its residents. One storm water management program worked with Master Gardeners to publish information in their regular column in the local newspaper. These efforts will continue and the rest of the Bay Area storm water management programs either published/placed similar articles, are tracking these efforts, or plan to consider doing this work in FY 01/02.

E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	Lead – San Francisco Support – DPR, BASMAA	Pilot FY 99/00

Summary – San Francisco initiated development of a consumer guide using information from Consumer Reports magazine and a report from the Pesticide Watch Education Fund. These efforts will continue and several of the Bay Area storm water management programs are tracking them. One program created four news articles and pitched them to the local media. The arborists for at least one municipality regularly provide information on alternative pest control to residents.

E-14: Provide support to Bay Area storm water programs in their efforts to carry out actions related to pest control operators.	Lead – DPR	Start FY 99/00

Summary – Both DPR and the Structural Pest Control Board accredited the workshops put on by CCCSD/CCCWP and San Francisco.

2.2 Regulatory

2.2.1 Federal Pesticide Re-registration

R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	Lead – SWQTF Support – DPR, SWMPs, RWQCB	According to re-registration schedule

Summary – The California Stormwater Quality Task Force (SWQTF) developed and submitted extensive comments on the Chlorpyrifos Preliminary Risk Assessment (Appendix F). Several other agencies also submitted comments including the ACCWP, Regional Board, and CCCSD. The SWQTF also started to develop comments on the Diazinon Preliminary Risk Assessment, which were due after the end of FY 99/00. The ACCWP also provided a study that was used in the preliminary risk assessment (ACCWP, 1997). Several storm water management programs also participated in or tracked the efforts of the SWQTF's Executive Committee or its Pesticide Work Group, and a few storm water management programs funded the efforts of the SWQTF's regulatory consultant.

R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by:		
A. Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments.	Lead – SWMPs Support – DPR, SWQTF, BASMAA, RWQCB	According to re-registration schedule
B. Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	Lead – SWQTF Support – DPR, SWMPs, RWQCB	According to re-registration schedule

Summary – The Chlorpyrifos Revised Risk Assessment and an agreement with registrants was released on June 8, 2000. The SWQTF's comments on the Chlorpyrifos Preliminary Risk Assessment and the preliminary work on the Diazinon Preliminary Risk Assessment identified existing, pertinent organophosphate (OP) pesticide data for USEPA to consider, and identified uses of OP pesticides that are likely to come in contact with water. The ACCWP provided another study (ACURCWP, 1995) and initiated development of a SWMM model of diazinon application and runoff. Several storm water management programs tracked the efforts of the SWQTF and agreed to provide existing data, if requested. A few storm water management programs funded the efforts of the SWQTF's regulatory consultant.

R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).	Lead – SWQTF Support – DPR, SWMPs, RWQCB	According to re-registration schedule

Summary – Phase 5 for Chlorpyrifos started after the end of FY 99/00 and Diazinon was in phase 3 at the end of the fiscal year (see description under Action R-1). The SWQTF initiated efforts on Chlorpyrifos and plans to submit risk management ideas and comments for both pesticides during their respective public comment periods in FY 00/01. At least one storm water management program, the RWQCB, and CCCSD tracked the efforts of the SWQTF.

R-4: As part of the Revised Risk Assessments (Phase 4) USEPA should:		
A. Include all of the surface water data and studies demonstrating pesticide-related toxicity and potential water quality standard exceedances from across the country.	Lead – USEPA Support – DPR, SWMPs, RWQCB	According to re-registration schedule

B. Identify potentially problematic uses including those that: 1) require mixing; 2) recommend being "watered-in" or applied just before a rain; 3) involve application in areas likely to contact water such as manholes, impervious surfaces (e.g., "crack and crevice"), and in and around creeks; and 4) come in formulations that may run off (e.g., granules or flakes that float).	Lead – USEPA Support – DPR, SWQTF, SWMPs, RWQCB	According to re-registration schedule
C. Require diazinon and chlorpyrifos manufacturers to conduct studies and submit results on the legal but potentially problematic uses identified as described above.	Lead – USEPA Support – DPR	According to re-registration schedule

Summary - The Chlorpyrifos Revised Risk Assessment and an agreement with registrants was released on June 8, 2000 and Diazinon was in phase 3 at the end of the fiscal year (see description under Action R-1). It appeared that USEPA did include virtually all of the surface water data and studies known to Bay Area storm water management programs. However, USEPA did not identify potentially problematic uses or require diazinon and chlorpyrifos manufacturers to conduct studies and submit results on these uses. The California DPR plans to support a study in FY 00/01 to identify potentially problematic uses.

R-5: USEPA should consider and initiate one or more methods for conducting cost/benefit analyses:		
A. Conduct more comprehensive cost/benefit analyses including more accurate assessments of the environmental cost, and the mounting cost to local public agencies of dealing with the regulatory and legal liability of pesticide-related surface water toxicity.	Lead – USEPA Support – DPR, SWMPs, RWQCB	According to re-registration schedule
B. Consider the costs and benefits of urban uses separately from agricultural uses to separate the very different needs, costs, and benefits of pesticide use in these two environments.	Lead – USEPA Support – DPR, SWMPs, RWQCB	According to re-registration schedule

Summary – USEPA did not use new or revised cost/benefit analyses in either the Chlorpyrifos or Diazinon Preliminary Risk Assessments, or the Chlorpyrifos Revised Risk Assessment.

R-6: As part of the Risk Management Strategies (Phase 6) USEPA should:		
A. Ensure that TMDL implementation plans can be developed to comply with the requirement to demonstrate "that the control actions and/or management measures are expected to achieve the required pollutant loads" (Federal Register 64, No. 162, 46051; 40 CFR 130.33(b)(10)(i), August 23, 1999).	Lead – USEPA Support – DPR, RWQCB	According to re-registration schedule
B. Identify and describe how USEPA will use the registration process to ensure that registered pesticides do not cause or contribute to the impairment of surface waters.	Lead – USEPA Support – DPR, RWQCB	According to re-registration schedule
C. Identify pest prevention and control methods that can effectively substitute for the problematic uses identified under Phase 4.	Lead – USEPA Support – DPR	According to re-registration schedule
D. Identify and make label changes to ensure that pesticide use in accordance with label directions does not cause impairment of surface waters.	Lead – USEPA Support – DPR	According to re-registration schedule

Summary – Neither the Chlorpyrifos nor the Diazinon Risk Management Strategies (Phase 6) have been released. The Chlorpyrifos Revised Risk Assessment (Phase 4) and an agreement with registrants (precursor to Phase 6) were released on June 8, 2000 and Diazinon was in phase 3 at the end of the fiscal year (see description under Action R-1). The Chlorpyrifos agreement does not address actions R-6A or R-6B. In announcing the agreement with registrants, USEPA did refer to pest prevention and control methods that can effectively substitute for the problematic uses (action R6-C). The agreement does specify label changes to remaining uses that may reduce the likelihood of legal pesticide use causing impairment of surface waters but no evidence was provided to ensure that outcome (action R-6D).

2.2.2 State Pesticide Regulation

R-12: Complete its current pest management assessment as soon as possible, and disseminate information on effective alternatives to as wide an audience as possible.	Lead – DPR	FY 99/00

Summary – California DPR has not completed its current pest management assessment of alternatives to diazinon use for ants, fleas, and grubs.

R-13: Initiate pest management assessments as soon as possible on other common pests for which diazinon is used for control, such as aphids, cockroaches, spiders, and yellow jackets.	Lead – DPR	FY 99/00

Summary - California DPR does not have plans to initiate an additional assessment.

R-14: Invoke California Food & Agriculture Code Section 12824 et. seq. authorities. The focus of the State's efforts should be those potentially problematic uses, identified under Phase 4 of pesticide re-registration that are not eliminated or significantly curtailed by USEPA as part of the current re-registration process.	Lead – DPR	FY 99/00

Summary – California DPR has not invoked section 12824, which says in part "The director shall endeavor to eliminate from use in the state any pesticide that endangers the agricultural or nonagricultural environment… All pesticides for which renewal of registration is sought also shall be evaluated in accordance with this section." Typically, this section is invoked at the beginning of the calendar year when, as a result of section 12817, "every registration expires on December 31st of each year except when renewal is applied for within one month thereafter in the manner which is provided for registration…" The completion of much of the re-registration process for both chlorpyrifos and diazinon during 2000, as well as its own study (see R-4 summary) should provide DPR with a clearer picture of potentially problematic uses.

2.2.3 Local Ordinances/Policies

R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Lead – San Francisco, Marin Support – BASMAA	By June 2002

Summary – San Francisco continues to implement their 1996 IPM ordinance, which allowing for a few justified exceptions, banned the use of pesticides by City departments or their contractors by January 1, 2000. A careful review of the IPM ordinance along with discussions among members of San Francisco's Technical Advisory Committee revealed several areas where changes to the ordinance language would clarify roles and facilitate implementation of the IPM program. The revised ordinance language was adopted by the County Board of Supervisors and went into effect February 14, 2000. By implementing the ordinance, San Francisco has:

- eliminated the use of all category 1 pesticides, all organophosphates, and carbamates;
- eliminated the use of sprays inside all buildings and structures; and
- implemented a community right to know notification system for all pesticide applications.

Marin County also is in the midst of implementing their 1998 IPM ordinance. Marin's ordinance has similar implementation provisions as San Francisco's ordinance, and sets an overall goal of reducing countywide total yearly pesticide use by 75% by weight (1997 is base year), no later than January 1, 2004. The Marin storm water management program is using the Marin County IPM ordinance as their model ordinance and the program is actively tracking implementation including attending Marin IPM Commission meetings.

The Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) is funding work to develop and promote a model ordinance. The City of Palo Alto is reviewing other agencies' ordinances and exploring options with the intention of putting an ordinance or policy in place during FY 00/01.

BASMAA is tracking implementation of the San Francisco and Marin IPM ordinances and plans to periodically pass information on these counties' efforts to Bay Area storm water management programs. A progress report on San Francisco's efforts is provided as Appendix G.

R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Lead – San Francisco, Marin Support – BASMAA	By June 2002

Summary – Appendix G provides an update on San Francisco's efforts to implement a purchasing policy/specification and contract language for pest prevention/control for lands and structures owned by the City and County of San Francisco. BASMAA is tracking these efforts and plans to periodically brief Bay Area storm water management programs. The City of Palo Alto is reviewing other local purchasing policy options with the intention of putting a policy or specification in place during FY 00/01.

2.2.4 Total Maximum Daily Loads

R-7: Continue to pursue, on an as aggressive a timetable as possible, the development and implementation of at least one case study of a diazinon TMDL for urban creeks.	Lead – USEPA Support – RWQCB, SWQTF, SWMPs, DPR	Start FY 99/00

Summary - USEPA's Office of Water (OW) and Office of Pesticide Programs (OPP) initiated discussions in November 1999 on the development and implementation of several case studies. The purpose of the case studies would be to establish theoretical TMDLs for specific waterbodies and theoretical proposals for achieving compliance through the most effective use of available Federal, State, and local authorities. OW and OPP staff developed a "draft straw proposal" (Appendix H) and shared it with USEPA staff from its Regional offices as well as potential stakeholders including the SWQTF. A representative from the California SWQTF met with managers and staff from OW and OPP in November 1999 to discuss the proposal and in January 2000, the SWQTF sent formal comments on the proposal to USEPA (Appendix I). Progress on the proposal since then has been delayed by USEPA's efforts to promulgate the final revisions to the TMDL Rule.

R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	Lead – SWQTF Support – USEPA, RWQCB, SWMPs, DPR	Start FY 99/00

Summary – In its January 2000 letter, the SWQTF volunteered to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks. The ACCWP also sent comments to USEPA on the draft straw proposal. In its December 1999 letter, ACCWP volunteered to work with USEPA to develop an approach to urban pesticide TMDLs.

R-9: Continue to develop and refine a diazinon TMDL for San Francisco Bay Area urban creeks, including refinement of the problem statement.	Lead – RWQCB Support – USEPA, SWMPs	According to TMDL schedule

Summary – With the planned addition of a dedicated staff person in FY 00/01, the San Francisco Bay Regional Board has accelerated their schedule for production of an urban creek TMDL for diazinon by about 2 years (Appendix J). The current schedule is:

- refine the TMDL problem statement – June 2000
- establish numeric targets (the desired future condition) - June 2002
- refine source analyses – June 2001
- allocate loads among sources – June 2002
- prepare the TMDL report – June 2002
- develop the Implementation Plan – June 2003

R-10: Name all sources when doing TMDLs by expanding on existing source categories and develop new categories to name sources as far back as possible in time and space in the life cycle of pollutants.	Lead – RWQCB Support – USEPA	According to TMDL schedule

Summary - The source analyses step has not started.

2.2.5 NPDES Permit Requirements

R-11: Coordinate the timing and content of NPDES permit provisions related to diazinon with the timing and content of the diazinon TMDL for urban creeks.	Lead – RWQCB Support – USEPA	Ongoing

Summary - The San Francisco Bay Regional Board has started to add provisions to National Pollutant Discharge Elimination System (NPDES) permits requiring storm water management programs to increase their efforts to reduce pesticide-related toxicity of surface waters. Specifically, these new provisions require:

- Analysis of diazinon-related water quality concerns stemming from 303(d) listing, including identification of potential sources, evaluation of current BMP effectiveness, characterization of drainage areas and discharges, and development of control measures plans
- Development of diazinon toxicity reduction strategies or plans

2.3 Monitoring

M-1: Earmark funds to support monitoring studies and coordinate their expenditure with the State and Regional Boards.	Lead – DPR Support – RWQCB	Ongoing

Summary - Starting with FY 99/00, California DPR earmarked approximately $800,000 for water quality monitoring related to the issue of organophosphate pesticides in surface waters. Based on input from Regional Boards around the state, about one-half of the funds were used to support the Sacramento / Feather River Watershed Process. The main deliverable of that effort is a water quality management strategy report due April 2001. The other $400,000 was encumbered to help address the following data gaps:

- San Diego RWQCB - The funding will be used to extend the current automated monitoring network that the San Diego Regional Water Quality Control Board established in conjunction with the Chollas Creek Total Maximum Daily Load stakeholder group.
- Santa Ana RWQCB – The University of California Integrated Pest Management group will gather urban pesticide sales and use data to help develop a better understanding of urban demand/usage and residential use patterns in the urban setting.
- San Francisco Bay RWQCB - The San Francisco Estuary Project will provide DPR with an analysis of the relative runoff potential of various diazinon and chlorpyrifos products into surface water. SFEP will be analyzing pesticide labels data, pesticide use data, and other pesticide-related information in its process. SFEP will also identify the sites of use that are more prone for diazinon and chlorpyrifos runoff.
- San Francisco Bay RWQCB - The County of Alameda will perform land use-associated run off monitoring and evaluate runoff potential of diazinon from paved surfaces. Land use categories such as single-family residential, multi-family residential, commercial, industrial, mixed zoning, etc. will be investigated.
- Central Valley RWQCB – The Center for Irrigation Technology (California State University, Fresno) will develop a method and suitable equipment to conduct diazinon runoff studies under simulated rainfall/irrigation conditions and differing environmental conditions. Initial studies will focus on turf and other bare soil and vegetated surfaces.

M-2: Appropriate and expend funds to provide the information necessary to implement California Food & Agriculture Code Section 12824 et. seq. authorities in a timely manner.	Lead – DPR Support – RWQCB	FY 00/01

Summary - California DPR has not invoked section 12824. The completion of much of the re-registration process for both chlorpyrifos and diazinon during 2000, as well as its own study

(see R-4 summary) should provide DPR with a clearer picture of potentially problematic uses for which additional monitoring is needed.

M-3: Use monitoring and science to further investigate local impacts and sources, and to host case studies, if USEPA or California DPR will provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	Lead – Alameda Support – USEPA, DPR, RWQCB, BASMAA	As funding allows

Summary – Having contributed much of what is known about the occurrence and sources of diazinon in the Bay Area (ACURCWP, 1995; ACFCWCD, 1997; ACCWP, 1997), the Alameda Countywide Clean Water Program continues to take the lead in monitoring focused on pesticide-related surface water problems (see description under Action M-1). Bay Area storm water management programs continue to support the Regional Monitoring Program, which includes trends monitoring and episodic toxicity monitoring in San Francisco Bay.

3.0 Coordination

C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	Lead – BASMAA Support – SWMPs, DPR, RWQCB	Ongoing, beginning FY 99/00

Summary - During FY 99/00, BASMAA and the storm water management programs coordinated development of the Pesticide-Related Toxicity Reduction Strategy through the BASMAA Pesticide Work Group. The Strategy was adopted by the BASMAA Executive Board in February 2000 and disseminated to a long list of agencies. Since that time, BASMAA has coordinated implementation of the SWMPs/BASMAA portions of the Strategy through the Urban Pesticide Committee (UPC) as well as the appropriate BASMAA and SWQTF committees.

C-2: Coordinate implementation of the overall Strategy by: 1) convening meetings to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information to the appropriate organizations.	Lead – RWQCB Support – SWMPs, DPR, SWQTF, USEPA	Ongoing, beginning FY 99/00

Summary - The San Francisco Bay Regional Board has helped coordinate implementation of the Strategy since its adoption in February 2000 by convening, staffing, and facilitating the efforts of the UPC.

4.0 Evaluation

V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Lead – BASMAA Support – SWMPs, DPR, RWQCB, SWQTF, USEPA	Annually

Summary - Regular evaluation of the implementation of any strategy is vital to its long-term success. Many of the Strategy actions are still being implemented and others have not been started. For those actions that have been completed in full or in part, effectiveness can be summarized as follows:

- Education Actions - Many of the education action items discussed above have built-in evaluation mechanisms and storm water management programs describe these in their individual annual reports. At the regional scale, the 1999 *Our Water, Our World* Promotion was evaluated using both qualitative and quantitative measures (Regional IPM Partnership Committee, 2000) and BASMAA's summer 1999 Regional Advertising Campaign was evaluated using pre- and post-campaign surveys (Action E-3). Both of these evaluations showed the actions to be effective at raising awareness and to some extent, at modifying polluting behaviors. The PCO work group has been evaluating the success and lessons learned from the June 2000 PCO workshops put on by San Francisco and CCCSD/CCCWP (Action E-7). Although the information provided at the workshops was well received, attendance was disappointingly low.
- Regulatory Actions – In general, the pesticide re-registration documents released to-date by USEPA have included and acknowledged the importance of surface water data and studies

demonstrating pesticide-related toxicity (Actions R-1, R-2, and R-4A) so the SWQTF and other commenters have been effective to that extent. The impact of the inclusion of these data on re-registered uses is less clear – partly because in the case of Diazinon, the re-registration process is not complete and partly because, in the case of Chlorpyrifos, the major changes to its registered uses have been prompted by human health not environmental risks. To-date, the SWQTF and other commenters have not been successful at convincing USEPA to: identify potentially problematic uses (Action R-4B), require registrants to conduct studies (Action R-4C), modify the USEPA cost/benefit methods (Action R-5), or integrate pesticide re-registration procedures with TMDL development (Actions R-6, R-7, and R-8). So the effectiveness of these actions at reducing pesticide-related surface water toxicity is undetermined.

Both BASMAA and the storm water management programs regularly report on the results of evaluations either via presentations at committee meetings and/or as a part of annual reports.

V-2: Evaluate implementation of the overall Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Lead – RWQCB Support – SWMPs, DPR, SWQTF, USEPA	Annually

Summary – The San Francisco Bay Regional Board has yet to begin this action.

5.0 Updates to Strategy Actions

In its June 2000 response to comments letter to the Regional Board, BASMAA agreed to update the Strategy actions as part of the annual reporting process. Specifically, the member agencies agreed to:

"Regulatory – We agree with your comment regarding the need for evaluation of municipal use of organophosphate pesticides and plan to add, as part of the annual reporting process on implementation of the Strategy, a new monitoring action to address it."

This new monitoring action has been added to Table 1 Revised Summary of Actions as M-4.

"Monitoring – We appreciate your comment. As currently worded, M-3 is not clear. To rectify this, we will modify, as part of the annual reporting process, M-3 into M-3A and M-3B as follows:

M-3A: Bay Area storm water programs will use monitoring and science to further investigate local impacts and sources.

M-3B: Bay Area storm water programs will host case studies, if USEPA or California DPR will provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country."

Action M-3 has been modified as described in Table 1 Revised Summary of Actions.

The Pesticide Work Group reviewed the complete list of actions in the Strategy and found that other than these changes, the list of actions is comprehensive and should remain current through FY 00/01.

6.0 Conclusions and Recommendations

The Pesticide-Related Toxicity Reduction Strategy has provided a comprehensive and correct plan of actions to address pesticide-related surface water toxicity in urban creeks. With a few exceptions, implementation of the actions seems to be proceeding at an acceptable pace. Considering this is the first year of the Strategy's implementation, it is reasonable to assume that those actions that are behind their implementation schedule can be brought back on schedule.

The following recommendations are made for FY 00/01:

Evaluation - Although it is possible to evaluate implementation of each of the actions, evaluating their effectiveness is more difficult, especially at this early stage of implementation. Nevertheless, each of the organizations responsible for implementation should ensure that some level of evaluation is done on each action.

Coordination – BASMAA's Pesticide Work Group should meet at least twice during the year to review implementation of the Strategy and make needed adjustments.

7.0 References

Alameda County Flood Control and Water Conservation District, 1997. Strategy to Reduce Diazinon Levels in Creeks in the San Francisco Bay Area. Prepared by J. Scanlin and S. Gosselin.

Alameda County Urban Runoff Clean Water Program, 1995. Identification and Control of Toxicity in Storm Water Discharges to Urban Creeks. Prepared by S.R. Hansen and Associates.

Alameda Countywide Clean Water Program, 1997. Characterization of the Presence and Sources of Diazinon in the Castro Valley Creek Watershed. Prepared by J. Scanlin and A. Feng.

Bay Area Stormwater Management Agencies Association, 2000a. Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks. Prepared by the BASMAA Pesticide Work Group.

Bay Area Stormwater Management Agencies Association, 2000b. FY 1998 – 1999 Regional Advertising Campaign, Final Report. Prepared by O'Rorke Public Relations & Advertising.

Regional IPM Partnership Committee, 2000. Regional IPM Partnership, *Our Water, Our World* Promotion, Final Report, 1999.

