**What are the requirements?**

Dental practices that remove and/or place amalgam fillings must use approved amalgam management practices and install an amalgam separator. Such a separator is in addition to chair-side traps and vacuum filters that may already exist. **The separator device must be ISO-certified to remove at least 95% of amalgam particles.**

These regulations affect dental practices in the following cities: East Palo Alto, Palo Alto, Los Altos, and Mountain View.

**Why require a dental amalgam recovery program?**

San Francisco Bay is considered impaired due to high levels of mercury in fish, water, and sediment. Because of the concerns with mercury in San Francisco Bay, the Regional Water Quality Control Plant (RWQCP) needs to reduce mercury discharges to the environment. Dental wastewater has been identified as a major source of mercury to the RWQCP. The latest discharge permit for the RWQCP mandates that the cities within the RWQCP service area develop an amalgam recovery program to reduce the mercury from this source.

Based on testing results, it is estimated that mercury discharges to the air and water from the RWQCP have decreased approximately 25% since the requirements became effective.

**What does a dental facility need to do to comply?**

**STEP 1** - Comply with required “best management practices” described on page 2.

**STEP 2** - Install and maintain an approved amalgam separator.

**STEP 3** - Annually submit documentation that certifies that your office is complying with the requirements.

**STEP 4** - Keep training, disposal, and equipment records on-site, available for an inspection.

This document will guide you through the process.

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**Exempted Facilities**

A facility is exempt from this requirement if amalgam fillings are removed or placed 3 or fewer days per year and the facility serves one of the following primary function:

- Orthodontics
- Periodontics
- Oral and maxillofacial surgery
- Radiology
- Oral pathology or oral medicine
- Endodontics
- Prosthodontics
The following amalgam management practices are mandatory:

1. Do not rinse chairside traps, vacuum screens, or amalgam separator equipment in a sink or other sanitary sewer connection. These items should be collected, stored, and sent to a metals recycler that is authorized to handle mercury.

2. Train staff in the proper handling and disposal of amalgam materials and fixer-containing solutions. Training records shall be available for inspection.

3. Store and manage amalgam waste in accordance with recycler or hauler instructions.

4. Do not use bleach or other chlorine-containing disinfectants to disinfect the vacuum system. Bleach-containing disinfectants have been shown to dissolve mercury from amalgam. The line cleansers in the box at the right are bleach-free, and therefore meet this requirement.

5. Do not use bulk liquid mercury; only precapsulated dental amalgam is permitted.

If you have questions about any of these practices, please contact us.

Some Bleach-Free Line Cleaners

<table>
<thead>
<tr>
<th>E-Vac</th>
<th>ProE-Vac</th>
<th>Stay-Clean</th>
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</thead>
<tbody>
<tr>
<td>EZ-Zyme</td>
<td>Purevac</td>
<td>Turbo Vac Line Flush</td>
</tr>
<tr>
<td>Green and Clean</td>
<td>Sani-Treet Plus</td>
<td>VAC-U-EZ</td>
</tr>
</tbody>
</table>

Disclaimer: This list may be incomplete; inclusion on this list does not constitute an endorsement of products or companies.

Amalgam separators employ filtration, settlement, or ion exchange to remove amalgam and its metal constituents from the office vacuum system before it discharges to the sewer. While chair-side traps capture the largest waste amalgam particles, amalgam separators focus on removing the remaining, much smaller particles. Also, in the case of ion exchange units, dissolved or ionic silver and mercury are removed.

Separators should either be installed in the vacuum line at each chair or in a central location that receives vacuum line wastewater from all chairs. Dental practices that are served by a shared vacuum system may elect to have one amalgam separator installed at the central location.

Separators must be maintained according to the manufacturer’s recommendation and disposal of amalgam wastes must be in accordance with applicable regulations.

Approved Amalgam Separators

Approved separators are those that meet the International Organization for Standardization’s standard ISO 11143 and are certified by the American Dental Association or other qualified testing laboratory to remove at least 95% of amalgam. A list of approved amalgam separators is available by contacting Karin North at 650-494-7629.

