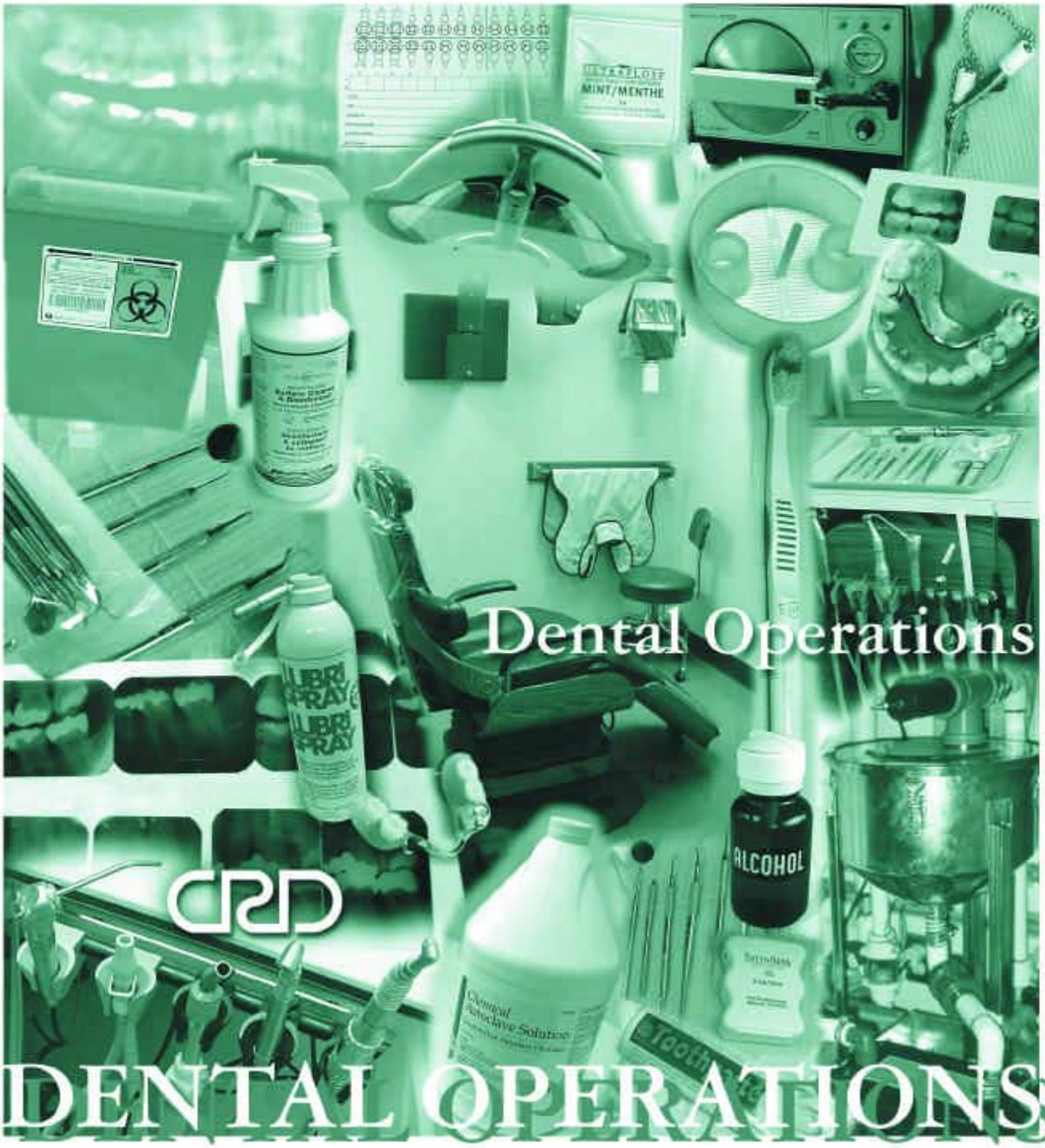
Environmental Regulations & Best Management Practices



Dental Operations in the Capital Regional District

ENVIRONMENTAL REGULATIONS &
BEST MANAGEMENT PRACTICES

Dental Operations in the Capital Regional District

This manual is published by the Regional Source Control program.
For more information please call (250) 360-3256 or visit the CRD web site at http://www.crd.bc.ca

Regional Source Control Program
524 Yates Street, PO Box 1000
Victoria, BC V8W 2S6
(250) 360-3256

March 2001

TABLE OF CONTENTS

List of Figures

1.0 INTRODUCTION

Routine dental procedures generate waste materials that may be restricted or prohibited for discharge into the sanitary sewer system under the Capital Regional District's (CRD) ***sewer use bylaw***. Examples of such waste materials include spent x-ray processing solutions, chemiclave solutions, disinfectants, cleaning agents and rinse solutions, pharmaceuticals and dental amalgam. Although the volume of these materials discharged from individual dental offices may be small, the cumulative amount of waste from all dental offices within the CRD has the potential to significantly reduce the quality of effluent and biosolids produced by local sewage collection and treatment facilities. Proper management of these wastes can minimize their impact on the environment.

The CRD's Regional Source Control program has developed this document in cooperation with representatives from the Association of Dental Surgeons of BC, the Victoria and District Dental Society, the BC Ministry of Health and the BC Ministry of Environment, Lands and Parks (BCMELP). This document provides a guide to environmental regulations that apply to dental operations within the regional district and provides information on best management practices and services that will assist operations in meeting or exceeding these regulations and improving their overall environmental performance.