San Francisco Public Utilities Commission, 2000. 2000 Summary - Report Water Pollution Prevention: Encouraging IPM Demand from the Restaurant Sector. Prepared by Uribe & Associates.

Table 1 Revised Summary of Actions

This table summarizes the actions listed in this Strategy by type of action (e.g., education, regulatory) and responsible government agencies. Every action has one lead agency or agency type (i.e., SWMPs) with support provided by other agencies as noted. If a specific SWMP is taking the lead on an action, they are noted in (parenthesis). The designations will likely change as the Strategy is implemented and roles and responsibilities become more defined. Therefore, the listing is conservative and some "not applicable" designations may change to "support" or even "lead" designations. Actions listed for "Bay Area storm water management programs" are not necessarily meant to be implemented by all such programs. For some actions, one program or BASMAA will take the lead or complete the work.

Education	**Roles**					
Household hazardous waste collection	**Bay Area SWMPs**	**SWQTF**	**RWQCB**	**DPR**	**USEPA**	**Schedule**
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	**Lead**	Not applicable	Not applicable	Not applicable	Not applicable	Ongoing
E-2: Investigate with the appropriate oversight agencies ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly (e.g., joint advertising).	**Lead** (BASMAA Support)	Not applicable	Not applicable	Not applicable	Not applicable	By June 2001
Pesticide-related toxicity / proper use and disposal / less-toxic methods (in the context of this Strategy, "less-toxic" is meant to connote less risk of storm water pollution)						
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	**Lead** (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Ongoing
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.	**Lead** (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	By June 2001

Education (cont')	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	**Lead** (BASMAA Support)	Not applicable	Not applicable	Not applicable	Not applicable	Pilot FY 99/00
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Not applicable	Not applicable	Pilot FY 99/00
Pest control operators (PCOs)						
E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00; Workshops by June 2001
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.	**Lead** (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00

Education (cont')	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00
E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Support	Support	Not applicable	By June 2001
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	**Lead** (San Francisco) (BASMAA Support)	Not applicable	Not applicable	Support	Not applicable	Pilot FY 99/00
E-14: Provide support to Bay Area storm water programs in their efforts to carry out actions related to pest control operators.	Not applicable	Not applicable	Not applicable	**Lead**	Not applicable	Start FY 99/00
E-15: Continue to support the outreach efforts of other agencies and organizations through grant programs. Funding priority should be given to projects and programs focused directly on reducing organophosphate pesticide-related toxicity in urban surface waters.	Not applicable	Not applicable	Not applicable	**Lead**	Not applicable	Ongoing

Regulatory		Roles				
Pesticide re-registration	**Bay Area SWMPs**	**SWQTF**	**RWQCB**	**DPR**	**USEPA**	**Schedule**
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	Support	**Lead**	Support	Support	Not applicable	According to re-registration schedule
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by:						
C. Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments.	**Lead** (BASMAA Support)	Support	Support	Support	Not applicable	According to re-registration schedule
D. Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	Support	**Lead**	Support	Support	Not applicable	According to re-registration schedule
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).	Support	**Lead**	Support	Support	Not applicable	According to re-registration schedule
R-4: As part of the Revised Risk Assessments (Phase 4) USEPA should:						
B. Include all of the surface water data and studies demonstrating pesticide-related toxicity and potential water quality standard exceedances from across the country.	Support	Not applicable	Support	Support	**Lead**	According to re-registration schedule

Regulatory (cont')	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
D. Identify potentially problematic uses including those that: 1) require mixing; 2) recommend being "watered-in" or applied just before a rain; 3) involve application in areas likely to contact water such as manholes, impervious surfaces (e.g., "crack and crevice"), and in and around creeks; and 4) come in formulations that may run off (e.g., granules or flakes that float).	Support	Support	Support	Support	**Lead**	According to re-registration schedule
E. Require diazinon and chlorpyrifos manufacturers to conduct studies and submit results on the legal but potentially problematic uses identified as described above.	Not applicable	Not applicable	Not applicable	Support	**Lead**	According to re-registration schedule
R-5: USEPA should consider and initiate one or more methods for conducting cost/benefit analyses:						
C. Conduct more comprehensive cost/benefit analyses including more accurate assessments of the environmental cost, and the mounting cost to local public agencies of dealing with the regulatory and legal liability of pesticide-related surface water toxicity.	Support	Not applicable	Support	Support	**Lead**	According to re-registration schedule
D. Consider the costs and benefits of urban uses separately from agricultural uses to separate the very different needs, costs, and benefits of pesticide use in these two environments.	Not applicable	Not applicable	Support	Support	**Lead**	According to re-registration schedule

R-6: As part of the Risk Management Strategies (Phase 6) USEPA should:	**Bay Area SWMPs**	**SWQTF**	**RWQCB**	**DPR**	**USEPA**	**Schedule**
E. Ensure that TMDL implementation plans can be developed to comply with the requirement to demonstrate "that the control actions and/or management measures are expected to achieve the required pollutant loads" (Federal Register 64, No. 162, 46051; 40 CFR 130.33(b)(10)(i), August 23, 1999).	Not applicable	Not applicable	Support	Support	**Lead**	According to re-registration schedule
F. Identify and describe how USEPA will use the registration process to ensure that registered pesticides do not cause or contribute to the impairment of surface waters.	Not applicable	Not applicable	Support	Support	**Lead**	According to re-registration schedule
G. Identify pest prevention and control methods that can effectively substitute for the problematic uses identified under Phase 4.	Not applicable	Not applicable	Not applicable	Support	**Lead**	According to re-registration schedule
H. Identify and make label changes to ensure that pesticide use in accordance with label directions does not cause impairment of surface waters.	Not applicable	Not applicable	Not applicable	Support	**Lead**	According to re-registration schedule
Total Maximum Daily Loads						
R-7: Continue to pursue, on an as aggressive a timetable as possible, the development and implementation of at least one case study of a diazinon TMDL for urban creeks.	Support	Support	Support	Support	**Lead**	Start FY 99/00
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	Support	**Lead**	Support	Support	Support	Start FY 99/00

Regulatory (cont')	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
R-9: Continue to develop and refine a diazinon TMDL for San Francisco Bay Area urban creeks, including refinement of the problem statement.	Support	Not applicable	**Lead**	Not applicable	Support	According to TMDL schedule
R-10: Name all sources when doing TMDLs by expanding on existing source categories and develop new categories to name sources as far back as possible in time and space in the life cycle of pollutants.	Not applicable	Not applicable	**Lead**	Not applicable	Support	According to TMDL schedule
NPDES permits						
R-11: Coordinate the timing and content of NPDES permit provisions related to diazinon with the timing and content of the diazinon TMDL for urban creeks.	Not applicable	Not applicable	**Lead**	Not applicable	Support	Ongoing
State pesticide regulations						
R-12: Complete its current pest management assessment as soon as possible, and disseminate information on effective alternatives to as wide an audience as possible.	Not applicable	Not applicable	Not applicable	**Lead**	Not applicable	FY 99/00
R-13: Initiate pest management assessments as soon as possible on other common pests for which diazinon is used for control, such as aphids, cockroaches, spiders, and yellow jackets.	Not applicable	Not applicable	Not applicable	**Lead**	Not applicable	FY 99/00
R-14: Invoke California Food & Agriculture Code Section 12824 et. seq. authorities. The focus of the State's efforts should be those potentially problematic uses, identified under Phase 4 of pesticide re-registration that are not eliminated or significantly curtailed by USEPA as part of the current re-registration process.	Not applicable	Not applicable	Support	**Lead**	Support	FY 99/00

Local government actions	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	**Lead** (San Francisco/ Marin) (BASMAA Support)	Not applicable	Not applicable	Not applicable	Not applicable	By June 2002
R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	**Lead** (San Francisco/ Marin) (BASMAA Support)	Not applicable	Not applicable	Not applicable	Not applicable	By June 2002
Monitoring		**Roles**				
	Bay Area SWMPs	**SWQTF**	**RWQCB**	**DPR**	**USEPA**	**Schedule**
M-1: Earmark funds to support monitoring studies and coordinate their expenditure with the State and Regional Boards.	Not applicable	Not applicable	Support	**Lead**	Not applicable	Ongoing
M-2: Appropriate and expend funds to provide the information necessary to implement California Food & Agriculture Code Section 12824 et. seq. authorities in a timely manner.	Not applicable	Not applicable	Support	**Lead**	Not applicable	FY 00/01

	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
M-3A: Bay Area storm water programs will use monitoring and science to further investigate local impacts and sources.	**Lead** (Alameda) (BASMAA Support)	Not applicable	Support	Support	Support	Ongoing
M-3B: Bay Area storm water programs will host case studies, if USEPA or California DPR will provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	**Lead**	Not applicable	Support	Support	Support	As funding allows
M-4: Bay Area storm water programs will quantitatively identify their use of organophosphate pesticides by preparing an inventory of pesticides used by staff and contractors of cities, counties, and special districts.	**Lead**	Not applicable	Not applicable	Support	Not applicable	Start FY 00/01
Coordination		**Roles**				
	Bay Area SWMPs	**SWQTF**	**RWQCB**	**DPR**	**USEPA**	**Schedule**
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	**Lead** (BASMAA) (SWMPs Support)	Not applicable	Support	Support	Not applicable	Ongoing, beginning FY 99/00

Coordination (cont')	Bay Area SWMPs	SWQTF	RWQCB	DPR	USEPA	Schedule
C-2: Coordinate implementation of the overall Strategy by: 1) convening meetings to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information to the appropriate organizations.	Support	Support	**Lead**	Support	Support	Ongoing, beginning FY 99/00
Evaluation						
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	**Lead** (BASMAA) (SWMPs Support)	Support	Support	Support	Support	Annually
V-2: Evaluate implementation of the overall Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Support	Support	**Lead**	Support	Support	Annually

Legend

Bay Area SWMPs = Bay Area storm water management programs and BASMAA

BASMAA = Bay Area Stormwater Management Agencies Association

SWQTF = Stormwater Quality Task Force

RWQCB = Regional Water Quality Control Board

DPR = Department of Pesticide Regulation

USEPA = U.S. Environmental Protection Agency

Appendix A
Transmittal Memo – Pesticide-Related Toxicity Reduction Strategy (BASMAA)

B A S M A A

To: Tom Mumley, TMDL Coordinator – San Francisco Bay RWQCB
Steve Moore, Diazinon TMDL Staff – San Francisco Bay RWQCB
Arty Williams, Office of Pesticide Programs, USEPA
Denise Keehner, Office of Pesticide Programs, USEPA
Jim Pendergast, Office of Water, USEPA
Roger Gorke, Office of Water, USEPA
Alexis Strauss, Region IX, USEPA
Kathleen Goforth, Region IX, USEPA
Marshall Lee, California Department of Pesticide Regulation
Nan Singhasemanon, California Department of Pesticide Regulation
Melinda Marks, California Stormwater Quality Task Force
Bruce Fujimoto, State Water Resources Control Board

From: Geoff Brosseau, Executive Director

CC: BASMAA Executive Board (w/o enclosure)

Date: February 29, 2000

Subject: BASMAA's Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks

The purpose of this letter is to transmit the enclosed Strategy and to provide some context for its use by your organization. The Bay Area Stormwater Management Agencies Association (BASMAA) developed this strategy to address the emerging problem of pesticide-related toxicity in urban/suburban creeks in a comprehensive way. The Strategy includes actions that BASMAA believes should be lead or supported by your organization.

To address municipal storm water NPDES permit compliance issues and the May 1999 303(d) listing of 35 Bay Area urban creeks as impaired by diazinon, the Regional Water Quality Control Board – San Francisco Bay Region (Regional Board) requested that Bay Area storm water programs develop a strategy to help address pesticide-related toxicity in urban creeks. BASMAA, a consortium of the seven municipal storm water programs in the San Francisco Bay Area, was a natural forum for developing such a strategy. BASMAA convened a Pesticide Work Group, consisting of storm water program managers and staff, the BASMAA Executive Director, and Regional Board staff, to draft the Strategy.

The Strategy, organized into three basic types of actions – education, regulatory, and monitoring – includes actions that are or should be taken by local, regional, state, and federal government agencies. The actions are distributed among these various levels of government based on each agency's regulatory authority, constituency, and resources.

The basic premise behind the Strategy is that it will take the combined and coordinated effort of each level of government to solve this problem in a way that minimizes duplication of effort, avoids transfer of the problem or risk to other media besides urban runoff, and prevents substitution of the use of organophosphate pesticides with other, possibly more toxic pesticides.

Table 1 – Summary of Actions – summarizes actions listed in the Strategy by type of action (e.g., education, regulatory) and responsible government agencies. Every action has one lead agency or agency type (i.e., storm water management programs) with support provided by other agencies as noted. Implementation of the actions will require responsible agencies to further refine the general list of actions into work plans with sub-actions, budgets, and more specific implementation schedules. Although the concepts and actions were developed with Bay Area storm water or urban runoff in mind, their generic nature allows them to be adopted and further refined by other types of agencies in other geographic locations.

The Strategy proposes two types of coordination:

Bay Area storm water programs will coordinate implementation of their portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.

BASMAA believes that the Regional Board – as the agency ultimately responsible for the diazinon TMDL for urban creeks – should coordinate implementation of the overall Strategy by: 1) convening meetings to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information to the appropriate organizations.

A third type of coordination has recently been proposed by USEPA's Office of Pesticide Programs and the Office of Water which may provide a forum for addressing some of the Strategy's actions at the federal level.

BASMAA looks forward to working with your organizations to turn this Strategy into a comprehensive set of actions that will solve this growing problem.

If you have any questions regarding the Strategy, please contact me at (650) 322-3070 or gabrosseau@ispchannel.com.

Appendix B

Comment Letter on BASMAA Strategy

(Regional Water Quality Control Board – San Francisco Bay Region)

California Regional Water Quality Control Board
San Francisco Bay Region

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Internet Address: http://www.swrcb.ca.gov
1515 Clay Street, Suite 1400, Oakland, California 94612
Phone (510) 622-2300 • FAX (510) 622-2460

May 16, 2000

Geoff Brosseau, Executive Director
Bay Area Stormwater Management Agencies Association
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: **BASMAA's Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Creeks**

Dear Geoff:

Thank you for your transmittal of the subject Strategy. We appreciate the collaborative effort leading to its development. In particular, we are impressed by the past and current pioneering efforts by BASMAA, and some of its member agencies and associated municipalities. In its current form, the Strategy is a meaningful first step towards a comprehensive plan of actions to resolve adverse water quality and toxicity in urban waterways attributable to pesticides. The Strategy hits the mark in its recognition of the need for a multifaceted effort that encompasses education/outreach, regulatory, and monitoring actions.

Unfortunately, the Strategy falls short in terms of detail and commitment to be accepted as adequate to meet municipal stormwater permit requirements. These include requirements to effectively prohibit non-storm water discharges to storm drain systems and watercourses, to reduce pollutants in stormwater discharges to the maximum extent practicable, and to not cause or contribute to violations of water quality standards. The Strategy fails to recognize the latter permit requirement and the associated responsibility to demonstrate that stormwater management plans include best management practices (BMPs) that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to exceedances water quality standards. The Strategy also fails to explicitly recognize the specific regulatory requirement to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewers associated with the application of pesticides, herbicides, and fertilizer including controls for application in public right-of-ways and at municipal facilities.

We recognize the limited authority and capacity of municipalities to control uses of pesticides, and that successful resolution of pesticide toxicity in urban waterways will require actions by others, namely the USEPA and California DPR. We will address these roles, responsibilities, and required actions in the urban creeks pesticide total maximum daily load (TMDL) and implementation plan that we are developing. However, you must realize that a successful TMDL and wasteload allocation and implementation plan that is beneficial and reasonable for municipalities will require commitment by municipalities to a more intensive plan of actions than is presented in the current strategy. The obvious preferred approach is for municipalities to develop their component of the TMDL implementation plan rather than have one imposed upon them.

As a start, the Strategy needs to be revised to include goals and milestones for each action. Tracking of each action to account for who is doing what and at what level is also needed.

(Action C-1 falls short of meeting this need.) Although the Strategy includes an evaluation action (Action V-1), the commitment is too soft in its current form, and without clear goals and timelines for other actions in the Strategy, it is not possible to ascertain whether Action V-1 will lead to determination that municipalities are in compliance with permit requirements noted above. Comments on other specific actions follow.

Education Actions

Action E-2 should be ***enhance the use of household hazardous waste collection programs to dispose of pesticides properly*** not investigate ways to enhance them.

Action E-4 should be ***enhance accessibility of materials*** not investigate ways to enhance.

Action E-5 should be programs ***will train*** municipal employees not plan to train.

Action E-6 should be programs ***will educate*** selected businesses not plan to educate.

The **IPM Partnership** has been one of the most successful pilot efforts to date, but it is only given limited recognition in the Strategy (project reports are not even referenced). The ultimate success of the IPM Partnership is clearly dependent on regionwide implementation. As such, it should be included as a line item action in the Strategy with specific goals and milestones that define the project and how success will be tracked and demonstrated.

Regulatory Actions

Actions R-15 and **R-16** are disappointing and are not adequate to demonstrate that municipalities are controlling their own uses to the maximum extent practicable. Stronger commitment to identification and evaluation of municipal use of pesticides is needed, particularly (chlorpyrifos and diazinon). The Strategy must include specific inventory and accounting of municipal uses (public works, sewage agencies, schools, parks and recreation, etc.). There should be commitment to no increased use of pesticides by municipalities without assessment and justification and commitment to identification and elimination of current uses that result in discharges.

Monitoring Actions

Action M-3 states that Bay Area stormwater programs are willing to investigate local impacts and sources and to host case studies if financial and other support is provided. As interpreted, this action is in conflict with Bay Area stormwater programs' permit monitoring requirements. These requirements include assessment of existing or potential adverse impacts on beneficial uses caused by pollutants of concern in storm water discharges, identification of potential sources of pollutants of concern found in storm water discharges, and evaluation of the effectiveness of representative storm water pollution prevention or control measures. Compliance with permit requirements cannot be conditioned by receipt of resources from others. Also, the Strategy fails to recognize BASMAA's own Regional Monitoring Strategy that

recognizes the need to assess receiving waters, identify sources of pollutants, and evaluate effectiveness of actions.

Evaluation Actions

Action C-1 includes commitment to produce an annual report on implementation of the Strategy and to provide timely information on implementation of strategy elements. We request submittal of such a report as soon as possible.

As a response to this comment letter, we request submittal of a plan by July 1, 2000 to correct deficiencies in the Strategy noted herein. At a minimum the plan should include providing an inventory by August 1, 2000 of municipal storm water programs and each municipal entity in the programs that identifies who is implementing each of the Strategy actions attributable to municipalities and the extent that these actions are currently implemented.

We appreciate your cooperation and timely response to this matter, and will gladly provide further detail regarding our comments and assistance in resolving them. If you have any questions, please call me at 510 622-2395.

Sincerely,

ORIGINAL SIGNED BY

Thomas Mumley
Senior Water Resources Control Engineer

cc: Bay Area Stormwater Management Agencies - Program Managers

Appendix C
Response to Regional Board Comments
(BASMAA)

B A S M A A

June 30, 2000

Tom Mumley
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Response to comments (May 16, 2000) on BASMAA *Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks*

Dear Tom:

On behalf of BASMAA and its member agencies thank you for your prompt response to and comments on BASMAA's *Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks*. The purpose of this letter is to respond to your May 16, 2000 letter requesting submittal of a plan by July 1, 2000 to "correct deficiencies in the Strategy." The Pesticide Work Group of BASMAA met recently to review your comments and to develop such a plan.

General responses to May 16, 2000 comment letter

BASMAA feels the Strategy provides the right amount of detail and commitment for a strategy. As noted in the document "Implementation of the actions listed herein will require responsible agencies to further refine the general list of actions into work plans with sub-actions, budgets, and more specific implementation schedules." Likewise, goals and milestones will be more effective if they are developed for specific sub-actions rather than for the general list of actions in the Strategy. Therefore, rather than modify the Strategy, BASMAA and its member agencies plan to follow it up with: 1) work plans and annual reports from member agencies, consistent with their individual permit requirements, 2) a comprehensive annual report on implementation of the Strategy.

Regarding your specific comments on action areas:
Education – We appreciate your comments but need to defer to individual member agencies for their response on specific items. The Pesticide Work Group will be reviewing the complete list of actions and may revise it as part of the annual report on implementation of the Strategy.

Regulatory – We agree with your comment regarding the need for evaluation of municipal use of organophosphate pesticides and plan to add, as part of the annual reporting process on implementation of the Strategy, a new monitoring action to address it.

Monitoring – We appreciate your comment. As currently worded, M-3 is not clear. To rectify this, we will modify, as part of the annual reporting process, M-3 into M-3A and M-3B as follows:

M-3A: Bay Area storm water programs will use monitoring and science to further investigate local impacts and sources.

M-3B: Bay Area storm water programs will host case studies, if USEPA or California DPR will provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.

Plan for Strategy implementation

BASMAA and its member agencies plan to implement the Strategy as follows:

- July 1, 2000 – Transmit plan (this document) to implement Strategy to Regional Board

- September 1, 2000 (or appropriate member agency Annual Report submittal date) - Transmit member agencies' annual reports to Regional Board. These reports will provide, as requested in your May 16, 2000 letter, "an inventory of municipal storm water programs and each municipal entity in the programs that identifies who is implementing each of the Strategy actions attributable to municipalities and the extent that these actions are currently implemented." (We request an extension of the deadline for this inventory stated in your letter, as it will be more efficient for agencies to submit this information with their annual reports.) Each of the member agencies plans to use an expanded version of the attached "Municipal Activities Template" to gather and provide this information in an organized, consistent, and comprehensive way. The expanded version will provide a list of subtasks under the tasks (e.g., E-3) listed.

- November 1, 2000 – In accordance with Strategy Action C-1, transmit annual report on implementation of the Strategy to Regional Board. The annual report will provide a summary of past, present, and planned efforts of municipalities as well as other organizations responsible for Strategy actions, and updates to Strategy actions. A draft table of contents for the annual report is enclosed with this letter.

Again, thank you for your constructive comments on our Strategy, and we look forward to working with you on its implementation. If you have any questions about this submittal or our plans, please contact me at 650-365-8620.