STEP 3 Submission of Compliance Forms

Annually submit the Amalgam Waste Disposal Report that certifies that your office is complying with the requirements.
Choosing the Right Amalgam Separator for

The type of amalgam separator you choose depends on several factors. Vendors will also be able to suggest units that will best serve your office configuration.

<table>
<thead>
<tr>
<th>Vacuum System Compatibility</th>
<th>Equipment Size and Location</th>
<th>Maintenance</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your office use a wet vacuum or a dry vacuum system? Does the practice want individual chair-side separators or a central unit that will handle all the chairs? Some amalgam separators are approved only for chair-side use or for use with a particular type of vacuum pump.</td>
<td>How much physical space is available for the equipment? Do you want to install an amalgam separator at individual chairs, or in one central location that will serve the entire office?</td>
<td>How often does one need to dispose of accumulated waste sludge? Is the sludge collected in a canister that can be replaced or in one that must be emptied? Does the vendor provide regular maintenance or is it the responsibility of the practice? If the vendor maintains the unit, find out the following: who the vendor contracts with to haul the waste away; where the contractor sends it, and what waste documentation the vendor provides as part of the service fee.</td>
<td>Costs will depend on the size of the practice and will include the cost of purchasing, installing, and maintaining the amalgam separator unit, and for proper removal and disposal of amalgam wastes collected. For the average practice, approved amalgam separators can range in purchase price from $150 to $2000; installation can range from $50 to $1000; annual maintenance can range from $250 - $600 (including the cost of waste disposal).</td>
</tr>
</tbody>
</table>

If a practice shares a central vacuum with other dental practices, make sure to select a separator that will be compatible with the central vacuum. Alternatively, a central separator may be more practical to serve all of the practices in the building.

Some separators will need 120V AC power supply.

Dental practices must keep the following information on site for 3 years:
- Staff training records (required for practices with 3 or more employees)
- Separator installation and maintenance records
- Amalgam waste disposal records

All records must be provided to municipal inspectors upon request and information sent to the RWQCP upon request.

Disclaimer: Costs cited here are only estimated, based on review of vendor information, and are subject to change.
FAQs

To whom does the ordinance apply?
It applies to the dental practices located in any of the RWQCP partner municipalities: East Palo Alto, Los Altos, Mountain View, and Palo Alto.

What if the landlord or a separate dental practice overseas the vacuum system?
Each dental practice is legally responsible for ensuring that an approved amalgam separator has been installed for a shared vacuum system. Communicate with the other dental practices and building owner and determine who will be responsible for installation and maintenance. Annually, each dental practice will be required to provide the date the separator was last maintained.

Are chairside traps and vacuum filters suitable to meet the requirement?
No, chairside traps and vacuum filters are separate devices that do not meet the amalgam removal requirement.

How does the RWQCP know the mercury coming into its wastewater treatment plant is from dental practices?
Many dentists use amalgam, which contains approximately 50% mercury. Studies by the ADA and others have shown that some of the amalgam mixed for placement as well as almost all of the amalgam from filling removals ends up as waste. With proper management, much of this waste can be prevented from being discharged to the sanitary sewer.

Since the installation of amalgam separators, the RWQCP has measured a 94 percent reduction in the average mercury concentration from a local dental office and a 64 percent reduction in a city sewer line downstream of multiple dental offices!

Why can't wastewater treatment plants just remove the mercury?
Wastewater treatment plants, including the RWQCP, are designed to treat wastewater containing conventional pollutants such as human waste and food waste. Mercury is not sufficiently removed by conventional treatment. As a result, mercury ends up in the wastewater discharged to the San Francisco Bay or in biosolids that are incinerated or used for land application and landfill cover.

What mercury reductions have been measured by the RWQCP since the amalgam recovery program went into effect?
The RWQCP has seen decreased mercury concentrations in its influent, sludge cake prior to incineration, and effluent to the Bay. Sludge cake mercury concentration is the best indicator of mercury decreases at the treatment plant, because the great majority of the mercury in the treatment plant is associated with solids that are captured in the sludge cake.

For More Information
Amalgam Recovery Program Manager: Karin North
karin.north@cityofpaloalto.org, 650-494-7629
City of Palo Alto Regional Water Quality Control Plant
2501 Embarcadero Way, Palo Alto, CA 94303