1.1 Why are Dental Wastes a Concern?

Studies undertaken by the CRD and other jurisdictions have shown that wastewater from dental offices typically contains elevated concentrations of metals such as mercury, silver, copper, tin and zinc. Sources of these metals include placement and removal of amalgam fillings (mercury, silver, copper, tin and zinc) and disposal of spent x-ray fixer solution (silver). Elevated levels of metals discharged to the sanitary sewer system or to septic fields are of concern to the CRD for the following reasons:

- Monitoring carried out near the CRD's long ocean outfalls has identified mercury, copper and zinc as some of the main contaminants in marine sediments. Mercury, in particular, is known to accumulate in the tissues of fish, plants and mammals and to "bioconcentrate" within the food chain.

- Metals levels in biosolids produced at CRD sewage treatment plants have exceeded federal and provincial limits for land application, thereby restricting options for biosolids use.

- In unsewered areas, high levels of metals can contaminate septic fields and septic tanks. Samples of sludge taken from septic tanks receiving dental wastewater have shown levels of metals exceeding limits specified in the CRD's ***septage disposal bylaw***. Septic fields contaminated by metals may have restricted future land use designations under the *BC Contaminated Sites Regulation* and the land owner and/or wastewater discharger may be liable for clean-up costs.

- Testing of certain dental wastes containing amalgam has indicated that they can be classified as *special wastes* under the *BC Special Waste Regulation.*

Dental amalgam is a stable, safe and effective material when used as a filling material for restoring teeth. Amalgam particles containing mercury and silver enter the wastewater from dental offices through the vacuum system during carving, burnishing and finishing of amalgam fillings and during the removal of old amalgam fillings. The larger particles are easily trapped in chair-side traps and in the filter protecting the vacuum pump. However, finer amalgam particles can pass through these traps and filters into sanitary sewer or septic systems.

Silver is a necessary component in image forming. Free silver ions are very toxic to aquatic organisms. Spent x-ray fixer contains high levels of silver that is mostly in the form of silver thiosulphate complexes, which are less toxic than ionic silver.

There is concern regarding the fate of the above forms of metals once they are introduced into the environment where they may be subject to abrasion, corrosion and chemical or bacterial transformation.

Federal, provincial or municipal regulations governing metals levels in sewage, effluent, biosolids, soil, surface water or groundwater generally contain limits for total concentrations rather than differentiating between the various forms of metals discharged.

Other wastes from dental offices that are of concern if discharged into the sewer system include:

- Cleaning solutions and disinfectants – may contain toxic or flammable substances including alcohol, ether, acetone, xylene, chloroform, formaldehyde, glutaraldehyde, ammonia or phenols.

- Pharmaceutical wastes – may contain chemicals that are harmful to marine organisms.

- Biomedical wastes – may contain materials that are a public health and safety concern.

The potential exists for significant reductions in the amounts of contaminants discharged from dental operations in the CRD through the implementation of responsible pollution prevention practices as described in this document. In addition to improved environmental protection, benefits to the dental sector include reduced liability and an improved business image in the community.

1.2 Summary of Regulatory Requirements

1.2.1 Federal Government

The Canadian government has no specific regulatory requirements for the management of dental waste, however regulations adopted under federal enactments such as the *Transportation of Dangerous Goods Act* and the *Workers Compensation Act* contain provisions

that apply to the general transportation and handling of hazardous materials. Where import or export of hazardous wastes occur, the *Export and Import of Hazardous Waste Regulation* under the *Canadian Environmental Protection Act* would apply. For more information regarding the above requirements, please refer to Section 5.

1.2.2 Provincial Government

1.2.2.1 BC Special Waste Regulation

The BCMELP regulates the generation, storage, treatment, recycling and disposal of special wastes to the environment through the ***BC Special Waste Regulation*** (BCSWR) under the *BC Waste Management Act.*

For more information regarding the BCSWR, please refer to Sections 2.1 and 5.

1.2.2.2 Worker's Compensation Board Regulation

The Workers' Compensation Board regulates health and safety issues such as chemical exposure, indoor air quality and biohazards under the provincial ***Workers Compensation Board Regulations (WCBR)*** . For more information regarding the WCBR, please refer to Section 5.

1.2.3 Regional Government

1.2.3.1 CRD Sewer Use Bylaw

The CRD is empowered, under the provincial *Waste Management Act*, to regulate the discharge of waste into its own sewers and into sewers owned and operated by member municipalities.

On August 10, 1994, the CRD Board passed Bylaw No. 2231, a bylaw to regulate the discharge of waste into sewers connected to a sewage facility operated by the CRD. This bylaw has been recently updated as ***CRD Sewer Use Bylaw No. 4, 2000***, which is generally referred to as the sewer use bylaw. The main intentions of the sewer use bylaw are to protect:

- the marine environment
- public health and safety
- sewerage works
- wastewater treatment processes
- wastewater sludge (biosolids) quality

and to ensure:

- consistent discharge requirements throughout the Capital Region

- fair and balanced use of the CRD's sewage facilities
- promotion of responsible waste management practices

In many cases, companies require a ***waste discharge permit*** in order to discharge industrial or commercial wastes into the sewers. However, the sewer use bylaw also provides for the discharge of certain types of waste under industry-specific ***codes of practice***.

