



# SECTION 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 07-08.

### 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 07-08 MERCURY POLLUTION PREVENTION ACTIVITIES**

The status of the Program's FY 07-08 Mercury Plan tasks is summarized in Table 7-1. Highlights of Program accomplishments, as developed and/or implemented by the Mercury Pollution Prevention 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 Pollution Prevention 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 07-08.

#### **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 07-08 Tasks**

Since FY 03-04, the Program has been coordinating its mercury outreach with the County Household Hazardous Waste (HHW) Program. The Program provided funds to develop and conduct media advertising to meet the requirements of a \$300,000, three-year California Integrated Waste Management Board (CIWMB) grant awarded to the County HHW Program. Under this grant, the County HHW Program developed partnerships with local hardware stores for collecting spent fluorescent lamps. The Grant ended in March 2006; however, the store partnership program continued.

In FY 07-08 the Program's Watershed Watch Campaign ran the "Watch Out for Mercury Pollution" advertisements to educate people on the proper disposal of fluorescent bulbs, and to inform them of fluorescent bulb drop-off locations. The advertising campaign ran from January to April 2008 and was coordinated with advertising done by the County HHW Program and the Santa Clara County Integrated Waste Management Division. The County HHW Program ran print advertisements during the same time period and the County IWM Division ran cable TV advertisements.

Details of the outreach campaign are in the FY 07-08 detailed Watershed Watch Campaign and Media Report included within Appendix B-3.

## 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.

Water Board staff produced the Guadalupe River Watershed Mercury TMDL Project Report (January 2006). Program staff, along with other Co-permittee staff, have reviewed the report and attended work group meetings to discuss the draft report and implementation plan. A draft Basin Plan amendment and supporting Staff Report were released for public review and comment on February 29, 2008. The documents establish new water quality objectives for waters in the Guadalupe River Watershed, incorporate a TMDL and include an implementation plan. SCVURPPP submitted a comment letter to the Water Board. The Water Board held hearings on the proposed Basin Plan Amendment in May 2008. The TMDL is scheduled for adoption in late 2008.

The Program continued to provide financial support to the Regional Monitoring Program (RMP). In addition, Program and Co-permittee staff actively participates in RMP Technical Review Committee (TRC) and Steering Committee (SC) meetings, Work Group meetings and provides meeting summaries to the Management Committee. Staff reviewed available draft reports and provided input on mercury-related studies, including those described in Section 4.

The Water Board issued a new NPDES permit, Order R2-2007-0077, to implement the San Francisco Bay Mercury TMDL adopted by the Water Board on August 9, 2006. This Watershed Permit for Municipal and Industrial Wastewater Discharges of Mercury to San Francisco Bay; Counties of Alameda, Contra Costa, Solano, Napa, Sonoma, Marin, San Francisco, San Mateo and Santa Clara was adopted November 2007. The Sunnyvale, San Jose/Santa Clara and Palo Alto POTWs must comply with the requirements in this Order.

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.

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, however, none occurred in FY07-08.

## 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. The Draft Multi-Year Program Plan is in the process of being updated for 2008. The draft plan, along with other information resources, is available at [www1.eere.energy.gov/buildings/](http://www1.eere.energy.gov/buildings/).

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

All of the one-time, specific tasks identified in the Mercury Plan have been completed. The Program continues to implement the ongoing activities in the Mercury Plan. During FY 07-08, there was progress made on tasks related to public outreach and regional partnerships. Significant outcomes from the FY 07-08 Work Plan and the primary mercury pollution prevention activities planned for FY 08-09 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 08-09.

#### **Mercury Pollution Prevention Outreach:**

The mercury outreach media campaign included radio ads to promote the County HHW retail store collection locations as described in Appendix B-3.

During FY 07-08, the CoHHW Program collected 496,484 feet (124,121 pounds<sup>1</sup>) of fluorescent bulbs at 30 retail drop-off locations within Santa Clara County<sup>2</sup>. This is more than a 40% increase from FY 06-07. In FY 06-07, the CoHHW Program collected 353,694 feet (88,423 pounds) of fluorescent bulbs.

It is estimated that approximately 1.44 kilograms of total mercury was diverted (i.e., discharge to the environment was avoided) to recycling from fluorescent lamps collected by the County HHW Program<sup>3</sup> in FY 07-08.

During FY 07-08, the HHW Program also collected:

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<sup>1</sup> Since fluorescent light bulbs come in different sizes, quantities are reported in terms of the total length (feet) of tubes collected. One four-foot light tube weighs approximately one pound.

<sup>2</sup> Information regarding the collection of mercury containing products (e.g., fluorescent bulbs, thermostats, thermometers and other products) during FY 07-08 obtained from a memorandum *entitled Fiscal Year 2007/2008 HHW Program Update* (dated July 21, 2008). This memorandum was prepared by Wendy Fong, Household Hazardous Waste Program, County of Santa Clara.

