



# SECTION 7

## MERCURY POLLUTION PREVENTION ACTIVITIES

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## 7. MERCURY POLLUTION PREVENTION ACTIVITIES

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### INTRODUCTION

Mercury has been found in sediments in South San Francisco Bay and the Guadalupe River Watershed. Some types of fish caught in the Bay contain mercury and other pollutants at concentrations that may threaten the health of humans consuming those fish. In response, the California Office of Environmental Health and Hazard Assessment issued an interim fish consumption advisory. The U.S. Environmental Protection Agency (EPA) has listed the Bay and the Guadalupe River Watershed (including the Guadalupe River, Alamitos Creek, Guadalupe Creek, Calero Reservoir, and Guadalupe Reservoir) as impaired by mercury under Section 303(d) of the Clean Water Act. In accordance with Section 303(d), the Water Board is required to establish a Total Maximum Daily Load (TMDL) for mercury in the South San Francisco Bay and the Guadalupe River Watershed.

Permit Provision C.9.c. requires the Program to address the impairment by developing and implementing a mercury pollution prevention plan. The Program developed a Mercury Pollution Prevention Plan (Mercury Plan) consistent with this Provision. The Mercury Plan was submitted to the Water Board on March 1, 2002 as part of the Program's FY 02-03 Work Plan. This section describes and evaluates Mercury Plan tasks completed during FY 05-06.

### MERCURY POLLUTION PREVENTION PLAN

The Mercury Plan is based on the premise that a Bay area-wide approach (and coordination) in addressing mercury pollution prevention will be most successful. For this reason, many of the actions identified in the Mercury Plan are for Program-level participation in regional efforts. These efforts are supplemented by countywide and local efforts.

The Mercury Pollution Prevention Plan addresses five general goals:

- I. **Municipal Use of Mercury-Containing Products** – Eliminate all unnecessary municipal use of mercury-containing products and establish proper disposal methods for products that cannot be eliminated.
- II. **Household Hazardous Waste Collection** – Provide mercury-containing product disposal services through household hazardous waste (HHW) collection programs for residents and small businesses, and encourage use of these programs.
- III. **Monitoring and Science** – Participate in coordinated monitoring efforts to support mercury TMDL development and implementation, including assessment of air pollution sources of mercury and concentrations of mercury in sediment.
- IV. **Regional, State, and Federal Coordination** – Actively participate in regional, state and federal coordination efforts to achieve a reduction in the amount of mercury in urban runoff and air emissions.
- V. **Public Education and Outreach** – Increase awareness of proper disposal of mercury-containing products and available non-mercury containing alternatives.

The Mercury Plan identifies actions that will be implemented at the Program level, municipality level, or both; and provides the schedule for initiation and/or completion of Program-level actions. The details of municipality actions and schedules are included in the individual Co-permittee work plans and/or annual reports, as appropriate.

### **FY 05-06 MERCURY POLLUTION PREVENTION ACTIVITIES**

The status of the Program's FY 05-06 Mercury Plan tasks is summarized in Table 7-1. Highlights of Program accomplishments, as developed and/or implemented by the Mercury P2 Plan AHTG, PIP AHTG, Program staff and municipalities are provided below.

#### **Guidelines for Reduction and Management of Mercury-Containing Products**

During FY 02-03, the Mercury P2 Plan AHTG and Program staff developed guidelines for the reduction and management of mercury-containing products identified for virtual elimination. The goals of the *Guidelines for Mercury-Containing Products Reduction and Management* are to work towards the virtual elimination of mercury from controllable sources that may affect urban runoff due to agency operations; and establish proper recycling and disposal methods for products that cannot be eliminated due to technological, safety or economic factors. Co-permittees continued implementing the *Guidelines for Mercury-Containing Products Reduction and Management* in FY 05-06.

#### **Mercury Pollution Prevention Outreach Workgroup**

In December 2002, Program staff established a new Work Group called the Mercury Pollution Prevention Outreach Work Group. This Work Group implements the Public Education and Outreach elements of the Mercury Plan by organizing a public education, outreach and participation program designed to reach residential and commercial users of mercury-containing products.

#### **FY 05-06 Tasks**

In March 2006, Santa Clara County Household Hazardous Program (CoHHW Program) staff completed implementing (with SCVURPPP) the outreach requirements of a \$300,000, three-year California Integrated Waste Management Board (CIWMB) grant, specifically the store partnership program for collecting spent fluorescent bulbs.

During FY 05-06, the CoHHW Program partnered with approximately eighteen retail stores to provide free fluorescent bulbs drop-off locations for residents. The Program's outreach focused on promoting these drop-off locations and educating people about mercury pollution.