- A code of practice is a regulatory document, developed by the District, which contains mandatory sanitary sewer discharge standards for specific industrial, institutional or commercial sectors. Codes of practice set out minimum effluent treatment, equipment maintenance and record keeping requirements for various sector operations. **A business or organization operating under an approved code of practice does not require a waste discharge permit.**

1.2.3.2 Other Regional or Municipal Regulations

Other regional or municipal regulations that may apply to the handling and disposal of wastes from dental offices within the capital region include:

- *Hartland Landfill Tipping Fee and Regulation Bylaw* (CRD): regulates the disposal of wastes at the CRD's Hartland Road sanitary landfill.

- *CRD Septage Disposal Bylaw*: regulates the discharge of septic tank contents into septage disposal facilities.

- Municipal Storm Sewer Bylaws: regulate the discharge of waste into municipal storm drains and watercourses.

2.0 MANDATORY REQUIREMENTS

2.1 Provincial Government Requirements – Special Waste Handling

The BCMELP regulates the management of ***special waste*** through application of the ***BC Special Waste Regulation (BCSWR)*** under the *BC Waste Management Act.* The following information is provided for guidance only. If there is any discrepancy between this information and the BCSWR, the BCSWR will take precedence.

Dental Waste and the BC Special Waste Regulation

Wastes containing mercury or silver which, when subjected to the leachate extraction procedure described in Schedule 4 of the BCSWR, produce a leachate with a concentration of greater than 0.1 mg/L of mercury or 5 mg/L of silver, classify as **special waste** (leachable toxic waste) under the BCSWR.

Other wastes produced by some dental operations, such as some chemiclave solutions, disinfectants, x-ray fixer and pharmaceuticals may also classify as special waste under the BCSWR.

2.1.1 Storage and Transport

Special waste, as defined by the BCSWR, must be stored, used, transported and disposed of in accordance with the requirements of the BCSWR. In particular:

- If more than 5 L of mercury or silver-bearing special waste is to be transported for off-site waste management, a manifest is required and the waste must be hauled by a licensed hauler in accordance with Section 45 of the Special Waste Regulation. Requests to change these requirements can be made under Section 51 of the regulation.

- If more than 1,000 L of mercury or silver bearing special waste is stored prior to shipping for treatment, it must be stored in accordance with the requirements of Part 2, Part 3 and Part 4, Division (2) of the Special Waste Regulation.

- If more than 1,000 L of untreated mercury or silver-bearing waste is generated over any 30-day period or stored on-site at any time, the waste must be registered in accordance with Section 43 of the Special Waste Regulation.

2.1.2 Disposal

Section 39 of the BCSWR restricts the deposit or discharge of **special waste** into any waste disposal system operated by a municipality or other public authority. Such waste disposal systems include:

- sanitary sewers
- storm sewers or watercourses
- septage disposal facilities
- solid waste landfills

Special waste disposal must be carried out using a licensed hazardous waste disposal vendor. See Section 5 for more information.

2.2 Capital Regional District Requirements - Code of Practice for Dental Operations

This section is a summary of the regulatory requirements contained in the CRD sewer use bylaw (the bylaw) that apply to dental operations. It is intended for information and guidance purposes only. If there is any discrepancy between this information and the bylaw, the bylaw will take precedence.

The CRD has determined that dental wastewater contains **restricted waste** as defined in the bylaw. Facilities that discharge **restricted waste** must either operate under a waste discharge permit or a code of practice.

Dental operations that follow the ***Code of Practice for Dental Operations*** (Schedule "L" of the sewer use bylaw) are authorized to discharge restricted waste into a sanitary sewer without a waste discharge permit. The CRD reserves the right to require any dental operation to obtain a waste discharge permit if deemed necessary by the sewage control manager. All other terms and conditions of the sewer use bylaw apply to the discharge to the sanitary sewer.

2.2.1 Application

- This code of practice applies to all dental operations in the CRD that discharge waste into a sewer connected to a sewage facility operated by the CRD.

- Dental operations include any operation that carries out dental care, dental hygiene or dental laboratory activities and which produces liquid waste containing mercury or silver.

2.2.2 Registration

- All dental operations operating under this code of practice must register with the CRD and report any subsequent change in the status of their operation to the CRD.

2.2.3 Discharge Regulations

General

- An operator of a dental operation must not discharge waste which, at the point of discharge into a sanitary sewer, contains:
    - ♦ prohibited waste, special waste or storm water; or
    - ♦ restricted waste with the exception of mercury measured at the point of discharge from a certified amalgam separator.

Liquid Waste Containing Silver Produced by X-ray Equipment

- Effective January 1, 2001 a dental operation that produces liquid waste containing silver, including spent x-ray fixative solutions, must either:
    - ♦ collect and transport the wastewater from the dental operation for **off-site waste management** ; or
    - ♦ **treat** the wastewater at the dental operation site prior to discharge to the sanitary sewer using **one** of the following silver recovery technologies:
        - ▪ two chemical recovery cartridges connected in series; or
        - ▪ electrolytic recovery followed by two chemical recovery cartridges connected in series; or
        - ▪ any other silver recovery technology, or combination of technologies, capable of reducing the concentration of silver in the wastewater to **5 mg/L or less**.