Sincerely,

ORIGINAL SIGNED BY

Geoff Brosseau, Executive Director

enclosures: Municipal Activities Template - Current Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy
Draft Table of Contents for Annual Report on Strategy Implementation

cc: BASMAA Executive Board / Pesticide Work Group

Table 1

Program Name

Current Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy (June 2000)

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
Education		
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.		
E-2: *Enhance the use of household hazardous waste collection programs to dispose of pesticides properly.*		
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.		
E-4: *Enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.*		
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.		
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.		
E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).		
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.		
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.		

Program Name

Current Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy (June 2000)

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.		
E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."		
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).		
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.		
Regulatory		
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.		
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: **A.** Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. **B.** Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.		
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).		
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.		
R-9: Continue to develop and refine a diazinon TMDL for San Francisco Bay Area urban creeks, including refinement of the problem statement.		
R-15: Track implementation of San Francisco and Marin's IPM		

Program Name

Current Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy (June 2000)

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
(Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).		
R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).		
Monitoring		
M-3a: *Use monitoring and science to further investigate local impacts and sources.*		
M-3b: *Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.*		
Coordination		
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.		
Evaluation		
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of		

Program Name

Current Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy (June 2000)

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.		

Draft

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Annual Report on Implementation of
Strategy for Reducing Organophosphate Pesticide-Related
Toxicity in San Francisco Bay Area Urban Creeks

Appendix D
Municipal Activities Tables
(BASMAA Member Agencies)

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
Education		
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	HHW info on all P^2 Outreach material.	**Albany:** Materials available at community center, city hall, at City events, creek clean ups, etc. **Fremont:** Fremont advertises HHW Collection Facility 3 or 4 x per year in general but not specifically pesticides. Usually in the City News, a newsletter sent to all residents & businesses. **County:** HHW info on all P^2 Outreach material.
E-2: Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.	Program has conducted information sharing meetings with HHW and ACWMA staff to discuss opportunities for coordination.	
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Participating in Point of Purchase campaign "Our Water Our World" campaign with IPM focus. Eleven IPM fact sheets developed to date and being distributed.	**Fremont:** Union Sanitary District (USD) included flier in City News in April on Integrated Pest Management (IPM) and has a slide ad showing in local Movie Theaters. USD & Fremont also support point of purchase displays in a local hardware store and a local nursery beyond those supported by the ACCWP. **County:** Distributes IPM fact sheets at outreach events.
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.	Currently through Kids in Gardens, IPM Point of Purchase, "Grow It," "Ants Invade" advertising, Targeted Media Relations, and County Fair exhibit with IPM focus.	**Albany:** Friends of Five Creeks put out a flyer specifically addressing Diazinon. This was part of their general information available at clean-ups, city hall, and their monthly meetings.
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.		**Albany:** City policy prohibits use of pesticides and herbicides. City maintenance crew use alternative methods—mostly hand weeding. The City became a member of BIRC, the "Bio-Integral Resource Center" and purchased their manuals on pest control, etc. which will be used to train employees. **Fremont:** Planning to hire intern to review current City practices and work with City workers & a consultant to develop a IPM approach.

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	The Industrial Inspection subcommittee has discussed developing and distributing brochures on pesticide use to restaurants and supermarkets.	
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.	Staff from the Alameda County Agricultural Commission were regular attendees at the UPC and are well aware of the diazinon issue.	
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	Part of Regional IPM campaign and Media Relations	**Fremont:** USD has developed flier that can be adapted for use in other articles on IPM.
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	Part of IPM campaign	**Albany:** City uses ACCWP and Waste Management materials on alternative pest management. Since City does not use pesticides, City's arborist regularly provides information on alternative pest control to residents.
Regulatory		
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	Program submitted comments on the diazinon preliminary risk assessment and performed and submitted a study ("Characterization of the Presence and Sources of Diazinon in the Castro Valley Creek Watershed") to USEPA that was used in the development of the risk assessment.	

BASMAA PRTRS Tasks for Storm Water Management Programs	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: **A.** Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. **B.** Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	A) Program provided a copy of its report "Identification and Control of Toxicity in Storm Water Discharges to Urban Creeks" to USEPA along with its comment letter. B) Program is developing a SWMM model of diazinon application and runoff.	
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	Program submitted a letter to USEPA volunteering to host a case study.	
R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Program is tracking the implementation through participation in the Pesticide Work Group.	
R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Program is tracking the implementation through participation in the Pesticide Work Group.	

Monitoring		
M-3a: Use monitoring and science to further investigate local impacts and sources.	Program has conducted numerous studies on diazinon sources and impacts including: 1) "Characterization of the Presence and Sources of Diazinon in the Castro Valley Creek Watershed;" 2) "Identification and Control of Toxicity in Storm Water Discharges to Urban Creeks;" 3) "Outdoor Use of Diazinon and Other Insecticides in Alameda County;" and 4) "Strategy to Reduce Diazinon Levels in Creeks in the San Francisco Bay Area."	**ACFCD:** District has conducted extensive sampling and analysis of diazinon in storm water runoff. **Fremont:** Pesticides are under consideration for inclusion in the monitoring plan being developed for Laguna Creek.
M-3b: Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	Program is currently hosting a case study funded by CDPR.	
Coordination		
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	Program is participating in the Pesticide Work Group and the BASMAA monitoring committee.	

Evaluation		
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Program will evaluate the results of its studies and management actions.	

Action Items	Ongoing/Planned Group Program Activities	Ongoing/Planned Individual Municipal Activities
Education – Household hazardous waste collection		
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	Brochures developed and/or adapted and distributed county-wide (*We're Dying to Tell You, Grow It, It's Enough to Make you Sick*, *Clean It* etc.) FYs from 1993-00. *Newspapers in Education* annual supplement (FYs from 1995-00). Staff *1-800-NO DUMPING* phone line to support public inquires FYs 1994-00.	A large majority of our cities participate in free household hazardous waste collection events.
E-2: Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.	Participate in the Contra Costa Community Forum. Participate in the AB939 group. Ongoing updating and inclusion of disposal information on printed materials from 1993 to present.	Many cities within Contra Costa County meeting with neighborhood communities on ways to enhance pesticide collection.
Education – Pesticide-related toxicity / proper use and disposal / less-toxic methods		
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	General brochures developed and distributed FYs 1993-00 (*We're Dying to Tell You, Grow It, Bay Begins, It's Enough to Make you Sick*. Revised *Grow It* to a regional version; coordinated FY1996-97 regional printing. Recommended and supported BASMAA regional advertising media relations campaign FY1996-97. Developed and placed countywide *Grow It* print, outdoor, radio and TV advertising in FY1996-97. Developed/Placed TV public service announcement regionally FY 1998-99. Adapted *When Ants Invade* materials; placed in print, agency newsletters, outdoor, web site and direct mail countywide FY1999-00 to support IPM campaign. Conducted media relations to support IPM campaign FY 1999-00.	Pesticide use and disposal information is regularly distributed at annual events by cities. Cities support watershed groups to perform outreach workshops on these issues. Educational material related to pesticide use is also distributed to children at local elementary schools.

E-3: Continued	Printed Spanish *Ants* fact sheet and distributed a total of 11 different yard care fact sheets to local retailers and at county events. Sponsored ten ladybug character appearances at participating IPM retail locations and county events to promote less-toxic pest management. Distributed seed packets at county events FYs 1998-00. Participated in the regional development and local distribution of the *Kids Backyard Bugs Guide* FY 1999-00. Annual participation at county Earth Day, FY 1994-00. Distribute Teacher Action Grants to teacher participating in *Kids in Creeks/Gardens* workshops FY 1994-00. Annual contribution to BASMAA advertising and media relations activities.	
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.	Developed partnerships with retailers, the media and local agencies for local placement of *Grow It*, e.g., nurseries, Longs Drugs FY 1996-97. Developed regional partnership with Orchard Supply Hardware for placement of IPM campaign materials FY 1999-00. Tested new information mediums with annual campaigns. Examples: tested two newspaper response rates and movie slides for the FY 1996-97 *Grow It* campaign; added linked web sites to media mix and included a direct mailer flyer with coupon to surrounding homes for the FY1999-00 *Ants Invade/IPM* campaign.	Contra Costa County attached pesticide fact sheets to employee pay checks and retiree newsletters sent out by the County Public Works Department.
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.		Employees of the cities attended training on Integrated Pest Management. Additionally, Contra Costa County developed a handbook on how to plan, implement, and maintain vegetation projects with less toxic pest control methods.
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Recruited nurseries and retailers to display *Grow It* materials FY1996-97. Developed and ongoing distribution of food service facility booklet in English, Spanish, FY1998-present. Recruited and trained staff of eight nurseries and retailers to stock less-toxic products, display IPM materials and educated customers FY1999-00.	Cities contract with Central Sanitary to perform outreach and inspections of commercial industries.

Education – Pest control operators (PCOs)		
E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Co-developed and co-sponsored (with CCCSD) 6/00 marketing workshop for PCOs participating in the 4/00 workshop.	
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.		
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.		Participation in County-wide watershed forum allows dialog with agricultural commissioners.
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.		
E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."		
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).		
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.		

Regulatory – Pesticide re-registration		
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	Ongoing participation through BASMAA and the State Storm Water Quality Task Force.	
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: **A.** Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. **B.** Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.		
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).		
Regulatory – Total Maximum Daily Loads		
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.		
Regulatory – Local government actions		
R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Participate in Urban Pesticide Committee and its Pesticide Work Group.	

R-16: Track implementation of San Francisco's purchasing policy/ specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).		
Monitoring		
M-3a: Use monitoring and science to further investigate local impacts and sources.		
M-3b: Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.		
Coordination		
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	Attend the Pesticide Work Group.	

Evaluation		
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and **V-1: continued** conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Ongoing participation through BASMAA committees.	

BASMAA PRTRS Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
Education			
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	• Outreach on pesticide disposal • Funding of HHW collection programs	• Outreach on pesticide disposal through IPM Partnership Program. • Program supports HHW collection program with Cities and County.	Cities help fund and manage HHW collection program.
E-2: Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.	• Joint educational projects with HHW collection agencies • Other	• Created Napa and Solano Regional Environmental Public Education Group which will address this among other issues. • Tracking EPA proper disposal labeling proposals. • Distributes educational materials.	Support Program's activities. City of Fairfield working to expand HHW facilities (see Task III.4.3).
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop educational materials (local and regional) • Distribute via annual events and exhibitions, mailings, response to requests • Conduct regional and local advertising campaigns • Pitch stories to regional and local media outlets	• Reviewed, distributes IPM Partnership Program materials (fact sheets); reviewed, funded, distributes "Kid's Guide to Backyard Bugs." • See Task VIII.4.4, Outreach Events. • Distributes BASMAA Regional Advertising Campaign—ants mailers • Purchased extra local radio time for BASMAA RAC ants campaign. • Pitched 4 new stories "Beyond Pesticides…" to local media outlets.	Support Program's activities.

E-3: (continued)	• Conduct point of purchase campaigns and training (e.g., IPM Store Partnership / *Our Water Our World* Program) • Construct and promote IPM demonstration gardens • Other	• Conducted IPM Partnership Program including distributing IPM Partnership Program fact sheets to local stores participating stores and Yardbirds; • Actively participating in IPM Partnership Program including discussions of demonstration gardens.	
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.	• Develop web pages • Distribute materials at point of purchase or disposal • Other (See also subtasks for Tasks E-5, E-6, E-7, E-10 and E-12)	• District is examining creation of a web page. • IPM fact sheets distributed at participating stores and Yardbirds.	Support Program's activities.
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop/distribute outreach materials for municipal employees • Hold workshops	• See Task V.4.7. Developed reduction plan for Diazinon (see Task V.5.3)	Support Program's activities. Properly train and certify employees.
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop/distribute outreach materials for businesses • Educate inspectors to look for improper use/disposal and use outreach materials	• Created updated "Storm Water Pollution Prevention for Restaurants and Food Handlers" brochure, which includes BMPs for pesticide use and disposal (see Appendix C). • Ongoing standard inspector training.	Support Program's activities.

E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Host and help coordinate local PCO workshop	• In process. Program was set to provide an PCO workshop in FY99-00. Based on evaluations of pilot workshops conducted by CCCSD and SF, the workshop was delayed to winter FY00-01.	Support Program's activities.
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.	• Support BASMAA and San Francisco efforts	• Program is supporting BASMAA and San Francisco efforts.	Support Program's activities.
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.	• Contact County Agricultural Commissioner	• Will be addressed in FY 2000-2001.	Support Program's activities.
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.	• Support BASMAA and San Francisco efforts	• Program is supporting BASMAA and San Francisco efforts.	Support Program's activities.
E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."	• Support BASMAA and San Francisco efforts	• Program is supporting BASMAA and San Francisco efforts.	Support Program's activities.
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	• Support BASMAA and San Francisco efforts to develop article • Place article in local media	• Program is supporting BASMAA and San Francisco efforts.	Support Program's activities.

E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	• Support BASMAA and San Francisco efforts	• Program is supporting BASMAA and San Francisco efforts. In FY1999/2000, Program created four news articles "Beyond Pesticides…" based on IPM fact sheets, and pitched to local media.	Support Program's activities.
Regulatory			
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	• Support SWQTF efforts	• Program is tracking SWQTF efforts via meeting summaries and BASMAA.	Support Program's activities.
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: **C.** Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. **D.** Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	• Provide data as needed • Support SWQTF efforts	• Will provide data as requested. • Program is tracking SWQTF efforts via meeting summaries and BASMAA.	Support Program's activities.
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).	• Support SWQTF efforts	• Program is tracking SWQTF efforts via meeting summaries and BASMAA.	Support Program's activities.
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	• Support BASMAA and SWQTF efforts • Consider participation as appropriate	• Program is supporting BASMAA through participation in Pesticide Work Group. • Considering participation as appropriate.	Support Program's activities.

R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Develop local model ordinance/policy • Facilitate consideration and adoption by Co-permittees • Provide models to special districts	• Program is currently tracking implementation of San Francisco's and Marin's IPM Ordinances.	Support Program's activities.
R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Develop local model ordinance/policy • Facilitate consideration and adoption by Co-permittees • Provide models to special districts	• Program is currently tracking implementation of San Francisco's purchasing policy/ specification for pest prevention/ control.	Support Program's activities.
Monitoring			
M-3a: Use monitoring and science to further investigate local impacts and sources.	• Support RMP studies • Conduct local studies	• Program supports RMP studies, and is considering monitoring for local impacts as part of watershed management approach (depending on funding and approach).	Support Program's activities.
M-3b: Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	• Consider participation if funding available (seek grant opportunities)	• Considering participation as part of watershed management approach if funding is available (see Task VII.4.2)	Support Program's activities.

Coordination			
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	• Continue participation in BASMAA Pesticide Work Group, UPC, and BASMAA committees • Assist development of Strategy annual report	• Program manager participates in BASMAA Pesticide Work Group and provided input to the Pesticide Strategy, including responding to Regional Board staff comments. Program participates in BASMAA Executive Board, Monitoring and PIP Committees.	Support Program's activities.
Evaluation			
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	• Participate in BASMAA Pesticide Work Group • Conduct annual evaluations of Program projects and include results in Program Annual Reports	• Program manager actively participates in the BASMAA Pesticide work group. Based on FY99-00 annual evaluation, the Program will incorporate tasks into the SWMP for future implementation (see Section 9.0).	Support Program's activities.

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
Education			
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	Outreach on pesticide disposal Funding of HHW collection programs	Produce and distribute educational materials (Grow It!, Control It! , etc. include information on proper disposal and phone numbers to call for HHW collection events.) Marin County Hazardous and Solid Waste JPA funds the permanent HHW collection facility.	The City of Novato operates a separate HHW collection program.
E-2: Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.	Joint outreach projects with HHW collection agencies Increased funding of collection programs	Funded and promoted an "Amnesty Day" for Dursban through the County's HHW Program in July 1999. Over 500 pounds of dursban were collected from three participating nurseries/hardware stores. Marinscope Papers ran a story and included photo.	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Develop educational materials (local and regional) Distribute via annual events and exhibitions, mailings, response to requests	Developed, or assisted development of, and printed the following educational materials: Grow It!, When Ants Invade, Control It!, Kids Guide to Backyard Bugs, Kids Activity Book (part of KAPS Membership Club). Also stock reprints of 11 IPM Fact Sheets. Countywide Program staff attend several major local events each year (e.g. Farm Day, the Canal Community Festival, and Earth Day) and distribute pesticide-alternative related materials. Materials are also mailed in response to requests. MCSTOPPP also contracts with the Marin Master Gardeners to present workshops on less toxic gardening in the community and to make IPM Fact Sheets and other less-toxic resources available at Farmers Markets throughout Marin. In 199/00, the Master Gardeners appeared at 57 events and distributed 1,432 IPM Home and Garden Booklets.	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-3: continued	Conduct regional and local advertising campaigns	Contract with the Marin Master Gardeners to assist 16 Marin school garden programs with information on less toxic pest management. 68 Marin teachers participated and the programs affected 1,471 students. Contribute funds for BASMAA Regional Ad Campaign related to less toxic pest control. Conduct coordinated local ad campaigns as appropriate. Funded participation in the local IPM Store Partnership program in FY 1997-1998 through 1999-2000, and will continue in 2000-2001. In FY 1999-2000, 22 stores participated in Marin County. The Program also participated on the Regional IPM Planning Committee and helped fund the regional program through BASMAA.	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-3: continued	Pitch stories to regional and local media outlets	Provided information to Marin IJ for extensive coverage on pesticides – including diazinon and dursban) for story appearing in June 1999. Information also included in various columns written by Marin Master Gardeners - including extensive coverage in December 1999. Extensive coverage was also given by Marinscope Papers in June 1998 and Pacific Sun in August 1998.	
		For point-of-purchase, see E-4.	
	Conduct point of purchase campaigns and training (e.g., IPM Store Partnership / Our Water Our World Program)		
	Construct and promote IPM demonstration gardens	For FY 2000-2001, exploring the possibility of a demonstration garden being developed at the Marin Art and Garden Center.	
		Provide workshops to Marin teachers on creating healthy school gardens and watersheds. In 1999-2000, 35 teachers attended the workshop which includes information on less toxic pest management.	
	Other		

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users. (See also Tasks E-5, E-6, E-7, E-10 and E-12)	Develop web pages Distribute materials at point of purchase or disposal	MCSTOPPP.org includes a pesticide information page. Printed "business size" cards and made available to IPM Partners. Cards list where to get more info on less toxic alternatives and where to dispose of pesticides in the County.	
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Develop/distribute outreach materials for municipal employees Hold workshops	Planned for FY 2000-2001 Planned for FY 2000-2001	
E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	Develop/distribute outreach materials for businesses	Developed Best Management Practices for Food Handling Facilities that includes information on toxic chemicals and hazardous waste disposal. For FY 2000-2001, exploring opportunity to provide pest management workshop to school maintenance and landscape personnel. Guides are distributed by County Environmental Health staff and through local agency staff.	
E-6: continued	Educate inspectors to look for improper use/disposal and use outreach material	Will include information at next business inspectors training workshop	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Host and help coordinate local PCO workshop	Planned for FY 2000-2001	
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.	Support BASMAA and San Francisco efforts	Support San Francisco pilot effort through BASMAA	
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to stormwater.	Contact County Agricultural Commissioner	Attend County IPM Commission meetings and established a working relationship with County Ag Commissioner.	
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.	Support BASMAA and San Francisco efforts	Support San Francisco pilot effort through BASMAA	

E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."	Support BASMAA and San Francisco efforts	Support San Francisco pilot effort through BASMAA	
E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	Support BASMAA and San Francisco efforts to develop article Place article in local media	Support San Francisco pilot effort through BASMAA Worked with Master Gardeners in including information on less toxic pest control through their column in the Marin IJ. Provided information to Marin IJ for major article which appeared in June 1999.	
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	Support BASMAA and San Francisco efforts	Support San Francisco pilot effort through BASMAA	
Regulatory			
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	Support SWQTF efforts	Participate in SWQTF Pesticide Work Group and/or Executive Committee	

R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: 1. Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. 2. Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	Provide data as needed Support SWQTF efforts	Provide existing data if requested Support SWQTF efforts	
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).	Support SWQTF efforts	Support SWQTF efforts	
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	Support BASMAA and SWQTF efforts Consider participation as appropriate	Support BASMAA and SWQTF efforts Consider participation as appropriate	
R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Develop local model ordinance/policy Facilitate consideration and adoption by Local Programs Provide models to special districts	Marin County ordinance is MCSTOPPP's model ordinance. Attend IPM Commission meetings. Facilitate consideration and adoption by Local Programs Provide model as appropriate	Marin County has local ordinance and IPM Commission.

R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	Develop local model ordinance/policy Facilitate consideration and adoption by Local Programs Provide models to special districts	Support San Francisco pilot effort through BASMAA Develop local model ordinance/policy Facilitate consideration and adoption by Local Programs Provide models as appropriate	Marin County Civic Center cafeteria has switched pest management to an IPM approach which is working successfully. Their pest control contractor is working with them on IPM approaches. Marin County Parks and Open Space has contracted with a consultant for IPM approach in caring for lagoon and civic center landscape.
Monitoring			
M-3a: Use monitoring and science to further investigate local impacts and sources.	Support Regional Monitoring Program studies Conduct local studies	Participation in Regional Monitor-ing Program (about $_____ for each of FY 1999-2000 and 2000-2001) Work with other stormwater programs to collect data for diazinon TMDL if needed	
M-3b: Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	Consider participation if funding available (seek grant opportunities)	Consider participation if funding available. Seek grant opportunities.	

Coordination			
C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	Continue participation in BASMAA Pesticide Work Group, UPC, and BASMAA committees Assist development of Strategy annual report	Continue participation in BASMAA Pesticide Work Group, UPC, and BASMAA committees Assist development of Strategy annual report	
Evaluation			
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	Participate in BASMAA Pesticide Work Group Conduct annual evaluations of Program projects; include results in Program Annual Reports	Chair and participate in BASMAA Pesticide Work Group Conduct annual evaluations of Program projects; include results in Program Annual Reports	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
Education			
E-1: Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.	• Outreach on pesticide disposal • Funding of HHW collection programs	• Program educational materials (*Grow It!*, *Pests Bugging You?*, etc. include information on proper disposal and phone numbers to call for HHW collection events. See Task E-3 for distribution activities. • Co-permittees fund local HHW collection events or fund County HHW events and operation of permanent collection facilities.	• Municipal agencies use Program materials, in addition to others developed locally. • The City of Palo Alto funds HHW collection events for residents and SQGs the first Saturday of each month. • The City of Sunnyvale funds HHW collection events the third Saturday of each month. • The City of Milpitas funds HHW collection events for residents and SQGs at the permanent facilities in San Jose, Sunnyvale, and South County. One mobile event occurs in Milpitas annually. See Notes below table for additional activities.
E-2: Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.	• Joint outreach projects with HHW collection agencies • Increased funding of collection programs	A Program work group is currently exploring these options with County HHW staff as part of the Household Chemical Management project.	

