

PHOTOPROCESSING/X-RAY SOURCE CONTROL PROGRAM

Silver is the primary pollutant of concern from the processing of film and photographic paper. Over 75% of the Palo Alto Regional Water Quality Control Plant's (RWQCP's) influent silver originates from some 350 relatively small commercial facilities and institutions including photo shops, printers, graphic artists, photographers, dentists, chiropractors, clinics and others. Less than 35% of the silver originates from photoprocessing and silver plating at relatively larger manufacturing facilities ("industry"). Approximately 5% comes from residential sources including home photoprocessing.

Public Involvement

A written facility survey, site visits, and a series of workshops were held to obtain input to the Photoprocessing/X-ray Ordinance development process. A mailing list of all facilities and a Photoprocessing Subgroup of the Metals Advisory Group were established as vehicles for information exchange. The *Silver Lining* newsletter and other special notices are now mailed to all facilities as needed to distribute new information.

Requirements

The Photoprocessing/X-ray Ordinance requires all facilities to either haul spent fixer (and similar "spent solutions" with very high silver content) off site for recycling or to recover the silver on site and obtain a permit for the discharge of treated water to the sanitary sewer. Treated solutions must not exceed a maximum concentration of 0.5 mg/l of silver unless specific water reduction techniques are employed which allow use of a 1.0 mg/l limit. The appropriate limit must be met prior to dilution with flow from bathroom, cooling, or other processes. Self monitoring and RWQCP monitoring is employed. Due to the difficulties small facilities have in meeting these limits, more than 90% of the approximately 350 facilities are hauling waste off site rather than treating waste on site.

Because washwater (as opposed to fixer/bleachfix) contains only about 10% of the silver waste generated from photoprocessing, it need not be treated for small facilities (less than 100 gallons of fixer used per month) or where the washwater meets the appropriate limit without treatment. In general, developer need not be treated because of its relatively low silver content.

Permits and Inspections

Facilities deciding to treat spent solutions on site must obtain a permit that requires quarterly to weekly self monitoring, depending upon facility size. Facilities deciding to have spent solutions hauled off site for silver recovery submit a Hauler Certification, indicating who will be handling their spent solutions. Both "discharging" and "hauling" facilities submit an annual report in February documenting their compliance. Inspections of discharging facilities are conducted annually and inspections of hauling facilities occur when irregularities in paperwork occur.

Hauling Spent Solutions Off Site

A number of companies are in the business of collecting spent solutions for off site silver recovery. These companies must charge a minimum fee to recover the cost of the pick-up service. In November 1993, a new alternative for Small Quantity Commercial Sources became available: drop-off of spent solutions at the Regional Water Quality Control Plant the first Saturday of the month. The cost per gallon is higher than pick-up service costs, but there is no minimum fee. This alternative may therefore be helpful for very small photoprocessors who don't mind making the trip. Local businesses may phone 650-496-6980 to make an appointment or to get more information. Another option for businesses is a similar program run by the Santa Clara County; call (408) 299-7300 for information.

Residential Program

Residents of the service area are encouraged not to discharge spent fixer to the sewer. Brochures are distributed to chemical sales outlets requesting that home hobbyists save their fixer and bring it to the Regional Water Quality Control Plant from 8:00 a.m. to 4:30 p.m., Monday through Saturday. Residents may also bring spent fixer along with other hazardous wastes to the monthly Household Hazardous Waste Drop-off Program, which is generally the first Saturday morning of each month [call (415) 496-6980 for exact times].

Results

Thanks to the cooperation of businesses and institutions in our service area, the maximum silver concentration discharged to the Bay has been dramatically reduced from 14 parts per billion (ppb) in 1989 to 0.4 ppb in 1995, a 97% reduction (see Figure 1). During 1995, 1996, and 1997, almost all effluent sample had silver levels below 0.2 ppb, the laboratory detection limit. With continued help from everyone involved, the plant will continue to meet its 2.3 ppb discharge limit consistently. Progress is especially gratifying because the silver concentration in clams found near the outfall has also steadily declined during this period (see Figure 2).

Selenium Toner

In 1993, a new brochure was developed requesting that selenium toner (used in black and white artistic work) not be discharged to the sewer. The toner is a hazardous waste and must be hauled off site or brought to the drop-off programs described above. The brochure was distributed to photoprocessing chemical sales outlets and the issue was discussed in an issue of the *Silver Lining* and other publications.

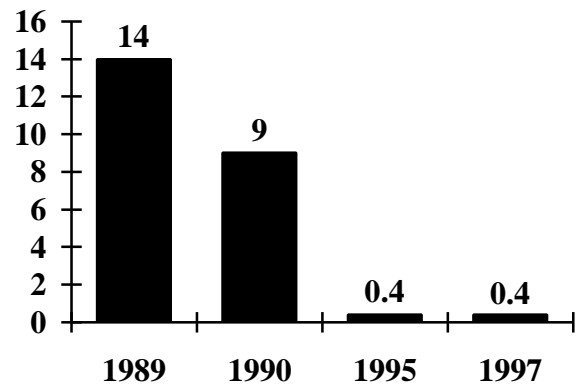


Figure 1: RWQCP Silver Discharge Concentration (maximum; micrograms per liter)

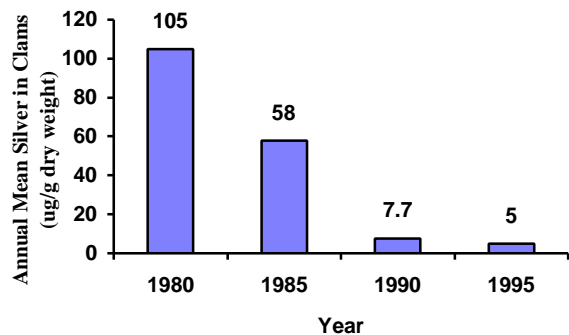


Figure 2: Silver Concentration in Clams near Sand Point
Data source: United States Geological Survey