<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 124,121 four-foot fluorescent lamps were collected. As a result, 1.44 kilograms of total mercury diverted (i.e., discharge to the environment was avoided) to recycling is a rough estimate.

- 1,295 pounds of elemental mercury (includes thermostats, thermometer and other products), an increase of 1% over FY 06-07;
- 100,100 pounds of household batteries, an increase of 52% over FY 06-07; and
- 370 mercury-containing thermometers at five thermometer exchange events.

These data indicates the success of the coordinated mercury outreach media campaign conducted by the Program, the County HHW Program and the County IWM Division.

In FY 08-09, the Program will continue to conduct advertising to promote the fluorescent bulbs drop-off locations, as municipal budgets/resources permit.

**Coordination Efforts with Regional Organizations:** The RMP Steering Committee and RMP Technical Review Committee 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 Regional Monitoring Program (RMP) Steering Committee and Technical Review Committee meetings.

SCVURPPP Co-permittees, San Jose, Palo Alto and Sunnyvale fund and support activities implemented by the Bay Area Pollution Prevention Group (BAPPG). In FY 07-08, BAPPG conducted the following activities for mercury pollution prevention outreach:

- Thermometer Exchange Event Coordination – Coordinated a group buy of thermometers for conducting thermometer exchanges during Pollution Prevention week. In May – July 2007 twenty agencies and organizations collected 4,264 thermometers, 21 thermostats and 16 pounds of bottled elemental mercury at 30 one-day and ongoing events. Another coordinated event is planned for Pollution Prevention week in September 2008.
- Update Amalgam Separator List – In 2008 updated the list of ISO-certified amalgam separators for use by Bay Area agencies in implementing their Mandatory Amalgam Separator Programs. The List is available on the BAPPG Yahoo! Groups site for all members.

**Table 7-1  
Status of FY 07-08 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>Since FY 04-05, the Program has been conducting 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 07-08 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>2008 Draft RMP Monitoring Plan</i>.</p> <p>Both Program and Co-permittee staff were actively involved with the CEP technical and management committees; and review of proposed Work Plans and study scopes. Program and Co-permittee staffs also participated in the CEP Mercury Work Group. The CEP was disbanded in 2008. Staff will continue to participate in regional collaborative projects through BASMAA.</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 continued this activity beyond the December 2005 compliance date and into FY 05-06. The City decided not to continue this effort into FY 06-07.</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>Completed</b> - The Program participated in CEP activities (formerly TMDL MOU) until the group was disbanded in 2008.</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. Meeting information and participation is provided in the Program's <i>Review of FY 07-08 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. Program and Co-permittee staff reviewed the draft Basin Plan Amendment and supporting Staff Report released February 2008.</p>

**Table 7-1  
Status of FY 07-08 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
IV.E Support, participate in, and advocate increased regional collaboration with the RWQCB and the Bay Area Air Quality Management District (BAAQMD).	<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 in their efforts. Mercury air deposition is being addressed regionally.  Program staff will continue to track the progress of the State Water Board Air Board meetings. The first meeting was held in February 2006.
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>	<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. The Draft Multi-Year Program Plan is available on their website. Currently, it is in the process of being updated for 2008.
<b><u>V. Public Education and Outreach</u></b>	
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:	<b>Completed/Ongoing<sup>4</sup></b> - In FY 07-08, the Mercury Pollution Prevention Outreach Work Group continued its mercury pollution prevention outreach.
<ul style="list-style-type: none"> <li>Develop and begin to implement a fluorescent light recycling outreach program to educate residential users</li> </ul>	<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 outreach is continuing, as

<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 07-08 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
and encourage proper disposal of fluorescent lights.	appropriate.  The County HHW Program has continued to develop partnerships retail stores to provide free fluorescent lamps drop-off sites for residents. The Program's Watershed Watch Campaign conducted media advertising to inform residents about these locations. (See Section 7 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>	<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 outreach is continuing, as appropriate.
<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>	<b>Ongoing</b> - Co-permittees began coordination efforts in FY 03-04.
V.B. Develop or adapt existing mercury outreach materials, as needed, for outreach programs.	<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: <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> </ul>

**Table 7-1  
Status of FY 07-08 Mercury Pollution Prevention Tasks<sup>1</sup>**

<u>Task</u>	<u>Status</u>
	<ul style="list-style-type: none"> <li>• One press release;</li> <li>• One video public service announcement for broadcast on local city cable channels;</li> <li>• Four newspaper ads, three radio ads, two transit (bus poster) ad; and</li> <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. The Program did not develop any new outreach materials in FY 07-08.</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 07-08.