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-3: Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop educational materials (local and regional)	• Developed, or assisted development of, and printed the following educational materials: *Pests Bugging You?*, *Grow It!*, *When Ants Invade*. Developed Program table-top display and bean bag game for annual events. Also stock reprints of 11 IPM Fact Sheets.	• Municipal agencies funded the development and printing of materials for the Program as well as themselves.
	• Distribute via annual events and exhibitions, mailings, response to requests	• Program staff attend several events each year, such as garden shows and Earth Day events, and distribute pesticide related materials. Materials are also mailed in response to requests on Program's 800 #.	• Municipal agencies distributed materials at local events (e.g., garden shows, farmers markets, Earth Day events) and responded to requests for information.
	• Conduct regional and local advertising campaigns	• Contribute funds and participate in work group for BASMAA Regional Ad Campaigns related to less toxic pest control. Conduct coordinated local ad campaigns as appropriate. Conducted separate local campaign offering copies of *Pests Bugging You?* (FY 97-98), and conducted a follow-up survey and effectiveness evaluation of the campaign.	• Municipal agencies funded local ad campaigns, some coordinated with regional campaigns.
	• Pitch stories to regional and local media outlets	• Support BASMAA Media Relations project for regional media outreach.	• Municipal agencies worked with local media for coverage of pesticide issues.

Pesticide Strategy Tasks for Storm Water Management Programs	Implementation Subtasks	Current / On-going Program-wide Activities	Notes on Individual Municipal Agency Activities
E-3: continued	• Conduct point of purchase campaigns and training (e.g., IPM Store Partnership / *Our Water Our World* Program) • Construct and promote IPM demonstration gardens • Other	• Funded participation in the IPM Store Partnership program in FYs 98-99, 99-00, and 00-01. In FY 99-00, 26 stores participated in Santa Clara County. The Program also participated on the Regional IPM Planning Committee and funded the regional program through BASMAA. • Program provided funding through the WAF for projects including IPM messages, e.g. Kids in Gardens.	• The following municipalities funded the IPM Store Partnership and had stores participating in the program: Palo Alto, Mountain View, Los Altos, Cupertino, Sunnyvale, and Santa Clara. Additional funds were provided by San Jose and Milpitas when Orchard Supply hardware stores were added to the program. See Notes below table for additional activities.
E-4: Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users. (See also Tasks E-5, E-6, E-7, E-10 and E-12)	• Develop web pages • Distribute materials at point of purchase or disposal	• Program plans to upgrade its web site to include a pesticide information page in FY 00-01. • IPM Store Partnership; outreach at HHW events.	• City of Palo Alto web page includes IPM component. • The following municipalities funded the IPM Store Partnership and had stores participating in the program: Palo Alto, Mountain View, Los Altos, Cupertino, Sunnyvale, and Santa Clara. Additional funds were provided by San Jose and Milpitas when the Orchard Supply store chain was added to the program. See Notes below table for additional activities.
E-5: Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop/distribute outreach materials for municipal employees • Hold workshops	• Planned for FY 00-01 • Planned for FY 00-01	See Notes below table for additional activities.

E-6: Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.	• Develop/distribute outreach materials for businesses • Educate inspectors to look for improper use/disposal and use outreach material	• Consider for FY 01-02 • Consider for FY 01-02	See Notes below table for additional activities.
E-7: Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Host and help coordinate local PCO workshop	• Planned for FY 00-01	• Municipalities support Program Activities. • City of Palo Alto staff and consultant attended San Francisco PCO training.
E-8: Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.	• Support BASMAA and San Francisco efforts	• Track and support San Francisco pilot effort through BASMAA	• Municipalities support Program Activities.
E-9: Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.	• Contact County Agricultural Commissioner	• Consider for FY 01-02	• Municipalities support Program Activities.
E-10: Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.	• Support BASMAA and San Francisco efforts	• Track and support San Francisco pilot effort through BASMAA	• Municipalities support Program Activities.
E-11: Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."	• Support BASMAA and San Francisco efforts	• Track and support San Francisco pilot effort through BASMAA	• Municipalities support Program Activities.

E-12: Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).	• Support BASMAA and San Francisco efforts to develop article • Place article in local media	• Track and support San Francisco pilot effort through BASMAA • Consider in FY 01-02	• Municipalities support Program Activities.
E-13: Develop a consumer guide to help consumers make more informed choices about pest control services.	• Support BASMAA and San Francisco efforts	• Track and support San Francisco pilot effort through BASMAA	• Municipalities support Program Activities.
Regulatory			
R-1: Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.	• Support SWQTF efforts	• Participate in SWQTF Pesticide Work Group and/or Executive Committee	
R-2: Assist USEPA with Revised Risk Assessments (Phase 4) by: **E.** Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments. **F.** Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.	• Provide data as needed • Support SWQTF efforts	• Provide existing data if requested • Support SWQTF efforts	• Municipalities support the SWQTF through the Program.
R-3: Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).	• Support SWQTF efforts	• Support SWQTF efforts	• Municipalities support the SWQTF through the Program.
R-8: Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.	• Support BASMAA and SWQTF efforts • Consider participation as appropriate	• Support BASMAA and SWQTF efforts	• Municipalities support the SWQTF and BASMAA through the Program.

R-15: Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Develop local model ordinance/policy • Facilitate consideration and adoption by Co-permittees • Provide models to special districts	• Funding Silicon Valley Pollution Prevention Center's work with Pesticide Alternatives Group to develop and promote model ordinance (FYs 99-00 and 00-01). • Planned for FY 00-01: develop pesticide management performance standards and assist co-permittees with implementation.	• Municipalities support the activities through the Program.
R-16: Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).	• Develop local model ordinance/policy • Facilitate consideration and adoption by Co-permittees • Provide models to special districts	• Track and support San Francisco pilot effort through BASMAA	• Municipalities support the activities through the Program.
Monitoring			
M-3a: Use monitoring and science to further investigate local impacts and sources.	• Support Regional Monitoring Program studies • Conduct local studies	• Participation in Regional Monitoring Program (about $145,000 for each of FYs 99-00 and 00-01) • Work with other storm water programs to collect data for diazinon TMDL if needed	• Municipalities support the activities through the Program.
M-3b: Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.	• Consider participation if funding available (seek grant opportunities)	• Consider participation if funding available (seek grant opportunities)	• Municipalities support the activities through the Program.
Coordination			

C-1: Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.	• Continue participation in BASMAA Pesticide Work Group, UPC, and BASMAA committees • Assist development of Strategy annual report	• Continue participation in BASMAA Pesticide Work Group, UPC, and BASMAA committees • Assist development of Strategy annual report	• Municipalities support the BASMAA Pesticide Work Group, the UPC, and BASMAA Committees through the Program.
Evaluation			
V-1: Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.	• Participate in BASMAA Pesticide Work Group • Conduct annual evaluations of Program projects; include results in Program Annual Reports	• Chair and participate in BASMAA Pesticide Work Group • Conduct annual evaluations of Program projects; include results in Program Annual Reports	• Municipalities support Program Activities.

Additional Notes on Individual Municipal Agency Activities:

E-1: *Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents.*

- The City of Santa Clara hosted a HHW awareness beanbag tossing game at City Hall Open House.
- City of Milpitas promotes HHW event with door hanger and advertisements prior to events.
- City of Cupertino uses the community cable television station to encourage residents to use the HHW program.
- The County maintains a web site about the HHW program.
- The City of San Jose and the County of Santa Clara have approved a $1.50 per ton tipping fee on all waste disposed in the County or sent to a county transfer station for disposal, effective July 1, 2000. This additional source of funding will increase the number of residents served as well as enable outreach to under-served populations.
- City of Cupertino maintained a 2-week HHW display at local library prior to local HHW event.

E-3: *Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*

- West Valley Communities had one Campbell store participate in the IPM partnership.
- See City of Palo Alto's Annual Report, PI/P Section for additional activities.
- City of Cupertino provides IPM brochures at one pet supply store and in a "new homeowner" packet, and promotes IPM Partnership stores in the community cable television station.
- West Valley Communities supplemented the Regional Advertising Campaign with ads in the community television station and local newspapers and radio stations and placed articles regarding pesticide use in the fall publications of the local newsletters.
- City of Santa Clara distributed IPM materials via utility inserts.

E-4: *Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.*

- City of Sunnyvale provides IPM information at community composting workshops.
- West Valley Communities provides IPM information at community composting workshops.
- City of Sunnyvale developed and placed theater billboards promoting IPM.
- See City of Palo Alto's Annual Report, PI/P Section for additional activities.

E-5: *Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*

- Sunnyvale Municipal golf course staff attend annual training on safe use of pesticides and reduction of spray drift. Four staff members hold licenses which require annual refresher training.
- West Valley Communities' Park Maintenance Supervisors lead workers hold licenses which require bi-annual refresher training.
- See City of Palo Alto and West Valley Communities' Annual Reports, PI/P Sections for additional activities.
- City of Los Altos uses qualified contractors and directs them to minimize pesticide use to the maximum extent practicable.
- The SCVWD continues to train its employees in the use of the least toxic, effective herbicide alternatives for flood control channel maintenance.
- The City of San Jose has a policy in place which encourages use of the least toxic method of pest management. A city-wide survey found that organophosphate pesticides were used in one instance only: roses in the Rose Garden Park. OP use is not planned for the future.
- The County of Santa Clara has created a position for an IPM Coordinator. Please see Attachment J of the County's annual report for details.

E-6: *Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*

- See City of Palo Alto's Annual Report, PI/P Section for additional activities.

VSFCD **Activities Related to Implementation of the BASMAA Pesticide-Related Toxicity Reduction Strategy**

The following table is consistent with Table 1 referenced in BASMAA's letter to the Regional Water Quality Control Board dated June 30, 2000, and Vallejo Sanitation & Flood Control District's understanding of the Board's expectation that local agencies will take responsibility for pesticide-related activities enumerated in BASMAA's Strategy for Reducing Organophosphate Pesticide-Related Toxicity in San Francisco Bay Area Urban Creeks.

BASMAA PRTRS Tasks for Storm Water Management Programs	***Vallejo Sanitation & Flood Control District Activities***	***Activities considered by Vallejo Sanitation & Flood Control District to be appropriate for regional coordination/ implementation***
Education		
E-1: *Continue to support and promote household hazardous waste collection as an important pesticide disposal option for residents and businesses.*	• *See report on TASK 2.1*	
E-2: *Investigate ways to enhance the use of household hazardous waste collection programs to dispose of pesticides properly.*	• *See report on TASK 2.1*	
E-3: *Continue to develop and distribute information to the general public on pesticide-related toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*	• *Facilitate regional production of new IPM Partnership fact sheets* • *Distribute via annual events and exhibitions, mailings, response to requests* • *Support Regional Advertising Campaign* • *Budgeted for participate in IPM Store Partnership / Our Water Our World Program in FY 2000/2001 (conduct point of purchase campaigns and training)* • *Support regional leadership for IPM Store Partnership*	• *Pitch other stories to regional media outlets* • *Purchase mass-market advertising*

E-3: *continued*	• *Help fund and edit the regional development of "Kids' Guide to Backyard Bugs"* • *Contributed matching funds to the development of a Solano County version and workshops for the "Kid's in Gardens" program.*	
E-4: *Investigate ways to enhance the accessibility of general and targeted educational materials to the general public and to pesticide users.*	• *Distribute IPM Partnership materials at District offices and public events.*	
E-5: *Train municipal employees who use pesticides about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*	• *Implementation of the "Public Right-Of-Ways and Municipal Facilities" section Appendix 5B of the SWMP. Full coverage of all municipal agencies expected by 2002.*	
E-6: *Educate selected businesses (e.g., restaurants, supermarkets) about pesticide-related surface water toxicity, proper use and disposal of pesticides, and less-toxic methods of pest prevention and pest control.*	• *The District continued to educate businesses in conjunction with the District's Pretreatment Program. See Appendix # for list of business inspected.*	
E-7: *Sponsor accredited PCO training workshops (after their initial development by CCCSD) that provide information and demonstrations of practices protective of water quality. Invite private company PCOs as well as PCOs from municipalities and special districts (e.g., open space districts, mosquito abatement districts, and school districts).*	• *Depending on the regional strategy, we will assist in hosting/coordinate local PCO workshop(s).*	

E-8: *Investigate and, if feasible, use opportunities to integrate educational materials and test questions about potential surface water quality impacts and ways to avoid them into the State's licensing procedures and continuing education curriculum for PCOs.*		*This is an appropriate task for the Regional Water Quality Control Board, BASMAA, and BAPPG.*
E-9: *Coordinate with County Agricultural Commissioners regarding pesticide discharges to storm water.*	*Contact has been made with County Department of Agriculture to determine what partnering and informational sharing opportunities are available.*	
E-10: *Develop a canned awareness-raising presentation for PCO chapter meetings and conferences.*	*VSFCD will help with this if the coordinating committee (see E-7) selects this activity.*	
E-11: *Investigate and, if feasible, work with PCO trade associations to either endorse specific BMPs protective of wastewater and storm water or integrate wastewater and storm water concerns into "Industry Standards."*	*We will support BASMAA and San Francisco efforts and work with local chapters if appropriate.*	
E-12: *Develop a boilerplate article on water quality issues and Integrated Pest Management or Less-Toxic Pest Management for general consumer and local business publications (e.g., Chambers of Commerce).*	*We will place article in local media*	*BASMAA and San Francisco are taking the lead on this.*
E-13: *Develop a consumer guide to help consumers make more informed choices about pest control services.*	*VSFCD will distribute the guide locally if the guide is developed.*	*BASMAA and San Francisco are taking the lead.*
Regulatory		
R-1: *Review and comment on USEPA's Preliminary Risk Assessments (Phase 3) for diazinon and chlorpyrifos.*		*SWQTF has lead*

R-2: *Assist USEPA with Revised Risk Assessments (Phase 4) by:* • *Providing existing, pertinent OP pesticide data from the San Francisco Bay Area, if these data are missing from the Preliminary Risk Assessments.* • *Helping identify uses of OP pesticides that are likely to come in contact with water, and working with USEPA and manufacturers to eliminate these uses from those listed on product labels.*	• *Palo Alto will provide data as needed* • *We will continue to support SWQTF efforts*	*SWQTF, BASMAA have lead*
R-3: *Submit risk management ideas and proposals to USEPA during Phase 5 for potential inclusion in the Risk Management Strategies (Phase 6).*		*SWQTF has lead*
R-8: *Volunteer to assist in development of a scope for a USEPA case study of a diazinon TMDL for urban creeks, and consider participation in the case study.*	*VSFCD will participate if requested.*	*This is an appropriate activity for the Urban Pesticide Committee and/or the SWQTF.*
R-15: *Track implementation of San Francisco and Marin's IPM (Integrated Pest Management) ordinances. Using these ordinances as models, facilitate their consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model IPM ordinances to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).*	*The District shall review other agencies' ordinances and explore options with the District Attorney and the Regional Board, with the intention of implementing similar requirements in the District.*	*Tracking implementation of other jurisdictions' ordinances, development of a model ordinance/policy, and provision to special districts is an appropriate activity for BASMAA.* *Facilitation of local adoption is an appropriate activity for SCVURPPP.*
R-16: *Track implementation of San Francisco's purchasing policy/specification for pest prevention/control. Using the purchasing policy/specification as a model, facilitate its consideration and potential adoption, in some form, by Bay Area municipalities. Provide the model purchasing policy/specification to neighboring special districts (e.g., open space districts, mosquito abatement districts, and school districts).*	*Following action on R-15, District will review local purchasing policy options, with the intention of putting specifications in place at that time.*	*Tracking implementation of other jurisdictions' policies/ specifications, and provision to special districts is an appropriate activity for BASMAA.* *Facilitation of local adoption is an appropriate activity for SCVURPPP.*
Monitoring		
M-3a: *Use monitoring and science to further investigate local impacts and sources.*	• *Support RMP, RMAS, and TMDL studies*	

M-3b: *Host case studies, if USEPA or California DPR provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.*	• *Consider participation if funding available*	
Coordination		
C-1: *Coordinate implementation of the SWMPs/BASMAA portions of the Strategy by: 1) convening meetings of the Pesticide Work Group and other interested individuals to review information, build consensus conclusions, and make recommendations; 2) producing an annual report on implementation of the Strategy; and 3) providing timely information on implementation of Strategy elements via reports to the Urban Pesticide Committee as well as the appropriate BASMAAA committees, including the Executive Board, Monitoring Committee, and Public Information / Participation Committee.*	*Palo Alto will participate if requested.* *This report services as reporting on the implementation of the Strategy.* *The District will continue to participate BASMAA committees*	*The Pesticide Work Group functions at the regional level.*
Evaluation		
V-1: *Evaluate implementation of the SWMPs/ BASMAA portions of the Strategy by: 1) reviewing each of the action items and either develop and conduct, or recommend that others develop and conduct, evaluations as appropriate; and 2) reporting on the results of the evaluations either via presentations at committee meetings and/or as a part of annual reports.*	*The District shall conduct the evaluations that are developed by the Pesticide Work Group.*	• *The Pesticide Work Group, functioning at the regional level, is the appropriate venue for 1).*

Appendix E
Pest Management Grant Project Descriptions
(California Department of Pesticide Regulation)

Nonagricultural Demonstration Projects

Project Title	Applicant	Location	Budget
Promoting Urban-based Ecologically-based Pest Management (EBPM) Education and Outreach in East Bay Public Schools and Community Gardens (Phase II)	University of California, Berkeley, Dr. Miguel A. Altieri	Alameda County	$30,000

Summary: Sections of the cities of Berkeley and Oakland are home to some of the poorest families in the United States. In public schools, teachers report that many children show up for school without adequate breakfast, and many lack energy and are unable to concentrate. Most children have diets high in fat and calories, due in part to the unavailability of affordable fresh fruits and vegetables. This project has established gardens at various schools in low- income areas, featuring vegetable cropping systems that will produce salad vegetables and some staple crops. The project established an IPM training, demonstration, and outreach program at five public schools located in low-income neighborhoods of Berkeley and Oakland. Students participate in all aspects of garden development, monitoring of crop-pest-natural enemy interactions, and in outreach activities in their local community. School gardens feature biodiverse cropping systems that enhance ecological interactions and serve as tools for integrating ecology, food, and agriculture into the classroom curriculum. The project emphasizes special workshops on IPM complemented with handouts, videos, slide shows and hands-on practice. Established demonstration plots serve to promote field days and cross-visits to ensure outreach of project benefits to many school children and the community at large.
Jill Goetz (510) 643-1042, Fax (510) 642-4612

Project Title	Applicant	Location	Budget
Kids in Gardens	Aquatic Outreach Institute, Kathy Kramer	Alameda, Santa Clara and Contra Costa Counties	$50,000

Summary: The Aquatic Outreach Institute (AOI), a non-profit environmental education organization, develops and manages education and outreach programs on creeks, wetlands, and watersheds in the San Francisco Bay Area. These programs provide thousands of schoolchildren, educators, and the general public with information about aquatic resources. This project involves one of AOI's highly successful programs, *Kids in Gardens*, which will educate 90 kindergarten - through twelfth-grade teachers on ways they can educate their students about reducing the use of toxic pesticides. Teachers will involve 4,500 students in organic and IPM school gardening projects. Students will also educate their families and community members about IPM gardening practices. More than 5,000 family and community members will receive student-generated information on IPM in the form of surveys, fliers, artwork, and Web pages. Creating school gardens in California has become a high priority for school administrators; using these gardens as outdoor laboratories for students presents an excellent opportunity to combine IPM practices with lessons teachers are already teaching, and to extend this learning to students' families.
Kathy Kramer (510) 231-9507, Fax (510) 231-5703

Appendix F
Comment Letter – Chlorpyrifos Preliminary Risk Assessment
(California Stormwater Quality Task Force)

SWQTF
California Stormwater Quality Task Force
1395 35th Avenue Sacramento, CA 95822
Ph (916) 264-1400 Fax (916) 264-1497
www.blymyer.com/stormwaterqtf

December 22, 1999

Public Information and Records Integrity Branch (PIRIB)
Information Resources and Services Division (7502C)
Office of Pesticide Programs (OPP)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Ms. Karen Angulo
Special Review and Reregistration Division (7508C)
Office of Pesticide Programs (OPP)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Subject: Comments on Chlorpyrifos Preliminary Risk Assessments (Docket control number OPP-34203)

Dear PIRIB and Ms. Angulo:

On behalf of the California Stormwater Quality Task Force, thank you for the opportunity to comment on the Preliminary Risk Assessments for Chlorpyrifos. The California Stormwater Quality Task Force (Task Force) was formed in 1989 to advise the California State Water Resources Control Board (State Board) on storm water discharge issues. In this capacity, the Task Force has assisted the State Board with the development and implementation of the storm water permitting processes. Our membership is composed of storm water management and storm water quality personnel from cities, counties, special districts, industries, and consultants throughout California.

Water quality research conducted in California by storm water programs, wastewater treatment plants, and Regional Water Boards over the last several years has identified widespread toxicity in local creeks, urban runoff, and wastewater treatment plant effluent. A majority of the toxicity was ultimately traced to diazinon and chlorpyrifos use in urban and suburban areas. Study results indicated that pesticide use according to label instructions could not be ruled out as a cause of wastewater and storm water toxicity. Based on the water quality data, USEPA listed 53 waterbodies in California as impaired due to diazinon in urban runoff and 7 waterbodies as impaired due to chlorpyrifos in urban runoff as part of the final 1998 section 303(d) (Clean Water Act) list of impaired water bodies in California. As a result of the 303(d) listings and other legal actions, eight Total Maximum Daily Loads (TMDLs)

for diazinon and four chlorpyrifos TMDLs have been initiated in California, including at least one in virtually every major urban area of the state.

As the agency that sanctions the use of pesticides and the agency that lists waterbodies as impaired, USEPA is the ultimate regulatory authority on this issue. The reregistration process currently underway for all organophosphate pesticides provides a timely and perhaps once-in-a decade(s) opportunity to address this problem. With this letter, the California Stormwater Quality Task Force formally request that USEPA exercise its federal authorities use the reregistration process to address the problem of organophosphate pesticides causing impaired waterbodies.