The Program's FY 05-06 Mercury Outreach Pollution Prevention Work Plan included implementation of the following tasks:

- **Development of Signage Materials** – The Program developed posters to inform people about the availability of free fluorescent bulbs drop-off locations. The posters were displayed in participating stores and at community locations (libraries, city halls etc.)
- **Conduct Media Advertising** – The fall Watershed Watch Campaign used the “Got Bulbs” advertisement to educate people on the proper disposal of fluorescent bulbs. The advertising campaign ran for four weeks in September – October 2005. The Program

provided funding for radio and print advertising, and the Santa Clara County Integrated Waste Management Division provided funding for transit advertising. In addition, the radio station KRTY offered, at no added cost, an “enter-to-win” contest promoting the drop-off locations. Both KRTY and the *San Jose Mercury News* provided free advertising to support this promotion. Listeners/readers were encouraged to participate in the contest by either dropping-off their used fluorescent bulbs at participating stores or by submitting the “pledge to dispose mercury properly” contest entry form available online and within the *San Jose Mercury News*. During the four-week contest period, nearly 400 entries were received for a chance to win tickets to a sporting event.

Details of the outreach campaign are included in the Fall Media Campaign report included within Appendix B-1. Copies of all outreach materials are included within Appendix B-10.

### Monitoring and Science

The Santa Clara Basin Watershed Management Initiative (SCBWMI) is serving as the stakeholder forum for the development of the Guadalupe River TMDL Report for Mercury. The Guadalupe River Watershed encompasses parts of San Jose, Los Gatos, Campbell, Monte Sereno and Santa Clara. The Program is a stakeholder in the Guadalupe River TMDL process. The Santa Clara Valley Water District (SCVWD) is taking the lead role in the TMDL development process by solely funding the \$900,000 study and serving as Co-Chair of the TMDL Work Group and Stakeholder Group. Program staff is also participating in the TMDL process.

Program staff, along with other Co-permittee staff, have attended work group meetings and reviewed draft technical memoranda developed by the consultant. Water Board staff are currently developing a draft TMDL report. Program staff is participating in work group meetings to discuss the draft TMDL report and implementation plan. Program and Co-permittee staff will continue to participate in the development of the Guadalupe River Watershed TMDL for mercury by attending meetings and reviewing technical results and reports.

The Program continued to provide financial support to the Regional Monitoring Program (RMP), including the Mercury Deposition Network Pilot Study. In addition, Program and Co-permittee staff actively participates in RMP Technical Review Committee (TRC) and Steering Committee (SC) meetings and provides meeting summaries to the Management Committee. Staff reviewed available draft reports, including the 2006 RMP Draft Monitoring Plan.

A Memorandum of Understanding (MOU) regarding development of a Water Quality Attainment Strategy for San Francisco Bay-Delta and Tributaries was entered into by the Water Board, Bay Area Clean Water Agencies (BACWA), and Bay Area Stormwater Management Agencies Association (BASMAA) on August 6, 2001, and includes the development of TMDLs for 303(d) pollutants including mercury. This group is referred to as the Clean Estuary Partnership (CEP). As a member agency of BASMAA, the Program is involved in the development and funding of potential projects for the San Francisco Bay mercury TMDL (mercury TMDL). Program staff has been participating in the CEP technical committee meetings, CEP Board meetings (as needed) and CEP Mercury Risk Reduction Work Group.

In addition, the Program’s *Multi-Year Receiving Waters Monitoring Plan* includes collecting and analyzing receiving water samples for mercury. Refer to Section 4- Monitoring Activities for additional details regarding mercury monitoring activities.

In addition, Program staff is tracking the results of the “historic” meeting between the State Air Resources Board and State Water Quality Control Board in February 2006. During the meeting, the idea of cross media (water and air) coordination in the investigation of the aerial deposition of pollutants from air to land was discussed. Once deposited on land, pollutants can enter water bodies through stormwater runoff. The priorities of future work groups will be to identify an inventory of the original sources of various pollutants and develop an action plan to address those pollutants at the source. Future Water Board-Air Board meetings are anticipated.

### **U.S. Department of Energy (DOE) Office of Building Technology’s Vision 2020 Lighting Technology Roadmap**

Since the Mercury Plan’s first year of implementation, Program staff has been tracking the progress made by the U.S. Department of Energy (DOE) office of Building Technology’s Vision 2020 Lighting Technology Roadmap in accordance with Mercury Plan Action IV.F. DOE’s Building Technologies Program continues to move forward on their Vision 2020 Roadmap. Progress includes seven strategies to address the challenges of transforming the lighting marketplace and developing new technologies that enhance lighting quality, efficiency and cost effectiveness. There are no significant updates or progress to report in FY 05-06.