Installation and operation of this silver recovery technology must comply with the requirements of the *Code of Practice for Photographic Imaging Operations* (Schedule "K" of the CRD sewer use bylaw).

Wastewater Containing Dental Amalgam

- Effective July 1, 2001 a dental operation that produces wastewater containing dental amalgam must either:
    - ♦ collect and transport the waste from the dental operation for **off-site waste management** ; or
    - ♦ **treat** the waste at the dental operation site prior to discharge to the sewer using an **ISO certified amalgam separator** (referred to below as an amalgam separator).
- This requirement is effective January 1, 2001 for those operations which either:
    - ♦ commence operation on, or after, January 1, 2001, or

- make a tenant improvement with a value of $2,000 or more on, or after, January 1, 2001.

- An operator of a dental operation that produces wastewater containing dental amalgam must:

  - install and maintain an amalgam separator according to the manufacturer's or supplier's recommendations
  - ensure that all wastewater containing dental amalgam is treated using the amalgam separator
  - install an accessible monitoring point at the outlet of the amalgam separator at a location upstream of the discharge of any other waste
  - locate the amalgam separator in such a manner that an accidental spill, leak or container failure will not result in waste containing amalgam entering any sewer. If such a location is not available, one of the following actions must be taken:
    - installation of spill containment to contain spills or leaks from the amalgam separator; or
    - all floor drains, into which liquid spilled from the amalgam separator would normally flow, must be capped.
  - ensure that dental amalgam collected in an amalgam separator, a collecting container or any other device is not discharged into a sewer

- If an operator of a dental operation installs an amalgam separator downstream of a **wet vacuum system,** the operator must ensure that:

  - the wet vacuum system is fitted with an internal flow control fitting; or
  - a flow control fitting is installed on the water supply line to the wet vacuum system; and
  - the flow control fitting is sized to limit the flow into the amalgam separator to a rate that is less than the maximum inlet flow rate recommended by the separator's manufacturer.

Replacement of the Amalgam Separator's Collecting Container

- An operator of a dental operation must replace the amalgam separator's collecting container when one of the following has occurred:

  - the manufacturer's or supplier's recommended expiry date has been reached;
  - the warning level specified in the ISO Standard has been reached; or
  - analytical data, obtained using an approved method, indicates that the concentration of total mercury in the discharge from the amalgam separator is greater than, or equal to, 2 mg/L.

Record Keeping and Retention [1]

- Where Silver Recovery Technology is installed:

  Dental operations that use silver recovery technology to treat wastewater containing silver generated by x-ray equipment must keep and retain the records specified in the *Code of Practice for Photographic Imaging Operations* (Schedule "K" of the CRD sewer use bylaw).

- Where an Amalgam Separator is installed:

  An operator of a dental operation must keep on site:

  - ♦ an operation and maintenance manual and ISO Standard certification documents for the installed amalgam separation equipment
  - ♦ a record book that includes the following operation and maintenance information recorded for the previous two years:
    - date of installation of the amalgam separator
    - name of installation service provider
    - serial number and expiry date of the amalgam separator and/or its components
    - maximum recommended flow rate through the amalgam separator
    - dates of inspection, maintenance, cleaning and replacement of any amalgam separation equipment
    - dates and descriptions of all operational problems, spills, leaks or collecting container failures associated with the amalgam separator and remedial actions taken
    - name, address and telephone number of any person or company who performs any maintenance or disposal services related to the operation of the amalgam separator
    - dates of pick-up of the collecting container for off-site disposal, volume of waste disposed and the location of disposal

[1] Copies of generic record keeping forms are available on request from the Regional Source Control program contact referenced in Section 5.

3.0 BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are activities developed to assist operations to reduce the amount of contaminants discharged to the environment, to comply with regulations and to improve overall waste management practices. BMPs are based on the pollution prevention (P2) principle that emphasizes reducing or eliminating pollutants and toxic materials at their source rather than removing them from a mixed waste stream. Preference is given to those practices that are highest in the P2 hierarchy as specified below in decreasing order of priority:

- avoidance, elimination or substitution of polluting products or materials
- reduction in the use of polluting products or materials
- elimination and reduction of the generation of polluting by-products
- reuse and recycling of polluting by-products
- energy recovery from polluting by-products
- treatment or containment of polluting residual by-products
- remediation of contaminated sites

A number of BMP documents have been produced for the dental industry by various agencies since the early 1990s. Many of these were developed to assist dental operations to decrease heavy metal discharges to sewers, comply with regulations, improve their operations and save money through application of pollution prevention principles. Dentists are also encouraged to influence suppliers by requesting and purchasing less toxic alternative cleaning and disinfecting products and pharmaceuticals.

The Canadian Council of Ministers of the Environment (CCME) have developed a *Canada-Wide Standard for Mercury in Dental Amalgams* for adoption by provincial governments. For more information on this standard, see Section 5.

Some example BMPs are listed under "Resource Materials" in Section 5.1. Important elements contained in these BMPs are summarized below.