The attached enclosures provide specific comments on the Preliminary Risk Assessments for Chlorpyrifos. In addition we have enclosed our recent "call-to-action" letter to USEPA management on this general issue, as well as the master schedule for diazinon and chlorpyrifos TMDLs in California.

Given the width and breadth of our comments, we would appreciate the opportunity to meet with you to discuss them further. In the meantime, please contact me at (916) 264-1420 if you have any questions about our comments. In addition, we note that USEPA is planning on holding public hearings later in the reregistration process. We ask that you hold at least one of these public hearings in California.

Sincerely,

ORIGINAL SIGNED BY

Dave Brent
Chairman – California Stormwater Quality Task Force

cc: Executive Committee – California Stormwater Quality Task Force

enclosures
Comment memos on Preliminary Risk Assessments for Chlorpyrifos (2)
Call-to-action letter – TMDLs and pesticide-related toxicity in urban / suburban surface waters
Master schedule for diazinon and chlorpyrifos TMDLs in California

tdc environmental

MEMO

TO: Geoff Brosseau **DATE:** December 21, 1999

FROM: Kelly D. Moran **PROJECT:** 24

SUBJECT: Review of USEPA Preliminary Risk Assessments for Chlorpyrifos (Docket Control Number OPP-34203)

At the request of the California Stormwater Quality Task Force (SWQTF), I have reviewed preliminary risk assessment documents for chlorpyrifos made available by the United States Environmental Protection Agency (USEPA) on its Internet site (www.epa.gov/pesticides/op/chlorpyrifos.htm). Since the primary interests of the SWQTF are surface water quality issues, the review focused on the *Fate and Environmental Risk Assessment Chapter* (referred to as the "risk assessment" in these comments) and the portions of the *Drinking Water Assessment* that estimate surface water concentrations of chlorpyrifos. The *HED Preliminary Risk Assessment*, the *Occupational/Residential Handler and Postapplication Residential Risk Assessment*, and the *Agricultural and Occupational Exposure Assessment* were also reviewed to obtain information regarding EPA's understanding of urban uses of chlorpyrifos.

The risk assessments recognize the widespread surface water toxicity problem related to chlorpyrifos use. This reregistration process for chlorpyrifos provides an excellent opportunity to prevent this widespread problem. Several portions of the risk assessment reference specific examples of chlorpyrifos-related toxicity, including those in the Sacramento River, Newport Bay, and Central Contra Costa Sanitary District's effluent. This shows that USEPA has been listening to the concerns of SWQTF members. Unfortunately, the risk assessment does not address the urban sources of the identified toxicity, does not evaluate chlorpyrifos uses and formulations that are potentially problematic for storm water runoff, does not mention 303(d) listings, and does not incorporate existing standards for chlorpyrifos and for surface water toxicity evaluation from the USEPA Office of Water.

The preliminary risk assessment has a number of deficiencies in its analysis of the surface water impacts of chlorpyrifos. The comments below note the major problems identified during my review of the documents. Each of the identified problems can and should be addressed in the USEPA reregistration process for chlorpyrifos.

Background

Chlorpyrifos is an extremely common, heavily used insecticide. California is one of the highest use states for chlorpyrifos. Chlorpyrifos formulations include wettable powder, emulsifiable concentrates, dust, granular, bait, flowable concentrates, impregnated material, pelleted/tableted, pressurized liquids, and microencapsulated products.

In urban areas, chlorpyrifos receives significant use. Chlorpyrifos is one of the top five insecticides used in residential settings; it is present in 18% of all households (*HED Preliminary Risk Assessment,* page 59). As the *HED Preliminary Risk Assessment* states, there are many non-residential urban sites of use, such as turf and ornamental plants, structural pest control, commercial buildings, schools, daycare centers, hotels, restaurants and other food-handling establishments, hospitals, stores, warehouses, food manufacturing plants, and vehicles.

Environmental releases of chlorpyrifos can occur during handling, mixing, loading and applying activities. Post-application releases from lawns and other landscaping, outdoor hardscape (*e.g.*, patios, paths, sidewalks, streets, driveways, curbs, and gutters), structures, pets, and treated building interior and exterior elements (*e.g.*, carpeting, crack & crevice areas, baseboards) can also occur.

The presence of elevated levels of chlorpyrifos in surface waters and surface water discharges is a widespread problem (risk assessment pages 28-29, 102-103, 178, 191, 25-206). On page 90, the risk assessment notes that chlorpyrifos is "one of the [NOAA-] inventoried pesticides found most often in coastal aquatic biota." The urban portion of these problems is at least as significant as the agricultural portion. In the *Drinking Water Assessment* (page 20), USEPA notes that "the NAWQA monitoring data now available do strongly imply that overall impacts of chlorpyrifos on surface waters from non-agricultural uses is at least as significant as from agricultural uses, with the % detections over 0.01 ppb, the 90^{th} percentile values, and the 95^{th} percentile values all higher in the streams draining primarily urban watersheds than in the streams draining primarily agricultural watersheds."

1. <u>A Comprehensive Analysis of Surface Water Impacts is Needed.</u>

<u>USEPA needs to develop a comprehensive list of uses and formulations of chlorpyrifos and then analyze that list to identify uses that may release chlorpyrifos to surface waters</u>. It would be appropriate for USEPA to review labels for all registered chlorpyrifos products and identify all uses that are likely to come into contact with water. All such uses need to be specifically evaluated in the reregistration process. Examples of uses with high potential for release of chlorpyrifos to surface water include uses that require mixing, uses where application occurs on paved areas, indoor uses on any surface that will be cleaned with water, all uses of products that recommend being "applied to runoff," "watered in," or applied just before a rain, and all uses of products that can be applied in areas likely to contact water, in storm drain or sewer systems, or in and around any type of water body. A quick review of registered chlorpyrifos products in the California Department of Pesticide Regulations pesticide products database identified the following examples of registered sites of chlorpyrifos use that would be especially likely to contribute to surface water impacts:

- aquatic areas (products registered for this use include Duration PT 275 MC microencapsulated Dursban liquid concentrate, and Dursban 75 WG),
- sewage systems (this definition includes septic systems and storm drains; products registered for this use include Dursban ME 20 microencapsulated insecticide, Empire 20, Insecta, Killmaster II, and Ultracide)
- urban areas (all uses),
- wide area and general indoor/outdoor uses (all uses), and

- carpets (when the carpets are cleaned, the pesticide will be discharged with the cleaning water to the sewer or sometimes to the storm drain).

On the basis of chlorpyrifos use information, USEPA needs to develop scenarios for analysis of surface water impacts. In the *Occupational/Residential Handler and Postapplication Residential Risk Assessment for Chlorpyrifos*, USEPA developed 11 use scenarios to evaluate worker exposure to chlorpyrifos. Similar scenarios need to be developed for use in the risk assessment to evaluate releases to surface waters. On the basis of a review of the registered sites of use for chlorpyrifos products listed in the California Department of Pesticide Regulations pesticide product database, it is recommended that USEPA evaluate the following scenarios at a minimum:

- Outdoor crack and crevice treatment (including sidewalks and gutters)
- Turf treatment
- Application to pavement and other outdoor hard surfaces (including consideration of label instructions to "water in" after application)
- Aquatic area/water area treatment
- Wood treatment at a wood preserving facility
- Treatment of wood piers, docks, bridges, and other facilities in or adjacent to surface water
- Nursery treatment
- Ornamental vegetation treatment (including considerations of label instructions like "apply until runoff")
- Treatment on roads and other rights-of-way
- Treatment of ants' nests or ornamental vegetation immediately adjacent to surface waters (for example, on creek banks)
- Indoor uses in all types of construction, including crack and crevice treatments, carpet treatment, animal care area treatment, food preparation area treatment, and treatment of any interior hard or fabric surfaces
- Sewage, septic tank, and storm drain uses
- Underground injection near storm drain lines, sewer lines, and laterals
- Pre-construction termiticide treatments during the rainy season
- "Wide area" and "Urban areas" broad treatments, like fogger adult mosquitocide application (including in marshes)
- Mixing and cleanup waste management (including clothes washing) at residential and professional applicator locations (including reasonably anticipated activities and dumping, even if not in accordance with the label)

USEPA needs to consider the impacts of chlorpyrifos "when used in accordance with widespread and commonly recognized practice." Analyses should consider reasonably anticipated misuse and accidents (*e.g.*, typical residential application at rates higher than specified on the label, spills during mixing, applicator hoses draining to gutters, disposal of pet collars, painting and application equipment cleanup, and chlorpyrifos-containing paint removal activities).

The risk assessment fails to characterize aquatic ecosystem risks from indoor uses. These uses contribute to surface water impairment via sewer system discharges. Notably absent are references to studies conducted at Central Contra Costa Sanitary District (Martinez, California), which indicated that a variety of indoor uses, as well as pesticide mixing and cleanup activities contributed to effluent toxicity, measured as toxicity to *Ceriodaphnia dubia* (the risk

assessment's page 7 reference to pet shampoos as the sole source of this toxicity is erroneous). A recent USEPA report, *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, Office of Water, EPA 833-B-99-002, August 1999, contains a summary of the organophosphate pesticide-caused effluent toxicity problem experienced at Central Contra Costa Sanitary District. Technical studies referenced in this summary (all of which have previously been submitted to OPPTS according to Bart Brandenburg, Central Contra Costa Sanitary District's Source Control Superintendent) provide the data necessary for USEPA to evaluate this issue.

2. <u>The Risk Assessment Needs to Be Expanded to Include All Urban Uses.</u>

<u>Urban uses are important environmentally</u>. The USGS NAWQA results demonstrate the importance of the impacts of urban uses of pesticides on water quality. USEPA recognizes this on page 28 of the risk assessment, which notes "somewhat surprisingly, the distribution of chlorpyrifos concentrations across the 11 urban streams is similar to the distribution across the 37 agricultural streams." A recent article in *Environmental Science and Technology* discussing the NAWQA results provides a stronger statement of the environmental importance of urban pesticide uses:

> "Insecticides were detected more frequently in urban streams than in most agricultural streams and were seldom detected in groundwater in either land use. Most detections were accounted for by diazinon, carbaryl, malathion, and chlorpyrifos." (Robert J. Gilliom, Jack E. Barbash, Dana W. Kolpin, and Steven J. Larson, "Testing Water Quality for Pesticide Pollution," *Environmental Science and Technology*, April 1 1999, pages 164A-169A.)

This shows the cumulative importance of many users in an urban watershed, and provides a good demonstration for the need to include cumulative urban runoff analysis in the risk assessment.

<u>Common urban uses of chlorpyrifos are omitted from the risk assessment</u>. The use category groupings presented on pages 4 and 5 of the risk assessment fall far short of the actual distribution of chlorpyrifos uses in urban settings. The risk assessment omits most non-residential urban sites of chlorpyrifos use, such as hospitals, restaurants and other food preparation areas, kennels, offices, institutions, recreational areas, parks, and schools. Among the excluded activities are those at professional pest control operators' facilities themselves. At some of these sites, releases of chlorpyrifos in storm water runoff and in wastewater may be regulated under Clean Water Act requirements.

<u>Cumulative use in typical urban watershed configuration needs to be evaluated</u>. On page 193 and again on page 199, the risk assessment claims (without evidence) that residential use of chlorpyrifos is relatively small compared to the assumption of 10 treated hectares around a 1 hectare pond. This statement is inappropriate, as it neglects to consider cumulative uses of chlorpyrifos in an urban area, as well as the frequent case where a watershed area far exceeds 10 times the area of the receiving water.

<u>Urban uses of chlorpyrifos can be estimated</u>. Ideal information is not available about urban pesticide use patterns, but information that would allow uses to be bracketed is available. For example, a recent paper by Scott Templeton, David Zilberman, and Seung Jick Yoo ("An Economic Perspective on Outdoor Residential Pesticide Use," *Environmental Science and Technology*, September 1, 1998, Pages 416A-423A) contains a great deal of information about

residential pesticide users, including what fraction of households use pesticides and what application rates are documented. It should be noted the article finds residential application rates (in pounds of active ingredient per acre) are higher than agricultural rates and much higher than label rates. Another source for use information is the report "Outdoor Use of Diazinon and Other Insecticides in Alameda County" (James Scanlin and Ashli Cooper, Alameda County Food Control and Water Conservation District, September 1997.) This USEPA-funded report has been submitted previously to the USEPA for its use in the diazinon and chlorpyrifos reregistration processes.

3. Structural Pest Control Uses, Including Termiticide Uses, Need to be Assessed for Surface Water Impacts.

Structural pest control involves releases of chlorpyrifos that are exposed to storm water runoff. The *Drinking Water Assessment* claims that the main non-agricultural use of chlorpyrifos is for termite control, which is typically injected in soil. The document then goes on to claim that this use would not be subject to runoff. This assumption is repeated on page 201 of the risk assessment. This assumption is faulty for the following reasons:

(1) Typically, use reports are for "structural pest control" rather than "termite control." Structural pest control is the control of any and all pests in or near structures (whether commercial, institutional, or residential). This includes the control of ants, fleas, spiders, and cockroaches, all common target pests for chlorpyrifos applications. This broader range of uses is common (confirmed by Jay Seslowe, San Francisco Agricultural Commissioner's Office, personal communication December 17, 1999). In 1997, professional applicators in California (which has about 10% of the nation's population) reported use of 507,000 pounds of chlorpyrifos for structural pest control. It is likely that EPA has substituted "termite control" where "structural pest control" was the actual use reported in its surveys, as EPA's use information, if translated to "structural pest control" would correlate with California data for structural pest control uses.

(2) While some termite control applications involve underground injection exclusively, most involve some perimeter applications (note EPA's own estimate that 3.6 million pounds of the "termite control" applications were outdoors; *Drinking Water Assessment*, page 8). Most structural pest control applications include (or consist entirely of) outdoor building perimeter spraying. In California, this is one of the most common activities conducted by professional pest control operators. The outdoor component of structural pest control is probably a very significant use of chlorpyrifos—and one that is subject to runoff. Worse, since building perimeter areas are often paved, a pesticide applied in this manner is very likely to run off when it rains.

(3) The USEPA has evidence of fish kills associated with termiticide applications, so it is clear that this use is subject to runoff, and further that this runoff can cause significant impacts. On page 20 of the *Drinking Water Assessment*, USEPA provides surface water chlorpyrifos concentration data for 15 incidents of contamination due to termiticide applications. These concentrations are relatively high (30 to 7,000 ppb).

Structural pest control may contribute significantly to chlorpyrifos releases to surface water in urban areas. In urban watersheds, it is possible that structural pest control use involves, on a cumulative watershed basis, application of substantially more active ingredient per acre in a watershed than is applied for agricultural uses. In its evaluation of the risks associated with chlorpyrifos use, it is essential that USEPA evaluate the impacts of cumulative use of

chlorpyrifos for structural pest control in urban watersheds. In evaluating the underground injection application method, the evaluation should also consider releases to underground storm drain and sewer lines and laterals, as this is a likely pathway for transport of chlorpyrifos to surface water.

4. Formulations Need To Be Analyzed For Potential To Cause Surface Water Problems.

USEPA needs to review all registered products and identify all formulations that may be especially prone to runoff (*e.g.*, granules or flakes that float and thus can flow in runoff), based on characteristics of inert ingredients. The impacts of the mobility of such formulations should be evaluated in the risk assessment. On page 197, the risk assessment cites an example where granule mobility may have contributed to the elevated concentrations of chlorpyrifos in surface water near treated turf. In this analysis, USEPA should seek to identify which formulations are most likely to be causing the surface water toxicity.

5. Surface Water Concentrations Need to be Estimated Appropriately.

The USEPA needs to resolve apparent technical confusion regarding the estimated environmental concentration of chlorpyrifos in surface waters. The *Drinking Water Assessment* provides USEPA's "best scientific judgement on the distribution of chlorpyrifos residues in water…." Those values are:

- Surface water, streams and rivers—chronic & acute—0.4 ppb
- Surface water, reservoirs and lakes—chronic—0.4 to 6.7 ppb; acute—0.4 to 31 ppb.

It is interesting to note that these values are not used in the other documents; instead a range of lower values (0.026 to 0.4 ppb) is substituted. In the *Drinking Water Assessment*, 0.4 ppb is treated as a lower bound estimated environmental concentration; in contrast, the risk assessment treats 0.4 ppb as an upper bound estimated environmental concentration. These values are already lower than anticipated peak values for the following reasons:

- The values provided are dissolved, not total chlorpyrifos concentrations based on the analysis of filtered samples in the USGS NAWQA (see pages 13-14 of the *Drinking Water Assessment*).
- The results provided are not maximum values. The Drinking Water Assessment notes that these values "should be somewhat less than actual peak values" because "smaller streams draining watersheds with more intense chlorpyrifos use" would likely have higher values and "because of the typical failure of such samples to capture the maximum peaks associated with post-application runoff events." Similarly, in the *HED Preliminary Risk Assessment* (page 8), USEPA notes that "the monitoring data are not available for the most vulnerable watersheds or groundwater where chlorpyrifos use is pervasive."
- Environmental concentrations estimated from models (higher than the NAWQA values used) may be too low, rather than too high. On pages 24 and 173, the risk assessment documents findings of chlorpyrifos concentrations in surface waters during controlled experiments that exceed model-generated estimated environmental concentrations. Later, however, the USEPA concludes that the models overestimate environmental concentrations—even though this evidence shows that at least in some cases the models underestimate environmental concentrations.

Additional data sources should be reviewed to determine if the estimate needs to be revised. Much of the data from California does not appear to be included in the survey of surface water concentrations. We urge USEPA to use all available resources in this analysis. For example, information in the following resources should be incorporated in the revised risk assessments and in future documents:

- Numerous reports detailing surface water concentrations of chlorpyrifos and its impacts have been submitted to USEPA. In Region 9, Kathy Goforth and Robyn Stuber have carefully compiled a bibliography of reports that they have collected and submitted to headquarters. It is surprising that relatively few of these studies are cited in the current reports.
- The California Department of Pesticide Regulation's Surface Water Database, managed by Candace Miller, has compiled some (but not all) California surface water pesticide data.

6. The Level of Concern Should be Defined By Comparing Estimated Environmental Concentrations to Water Quality Criteria.

Water Quality Criteria are the appropriate standards for the risk assessment. USEPA has developed a maximum acceptable concentration of chlorpyrifos in surface waters. This value, known as the "recommended water quality criterion," is the value that should be used for development of the aquatic risk quotients. It does not make sense for USEPA to develop a new and different set of numbers in the current process, when the Office of Water has already developed values. According to the *Federal Register*, December 7, 1998, page 67547, the national recommended water quality criteria are intended to be protective of the vast majority of the aquatic communities in the United States. These numbers are used as the basis for effluent limitations in NPDES permits and as the basis for determining if a water body is impaired (see Clean Water Act Section 303[d]). According to the *Federal Register* notice, "the Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of a aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedance, and chronic frequency of allowed excellence. Because 304(a) aquatic life criteria are national guidance, they are intended to be protective of the vast majority of the aquatic communities in the United States." For chlorpyrifos, the values are as follows:

	CMC	CCC
Duration	1 hour	4 days
Fresh Water	0.083 ppb	0.041 ppb
Salt Water	0.011 ppb	0.0056 ppb

7. For Surface Waters, the Appropriate Toxicity Characterization Involves Use of Office of Water Standard Methods and Policies.

The USEPA should use a toxicity definition consistent with the Office of Water definition when evaluating toxicity to aquatic species. Under the Clean Water Act, any finding of an adverse effect in a toxicity test is considered "toxicity." An adverse effect is considered a statistically

significant (with 95% confidence) event (*i.e.*, reduction in survival or reproductive success diminished). This endpoint differs from that being used in the risk assessment (page 96 of the risk assessment states that "toxicity" can be defined as the LC 50, EC 50, MATC, LOEC, or NOEC on the basis of toxicity tests for a limited list of aquatic species that differs from the list of species used for Clean Water Act testing).

The USEPA should analyze aquatic toxicity using Office of Water methods. It is unclear why the risk assessment process does not include analysis of toxicity to the aquatic species USEPA has selected as the most appropriate test species for surface waters. The risk assessment mentions the Office of Water standards on page 28. These methods are detailed in three documents:

- Cornelius I. Weber, ed., *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA/600/4-90/027F, August 1993.
- Philip A. Lewis, *et al*., eds., *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, EPA/600/4-91/002, July 1994.
- Donald J. Klemm *et al*., eds., *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, EPA/600/4-91/003, July 1994.

Selection of species other than those used by the Office of Water leads to an understatement of the environmental impacts of chlorpyrifos. Methodological differences (not analyzed in this review) could also affect results. For example, for freshwater environments, *Ceriodaphnia dubia* is used for both acute and chronic aquatic toxicity testing. *Ceriodaphnia dubia* are more sensitive to chlorpyrifos than the most sensitive freshwater species (*Daphnia magna*) considered in this analysis. The 96-hour LC 50 for *Daphnia magna* provided in the risk assessment (page 69) is about 0.10 ppb; for *Ceriodaphnia dubia*, the LC 50 is about 0.06 to 0.08 ppb. More importantly, in environmental samples, chlorpyrifos has been found to demonstrate toxicity to *C. dubia* above the NOEC of 0.03 ppb (see for example, USEPA Office of Water, *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, EPA 833-B-99-002, August 1999, p. 122; compare this to *D. magna*, which has an NOEC of 0.04 ppb [risk assessment, page 70]).

8. Cumulative Impact Analysis is Needed.

EPA needs to consider cumulative effects of chlorpyrifos and other substances present in surface waters. As a recent article in *Environmental Science and Technology* noted:

> "The NAWQA study reveals that low-level mixtures are the most common form of pesticide occurrence in streams and groundwater. Long-term exposure to low-level mixtures of pesticide compounds, punctuated with seasonal pulses of high concentrations, is an exposure pattern that may not be adequately accounted for in present criteria." (Robert J. Gilliom, Jack E. Barbash, Dana W. Kolpin, and Steven J. Larson, "Testing Water Quality for Pesticide Pollution," *Environmental Science and Technology*, April 1 1999, page 164A-169A.)