### **EVALUATION OF PROGRAM EFFECTIVENESS AND NEXT STEPS FOR MERCURY PLAN**

During FY 05-06, there was considerable progress made on tasks outlined in the Mercury Plan, specifically related to public outreach and progress of regional partnerships. Significant outcomes from the FY 05-06 Work Plan and the primary mercury pollution prevention activities planned for FY 06-07 include:

**Guidelines for Reduction and Management of Mercury-Containing Products:** In FY 03-04, Co-permittees began strategizing on how to implement the Program’s Guidelines for reducing and managing mercury-containing products identified for virtual elimination and began implementation in FY 04-05. Implementation will continue in FY 06-07.

**Mercury Pollution Prevention Outreach:** The Mercury Pollution Prevention Outreach Work Group successfully completed the implementation of a two-year, two-phase fluorescent light tube recycling campaign in FY 03-04, and continued outreach in subsequent years to support the CoHHW Program’s Mercury Reduction Grant.

The FY 05-06 Media Campaign included free promotional print ads, live promotional announcements, web site exposure and a sports event contest package from KRTY, a third party sponsor. Posters, contest boxes and floor decals were featured at participating hardware stores within Santa Clara County. Bus signs were also visible throughout the County and featured a four-week override. Total gross impressions from media advertising were 20,420,100. Nearly 400 Got Bulbs contest entries were received by KRTY, mostly from the web site and the *San Jose Mercury News* advertisement.

During FY 05-06, the CoHHW Program collected 277,000 feet<sup>1</sup> (67,943 pounds) of fluorescent bulbs at 18 retail drop-off locations within Santa Clara County<sup>2</sup>. This is a significant increase

<sup>1</sup> Since fluorescent light bulbs come in different sizes, quantities are reported in terms of the total length (feet) of tubes collected.

<sup>2</sup> Information regarding the collection of mercury containing products (e.g., fluorescent bulbs, thermostats, thermometers and other products) during FY 05-06 obtained from a memorandum entitled *Fiscal Year 2005/2006 HHW Program Update* (dated July 21, 2006). This memorandum was prepared by Rob D’Arcy, Santa Clara County Hazardous Materials Program Manager.

from FY 04-05. During FY 04-05, the CoHHW Program collected 166,000 feet (41,597 pounds) of fluorescent bulbs.

It is estimated that approximately 0.803 kilograms of total mercury was diverted (i.e., discharge to the environment was avoided) to recycling from fluorescent lamps collected by the CoHHW Program<sup>3</sup> in FY 05-06. In addition, the HHW Program also collected 231 mercury-containing thermometers, 425 pounds of elemental mercury (includes thermostats, thermometer and other products) and 51,050 pounds of household batteries during FY 05-06.

In FY 06-07, the Program will continue to conduct advertising to promote the fluorescent bulbs drop-off locations.

**Coordination Efforts with Regional Organizations:** The Guadalupe Hg Draft TMDL Report, SCBWMI Guadalupe Hg Work Group meetings and Program staff review of several draft products are recent highlights of the Program's coordination efforts with local and regional organizations. Program staff will continue to attend CEP (Clean Estuary Partnership) TMDL meetings, Regional Monitoring Program (RMP) Steering Committee and Technical Review Committee meetings. In addition, Program staff will continue to track the progress of the State Water Board-Air Board meetings.

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<sup>3</sup> Based on a 1999 National Electrical Manufacturers Association survey entitled *Environmental Impact Analysis: Spent Mercury-Containing Lamps, January, 2000 (Fourth Edition)*, the average four-foot fluorescent lamp contains about 11.6 milligrams (mg) of mercury. For the sake of estimating the amount of mercury sent for recycling, approximately 69,250 four-foot fluorescent lamps were collected. As a result, 0.803 kilograms of total mercury diverted (i.e., discharge to the environment was avoided) to recycling is a rough estimate.

