

WASTE MINIMIZATION

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Governor

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SILVER RECOVERY SERVICES

Silver containing wastes are generated during x-ray and photoprocessing at a wide variety of businesses. Silver is a toxic metal regulated under hazardous waste laws (see Hawai'i Administrative rules (HAR) 11-261 Subpart C). Silver is also regulated by county wastewater utilities (see page 2 for county contacts) and prohibited from disposal down the sewer if silver concentrations are above a certain level (different counties have different requirements). This Bulletin provides information on some of the Hawai'i businesses that can assist in managing silver contaminated waste water. For questions on silver recovery systems, proper management and disposal of silver waste, please contact the Department of Health's (DOH) Solid & Hazardous Waste Branch, at 586-4226.

Hawaii Companies that provide silver recovery services include the following:

SERVALL
P.O. Box 90835
Honolulu, Hawaii 96835
Phone: 754-4793
Fax: 394-0796



Film processing may generate waste effluent contaminated with silver; a toxic and hazardous waste.

email: servall@hawaii.rr.com

SERVALL provides silver recovery equipment, for generators of photoprocessing solutions. Services equipment. May return silver value to customer depending on amount.

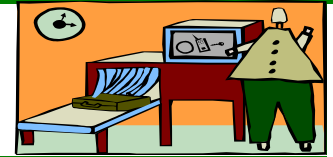
SILVER RECOVERY SYSTEMS OF HAWAII
500 Alakawa Street
Ste 206
Honolulu, HI 96817
Phone: 1-888-814-8819
SILVER RECOVERY SYS-

TEMS provides silver recovery equipment such as ion exchange systems. Collects silver recovery cores for silver refining. Provides pickup service for photoprocessing solutions from x-ray and photoprocessors on all islands. May return silver value to customer depending on amount.

(Continued on Page 2)

SILVER RECOVERY SERVICES (CONTINUED FROM PAGE 1)

COMPARISON OF SILVER RECOVERY METHODS



METHOD	ADVANTAGES	DISADVANTAGES
Metallic Replacement	Low investment; low operating costs; simplest operation	High iron content of effluent; silver recovered as sludge; high silver concentration in effluent unless two units are in series
Ion Exchange	Can attain 0.1-2.00 mg Ag+/L; good for very low Ag limits.	Only for low silver concentration influent; complex operation; high investment.
Electrolytic Recovery	Recovers silver as pure metal; high silver recovery.	Potential for sulfide formation; high silver concentration in effluent.
Precipitation	Can attain 0.1 mg. AG+/L; low investment	Complex operation; silver recovered as sludge; treated solution cannot be reused; potential H2S release.
Reverse Osmosis	Also recovers other chemicals; purified water is recycled.	Concentration requires further processing; high investment; high operating cost.
Evaporation	Minimum aqueous effluent; water conservation.	High energy requirement; silver recovered as sludge; organic contaminant buildup; potential air emissions.

NCNS ENVIRONMENTAL, INC.
 1644 Kahai Street
 Honolulu, HI 96819
 Phone: 847-7875
 Fax: 596-5438
 Provides pickup service for spent photoprocessing businesses. May return silver value to customer depending on amount.

HAWAII BIOWASTE SYSTEMS
 1084 Puuwai Street
 Honolulu, Hawaii 96819
 Phone: 841-1240
 Provides pickup service of processing solutions from x-ray machines from medical and dental facilities, including small and large clinics and hospitals.

For more information, contact DOH's Pollution Prevention and Waste Minimization Coordinator (phone: 586-4226).

(This Bulletin is not a complete listing of silver recovery businesses in the State of Hawai'i. The information here does not constitute an endorsement on behalf of the State of Hawai'i. Final determinations of the proper handling and disposal of waste are the sole responsibility of the waste generator.)

COUNTY WASTEWATER UTILITIES

As stated on page 1, silver waste is regulated by county wastewater utilities, and different counties have different requirements regarding the threshold concentrations at which silver waste is prohibited from being dumped with wastewater. The following are county departments, which may be contacted for information regarding wastewater regulations for silver waste:

COUNTY OF HAWAII
 Department of Public Works: 808-961-8338

CITY AND COUNTY OF HONOLULU
 Department of Wastewater Management: 808-527-5363

COUNTY OF KAUAI
 Department of Public Works:

808-241-6616

COUNTY OF MAUI
 Department of Public Works, Wastewater Reclamation Division
 808-243-7417