The following issues need to be addressed in the cumulative impacts analysis:

- use of multiple chlorpyrifos products in the same watershed,
- use of multiple organophosphate pesticides in the same watershed,
- use of chlorpyrifos products with multiple active ingredients near surface waters, and
- potential impacts of inert ingredients in chlorpyrifos products on water quality.

The cumulative use of organophosphate pesticides contributes to surface water toxicity problems. As the *HED Preliminary Risk Assessment* notes (page 61), EPA considers organophosphate pesticides to express toxicity through a common biochemical interaction. The combined effects of organophosphate pesticides have been demonstrated to cause additive toxicity in surface waters, as the risk assessment notes on pages 28, 98 and 103. It will be necessary for USEPA to evaluate the cumulative toxicity of chlorpyrifos, diazinon, and other organophosphates (as well as their degradates).

9. The Risk Assessment Needs to Recognize the Potential Environmental Importance of Dissolved Chlorpyrifos in Storm Water Runoff.

On page 9, the risk assessment states that "most of chlorpyrifos runoff is generally via adsorption to eroding soil rather than by dissolution in runoff water. However, in some cases within the lower ranges of adsorption and when runoff volume greatly exceeds sediment yield, dissolution in runoff water may also contribute significantly to runoff." Does USEPA have data to support these broad assertions? Runoff data collected by the USGS and California agencies show environmentally significant concentrations of chlorpyrifos in the *dissolved* form in runoff. The USEPA view that chlorpyrifos is only in a particulate-bound form in runoff can affect risk assessment results inappropriately. USEPA needs a correct understanding of the chemical form of chlorpyrifos in runoff to evaluate its risks.

10. More Information is Needed to Evaluate the Environmental Significance of the Degradate TCP in Surface Water.

While the degradate TCP exhibits significantly lower aquatic toxicity than does chlorpyrifos, the complete absence of environmental monitoring data is disturbing. Without even one sample of its concentration in the environment (in a general study or in a controlled experiment), EPA deems it unimportant. Given that many storm water runoff, river, creek, and estuary samples exhibit toxicity from "unknown sources," and the high use of chlorpyrifos and environmental persistence and high solubility of TCP, it appears necessary to obtain actual environmental data to validate model estimates of TCP concentration.

11. Many Analyses Important to the Reregistration Process are not Included in the Risk Assessment.

USEPA has omitted analysis of critical chlorpyrifos uses and critical risk assessment endpoints due to lack of information. These comments have identified several areas where work is needed. USEPA itself has identified many additional areas where data is needed. Several rather critical water quality related endpoints are not analyzed because USEPA apparently has yet to develop procedures for the analysis. Some of the most critical omissions noted in the risk assessment are listed below:

- Homeowner uses, ornamentals and applications described as "apply to runoff" have not been assessed for aquatic impacts (page 7).
- Risks for indoor uses have not been assessed for wildlife effects, even though toxicity from these uses has been documented in surface water discharges from sewage treatment plants (page 7).
- Aerobic aquatic metabolism data for chlorpyrifos is lacking (page 11).

- Spray drift impacts are not planned for evaluation during this reregistration process (page 13). Chlorpyrifos has been found in rain and fog. When conducted, the spray drift evaluation should assess the impacts of aerial transport of pesticides from both urban and non-urban uses into urban runoff.
- Risks due to chlorpyrifos' presence in sediments (such as risks to benthic organisms) are not assessed (pages 61 and 103).
- Field experiments to assess chlorpyrifos impacts included no aquatic invertebrate observations, even though chlorpyrifos is known to be highly toxic to aquatic invertebrates (page 101).
- Risks to non-target aquatic plants have not been assessed (page 103).
- Assessment of runoff from homeowner fruit tree uses (one of the few urban uses that the risk assessment mentions) was not conducted because a model is not available for flowing waters (page 192).
- Aquatic impacts of lawn application and residential perimeter use of chlorpyrifos are not evaluated because USEPA believes its current modeling tools would overestimate surface water concentrations resulting from such uses (if information presented elsewhere in the report is indicative, the model could very well underestimate surface water concentrations in urban areas once cumulative uses of chlorpyrifos and enhanced runoff due to pavement are considered) (pages 199 and 200).
- USEPA states in regards to findings of chlorpyrifos toxicity in storm water runoff, rivers, creeks, sewage treatment plant effluents, and rainfall that "the extent of adverse effects can not be assessed, because the levels of chlorpyrifos were not analytically measured" (page 209). This statement is confusing in that numerous studies have been submitted to USEPA by California state and local agencies that include measurements of chlorpyrifos concentrations in the affected surface waters.
- Risks to most aquatic habitats, while likely to be greater than risks for the model habitats, have not been assessed (page 209).
- Cumulative risks of chlorpyrifos with other pesticides have not been evaluated (page 209).
- Endocrine disrupter effects are not planned for evaluation during this reregistration process. The *HED Preliminary Risk Assessment* notes that EPA is currently developing a screening and testing program for endocrine disrupter effects, and the document indicates that EPA may require further testing of chlorpyrifos for endocrine effects. It will be important to include ecosystem endocrine effects in future testing.

John J. Tomko, P.E.
Hazardous Materials and
Water Quality Consultant

JJT MEMORANDUM

TO: **Larry Nash**
Geoff Brosseau
Kelly Moran

FROM: **John Tomko, Consulting Engineer**

DATE: **December 15, 1999**

SUBJECT: **Summary of and Comments on Aquatic Life Risk Assessments in USEPA's Draft Reregistration Eligibility Science Chapter for Chlorpyrifos, Fate and Environmental Risk Assessment Chapter, dated October 1999.**

Subchapter 4 - Ecological Risk Characterization

Summary

Page 96 - The quotient method was used to determine the likelihood of adverse ecological effects. Risk quotients (RQs) were estimated for numerous agricultural and urban uses of chlorpyrifos for various non-target organisms. The RQs were calculated by dividing exposure estimates by ecotoxicity values. These RQs were then compared to USEPA's Levels of Concern (LOCs), which are criteria used by EPA to indicate potential risk to nontarget organisms and the need to take regulatory action. The criteria indicate that a pesticide used as directed has the potential to cause adverse effects on nontarget organisms. The LOCs currently address the following four (4) presumptive categories (the aquatic animal LOC criteria used in this assessment are shown in parentheses):

- acute high (0.5) - potential for acute risk is high and regulatory action may be warranted in addition to restricted use classification,

- acute restricted use (0.1) - potential for acute risk is high, but this may be mitigated through restricted use classification,

- acute endangered species (0.05) - potential for acute risk to endangered species is high, and regulatory action may be required, and

- chronic risk (1) - the potential for chronic risk is high, and regulatory action may be required.

Page 99 – A significant conclusion reached in this risk assessment chapter was that a single application of chlorpyrifos poses high risks to small mammals, birds, fish and aquatic invertebrate species for nearly all registered outdoor uses, and that multiple applications increase the risk to wildlife and prolong exposure to toxic concentrations. Specific risk estimate conclusions on fish and amphibians and aquatic invertebrates are noted below. Also (as noted below) for most urban uses of chlorpyrifos, aquatic risk quotient estimates were not calculated, or in the case of termiticide uses, were calculated using an incorrect value for annual volume of Active Ingredient (AI) used.

Page 100/101- Risks to Fish and Amphibians

Risk quotients exceed the levels of concern for high acute toxicity (0.5) and chronic effects (1) for freshwater and estuarine fish for all uses.

Page 101/102- Risks to Aquatic Invertebrates

Risk quotients exceed the levels of concern for high acute toxicity (0.5) and chronic effects (1) for freshwater and estuarine fish for all uses.

Page 102/103 - Risks to Freshwater Organisms in Field Monitoring Studies

Monitoring data (biota, sediment, and water column data) reviewed by USEPA indicate widespread and persistent occurrence of chlorpyrifos in aquatic areas throughout the nation. However, they note that the ecological significance of these levels in biota (including benthic organisms) are unknown. California data referenced in this section include:

- Dec. 13, 1996 Val Connor report on 1994/95 Stockton/Sacramento/San Francisco Bay urban runoff events and rainfall data, and

- Dec. 1995 CVRWQCB report on San Joaquin Valley receiving water data (agricultural sources) between 1988 and 1992.

Page 105 - Freshwater and Estuarine Toxicity Values

The following toxicity values for fish and invertebrates were selected as the most sensitive aquatic endpoints and they were used as the denominator in the risk quotient equation:

		Freshwater		Estuarine	
Aquatic Life	Toxicity Type	Toxicity (ppb)	Species	Toxicity (ppb)	Species
Fish	Acute (LC50)	1.8	bluegills	.96	silversides
	Chronic (NOEC)	.57	fathead minnows	.28	silversides
Invertebrates	Acute (LC50)	.1	daphnids	.035	mysid shrimp
	Chronic (NOEC)	.04	daphnids	.0046	mysid shrimp

Page 106 - Ecological Exposures and Risk Characterization

Exposure concentrations were modeled at maximum and typical use rates, using the farm pond GENEEC Model. The exposure concentrations generated by this model represent 1 in 10 year concentrations in a one-1acre farm pond (or similar water body with no outlet) that receives pesticide loading from an adjacent 100% cropped, 100% treated field.

Page 192/193 - Risk Summary for Maximum Homeowner Ornamental and Fruit Tree Uses

EPA did not assess aquatic risks for these uses because of the complexity of estimating exposure concentrations, due to the non-availability of runoff models from less than 10 acre plots to flowing streams or ditches. However, EPA states that the spray treatment of ornamentals to runoff is likely to pose acute risks to aquatic organisms, if rainfall washes the spray solution off the ornamentals and the application runoff into an adjacent aquatic area.

Page 194/196 - Risk Summary for Maximum Golf Course Spray and Granular Treatments

EPA did assess aquatic life risks and calculate RQs for these uses (See table below). These RQs significantly exceed the LOCs. EPA indicates that these levels may be too high because the model used to estimate runoff levels did not incorporate reductions in levels due to ground cover.

Species	RQ (Spray)	RQ (Granular)
Freshwater fish acute	16	14
Freshwater fish chronic	26-45	22-39
Estuarine fish acute	30	26
Estuarine fish chronic	52-91	46-79
Freshwater invertebrate acute	290	250
Freshwater invertebrate chronic	370-640	320-550
Estuarine invertebrate acute	830	720
Estuarine invertebrate chronic	>3200->5500	>2800->4800

Page 198/201 - Risk Summary for Lawn Care and Residential Perimeter Uses

EPA did not assess aquatic risks for these uses because of the complexity of estimating exposure concentrations, due to the non-availability of runoff models from less than 10 acre plots to flowing streams or ditches. However, EPA states that rainfall may result in runoff of chlorpyrifos residues applied as a perimeter pest treatment into an adjacent aquatic area.

Page 201 - Indoor and Foundation Termiticide Uses

EPA concluded that the typical house treatment method for injection of chlorpyrifos into the soil for termite control should, if carefully followed, pose little risk to aquatic species. However, they have indicated that there have been several reported fish kill incidents associated with these uses. Also, on page 204 EPA notes that wildlife incident reports indicate that chlorpyrifos uses around homes, especially with termiticide treatments have killed robins and fish.

This use is the maximum urban use of chlorpyrifos. This reports indicates that the annual volume used for these uses is 2.6 million pounds of Active Ingredient. However, a Quantitative Usage Analysis for Chlorpyrifos released by USEPA on their OPP website, dated 9/27/99, shows that the annual usage is 5 million pounds of AI. This is approximately 24% of the total annual usage of 21 million pounds, and 48% of the total annual urban usage of 10.6 million pounds. The only use higher than the termiticide use is the agricultural use of chlorpyrifos on corn, where 5.5 million pounds is applied annually.

It's unclear how EPA concluded that the typical treatment method poses little risk to aquatic species. Considering that this use is the greatest single use of chlorpyrifos within urban areas, field studies should be conducted to verify their conclusion of minimal aquatic risks. The chlorpyrifos solution used in this use is very concentrated (between 0.5% to 1%), and EPA stresses that risk should be minimal if this method is carefully followed. Obviously, at these concentrations, less than careful adherence to this method (i.e., minor spills/leaks to the ground surface, over spraying of the trenches or spray drift, excess injection into the holes) can easily result in chlorpyrifos levels of ecological concern on surface soils and transport to water bodies by rainfall and/or irrigation.

Page 201 - Risk Summary for Mosquito Adulticide Uses

EPA did assess aquatic life risks and calculate RQs for these uses (See table below). These RQs were based on 15% spray drift to waters 3 and 6 feet deep. They did not consider runoff from applied areas due to irrigation and/or rainfall. LOCs were exceeded for invertebrates and estuarine fish chronic effects.

Species	Mosquito Adulticide RQ (Spray)
Freshwater fish acute	0.12 - 0.23
Freshwater fish chronic	0.19 - 0.39
Estuarine fish acute	0.22 - 0.43
Estuarine fish chronic	0.75 - 1.5
Freshwater invertebrate acute	2.1 - 4.2
Freshwater invertebrate chronic	5.2 - 10
Estuarine invertebrate acute	6.0 - 12
Estuarine invertebrate chronic	46 - 91

Page 203/206 - Risk Summary of All Outdoor Chlorpyrifos Uses

This section summarizes the risk assessment data and notes that the risk quotients for all evaluated chlorpyrifos uses exceed the acute and chronic LOCs for most terrestrial and aquatic categories. Some other conclusions were:

- Aquatic species are at more risk than terrestrial species.
- Estuarine species are at more risk than freshwater species.
- Birds are at more risk than most mammalian species.
- RQs are less for ground spray applications than aerial applications.
- Chronic risk quotients for granular applications are omitted because a standard method is not available, not for the lack of possible risks.

Field/ambient data is also discussed in this section, including the following:

- Wildlife casualties in three field studies at chlorpyrifos-treated sites included fish, small mammals, birds, snakes, toads, tadpoles, and a turtle. In addition, water column levels exceeded acute and chronic toxicity values for both fish and aquatic invertebrates.
- Ninety-two (92) wildlife incident reports indicate that chlorpyrifos uses around homes and on crops have killed fish (72 reports), birds (20 reports), aquatic invertebrates (8 reports), amphibians (7 reports), reptiles (4 reports), and mammals (4 reports). An additional 69 reports have either not been reviewed or lack sufficient detail.
- Bioassay data from San Francisco Bay, Sacramento Valley, San Joaquin Valley, Upper Newport Bay, Arizona, Kentucky, Nevada, Texas identify chlorpyrifos as a toxicant in urban discharges, and bioassay data from San Francisco Bay and Sacramento Valley identify toxic levels of chlorpyrifos within rainwater. EPA states that “These monitoring levels portend serious impacts on invertebrate populations in these freshwater/estuarine areas.”

EPA discusses possible application modifications to mitigate the risks including the following:

- Reduce maximum application rates to typical application rates.
- Eliminate aerial sprays where possible.
- Enforce the buffer zones for spray drift.

- Direct air blast operations away from critical areas.

- Reduce terrestrial risks by reducing application rate of individual applications and increasing time between applications to two to three weeks.

- Reduce aquatic risks by reducing the total amount applied (by reducing application rate and/or number of applications).

Page 207 - Endangered Species Concerns

EPA concludes that there is a high potential for many endangered and threatened species to be exposed to chlorpyrifos. Jeopardy opinions were rendered by the Fish and Wildlife Service (FWS) in 1981 and 1982, and a draft opinion was rendered in 1993, on a number of aquatic and terrestrial endangered species for the use of chlorpyrifos on food crops. Apparently, FWS specified 105 use limitations based upon these opinions, but it's stated only "that several voluntary use limitations have been made".

EPA has a special program "The Endangered Species Protection Program" to identify and control pesticides that may cause adverse impacts to endangered and threatened species. The program over the last 10 years has been implemented on an interim basis. It provides information to users to help them protect these species on a voluntary basis. The final program is expected to provide labeling changes on use restrictions necessary to protect these species.

EPA states that they will not be imposing label changes as a result of this reregistration process for chlorpyrifos, but possibly in the future under their Endangered Species Protection Program.

Page 207 - Uncertainties in the Risk Assessment

EPA lists numerous uncertainties in this risk assessment that tend to underestimate the ecological risks of the chlorpyrifos uses. These include:

- Cumulative risks from combined uses of chlorpyrifos products were not estimated, nor were additive toxicity risks due to other pesticides.

- Chronic (reproductive) risks to freshwater fish may be as much as 2 orders of magnitude higher, since the fathead minnow LC50 (chronic assessment endpoint used in this risk assessment) is 203 ppb and the bluegill sunfish LC50 is 1.8 ppb.

- Risks to benthic organisms were not assessed due to lack of sediment toxicity data.

- Aquatic risks have been assessed only for 2-meter deep ponds, not for the myriad of aquatic habitats (marshes, streams, creeks, shallow rivers, intermittent aquatic areas etc) that are likely to be more productive that the 2-meter deep ponds. EPA estimates that risks in these shallow/intermittent water bodies may be significantly higher (i.e., 6 to 13 fold higher risk quotients).

Comments

- Since numerous RQs were in excess of USEPA's Levels of Concern (LOCs) for nearly all chlorpyrifos uses, USEPA should be encouraged to take immediate action to eliminate these unacceptable risks, including label changes and use restrictions.

- The annual volume used for termiticide use is 5 million pounds not 2.6 million pounds. Termiticide use is the greatest single use of chlorpyrifos within urban areas. EPA should explain how they concluded that the typical termiticide treatment method poses little risk to aquatic species. Field studies should be conducted to verify minimal aquatic risks. The chlorpyrifos solution used in this use is very concentrated (between 0.5% to 1%), and minor spills/leaks to the ground surface, over spraying of the trenches or spray drift, and excess injection into the holes) can easily result in chlorpyrifos levels of ecological concern on surface soils and transport to water bodies by rainfall and/or irrigation.

- The listing of a few potential risk management measures is inappropriate in a preliminary risk assessment. However, since they appear in this document—EPA's list of possible mitigation measures needs to be more specific, especially for urban uses of chlorpyrifos. Specifically,

  - Eliminate aerial sprays where possible, enforce the buffer zones for spray drift, and direct air blast operations away from critical areas.

    These measures have limited usefulness for urban uses, and don't address site runoff problems associated with irrigation and rainfall.

  - Reduce maximum application rates to typical application rates, reduce terrestrial risks by reducing application rate of individual applications and increasing time between applications to two to three weeks, and reduce aquatic risks by reducing

the total amount applied (by reducing application rate and/or number of applications).

EPA should specify the acceptable reductions for each use that are protective of aquatic and terrestrial life (i.e., result in EECs < LOCs)? Runoff models specifically developed for urban application sites (lawns, gardens, pavements golf courses, mosquito adulticide use sites, etc) with rainfall/irrigation runoff to shallow and low flow water bodies should be developed and used to determine ecologically protective application levels.

- If USEPA fails to take immediate action and determines that additional risk assessment analyses are necessary then the following issues need to be addressed:

  - Cumulative risks from combined uses of chlorpyrifos products, and additive toxicity risks of other pesticides should be estimated.

  - The chronic toxicity endpoint for fish should be based upon the most sensitive fish (the bluegill sunfish) and not the fathead minnow.

  - Risks to benthic organisms should be assessed.

  - Aquatic risks models need to be developed for the myriad of aquatic habitats (marshes, streams, creeks, shallow rivers, intermittent aquatic areas etc), and for urban application sites (lawns, gardens, pavements golf courses, mosquito adulticide use sites, etc) with rainfall/irrigation runoff to shallow and low flow water bodies.

SWQTF
California Stormwater Quality Task Force
1395 35th Avenue Sacramento, CA 95822
Ph (916) 264-1400 Fax (916) 264-1497
www.blymyer.com/stormwaterqtf

November 2, 1999

Ms. Carol Browner
Administrator
USEPA
401 M Street, SW
Washington, DC 20460

Ms. Susan Wayland
Assistant Administrator - Office of Prevention, Pesticides, and Toxic Substances (OPPTS)
USEPA
401 M Street, SW
Washington, DC 20460

Mr. J. Charles Fox
Assistant Administrator - Office of Water (OW)
USEPA
401 M Street, SW
Washington, DC 20460

Subject: Call to action – TMDLs and pesticide-related toxicity in urban/suburban surface waters

Dear Ms. Browner, Ms. Wayland, and Mr. Fox:

On behalf of the California Stormwater Quality Task Force, I am writing to urge that the U.S. Environmental Protection Agency focus its authorities and resources on the national problem of pesticide-related toxicity in urban/suburban surface waters. Our research indicates that in-stream toxicity is caused by use of common organophosphate pest control products sold at retail outlets and applied by commercial pesticide applicators throughout the country. While municipal stormwater agencies throughout California are aggressively pursuing public education campaigns it is clear to us that public education alone will not eliminate in-stream toxicity due to these pesticides. Solving a problem of such scale and complexity will take a coordinated, multi-media approach supported by USEPA's highest management levels.

The California Stormwater Quality Task Force (Task Force) was formed in 1989 to advise the California State Water Resources Control Board (State Board) on storm water discharge issues. In this capacity, the Task Force has assisted the State Board with the development and implementation of the storm water permitting processes. Our membership is composed of storm water management and storm water quality personnel from cities, counties, special districts, industries, and consultants throughout California.

In March of this year, Denise Keehner, Acting Director of the Environmental Fate and Effects Division, briefed the Task Force on the Office of Pesticide Programs' understanding and perspective on the growing problem of pesticide-related toxicity in urban and suburban surface waterbodies. We found her presentation informative and the information exchange valuable. We were encouraged by the problem-solving opportunities raised in that meeting and it appears that recent events have brought those opportunities to the forefront.

The problem

Water quality research conducted in California by storm water programs, wastewater treatment plants, and Regional Water Boards over the last several years has identified widespread toxicity in local creeks, urban runoff and wastewater treatment plant effluent. The toxicity problem was ultimately traced to diazinon and chlorpyrifos—commonly used organophosphate pesticides available in hundreds of consumer products. Study results indicated that pesticide use according to label instructions could not be ruled out as a cause of wastewater and storm water toxicity. Based on the water quality data, USEPA listed 53 waterbodies in California as impaired due to diazinon in urban runoff and 7 waterbodies as impaired due to chlorpyrifos in urban runoff as part of the final 1998 section 303(d) (Clean Water Act) list of impaired water bodies in California. As a result of the 303(d) listings and other legal actions, eight Total Maximum Daily Loads (TMDLs) for diazinon have been initiated in California, including at least one in virtually every major urban area of the state.

