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**CITY OF SAN DIEGO PUBLIC UTILITIES DEPARTMENT  
INDUSTRIAL WASTEWATER CONTROL PROGRAM**

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**CERTIFICATION OF COMPLIANCE WITH BEST MANAGEMENT PRACTICE  
REQUIREMENTS FOR SILVER-RICH SOLUTIONS**

Facility Name \_\_\_\_\_

Facility Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Mailing Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Owner Name \_\_\_\_\_ Phone Number (\_\_\_\_\_) \_\_\_\_\_

Contact Name \_\_\_\_\_ Title \_\_\_\_\_ Phone Number (\_\_\_\_\_) \_\_\_\_\_

**SEE BACK OF FORM FOR DEFINITION OF SILVER-RICH SOLUTION**

- 1. How are silver-rich solutions disposed of?  
 Hauled off-site by a hazardous waste hauler  
 Treated on-site and discharged to sewer

- 2. Does this facility generate an annual average of more than 0.5 gallons per calendar day of silver-rich solutions?      Yes    No

- 3. \_\_\_\_\_ I am personally familiar with the operations at this facility and I have reviewed the BEST  
Initials     MANAGEMENT PRACTICE REQUIREMENTS FOR SILVER RICH SOLUTIONS on  
the back of this form.

- 4. \_\_\_\_\_ I hereby certify that no wastes containing recoverable silver will be discharged to the sewer  
Initials     without benefit of pretreatment.

- 5. Initial one of the following:

\_\_\_\_\_ This facility currently meets all Best Management Practice requirements of the certification.  
Initials     Operational procedures and employee training are in place to ensure continuing compliance  
throughout the certification period.

\_\_\_\_\_ This facility currently meets all Best Management Practice requirements of the certification,  
Initials     except for the following deficiencies which will be corrected within 30 days of signatory date.

- 6. \_\_\_\_\_ I am aware of the potential for significant penalties for submission of false information,  
Initials     including the possibility of fines and imprisonment for knowing violations.

\_\_\_\_\_  
\_\_\_\_\_

- 7. Name \_\_\_\_\_ Title \_\_\_\_\_  
(Print)

Signature \_\_\_\_\_ Date: \_\_\_\_\_  
(If not the owner, attach copy of written authorization.)

**WHITE COPY: COMPLETE AND RETURN TO ADDRESS ABOVE**  
**CANARY COPY: POST ON-SITE AND MAKE AVAILABLE TO PROGRAM PERSONNEL UPON REQUEST**

## **BEST MANAGEMENT PRACTICE (BMP) FOR SILVER-RICH SOLUTIONS**

All facilities generating silver-rich solutions must comply with the Best Management Practice Requirements shown below. Silver-rich Solutions contain sufficient silver for cost-effective recovery, either on-site or off-site. These solutions include used fix and bleach-fix solutions, low replenished (low-flow) washes following a fix or bleach-fix solution, and stabilizers for the washless minilab film and paper processes.

### **I. SILVER-RICH SOLUTION MANAGEMENT REQUIREMENTS:**

**A. Either: (1) Haul silver-rich spent film processing solutions off-site for recovery or disposal, or (2) Using technology that is equivalent to or exceeds the equipment listed below, based on the volume of silver-rich solutions generated by each piece of equipment per day, pretreat all silver-rich spent film processing solutions to remove silver prior to discharge of the solutions to sewer; operate and maintain silver recovery equipment so that it provides the percent recovery for which it was designed.**

**(a) If the equipment generates an average of less than 0.5 gallons/day of silver-rich solutions:** treat silver-rich solutions using a single chemical recovery cartridge (CRC) with manufacturer specified flow control, or alternative technology providing at least 90% silver recovery or management.

**(b) If the equipment generates an average of 0.5 to 20 gallons/day silver-rich solutions:** treat silver-rich solutions using two chemical recovery cartridges in series with manufacturer-specified flow control, or an electrolytic unit followed by a chemical recovery cartridge with manufacturer-specified flow control, or alternative technology providing at least 95% silver recovery or management.

**(c) If the equipment generates an average of more than 20 gallons/day silver-rich solutions:** treat silver-rich solutions using an electrolytic unit plus two or more CRCs with manufacturer specified flow control or an electrolytic unit plus a precipitation unit, or alternative technology providing at least 99% silver recovery or management.

**Note: RECOVERY SYSTEMS SERVING MORE THAN ONE PROCESSOR MUST BE DESIGNED TO MEET REMOVAL REQUIREMENTS FOR THE COMBINED FLOW.**

### **II. SELF-MONITORING AND RECORD-KEEPING REQUIREMENTS:**

**A. For each silver recovery system in operation:**

**1. Test the silver concentration in the recovery system effluent at least once every three months, using silver test paper.** If the paper turns black, the recovery system is not operating properly and needs immediate attention. Cease discharge and take all measures necessary to restore recovery system efficiency prior to re-initiating discharge. (Facilities whose silver recovery systems are serviced by a contract maintenance service at a frequency of at least once every three months are exempt from this requirement.)

**2. Maintain a silver recovery log** to record flow through the silver recovery system and test results resulting from (1) above, if applicable.

**B. If more than one silver recovery system is used:**

Develop and maintain a list of silver recovery systems in use and their location, and document which processors each recovery system serves. Maintain the list on-site and make it available to Wastewater Pretreatment Inspectors upon request.

### **III. REPORTING REQUIREMENTS:** (Facilities generating less than 0.5 gallons/day silver-rich solution are exempt)

**A. By December 15th and June 15th of each year:** submit a statement to this office certifying that, during the previous six months, all silver-rich solutions generated at your facility have been either: (1) treated on-site to remove no less than the percentage of silver required by the BMP, prior to disposal to sewer, or; (2) hauled off-site for treatment and disposal. A Certification Form will be mailed to your facility for signature approximately five weeks prior to the due date.

### **IV. DEFINITIONS:**

**1. % silver recovery:** The percent of silver recovered from the silver-rich solutions by the silver recovery treatment system, calculated as follows:

$$\% \text{ recovery} = \frac{1 - \text{Concentration (in mg/l) silver in effluent}}{\text{Concentration (in mg/l) silver in influent}}$$

**2. CRC:** A chemical recovery cartridge which recovers silver through a process known as metallic replacement.

**3. Electrolytic Silver Recovery:** A method of recovering silver in which a direct current is applied across two electrodes immersed in a silver-rich solution.

**4. Metallic Replacement:** A method of recovering silver from silver-rich solutions by an oxidation-reduction reaction with elemental iron and silver thiosulfate to produce ferrous iron in solution and metallic silver sludge. The device used is commonly called a chemical recovery cartridge (CRC).

**5. Silver Recovery System:** One or more silver recovery treatment units which, alone or in combination, are used to treat a given silver-rich solution to remove silver prior to discharge of the solution to the sanitary sewer.