**Table 7-1  
Status of FY 05-06 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
<b><u>I. Municipal Use of Mercury-Containing Products</u></b>	
I.F. Implement guidelines developed under Action I.E.	<b>On-going</b> - Co-permittees began implementation in FY 03-04.
<b><u>II. Household Hazardous Waste Collection</u></b>	
II.A. Provide mercury-containing products disposal services for residents and small businesses.	<b>On-going</b> - Disposal services are provided by the County HHW Program, Palo Alto Regional Water Pollution Control Plant and the Sunnyvale Materials Recovery and Transfer (SMaRT®) Station.
II.C. Implement guidelines developed under Action II.B.	<b>On-going</b> - Co-permittees began implementation in FY 03-04.
II.F. Work with HHW collection agencies to develop and help publicize fluorescent light recycling program. <sup>2</sup>	<p><b>Completed/Ongoing</b> – Began effort in FY 02-03. The Mercury Pollution Prevention Outreach Workgroup collaborated with the Santa Clara CoHHW Program for implementing the outreach component in the Program’s two-phase fluorescent light tube (FLT) recycling campaign. The first phase of the campaign, which was developed in FY 02-03, targeted residents. The second phase, completed in FY 03-04, targeted small businesses. The main objective of both phases was to show the negative health and environmental impacts of mercury and the methods available to the public for the proper disposal of FLTs.</p> <p>During FY 04-05 and FY 05-06, the Program conducted outreach to promote the free fluorescent bulb drop off locations provided by the County HHW Program.</p>
<b><u>III. Monitoring and Science</u></b>	
III.A. Continue financial support of the Regional Monitoring Program (RMP), including the Mercury Deposition Network Pilot Study and	<b>On-going</b> - Program and Co-permittee staffs actively participated in RMP TRC and SC meetings and provided meeting summaries to

<sup>1</sup> Completed Mercury Pollution Prevention Tasks are described in previous Annual Reports (Table 7-1).

<sup>2</sup> Action II.F. is being conducted in conjunction with Public Education and Outreach Actions.

**Table 7-1  
Status of FY 05-06 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
<p>the Clean Estuary Partnership (CEP). Continue to actively participate in the RMP Steering Committee (SC) and Technical Review Committee (TRC).</p>	<p>Management Committee. Staff reviewed available reports and provided comments. Draft reports included <i>2006 Draft RMP Monitoring Plan</i>.</p> <p>Both Program and Co-permittees' staffs are actively involved with the CEP technical and management committees; and review of proposed Work Plans and study scopes. Program and Co-permittee staffs also participate in the CEP Mercury Work Group. In addition, the City of San Jose continues to chair the CEP technical committee.</p>
<ul style="list-style-type: none"> <li>The City of San Jose will continue to provide in-kind services for the maintenance of the Mercury Deposition Network site near San Jose.</li> </ul>	<p>The City of San Jose has continued this activity beyond the December 2005 compliance date and is evaluating whether to continue into FY 06-07 and beyond.</p>
<p>III.B. Provide financial and staff support for a coordinated regional plan to collect data for the mercury TMDL, as defined in the CEP MOU.</p>	<p><b>On-going</b> - The Program continued to participate in the CEP (see Section 4, Monitoring for a discussion of the CEP (formerly TMDL MOU) activities and accomplishments to date).</p>
<p><b><u>IV. Regional, State, and Federal Coordination</u></b></p>	
<p>IV.A. Participate in the activities of the Bay Area Stormwater Management Agencies Association, the California Storm Water Quality Task Force, and the San Francisco Estuary Institute and communicate Program efforts.</p>	<p><b>On-going</b> - Program staff continue to attend BASMAA, CASQA and SFEI RMP meetings (See Internal and External Meetings FY 05-06 attached to the <i>Review of FY 05-06 Program Management Services</i> within Appendix A-2).</p>
<p>IV.B. Collaborate in technical studies to support TMDL development and implementation including the Santa Clara Basin WMI Guadalupe River Mercury TMDL Workgroup.</p>	<p><b>On-going</b> - Program and Co-permittee staffs actively participate in the Guadalupe Mercury TMDL Watershed Work Group and Stakeholder group. Staff reviewed available reports including <i>Draft TMDL Report</i>.</p>
<p>IV.E Support, participate in, and advocate increased regional collaborati</p>	<p><b>Ongoing</b> - The Program will support the RWQCB in collaborating with the BAAQMD but will not directly work with the BAAQMD. The Program supports the RWQCB through participation in the CEP.</p>