Impact of 303(d) listing on local governments

By definition under the Clean Water Act, the May 1999 listing action means that there is a water quality problem, regardless of the problem definitions under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (i.e., "unreasonable adverse effect") or the Food Quality Protection Act (FQPA) (i.e., "reasonable certainty of no harm"). The listing action puts over 100 municipalities in California at immediate regulatory, legal, and financial risk.

- Regulatory risk - The State Water Resources Control Board and USEPA can take enforcement action against and fine municipalities for violating their NPDES storm water permits.
- Legal risk - Citizen and environmental groups can sue municipalities for the same reasons.
- Financial risk - Municipalities must now spend local public tax dollars proactively addressing this problem, and potentially reacting to fines and lawsuits.

As a result of these liabilities, we are very motivated to work with others to solve this problem.

National problem

A review of monitoring data from around the country shows that municipalities in California are not alone in this predicament.

- NAWQA (1998) – Results from the United States Geological Survey's (USGS) National Water Quality Assessment Program from 1992 through 1996 show that the problem is in fact a national one. Over 300 samples have been taken from eleven urban streams scattered across the country from Florida to Connecticut to Oregon as part of the Pesticides National Synthesis Project. In a recent report on the first cycle of the program, USGS concluded that *"urban and suburban areas are substantial sources of pesticides to streams"* and that *"most urban areas have similar pesticides in streams...and many urban areas may benefit from similar strategies for reduction."*

Specifically, USGS found that concentrations of diazinon exceeded the International Joint Commission (IJC) aquatic life criterion of 80 ng/L in eight of the eleven (73%) urban streams sampled around the country in 1993 and 1994. Diazinon concentrations were estimated to exceed the criterion for extended periods (9 to 250 days per year) at seven of the eleven (64%) urban sites. The IJC established the Great Lakes water quality objective for diazinon of 80 ng/L in 1977. In December 1999, USEPA plans to publish final national water quality criteria for diazinon. The proposed freshwater acute (one-hour average) criterion is 90 ng/L to be exceeded no more than once every three years on the average. The proposed saltwater acute (one-hour average) criterion is 820 ng/L to be exceeded no more than once every three years on the average.

USGS also found that the most frequently detected pesticides were and continue to be the most heavily used. The most frequently detected insecticides—diazinon and chlorpyrifos—are ranked number 1 and 4 nationally among insecticides used for homes and gardens.

Of even greater concern was the USGS finding that pesticides usually occur in mixtures. More than 50 percent of all stream samples (urban, agricultural, and intermediate) contained five or more pesticides. Almost 40% of the urban samples contained a mixture of the herbicides simazine, prometon, atrazine, and the insecticide diazinon. More than 10% of the urban stream samples contained a mixture of at least four herbicides plus diazinon and chlorpyrifos. These results prompted USGS to declare: *"Insecticides in urban streams, largely from use around homes and in gardens, parks, and commercial areas, frequently occur at levels of concern for aquatic life and may be a significant obstacle for restoring urban streams."*

- Publicly-Owned Treatment Works survey (1989) – Results from a survey done 10 years ago by USEPA show that pesticide-related toxicity is a wastewater problem as well as a storm water problem. USEPA's Environmental Research Laboratory in Duluth, working through the National Effluent Toxicity Assessment Center (NETAC), reported on the occurrence of diazinon in 28 POTW effluents. Diazinon was found in sixteen (62%) of the effluents, and levels were greater than or equal to 250 ng/L for nine (32%) of the effluents. NETAC concluded in part *"The frequency with which we have observed diazinon in the past, in this survey, and continue to find it in effluents is indicative of a widespread problem."*

Clearly this is a national problem caused by products that are registered at the national level and sold across the country.

Municipalities' Role

To comply with their NPDES storm water permits, municipalities must meet two broad goals:

1. effectively prohibit non-storm water discharges into storm sewers, and
2. reduce the discharge of pollutants to the maximum extent practicable (MEP).

To meet these goals, there are a number of things California storm water programs have done or plan to do that may reduce pesticide-related toxicity in surface waters including:

- limiting or prohibiting pesticide use by municipal staff and contractors and/or requiring use of best management practices (BMPs) such as Integrated Pest Management;
- providing adequate and convenient options for disposal of unused pesticides and pesticide containers through household hazardous waste collection programs;

- educating residents about pesticide-related toxicity and proper use and disposal through distribution of educational materials, and development and implementation of media and advertising campaigns;
- educating residents about alternative methods and products through such programs as demonstration gardens and our acclaimed IPM Partnership—a point-of-purchase program in hardware stores and nurseries;
- educating businesses about proper use and disposal, as well as alternative methods and products for use around their own properties and facilities; and
- educating pest control operators and working with them to develop BMPs protective of surface waters.

We are and will continue to do our part to address the problem of pesticide-related toxicity in surface waters by way of meeting the MEP goal.

We can't do it alone

However, it is clear to us that our efforts alone will not be enough to solve this national problem. From our research, it appears that less than 1% of applied diazinon runs off, yet it takes less than a fluid ounce of active ingredient flushed into storm water runoff to cause toxicity in an urban creek. Our educational programs are some of the most developed in the country and they have won numerous awards for their quality and effectiveness. Nevertheless, even the best education programs are not 100% effective.

It is clear that education alone will not solve this problem.

That fact will have significant regulatory, legal, and financial implications for every level of government—federal, state, and local—under the TMDL program. Under proposed revisions to the TMDL regulations, TMDLs would have to contain ten prescribed elements including an implementation plan. The implementation plan would have to include *"a demonstration that the control actions and/or management measures are expected to achieve the required pollutant loads"* (Federal Register 64, No. 162, 46051; 40 CFR 130.33(b)(10)(i), August 23, 1999).

It's highly unlikely that a diazinon toxicity TMDL could be written—that allocates loads to point and nonpoint sources, atmospheric deposition, and natural background—that will meet this requirement. These four "source" categories do not have absolute control over the uses, discharges, and emissions of pesticides to the environment. A significant amount of control rests with USEPA via the pesticide registration process.

USEPA's Role

As the agency that sanctions the use of pesticides and the agency that lists waterbodies as impaired, USEPA is the ultimate regulatory authority on this issue. The reregistration process currently underway for all organophosphate pesticides provides a timely and perhaps once-in-a decade(s) opportunity to address this problem. With this letter, the fourteen Phase 1 municipal storm water programs represented by the California Stormwater Quality Task Force, formally request that USEPA exercise its federal authorities and seize this unique opportunity.

Opportunities

The registration review process provides two opportunities for USEPA to address the problem of organophosphate pesticides causing impaired waterbodies.

Phase 4–Revised Risk Assessments - The revised risk assessments produced during Phase 4 of the registration review should:

- Include all of the surface water data and studies demonstrating pesticide-related toxicity and potential water quality standard exceedances from across the country.
- Identify potentially problematic uses – Given the growing evidence of widespread pesticide-related surface water toxicity, USEPA should review and identify all uses that are likely to come into contact with water. These uses would include those that: 1) require mixing; 2) recommend being "watered-in" or applied just before a rain; 3) can be applied in areas likely to contact water such as manholes, impervious surfaces (e.g., "crack and crevice"), and in and around creeks; and 4) come in formulations that may run off (e.g., granules or flakes that float). We offer to help develop the criteria for identifying these uses, and to work with USEPA and manufacturers to eliminate these uses from those listed on product labels.
- Revise the cost / benefit analyses – Considering the new evidence of widespread toxicity in urban areas, USEPA should consider and initiate one or more methods for conducting cost / benefit analyses:
    - More comprehensive cost / benefit analyses – The current cost / benefit approach is incomplete and therefore inaccurate. On the environmental cost side, the impacts on urban surface waters are underrepresented. On the economic benefit side, the mounting cost to local public agencies of dealing with the regulatory and legal liability caused by this national problem must be added to the calculation and considered against the private gains made by manufacturers.
    - FIFRA – The costs and benefits of urban uses should be considered separately from agricultural uses. The needs, costs, and benefits of pesticide use are very different in these two environments and the cost / benefit analyses should reflect that fact.

Phase 6–Risk Management Strategies of the registration review should be used to:

- Ensure that TMDL implementation plans can be developed to comply with the requirement to demonstrate *"that the control actions and/or management measures are expected to achieve the required pollutant loads"* (Federal Register 64, No. 162, 46051; 40 CFR 130.33(b)(10)(i), August 23, 1999). To demonstrate that pollutant loads will be met, the risk management strategies developed under Phase 6 must identify and describe how USEPA will use the registration process to ensure that registered pesticides do not cause or contribute to the impairment of surface waters.
- Identify pest prevention and control methods that can effectively substitute for the problematic uses identified under Phase 4. While solving one environmental problem it's vital to avoid creating a new one. Pest prevention and control will remain necessary activities so the key will be to identify and disseminate methods that have a significantly lower risk of causing water quality problems than the current methods.

In addition to the opportunities presented by the registration review process, we believe there are scientific opportunities as well. California municipalities present the most advanced urban pesticide-related toxicity situation (educationally, scientifically, and regulatorily) in the country. USEPA should take advantage of this fact by supporting case studies on key scientific questions. Our research has identified the following two categories of questions that need immediate investigation:

- Can legal use (according to label instructions) of diazinon and chlorpyrifos in urban areas be ruled out as a source of identified toxicity in urban runoff and POTW effluent?

- What application sites (e.g., pavement) and formulations (e.g., granules, flakes, "mix-your-own") are most likely to be causing the identified toxicity?

In addition to the scientific work we have conducted to-date, we are ready to host case studies if USEPA will provide financial and other support, with the goal of conducting representative case studies whose results can be extrapolated across the country.

Given the gravity of the problem for cities, counties, and special districts across the country, we hope USEPA will respond to our call for action by considering all of these opportunities, and we stand ready to participate with you in that effort.

Please contact me at (916) 264-1420 if you have any questions about our comments.

Sincerely,

ORIGINAL SIGNED BY

Dave Brent
Chairman – California Stormwater Quality Task Force

cc: Ms. Marcia Mulkey, Director, Office of Pesticide Programs (OPP), OPPTS, USEPA
Ms. Denise Keehner, Acting Director, Environmental Fate and Effects Division, OPP, OPPTS, USEPA
Ms. Lois Rossi, Director, Special Review & Reregistration Division (SRRD), OPP, OPPTS, USEPA
Mr. Jim Jones, Director, Registration Division, OPP, OPPTS, USEPA
Mr. Ben Chambliss, SRRD, OPP, OPPTS, USEPA
Mr. Michael Cook, Director, Office of Wastewater Management, OW, USEPA
Ms. Kim Kramer, Office of Wastewater Management, OW, USEPA
Ms. Hazel Groman, Office of Wetlands, Oceans and Watersheds, OW, USEPA
Mr. Paul Helliker - Director, California Department of Pesticide Regulation (CDPR)
Mr. Doug Okumura, Asst. Director, Division of Enforcement and Environmental Monitoring, CDPR
Mr. Paul Gosselin, Asst. Director, Division of Registration and Health Evaluation, CDPR
Mr. Walt Pettit, Executive Director, State Water Resources Control Board (SWRCB)
Mr. Bruce Fujimoto, Chief, Storm Water Section, SWRCB
Dr. Tom Mumley, TMDL Coordinator, California RWQCB – San Francisco Bay Region
Dr. Val Connor, Environmental Specialist, California RWQCB – Central Valley Region
Ms. Felicia Marcus, Regional Administrator, Region IX, USEPA
Ms. Alexis Strauss, Director, Division of Water Management, Region IX, USEPA
Mr. David Smith, TMDL Coordinator, Region IX, USEPA
Mr. Bart Brandenburg, Source Control Superintendent, Central Contra Costa Sanitary District
Mr. Geoff Brosseau, Executive Director, Bay Area Stormwater Management Agencies Association
Executive Committee – California Stormwater Quality Task Force

Deadlines for Final Versions of TMDL Elements

Waterbodies	Region	Stressor	Problem statement	Target	Source analysis	Allocation	Technical TMDL	Implementation Plan
Chollas Creek	9 – San Diego	Diazinon	Aug. 3, 1999	August. 3, 1999	Nov. 15, 1999	Feb. 15, 2000	April 2000	
Newport Bay / San Diego Creek	8 – Santa Ana	Toxic substances, including Diazinon & chlorpyrifos	Winter 1999	Summer 2000	Winter 1999	Summer 2000	Summer 2000	Summer 2000
Sacramento / Stockton urban creeks*	5 – Central Valley	Diazinon & chlorpyrifos	Dec. 1999	April 2000	June 2001	June 2001	June 2001	
San Joaquin River*	5 – Central Valley	Diazinon & chlorpyrifos	June 2000	June 2002	June 2001	June 2001	June 2001	
Sacramento River*	5 – Central Valley	Diazinon	June 2000	June 2002	June 2001	June 2001	June 2002	
Sacramento / San Joaquin Delta*	5 – Central Valley	Diazinon & chlorpyrifos	June 2000	June 2002	June 2002	June 2002	June 2002	
SF Bay Area urban creeks	2 – San Francisco	Diazinon	June 2000	June 2002	June 2001	June 2002	June 2002	June 2003
San Francisco Bay	2 – San Francisco	Diazinon	June 2005	June 2006	June 2005	June 2006	June 2006	June 2007

Notes:
TMDLs are listed in chronological order based on due date for Technical TMDL

* Dates for Central Valley Region TMDLs are somewhat tentative and can change due to litigation and / or work plan agreements with USEPA and the State Board

Appendix G
Integrated Pest Management Program Progress Report
(San Francisco)

DEPARTMENT OF THE ENVIRONMENT
CITY AND COUNTY OF SAN FRANCISCO
FRANCESCA VIETOR, DIRECTOR

Integrated Pest Management Program
Annual Report, 1999/2000

Debbie Raphael, Pesticide Program Coordinator

PROGRAM ASSESSMENT

The past fiscal year has seen significant changes in the City of San Francisco's landmark Integrated Pest Management (IPM) Program. Prior to the 99/00 fiscal year, the responsibility for the implementation of the IPM program was divided between the Ag. Commissioner's office and the Department of the Environment (DEnv). On August 1, 1999 the DEnv hired a Pesticide Program Coordinator to consolidate the program and provide needed direction to coordinate the efforts of the various departments working toward the common goal of pesticide reduction.

San Francisco's IPM program is based on a solid foundation. Many staff have demonstrated a commitment to try new techniques and have developed an increased awareness around the use of chemical pesticides on city property. During the past fiscal year pesticide use has continued to fall, staff across the City have received training, an Approved List of reduced risk pesticides was developed, and many surrounding jurisdictions and school districts have looked to our program as a model for their own efforts.

Below is a summary of the state of San Francisco's IPM program. The seven departments called out in this report are those previously identified as the City's "big users" of pesticides. This designation was a result of the amount of landscaped areas or buildings falling under their responsibility. The seven "big users" are SF International Airport, Recreation and Parks, Public Works, Port, Public Utilities Commission, Public Health, and MUNI.

Ordinance Revisions

Careful review of the IPM ordinance along with discussions among members of the Technical Advisory Committee (TAC) revealed several areas where changes to the ordinance language would clarify roles and facilitate implementation of the IPM program.

11 Grove Street, SAN FRANCISCO, CALIFORNIA 94102
WWW.SFENVIRONMENT.COM
TELEPHONE (415) 554-6390 FAX 554-6393 E-MAIL: ENVIRONMENT@CI.SF.CA.US

Integrated Pest Management Program
Annual Report, 1999/2000

Debbie Raphael, Pesticide Program Coordinator

Program Assessment

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Ordinance Revisions

Careful review of the IPM ordinance along with discussions among members of the Technical Advisory Committee (TAC) revealed several areas where changes to the ordinance language would clarify roles and facilitate implementation of the IPM program. DEnv staff worked closely with the City Attorney's office and aides to Supervisor Katz to draft revisions for the ordinance. The resulting revisions include:

- Anti-microbials (language prepared before my arrival)
- Notification and posting
- Role of Commission on the Environment (COE) as over-sight body
- Emergency exemptions
- Reporting frequency and content

The revised ordinance language was adopted by the County Board of Supervisors and went into effect February 14, 2000. The most recent copy of the IPM Ordinance is included as Attachment A.

Approved List

Under the terms of the IPM Ordinance a list of "reduced risk" pesticides must be completed by January 1, 2000 and must be approved by the Commission on the Environment. Only pesticides on this list may be used on City property unless an exemption has been granted by the DEnv.

An extensive process was implemented involving community members, City staff, IPM experts, the Commission on the Environment, and the technical evaluation skills of Dr. Philip Dickey of the Washington Toxics Coalition. A complete summary of this process is contained in the IPM Program Report – Reduced Risk Pesticide List 2000, included as Attachment B.

The reduced risk pesticide list is meant to be a dynamic document and will be reviewed on an on-going basis to incorporate new pesticide products and to remove un-needed ones. Any changes to the list will be brought before the Commission on the Environment for approval. The most recent list of approved reduced risk pesticides is included as Attachment C.

Data Collection and Analysis

A clear understanding of how much and what types of chemical pesticides are used on City property is a key element in the evaluation of the success of this IPM Program. A database was developed to track pesticide use but until recently no data had actually been entered into the system. Staff have been working with the contributing departments to fill in the data gaps and address inconsistencies.

Entry of pesticide use data for the Recreation and Parks Department (Rec/Parks), the department with the biggest pesticide use is complete and a summary of use trends is included as Attachment D to this report.

One important measure of the success of an IPM program is the frequency with which pest problems can be resolved without the use of any chemical controls. Data supplied by the City-wide pest control contractor shows a dramatic increase in the number of service calls that did not require application of a pesticide. See Attachment E.

DEnv staff are working with ISD to update and redesign the city's current pesticide database system to track non-chemical methods of pest control such as prevention efforts and trapping. Adding this type of information will transform the database into a more accurate reflection of an IPM program.

Pesticide Inventory and Disposal

While the most toxic and hazardous pesticides have been eliminated from use on City property, containers of these pesticides still existed on City storeroom shelves. DEnv staff worked with City departments to survey storage facilities and identify pesticide products no longer allowed under the IPM program and then facilitated the timely and legal disposal of these products. The most significant area of concern was the storeroom of the Department of Recreation and Parks (DRP) in Golden Gate Park. DRP staff segregated the non-compliant products and have arranged for their removal.

The departmental IPM Coordinators from each of the seven "big user" departments have been notified about this issue and were asked to complete pesticide inventories at each of their sites to ensure that all noncompliant pesticides are removed from their property.

Contract Development

All in-door (structural) pest control is performed by outside contractors except in the DRP. The pest control bid is up for renewal in the upcoming fiscal year. This affords us the perfect opportunity to address shortcomings in the prior contract language and selection process.

DEnv staff have been meeting regularly with Purchasing staff to craft a selection process that rewards excellent IPM services rather than simply low bid. Purchasing staff have suggested using a Request for Proposal (RFP) process where price will be one of several qualifying factors. Experience in IPM implementation will be weighted heavily as well as the capacity to supply DEnv with up to date pesticide use data for each site.

Representatives from departments such as Public Works, Public Health, MUNI, Airport, Police and Fire will be brought into the contract language development process as well as the selection process. DEnv staff are working closely with Purchasing and an independent IPM expert to come up with the draft of the RFP language.

Training/Conferences

One key component of all IPM programs is the importance of on-going training for city staff at all levels. DEnv staff have been working with City departments to organize and

coordinate a variety of training opportunities. All training events and conferences are free of charge to participating departments and are funded from the DEnv IPM budget.

TAC Meetings: Each month representatives from the seven "big user" departments meet to discuss implementation of the IPM program. Participants include departmental IPM Coordinators, safety and environmental compliance staff, pest control contractors, independent IPM experts, and community members. The Pesticide Program Coordinator from DEnv chairs these meetings and sets the agendas.

Topics have included guest speakers on pesticide regulations, new products and techniques, changes to the IPM Ordinance, training planning, and pesticide reporting requirements. Most importantly, these meetings offer opportunities for departments to share experiences around pest control so that others can learn from their mistakes and successes. For example, the airport has reported on their monitoring and feedback system, and PUC presented the weed control manuals developed for them by Sheila Daar, IPM expert – copies were handed out to all TAC members, and Public Health discussed their Communications Audit.

IPM Conference: This annual event was held on April 4th. Traditionally conference attendees have been primarily City staff but with the widespread regional interest in IPM programs, many surrounding jurisdictions and school districts sent representatives. Participants came from Los Angeles, Santa Barbara, Santa Clara, Alameda, Marin, and Sonoma counties. Speakers were invited from universities in Oregon and Southern California. The San Francisco Bay Area is lucky to have a large pool of IPM expertise and many of these professionals led sessions at the conference. The conference is free to all participants. About 125 people were in attendance.

The agenda for the conference was based on input from members of the TAC Committee as well as suggestions from IPM Professionals. Topics included:

- Use of Compost Tea to replace fungicides
- Biology and control of Argentine Ants
- Use of mulches and soils analysis to prevent weeds
- Mechanical means of vertebrate control
- Dealing with "phantom" pests

Mayor Brown presented several City departments and individual staff members with Environmental Service Awards in recognition of their efforts to reduce the use of pesticides on City property. Recipients for the year 2000 were:

- Department of Public Health – gardeners at SF General Hospital
- Public Utilities Commission – Milbrea team for watershed management
- MUNI – Pesticide reduction in "rolling stock" (buses, trains, trolleys)
- Department of Recreation and Parks – Efforts of Bob Fiorello

Site Specific Workshops and Training: Several departments offer pesticide safety training to their staff who serve as pesticide applicators. DEnv staff work closely with the departments to bring in outside experts as speakers and to arrange for professional credit issued by the Department of Pesticide Regulation.

Training sessions held to date have serviced the following departments:
Rec/Parks: 140 participants
PUC: 60 participants
Airport: 20 participants
Public Health: 100 participants

DEnv will work with the Port and Department of Public Works, and MUNI to identify training needs and opportunities.

Community and Regional Outreach

Web Site – The IPM Program's IPM Web Site is now up and running. The site can be accessed through the City's Web Page as well as through the DEnv web site at sfenvironment.com. The goal of the IPM Web Site is to allow easy access to documents produced by the program and to serve as a hub from which people can gain access to a wide array of pest-related information.