3.1 Elemental Mercury

Mercury is a persistent and highly toxic contaminant in the environment. Waste elemental mercury is classified as a **special waste** . The use of bulk liquid mercury in the preparation of dental amalgam is declining. Most dentists now use precapsulated amalgam. Dental offices that continue to use bulk liquid mercury to prepare amalgam fillings, should take the following precautions:

- Mercury storage and work areas should be designed to provide secondary containment in the event of a spill or leak.

- A mercury spill kit should be maintained in the office near the mercury storage and work areas.

- Spilled mercury should be transferred to a labelled, sealed, leak-proof glass container and stored for pick up by a waste disposal vendor.

- Written mercury spill clean-up procedures should be posted in a visible location and all personnel handling mercury should be trained in spill clean-up procedures.

Do not dispose of waste elemental mercury into the garbage, down the drain or mix it with biomedical wastes.

3.2 Dental Amalgam Wastes

Amalgam particles containing mercury and silver can enter the wastewater from dental offices through the vacuum system during carving, burnishing and finishing of amalgam fillings and during the removal of old amalgam fillings. The larger particles are easily trapped in chair-side (or "primary") traps and in the filter (or "secondary" trap) protecting the vacuum pump. However, finer amalgam particles can pass through these traps and filters into the sewer or septic system.

Removal of these fine particles using an ISO certified amalgam separator (as required in the CRD *Code of Practice for Dental Operations*) will significantly reduce metals levels in dental wastewater and, where installed upstream of a dental operatory vacuum system, will also provide the additional benefit of reduced vacuum pump wear.

Amalgam wastes can also enter the sanitary sewer through cuspidors, sinks and floor drains. Best management practices that can help prevent these wastes from entering the sewer or septic system from any source include:

- use precapsulated amalgam

- mix only the amount of amalgam required for each restoration

- collect large waste amalgam scraps (scrap amalgam) from preparation, placement and removal of fillings, place in labelled leak-proof containers and recycle using a waste disposal vendor. Do not dispose of scrap amalgam into the garbage (municipal solid waste) or into sinks or drains that are not connected to an amalgam separator.

- use disposable chair-side (primary) traps. Reusable traps are more difficult to clean and may result in loss of amalgam particles into the sewer or garbage.

- change chair-side (primary) traps at least once a week or as recommended by the supplier or manufacturer. When changing primary traps:

    - turn off the high volume evacuation system

- ♦ always wear protective gloves
- ♦ place the trap directly into a labelled, leak-proof container and recycle using a waste disposal vendor
- ♦ never rinse primary traps over the drain or discard in the garbage

- Vacuum pump filters (secondary traps), where used, should be changed once a month or in accordance with manufacturer's recommendations. Since used secondary traps usually contain amalgam particles and dissolved metals they must not be rinsed into the sewer or disposed of into the garbage. Contact a waste disposal vendor to pick up and recycle these traps.

- Check with your mercury amalgam recycler to determine if it is acceptable to include used primary traps and scrap amalgam in the same recycling container.

- If using a cuspidor which may receive dental amalgam particles, have it connected to the dental operatory vacuum system upstream of the amalgam separator.

All recovered liquid waste containing amalgam should be stored in labelled, leak-proof containers in a secure location, in such a manner that an accidental spill, leak or container failure will not result in amalgam waste entering any sanitary sewer or storm drain. If such a location is not available, adequately sized secondary containment should be provided or all floor drains in the area should be capped.

Do not dispose of amalgam wastes into the garbage, the sewer system or mix them with biomedical wastes.

TYPICAL LOCATION OF AMALGAM SEPARATOR

Figure 1. Dry Vacuum System: ISO certified amalgam separator installed before vacuum pump