**Table 7-1  
Status of FY 05-06 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
	<p>Mercury air deposition is being addressed regionally.</p> <p>Program staff will continue to track the progress of the State Water Board-Air Board meetings. The first meeting was held in February 2006.</p>
<p>IV.F. Support and track the progress of the U.S. Department of Energy (DOE) Office of Building Technology's Vision 2020 Lighting Technology Roadmap.<sup>3</sup></p>	<p><b>In Progress</b> - DOE's Building Technologies Program continues to move forward on their Vision 2020 Roadmap. Progress includes seven strategies to address the challenges of transforming the lighting marketplace and developing new technologies that enhance lighting quality, efficiency and cost effectiveness. There are no significant updates or progress to report in FY05-06.</p>
<p><b><u>V. Public Education and Outreach</u></b></p>	
<p>V.A. Develop various outreach programs to educate target audiences about proper disposal of mercury-containing products and alternative non-mercury containing products. Outreach programs will include, but may not be limited to, the following:</p>	<p><b>Completed/Ongoing<sup>4</sup></b> - In FY 05-06, the Mercury Pollution Prevention Outreach Work Group continued its mercury pollution prevention outreach. Outreach was coordinated with the County HHW Program's Mercury Grant implementation plan.</p>
<ul style="list-style-type: none"> <li>• Develop and begin to implement a fluorescent light recycling outreach program to educate residential users and encourage proper disposal of fluorescent lights.</li> </ul>	<p><b>Completed/Ongoing<sup>4</sup></b> - Phase I outreach of the two year, two phase Work Plan was completed in FY 02-03. This phase focused on residential outreach. Additional annual coordination is continuing, as appropriate.</p> <p>In FY 05-06, the County HHW Program continued to develop partnerships retail stores to provide free fluorescent lamps drop-off sites for residents. To Program conducted a media campaign to</p>

<sup>3</sup> DOE's Vision 2020 Lighting Technology Roadmap includes this goal for the year 2020, "Highly efficient, reduced-mercury fluorescent sources will come to market." Sustainable Conservation's September 27, 2000 report entitled *Reducing Mercury Releases from Fluorescent Lamps: Analysis of Voluntary Approaches* concluded that "we do not believe that starting a new collaborative approach with manufacturers to create mercury-free fluorescent lamps is the most effective use of resources at this time." Sustainable Conservation recommends focusing on voluntary recycling of mercury-containing lamps as an alternative approach.

<sup>4</sup> These tasks were marked as Completed and Ongoing since the specific public education and outreach task was completed but outreach is ongoing. Articles will continue to be posted and updated, as appropriate. The Program will continue to assist the CoHHW with public outreach activities as resources allow.

**Table 7-1  
Status of FY 05-06 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
	promote these drop-off locations (See Section 7 and Appendix B-1 of this Annual Report for additional details).
<ul style="list-style-type: none"> <li>Develop and begin to implement a fluorescent light recycling outreach program to educate small businesses and conditionally exempt small quantity generators and encourage proper disposal of fluorescent lights. (For example, the small business outreach program might include coordination with local chapters of the Building Owners and Managers Association [BOMA] or the National Association of Industrial and Office Properties [NAIOP].)</li> </ul>	<p><b>Completed/Ongoing<sup>4</sup></b> - In FY 03-04, the Work Group implemented Phase II of the two-year, two-phase Work Plan. Phase II outreach efforts were focused on small businesses and CESQGs. Additional annual coordination will continue, as appropriate.</p>
<ul style="list-style-type: none"> <li>Coordinate with municipal inspectors to integrate mercury outreach to industrial businesses into their existing routine pretreatment, source control, and/or hazardous materials inspection processes</li> </ul>	<p><b>Ongoing</b> - Co-permittees began coordination efforts in FY 03-04.</p>
<p>V.B. Develop or adapt existing mercury outreach materials, as needed, for outreach programs.</p>	<p><b>Completed/Ongoing<sup>4</sup></b> - As part of the Outreach Work Plan for Action V.A, development of materials began in FY 02-03. To date, the following outreach pieces have been developed by the Outreach Work Group:</p> <ul style="list-style-type: none"> <li>Two fact sheets for the worldwide web (one for residents and one for businesses);</li> <li>Two newsletter articles (one for residents and one for businesses);</li> <li>One press release;</li> <li>One video public service announcement for broadcast on local city cable channels;</li> <li>Three newspaper ads, two radio ads, one transit (bus poster) ad;</li> </ul>

**Table 7-1  
Status of FY 05-06 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
	<p>and</p> <ul style="list-style-type: none"> <li>• Signage (posters and decals) for promoting the fluorescent drop-off locations.</li> </ul> <p>All outreach pieces aim to show the negative health and environmental impacts of mercury and the methods available to the public for the proper disposal of FLT's. Copies of all outreach materials developed during FY 05-06 are included within Appendix B-10.</p>
V.C. Attend community events and distribute outreach materials.	<b>Completed/Ongoing<sup>4</sup></b> - As part of the Outreach Work Plan for Action V.A, distribution of outreach materials continued during FY 05-06.