



Silver Waste Recycling & Disposal Options for Dental Offices

What are the sources of silver waste in dental offices?

The sources of silver waste in dental offices are used X-ray fixer solution and used X-ray film. Silver is a [characteristic \(D011\) hazardous waste](#).

What are the health effects of silver exposure?

Most people are normally exposed to very low concentrations of silver from food and drinking water, due to the naturally occurring levels of silver in water and soil. Prolonged exposure in people who ingest or breathe elevated (above background) concentrations of silver compounds can cause some areas of the skin and other body tissues to turn gray or blue-gray, a condition named "argyria." Argyria, the most serious side effect of elevated silver exposure, is a permanent condition. However, it is only cosmetic and not known to cause damage to other organs of the body.

How do I properly manage silver waste from dental offices?

Dental offices have two options to manage used X-ray fixer solution properly.

1. Process the fixer solution on-site to reclaim the silver.

There are a variety of silver recovery units available on the market. A silver recovery unit is considered a recycling process, and therefore does not require a hazardous waste permit. Before you purchase a recovery unit, check with your local publicly owned treatment works (POTW) or Wastewater Treatment Facility (WTF) to determine if the dental office will need a POTW or WTF discharge permit from the town or city and to ensure that the level of silver removal it provides meets the POTW's or WTF's discharge standards. If it does, you may rinse the recovery unit's treated process water down the drain. DO NOT wash the recovery process waste down the drain if your dental office is on a septic system.

As a best management practice, a transporter should ship reclaimed silver filter to a silver reclamation facility for removal of the captured silver. The reclaimed silver does not require a manifest, the quantity of sludge is not counted toward generator status and the generator will not be charged a New Hampshire hazardous waste fee. Staff should also monitor the system to ensure there is no "bypass" of silver when the filter is at capacity.

The silver "sludge" must be sent to a reclamation facility in order to receive the "exclusion" from manifesting, generation rates and hazardous waste fees. The sludge cannot be tossed into the trash.

2. Recycle the fixer solution.

Silver bearing fixer solutions are regulated as a hazardous waste when they are shipped off-site for silver recovery. The dental office must notify the New Hampshire Department of Environmental Services (NHDES) Hazardous Waste Compliance Section to obtain an EPA Identification Number. A registered silver recycler/hazardous waste transporter should pick up the fixer solution, manifest the waste, note on the manifest "for recycle," and the generator will not be charged a New Hampshire hazardous waste fee.

3. Dispose fixer and developer after treatment.

Currently on the market, there are products that claim to "treat" fixer and developer to render waste as

non-hazardous and dispose as “regular” trash. If the dental office chooses this option, they **must notify** NHDES Hazardous Waste Compliance Section to obtain an EPA Identification Number, count the waste towards generator status, and comply with the hazardous waste generator requirements.

How do I determine which management option is better for my office?

Ask yourself these questions:

- **Storage** – Does your dental office have enough room to store 55-gallon drums?
- **Transporter pick-up fees** – How much will it cost for a transporter to pick up the used fixer solution every week/month?
- **Spills** – Is someone in your office trained to handle a possible hazardous waste spill? What is the cost of a spill kit?
- **Paperwork** – How much paperwork is involved in manifesting and retaining records?
- **Labor costs** – How much time will it take to manage the waste fixer solution, clean up spills, and do paperwork?

Does used X-ray film contain silver?

Films, negatives and photographic paper may also contain silver. Testing may be required to make this determination, unless the product supplier can provide information that can be used to determine if these materials are hazardous waste when they are no longer useable. For a list of laboratories that test hazardous waste please refer to [Hazardous Waste Testing Labs](#).

What are the best management practices for X-ray developer?

X-ray developer does not contain silver; therefore, it does not typically have to be managed as a hazardous waste.

- **DO NOT** mix X-ray developer with X-ray fixer. The silver-laden X-ray fixer is considered hazardous waste and must be managed accordingly.
- **DO NOT** pour X-ray developer down the drain if the dental office is connected to a septic system. Collect the developer and contract a waste hauler for proper disposal.
- Check with your Publicly Owned Treatment Works or Wastewater Treatment Facility to determine if X-ray developer can be released to the sewer.

Who is a registered silver recycler/hazardous waste transporter in New Hampshire?

Most hazardous waste transporters will pick up silver-bearing solutions and filters and transport to a reclamation facility. The transporters noted below will recycle the fixer solution and/or silver-bearing filters at their facility. When recycling fixer solution remember to write on the manifest “For Recycle,” otherwise the facility will be charged a New Hampshire hazardous waste fee.

Note: The information provided in this document is intended to give only a basic idea of the rules, regulations, and management options which must be considered by dental offices to be in compliance with applicable state and federal regulations. Contact the appropriate NHDES program to verify rules and regulations to ensure the dental office is in compliance.

For More Information

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(603) 271-6460
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