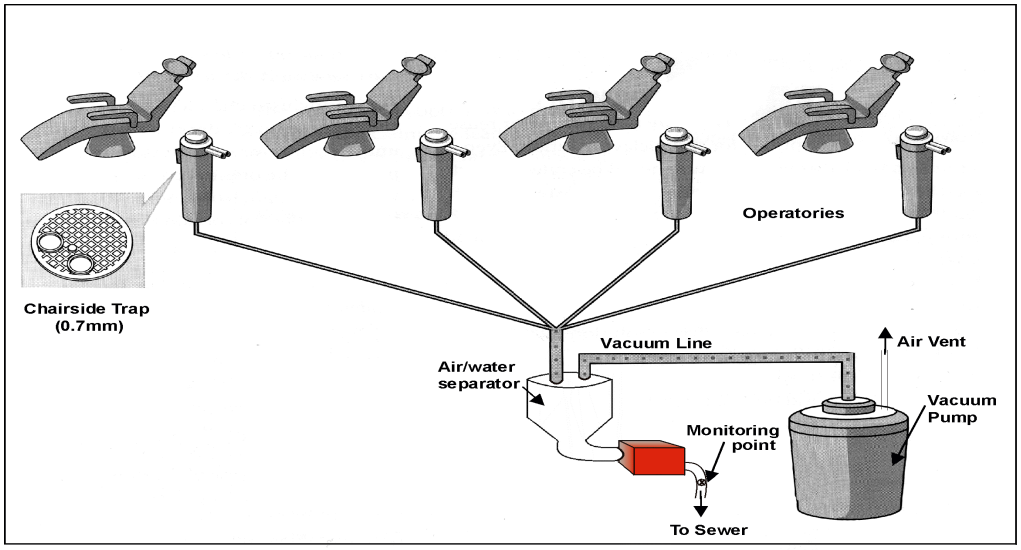
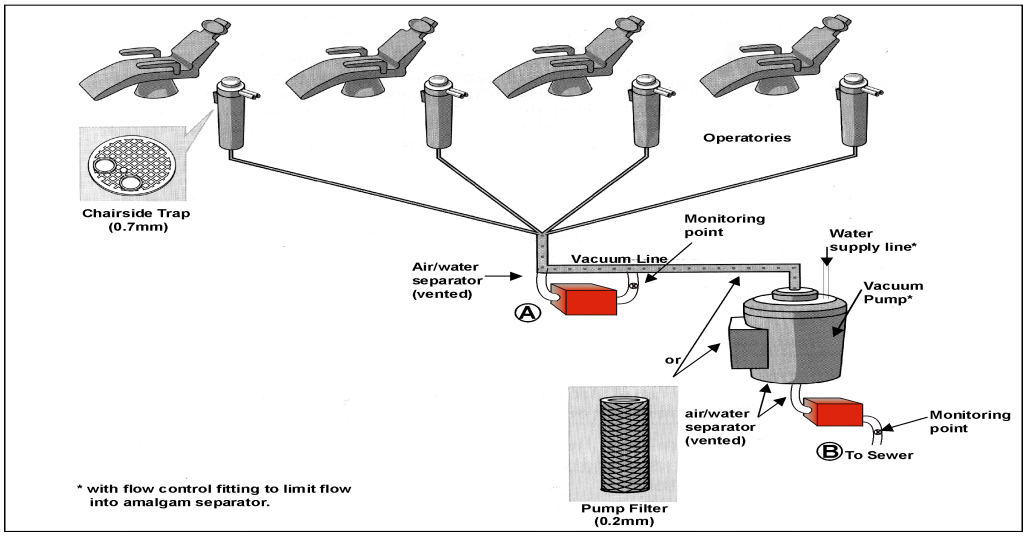


Figure 2. Wet Vacuum System: ISO certified amalgam separator installed A) before vacuum pump or B) after vacuum pump



3.3 X-ray Wastes

The use of x-ray procedures in dental offices generates the following waste types: fixer, developer, cleaner, lead foil and lead shields (aprons). These solid and liquid wastes are best managed as follows:

- Used x-ray fixer, or developer that is mixed with fixer, contains silver and must be either collected for off-site waste management or treated using silver recovery equipment in accordance with *the Code of Practice for Photographic Imaging Operations.* For further information regarding BMPs for used x-ray fixer refer to the CRD's ***Environmental Regulations and Best Management Practices for Photographic Imaging Operations.***

- Used developer, if <u>not</u> mixed with fixer or classified as special waste or restricted waste, may be discharged to the sanitary sewer. Developer should not be discharged to storm drains or septic systems.

- Avoid using x-ray cleaning solutions that may be classified as special waste or restricted waste. For example, some cleaning solutions contain hazardous chromium compounds.

- Collect and return used lead foil or lead shields to the manufacturer or recycle them using a waste disposal vendor. Do not dispose of them in the garbage.

3.4 Cleaning solutions and Disinfectants

Some general cleaning solutions, chemiclave solutions, disinfectants and cold sterilants used in dental procedures may be classified as ***special waste*** under the *BC Special Waste Regulation.* Special wastes can not be disposed of in the sanitary sewer, storm sewer or septic systems. Check the product's Material Safety Data Sheet (MSDS) or contact the supplier to determine if a waste solution could be classified as a special waste.

If classified as special waste, used cleaning or disinfectant solutions should be stored in labelled, sealed leak-proof containers in a secure location in such a manner that an accidental spill, leak or container failure will not result in chemicals entering any sanitary sewer, septic system or storm drain. If such a location is not available, adequately sized secondary containment should be provided for this equipment or all floor drains in the area should be capped.

Hazardous waste disposal vendors can provide pick-up services for special wastes or flammable wastes.

If <u>not</u> classified as special waste, small quantities of cleaning solutions and disinfectants may be discharged to sanitary sewers (but <u>not</u> to storm sewers or septic systems).

Some general BMPs concerning cleaning or disinfecting include:

- minimize the purchase and use of hazardous cleaning or disinfectant solutions
- check the product MSDS for hazardous ingredients and select the least hazardous effective alternative
- avoid discarding excess unused cleaning product to the sewer – use the product for its intended purpose
- use mechanical methods of cleaning and non-hazardous biodegradable products whenever possible
- eliminate or reduce the use of chemiclave solutions by using an autoclave to sterilize instruments
- inspect product containers regularly for damage or leaks

3.5 Pharmaceuticals

Some types of expired pharmaceuticals may be classified as **special waste** under the *BC Special Waste Regulation.* Check the product MSDS or contact the supplier to determine if a waste pharmaceutical is classified as a special waste. Certain types of expired pharmaceuticals may be picked up for disposal by waste disposal vendors. See Section 5 for further information.

Prior to use or recycling, store pharmaceuticals in labelled, sealed, leak-proof containers in a secure location in such a manner that an accidental spill, leak or

container failure will not result in chemicals entering any sanitary sewer or storm drain. If such a location is not available, adequately sized secondary containment should be provided for this equipment or all floor drains in the area must be capped.

Do not dispose of expired or excess pharmaceuticals into the garbage, the sewer system or mix them with biomedical wastes.