Eventually, DEnv staff would like to see pesticide use information accessible to residents from this web site. For example, a parent would be able to determine if any pesticides had been applied to their neighborhood park. ISD staff have discussed converting the current database to an Internet version but the undertaking is not trivial and will require a significant financial commitment of the IPM Program's budget.

Interdepartmental Coordination – Several other City departments implement efforts that share common themes with the IPM Program. For example, the PUC is crafting an outreach program aimed at pest control contractors to try to prevent pesticide run off into the City's storm drains and sewer system. The Water Conservation Program addresses water and pesticide use for landscape professionals. The Pesticide Partnership is another PUC driven program but is aimed at the resident by placing in-store information on less toxic pest control at selected retail outlets. The PUC also works with San Francisco League of Urban Gardeners to train master gardeners. The Natural Areas Program out of the DRP trains volunteers to remove non-native plants to avoid the need for chemical controls.

In order to coordinate all these efforts, to reduce overlap, and to facilitate partnerships between departments DEnv Staff have created the San Francisco Pesticide Working Group. This group has met once and will be meeting on a regular basis to share information and plan interdepartmental projects. One such project may be the sponsorship of a teacher training summer IPM workshop that will encourage the creation of gardens as part of the City's after school program at local parks while learning about non-chemical pest control methods.

Community Events – The IPM Program sponsored and staffed a booth at the San Francisco Flower and Garden Show in March. The booth highlighted alternative pest control strategies. Approximately **3,000 visitors** were reached at our booth. Additional opportunities for community outreach will be explored especially through the SF Pesticide Working Group.

Written Materials - This area is becoming increasingly important as San Francisco's IPM program matures. Currently there is a real dearth of accurate and timely information about our IPM program. DEnv Staff have updated some of the summary materials found in the Implementation Notebook and need to look at the document in its entirety.

In addition, DEnv Staff along with Gregg Small of Pesticide Watch wrote an article published in the Journal of Pesticide Reform (see Attachment F). The journal has a national distribution and the article summarizes San Francisco's program accomplishments and challenges over the past three years.

Presentations and Partnerships - The Pesticide Program Coordinator has been invited to speak about San Francisco's IPM Program within the City at community groups and PUC seminars, and at the Annual Urban IPM Conference at the University of California, Riverside. Interest in the San Francisco program crosses the nation and limitations of staff time and resources restrict the DEnv's ability to meet all the requests for conference participation.

San Francisco is serving as a model for jurisdictions and school districts across the country. DEnv Staff have been working to help draft IPM legislation and develop workable programs in the Counties of Marin and Santa Clara, the City of Oakland, and school districts in San Francisco, Marin, Oakland, and San Leandro. In addition, San Francisco IPM staff have been asked to advise the Federal Environmental Protection Agency Region 9 about implementing a national school IPM program. The City of Santa Fe, New Mexico is also using San Francisco as a template for local IPM efforts.

Departmental Needs

While all City departments are covered by the IPM Ordinance and are mandated to have Pest Management Plans on file with the DEnv, the focus of staff efforts have been on the compliance of the "big seven" departments. Pest control for all other City departments is performed only by outside contractors. The Contract Development section of this report outlines the changes and improvements planned for working with outside contractors.

MUNI –Compliance with structural use of pesticides is excellent and the "rolling stock" (buses, trains, cable cars, etc) are a model of IPM methods that should be published and broadcast to transportation agencies throughout the country. The landscape division needs to make improvements on notification/posting. Site managers and station agents

complained about mice and were distributed fact sheets on pest prevention strategies. In addition, carpenters were brought in to pest-proof problem areas. Currently MUNI is the only "big user" department to be without a departmental IPM plan. DEnv staff have met with the appropriate staff in the ISLPP department of MUNI and will aid them in the development of an IPM plan.

Airport – The San Francisco International Airport has an excellent IPM program both within buildings and in landscaped areas. A well-defined chain of command results in timely structural repairs and hence an effective pest prevention program. A pest management plan is on file with DEnv and Airport Staff conduct annual safety training that includes IPM principles.

While City maintained property is fully compliant with the IPM Ordinance the many tenants at the Airport are not. The ordinance requires only that these entities become compliant upon renewal of their lease agreements. Because of the long-term nature of most leases, DEnv staff will need to explore voluntary participation by Airport tenants in the IPM Program.

One area of future concern is the challenge of maintaining the additional landscaped areas resulting from the airport's expansion. Herbicide use on Airport property may show a marked increase if weed prevention methods are not incorporated into landscape designs.

Port – Like the Airport, property maintained by the San Francisco Port is in full compliance with the requirements of the IPM Ordinance. One area that presented a problem was in reporting of landscape pesticide use to the DEnv. Port landscape staff were not given a computer until very recently. Port staff should be submitting electronic use reports on a monthly basis, as required under the ordinance

Again, many properties that are administered by the Port are not maintained by City staff. The Port has an extensive leasing department and DEnv staff are working with this group to ensure inclusion of IPM language into all new leases. A follow-up or enforcement plan will need to be developed for these and other similar city-owned properties that are privately maintained.

One barrier to further decreases in the use of chemical herbicides on Port property is the small number of landscape staff – a single position has been allocated. While the Port's landscape gardener has done an excellent job of identifying priority areas for herbicide use, the Port could be a good model for effective use of additional resources to achieve greater pesticide reductions.

Public Works – An IPM plan is currently on file with DEnv and DPW's Safety staff are well informed as to program goals and requirements. The Public Works Department has an excellent compliance record in both its buildings and landscape areas but the current vacancy in the position of landscape IPM Coordinator may jeopardize this model

performance. Before the staffing vacancy, DPW was recognized for its weed prevention programs on median strips throughout the city by using both mulches and the planting of wild flowers. These efforts not only resulted in a decreased dependence on pesticides, but also greatly enhanced the aesthetics of public right of ways. DEnv is very concerned by the slow pace of filling this key IPM position.

PUC – This department should serve as a model for IPM implementation not only within our City but also across the country. The PUC received a Commendation from the Board of Supervisors for its leadership role in tracking pesticide use, identifying opportunities for reduction, and training of departmental staff. The PUC has allocated resources to purchase equipment and experiment with new technologies to achieve their goals of brush management, soil conservation, and water quality protection. It is interesting to note that while PUC staff might not label their efforts IPM, these goals are all shared in common with a successful IPM program.

There is currently some shifting of responsibilities for the overall departmental IPM program responsibility due to the transfer of a key staff person to the Water Treatment and Supply division. DEnv staff will continue to work with all the divisions of the PUC to make sure program oversight is not compromised.

Public Health – Key safety staff of the two hospitals, the clinics, and other Public Health properties are well on board with the IPM program. Landscape staff at San Francisco General Hospital use no pesticides to maintain their beautiful grounds. Laguna Honda Hospital has developed a well-defined chain of command that can quickly respond to any pest emergency and implement needed sanitation changes or structural repairs.

A model IPM plan has been completed and several training sessions for custodial, maintenance and nursing staff took place in the spring. Achieving the high standard for pest control necessary in patient care facilities has been a challenge for the IPM program. Public Health staff have proven to be willing participants and are improving lines of communication between pest control contract staff and their own maintenance staff to facilitate the pest proofing repairs critical to program success.

Problems with existing contract language for pest control services will be addressed in the upcoming contract review process. DEnv staff have been working closely with staff from Public Health to ensure a smooth transition to a new pest control contract.

Rec/Parks – The Department of Recreation and Parks (DRP) is the most complex of all city departments affected by the IPM ordinance. DRP has realigned staff positions to create an IPM team of one coordinator and three specialists. This team is charged with both education and enforcement of the ordinance requirements. DEnv staff have been working closely with this department to facilitate reporting, coordinate training, and identify new pest control techniques consistent with an IPM program.

DRP is the only city department to do structural pest control in-house. The three IPM specialists do structural pest control services for all DRP buildings (except for the Pools).

Compliance with the ordinance is excellent but the lack of a quality assurance program for structural pest control raises concerns over the effectiveness of their pest control measures.

Results of DRP pesticide use reports:

The increase in the pounds of pesticides used from 1998 to 1999 can be explained by the introduction, on a trial basis, of the reduced risk herbicide, Suppressa. Suppressa is a relatively new product made from corn gluten meal - a food grade substance that in large enough concentrations seems to suppress weed growth and germination.

While the numbers indicate a general decrease in the amount of pesticide used on City property and most of the products with the greatest human health and environmental impacts have been eliminated, there remains a need to examine the Department's decision making process and potential barriers to further implementation of non-chemical pest control methods. DEnv staff can not do this analysis alone. Rec/Parks staff must carefully look at each pesticide use decision and identify trends that explain use patterns. Rec/Parks staff must specify where additional resources would result in the most significant decreases in pesticide use.

A new IPM Coordinator for DRP will be starting in the coming fiscal year. This position is critical to the success of the Department's IPM efforts. The individual must be given the authority to regulate pesticide use and must have the support of the DRP administration to deny requests for pesticide applications.

Future Directions

Newsletter – Several members of the TAC have requested the creation of a citywide newsletter that publicizes the IPM program to city employees. Perhaps the IPM program could piggy-back on the efforts of the Department of Consumer Assurance (formerly County Agricultural Commissioner's Office) who plans on starting a newsletter or could insert articles on IPM into a broader environmental newsletter coming out of the Department of the Environment. Newsletters can become an excellent channel for communicating specific pest control techniques that can be used by staff both at work and at home. It would also serve to highlight the efforts of some of our local IPM "hero's".

Advisory Committee – Except for the on-going involvement of Pesticide Watch, there seems to be no formal or regular process for public input into the IPM Program. Considering the very public nature of this program's conception, the lack of public input could be seen as a significant oversight. DEnv staff, along with the Director of the Department will explore the creation of a more formalized public input process, perhaps an advisory committee. Experience with the ad-hoc committee for the Approved List indicates both the level of public interest in this idea as well as the potential for constructive contributions.

Public Notification - There is a need to tighten up record keeping at individual sites so that site managers can document pest infestations and will have a record of all pest control measures currently in use within their building. With the start of a new pest control contract, emphasis will be given on pest control notebooks being placed in each city building. These notebooks would contain pest sighting logs, records of pest control measures, and labels and material safety data sheets for each pesticide used within a building.

Appendix H
Draft Straw Proposal for OW/OPP Project on Pesticide/Watershed Interactions (USEPA)

DRAFT STRAW PROPOSAL FOR
OW/OPP PROJECT ON PESTICIDE/WATERSHED INTERSECTIONS

November 1, 1999

Issue: With increasing frequency, use of registered pesticides and watershed issues intersect, resulting in the need for increased coordination at the Federal, State and local levels. The most clear intersection exists with pesticide registration and use, NPDES storm water and animal feeding operations, and Total Maximum Daily Loads (TMDLs). TMDLs represent a watershed plan for allocating loadings of pollutants that affect water quality, and NPDES regulates "point" sources of contamination that may be contributing to the waterway's being listed as "impaired" under the Clean Water Act (CWA).

States and the USEPA are under increasing pressure as a result of lawsuits brought by environmental groups to more fully and aggressively implement the TMDL program under CWA. Simply stated, the TMDL program has existed for many years and involves the evaluation of waterways within a State and the identification of those which are "impaired" because of pollution in excess of levels which are believed to result in ecological impacts. Some waterways in many states have been listed as impaired on the basis of contamination with pesticides at levels in excess of "no toxics in toxic amounts" as they affect aquatic life. The lawsuits which are being filed are being filed on the basis of the failure of some States to establish TMDLs for these (and other) waterways and to regulate/reduce releases from sources such that TMDLs can be met for each impaired waterway.

Several States and entities within states have raised the issue of the federal role in reducing and/or regulating releases from non-point sources of pesticides to waterways versus the role of State and local governments in the context of the TMDL Program. Of course, the underlying issues are threefold: (1) how to set TMDLs and the scientific data and methods needed; (2) how to determine who should bear how much of the burden for ensuring that waterways do not exceed TMDLs---pesticide users? pesticide registrants? Stormwater control authorities? And (3) what blend of voluntary and/or regulatory actions at the various levels of government is most effective for addressing the issue of waterways which exceed TMDLs on the basis of pesticide contamination?

Method: OPP and OW in conjunction with SFIREG and the appropriate State Water Agency Organization will identify one or more waterways in several states/locations across the U.S. that have been identified as impaired on the basis contamination with currently registered pesticides. Once the waterways have been identified, we will solicit volunteers to form, for each waterway, a small team. Each team would undertake two phases (information exchange and case study) for each of three scenarios (row crop pesticide use contributing to impairment; other pesticide use and NPDES permitted discharges contributing to impairment; and finally, animal feeding operations contributing to impairment.

Broader input would be sought form appropriate groups, etc. after draft reports were written for each scenario. The result of the effort will be the case study reports that will assist states in determining who can and should be involved in listing decisions, implementation, etc. and who has what resources they can bring to bare on the particular problem.

INFORMATION EXCHANGE

Explore the basis for the listing

Determine the tools and methods and data needed for establishing the TMDL

Identify available tools, methods and data at the federal, state and local levels for establishing the TMDL

Determine the tools, methods, and data needed for identifying sources and contributions to exceedences

Identify the spectrum of available voluntary/regulatory options at the federal, state and local level for reducing releases to levels which could contribute to achieving an established TMDL

CASE STUDY

Using all of the above, work to establish a **theoretical** TMDL for the waterway and a **theoretical** proposal for achieving compliance through the most effective use of available Federal, State and local authorities.

PUBLIC COMMENT AND BROADER FEEDBACK

Obtain broad public input and feedback on the results

MAJOR STEPS

Identify candidate waterway(s):	12/99
Form team(s):	01/00
Hold Initial Meeting to Share Information	TBD by workgroup
Hold Case Study Workshop	TBD by workgroup
Prepare Paper Based on Case Study Workshop	TBD by workgroup
Obtain broader input on results	TBD by workgroup
Issue report of results	TBD by workgroup

Appendix I

Comment Letter - Draft Straw Proposal for OW/OPP Project on Pesticide/Watershed Interactions

(California Stormwater Quality Task Force)

SWQTF
California Stormwater Quality Task Force
5469 E. Olive Avenue Fresno, CA 93727
Ph (559) 456-3292 Fax (559) 456-3194
www.stormwatertaskforce.org

February 1, 2000

Office of Water
Jim Pendergast
U.S. EPA, Mail Code 4503F
401 M Street, SW
Washington, DC 20460

Office of Pesticide Programs
Arty Williams
U.S. EPA, Mail Code 7506C
401 M Street, SW
Washington, DC 20460

Subject: Draft Straw Proposal for OW/OPP Project on Pesticide/Watershed Interactions

Dear Ms. Williams and Mr. Pendergast:

First, I wanted to thank you and your colleagues for meeting with Geoff Brosseau on such short notice last month. The timing of his meetings with staff from your two Offices on November 18 and his meeting the next day in Sacramento with the Executive Committee of the California Stormwater Quality Task Force (SWQTF) greatly facilitated the communication between our organizations. Second, we would like to thank you for initiating discussions between your two Offices on the issue of TMDLs and pesticide-related toxicity in urban/suburban surface waters, and for developing and asking for comments on your Draft Straw Proposal for OW/OPP Project on Pesticide/Watershed Interactions. The purpose of this letter is to communicate our reaction and comments to the Draft Straw Proposal.

To-date, the Draft Straw Proposal has been briefly discussed by individuals involved with the issue of pesticide-related toxicity in urban/suburban surface waters on two occasions: 1) California SWQTF Executive Committee meeting on November 19, and 2) Bay Area/Central Valley Urban Pesticide Committee meeting on December 7. More detailed discussions have been delayed because of the holidays and end of the year deadlines. However, recognizing our mutual interest in moving this issue forward, we did want to provide some initial feedback to you as soon as possible. Accordingly, our comments at this point are somewhat conceptual. We expect that a more interactive discussion between our organizations in the very near future will fine tune the project's concept and scope.

The following comments have been made by some of our colleagues:

- The three scenarios listed in the Method section do not specifically mention "urban/ suburban" or "storm water." Although the "other pesticide use and NPDES permitted discharges contributing to impairment" scenario could be interpreted to cover our situation, a scenario should be developed that specifically reflects the situation in California where we have eight TMDLs underway for pesticide-impaired waterbodies in virtually every major urban area of the state.

- Concern has been expressed by those working on TMDLs with year 2000 deadlines (i.e., Chollas Creek – San Diego and Newport Bay/San Diego Creek), that a theoretical TMDL exercise will be too late to provide assistance to these imminent TMDLs. As a result, these "early" TMDLs may set the wrong kind of precedents.

- Focusing on the TMDL implementation stage will not address the systemic problems in the registration/reregistration processes and the TMDL regulations that have produced the situations we are now facing—that is, duly registered pesticides causing impaired waterbodies in a rapidly expanding number of urban/suburban watersheds across the country.

In addition to these initial reactions, the following points that were made during the November 18 meetings with your two Offices should be addressed by the OW/OPP project:

- Proposed changes to the TMDL regulations are out for public review with comments due January 20. In addition, the reregistration reviews of diazinon and chlorpyrifos are currently underway and should be done or substantially completed in 2000. The alignment of these separate and parallel regulatory actions provides a unique opportunity to make both regulations more effective.

- The registration/reregistration process should require registrants (product manufacturers) to measure discharges off application sites. The discovery of problematic products, formulations, uses, and application sites should be born by the product manufacturer before registration. The burden of proof should not be on the general public through the expenditure of tax dollars.

- The product registration/reregistration process should be revised into more of a product stewardship process. USGS has found that the most frequently detected pesticides across the country were and continue to be the most heavily used. The most frequently detected insecticides—diazinon and chlorpyrifos—are ranked number 1 and 4 nationally among insecticides used for homes and gardens. A more comprehensive product review process

might avoid repeating the historical pattern of pesticides becoming "too popular for the environment's good" (e.g., DDT, chlordane, dieldrin, diazinon, chlorpyrifos, ?????).

- The issue of pesticide-related toxicity in urban/suburban surface waters is likely to be just the first in a series of complex, multi-media challenges caused by "ubiquitous" (i.e., nationwide, cross-media) pollutants (e.g., DDT, PCBs, mercury, dioxin). The issues raised by organophosphate pesticides should be used to institutionalize changes to the TMDL process so that USEPA can address these pollutants more effectively in the future.

- It's highly unlikely that a diazinon or chlorpyrifos toxicity TMDL could be written—allocating loads to point and nonpoint sources, atmospheric deposition, and natural background—that will meet the proposed TMDL requirement that the implementation plan needs to include *"a demonstration that the control actions and/or management measures are expected to achieve the required pollutant loads"* (Federal Register 64, No. 162, 46051; 40 CFR 130.33(b)(10)(i), August 23, 1999).

As I mentioned, we will be meeting to further develop our comments but the tenor of these initial reactions and discussions leads us to make the following preliminary recommendations:

- The basic purpose of the project should be to address the issues and challenges described above and take advantage of the opportunities within a system that is not currently designed to resolve complex, multi-media problems (i.e., two differing sets of regulations (CWA and FIFRA/FQPA) with different problem thresholds, overseen by two different Offices).

- One scenario should be developed that specifically addresses pesticide-related toxicity in urban/suburban surface waters in California.

- Rather than focus on a particular urban/suburban watershed for the case study, the project should be conducted on a theoretical basis to identify and work out ways for the registration/reregistration process and the TMDL regulations to work better together. Specific watersheds could be used as examples to test and refine our ideas during and after the conceptual project is completed.

- The products of the project should be: 1) recommended changes to the administrative procedures used during the registration/reregistration process, and 2) recommended changes to the TMDL regulations and procedures. These recommendations could then be applied in a real setting on an upcoming TMDL.

- The project should be conducted over the first six months of 2000 to focus our efforts and allow the products to be integrated immediately into the reregistration process and the TMDL regulation revisions.

Again, thank you for sharing your thoughts on this project at such an early stage of development. We look forward to refining the scope and products of the Draft Straw Proposal, and to working with you on the actual project. Geoff Brosseau is taking the lead on this issue for the Stormwater Quality Task Force and will take the liberty of contacting you shortly to initiate next steps. In the meantime, if you have any questions about our comments, please contact me at (559) 456-3292 or Geoff Brosseau (650) 322-3070.

Sincerely,

ORIGINAL SIGNED BY

Melinda Marks
Chair – California Stormwater Quality Task Force

MSM/dl

c: Geoff Brosseau, Executive Director
Bay Area Stormwater Management Agencies Association

Appendix J
Master Schedule of Diazinon/Chlorpyrifos TMDLs in California
(Regional Water Quality Control Boards)

Deadlines for Final Versions of TMDL Elements

Waterbodies	Region	Stressor	Problem statement	Target	Source analysis	Allocation	Technical TMDL	Implementation Plan
Chollas Creek	9 – San Diego	Diazinon	Aug. 3, 1999	Aug. 3, 1999	Nov. 15, 1999	Feb. 15, 2000	April 2000	November 2000
Newport Bay/San Diego Creek	8 – Santa Ana	Toxic substances, including Diazinon & chlorpyrifos	Winter 2000	Spring 2001	Spring 2001	June 2001 (Draft TMDL)	Fall/Winter 2001	Spring 2002
Sacramento/ Stockton urban creeks*	5 – Central Valley	Diazinon & chlorpyrifos	*To Be Determined*	*To Be Determined*	*To Be Determined*	*To Be Determined*	December 2001 (Arcade Creek)	
SF Bay Area urban creeks	2 – San Francisco	Diazinon	June 2000	June 2002	June 2001	June 2002	June 2002	June 2003
San Joaquin River*	5 – Central Valley	Diazinon & chlorpyrifos	*To Be Determined*	*To Be Determined*	*To Be Determined*	*To Be Determined*	June 2002	June 2003
Sacramento River*	5 – Central Valley	Diazinon	*To Be Determined*	*To Be Determined*	*To Be Determined*	*To Be Determined*	June 2002	June 2003
Sacramento/ San Joaquin Delta*	5 – Central Valley	Diazinon & chlorpyrifos	*To Be Determined*	*To Be Determined*	*To Be Determined*	*To Be Determined*	June 2003	June 2004
San Francisco Bay	2 – San Francisco	Diazinon	June 2003	June 2004	June 2003	June 2004	June 2004	June 2005

Notes:
TMDLs are listed in chronological order based on due date for Technical TMDL

* Dates for Central Valley Region TMDLs are somewhat tentative and can change due to staffing, litigation, or work plan agreements with USEPA and the State Board