3.6 Record Keeping for Special Waste

The following records should be kept by each dental operation if quantities of **special waste** greater than five litres or five kilograms are stored on site:

- list of special wastes and monthly volume generated
- dates of shipment off-site and volume of waste shipped
- name of waste disposal vendor contracted to remove wastes
- all other records required under the *BC Special Waste Regulation*

3.7 Biomedical Waste

Biomedical waste typically generated by dental offices includes: waste sharps, soiled rubber gloves, used swabs, human blood, tissue and body fluids.

In general, biomedical wastes should be handled and disposed of in accordance with the ***Guidelines for the Management of Biomedical Waste in Canada,*** established by the CCME, and any applicable ***WCB Regulations*** .

The discharge of biomedical waste into the sanitary sewer system is prohibited under the *CRD Sewer Use Bylaw*. However the restriction for discharge of human blood, tissue and body fluids only applies to that which is known to contain certain rare viruses.

Human blood and body fluids generated during normal dental practice involving healthy patients are acceptable for discharge into the sanitary sewer or septic system without treatment.

Waste sharps, including needles, scalpels and other sharp objects should be:

- separated from other types of biomedical waste
- placed in a rigid, puncture resistant, leak-proof container (provided by biomedical waste disposal vendors) and labelled “biohazard - waste sharps”
- permanently sealed in the container (when full) and picked up by a biomedical waste disposal vendor for proper disposal

Other types of biomedical waste including soiled rubber gloves, used swabs and other blood or body fluid-saturated items should be:

- separated from waste sharps

- placed in a red bag that is labelled “biohazard”
- stored in a rigid leak-proof container in accordance with the CCME guidelines (referenced above)
- picked up by a biomedical waste disposal vendor for proper disposal

Waste sharps and other types of biomedical waste must not be mixed with, or disposed of as, municipal garbage.

3.8 Non-Hazardous Office Wastes

The following procedures are suggested to help operators improve their overall environmental performance:

- choose products with the least packaging and the highest recyclable material content
- regular office waste generated by dental offices should be recycled whenever possible
- waste paper, aluminum cans, newspaper, glass, cardboard and plastic containers should be recycled
- check with the building manager to find out if any recycling programs are already established in the building

Further information on solid waste reduction and recycling is available in Section 5.

4.0 CODE OF PRACTICE IMPLEMENTATION PLAN

The implementation plan for CRD codes of practice includes the following components:

- education
- inspection
- monitoring
- enforcement
- administration
- review

Regional Source Control program staff will carry out activities related to each component in partnership with each code sector.

4.1 Inspection, Monitoring and Enforcement

Regional Source Control program staff may carry out inspections, examine records or other documents and take samples of effluent for analysis as specified under the sewer use bylaw. Compliance sampling may also be conducted at any time on the effluent from operations regulated under a code of practice. Repeat sampling may be necessary if non-compliance with the code is suspected or high contaminant concentrations are detected in previous samples.

A cooperative, gradually escalating, approach to enforcement will be used for all CRD codes of practice. This approach is established in an enforcement policy that has been approved by the CRD Board.

Where cooperative efforts to achieve compliance using the enforcement policy have failed, warnings and tickets of between $50 and $200 per offence may be issued under the *CRD Ticket Information Authorization Bylaw.* For more serious or continuing offences, fines of up to $10,000 per offence per day may be issued under the sewer use bylaw.

5.0 FOR MORE INFORMATION

SUBJECT	CONTACT	TELEPHONE and/or WEB SITE ADDRESS
Biomedical Waste	BC Ministry of Environment, Lands & Parks	Tel: (250) 356-6200
	Workers' Compensation Board	Tel: (250) 952-3648
BC Special Waste Regulation or Special Waste Handling/Disposal	BC Ministry of Environment, Lands and Parks	Tel: (250) 387-3648 www.elp.gov.bc.ca/epd
Canada-Wide Standard for Mercury in Dental Amalgams	Canadian Council of Ministers of the Environment (CCME)	www.ccme.ca/3e_priorities/3e.html
Code of Practice for Dental Operations or CRD Liquid Waste Control Bylaws	Regional Source Control program	Tel: (250) 360-3256
Code of Practice for Photographic Imaging Operations	Regional Source Control program	Tel: (250) 360-3256
Dental Member Services and Education	Association of Dental Surgeons of BC	Tel: 1-888-396-9888
	Victoria and District Dental Society	Tel: (250) 519-1072
Expired Pharmaceuticals	BC Pharmacy Association	Tel: (604) 279-2053
Export and Import of Hazardous Waste Regulations	*Canadian Environmental Protection Act* Environmental Registry	http://www.ec.gc.ca/ceparegistry/regulations
Hazardous Waste Disposal Vendors	Obtain copy of CRD Recycling directory from CRD Recycling Hotline or Check Telus Yellow Pages under "Waste Reduction and Disposal Services – Industrial"	Tel: (250) 360-3030
Lead Foil Recycling	Kodak Canada Inc.	Tel: (416) 766-8233 ext. 35190
Recycling – General Inquiries	CRD Recycling Hotline	Tel: (250) 360-3030 www.crd.bc.ca
	BC Recycling Hotline	Tel: 1-800-667-4321
Report Hazardous Waste or Chemical Spills	Provincial Emergency program (PEP)	Tel: 1-800-663-3456
Special Waste Transport Licenses	BC Ministry of Environment, Lands and Parks	www.elp.gov.bc.ca/epd/epdpa/sw/swtl/swtl.html

SUBJECT	CONTACT	TELEPHONE and/or WEB SITE ADDRESS
Transportation of Dangerous Goods Act	Transport Canada	http://www.tc.gc.ca
	Transport by rail and highway	Tel: (604) 666-2955
	Transport by air	Tel: (604) 666-5655
	Transport by sea	Tel: (604) 363-0394
	Copies of Regulations and associated materials	Tel: (613) 991-3135
Workers' Compensation Act and Regulations	Workers' Compensation Board of British Columbia (WCB)	Tel: 1-888-621-7233 http://www.wcb.bc.ca
	WCB films and posters	Tel: 1-800-661-2112
	Safety Prevention - Victoria	Tel: (250) 881-3418

5.1 Resource Materials

Copies of the following best management practice documents are available from the Regional Source Control program or through the contact numbers and web site addresses provided:

- *Never Down the Drain – Pollution Prevention Tips for Dental Offices*, San Francisco Water Pollution Prevention Program, Tel: (415) 695-7310.

- *Waste Management Guidelines for King County Dental Offices*, June 1998, King County Hazardous Waste Program, Washington Tel: (206) 263-3062.

- *Handling Hazardous Waste – A Directory for Dentists,* a website updated by King County Hazardous Waste Program, Washington. www.metrokc.gov/hazwaste/dental/

- *Dentistry and the Environment*, Massachusetts Water Resources Authority, January 1998, Tel: (617) 242-6000, www.mwra.state.ma.us/sewer/html/tracpub.htm

- *How to Manage Waste From Your Dental Practice*, Western Lake Superior Sanitary District, Tel: (218) 722-0761.

6.0 GLOSSARY OF TERMS

Amalgam Separator means any technology or combination of technologies, designed to separate amalgam particles from dental wastewater using a process involving sedimentation, filtration or centrifugation.

Biomedical Waste means biomedical waste as defined in "Guidelines for the Management of Biomedical Waste" established by the Canadian Council of Ministers of the Environment (CCME).

Biosolids means treated municipal wastewater sludge that meets quality criteria for beneficial use as a fertilizer or soil amendment product.

Certified Amalgam Separator means any amalgam separator that is certified in accordance with ISO Standard ISO/FDIS 11143: (1999) for "Dental equipment – Amalgam separators" established by the International Organization for Standardization.

Code of Practice means a regulatory document developed by the District that contains mandatory sanitary sewer discharge standards for specific industrial, institutional or commercial sectors.

Collecting Container means that part of an amalgam separator designed for retention of separated amalgam waste for the purpose of disposal.

Contaminant means a substance that is not naturally present in the environment or is present in elevated amounts, which if in sufficient concentration, can adversely affect an environment.

Dental Amalgam means a dental filling material consisting of an amalgam of mercury, silver and other materials such as copper, tin or zinc.

Dental Operation means any operation that carries out dental care, dental hygiene or dental laboratory activities and which produces liquid waste containing mercury or silver.

Effluent means the liquid flowing out of a facility or household into a sewer system or water body.

Flow Control Fitting means a device used to limit the flow of water into a wet vacuum system to a rate that does not exceed the maximum inlet flow rate of a certified amalgam separator installed downstream.

ISO Standard means standard ISO/FDIS 11143: (1999) for "Dental equipment – Amalgam separators" established by the International Organization for Standardization.

Monitoring Point means an access point to a sewer, private drainage system or other sewer system for the purpose of measuring the rate of flow of, or collecting representative samples of, wastewater being discharged from a premise.

Off-site Waste Management means removal of waste to a facility licensed by a province, state or federal government for treatment and disposal in accordance with applicable regulations.

Pollution Prevention means the use of processes, practices, materials and energy that avoid or minimize the creation of processing and other, wastes.

Sanitary sewer means a collection system for domestic, commercial, institutional and industrial wastewater or any combination thereof.

Sharps means hypodermic needles, hypodermic syringes, blades, broken glass and any devices, instruments or other objects that have acute rigid corners, edges or protuberances.

Silver recovery technology means equipment that is designed to recover silver from wastewater produced by photographic imaging operations using such methods as metallic replacement, electrolysis, ion exchange or chemical precipitation. Silver recovery technology includes, but is not limited to, the following types of equipment, electrolytic units, chemical recovery cartridges, chemical precipitation units and ion exchange units.

Special waste means any chemical, compound, mixture, substance or article as defined in the Special Waste Regulation, pursuant to the *Waste Management Act* of British Columbia.

Spill Containment means any impervious structure that surrounds an amalgam separator that is sufficient to hold at least 110% of the largest volume of free liquid in the amalgam separator.

Storm Sewer means a sewer for the collection and transmission of stormwater or uncontaminated water.

Waste Management Act means the *Waste Management Act* of the Province of British Columbia or any legislation that replaces the *Waste Management Act.*

Wastewater means the composite of water and water-carried wastes from residential, commercial, industrial or institutional premises or any other source.

Wet Vacuum System means a dental operatory vacuum system that uses water, which is spun and thrown out within the pump mechanism, to create a vacuum.