



## PHOTOGRAPHIC WASTES – PUB 27

### Introduction

This information brochure describes the requirements for discharging waste from photographic operations to the sewer system.

### Background

Photographic processing laboratories produce a variety of chemical wastes. The main chemicals of concern are silver, ammonia and sulphur compounds.

Silver compounds accumulate in the solid by-products (biosolids) from wastewater treatment plants and may limit the potential for recycling this valuable nutrient resource. They can also have a toxic effect on the environment. The Corporation is therefore concerned to minimise silver discharge to its sewers.

Since silver is a precious metal, it is also in the interest of photo lab operators to minimise their wastes, and therefore reduce their chemical costs.

Ammonia and sulphur compounds can, under certain conditions, produce noxious gases or corrosive substances in the sewer that might be a danger to Corporation personnel or accelerate damage to the sewer fabric.

### The P.U.R.E. Code of Practice

The Corporation's requirements concerning the discharge of photographic processing wastes are the same as those set out in the Photographic Industry Code of Practice, published by Photographic Uniform Regulations for the Environment (PURE), a division of the Photographic and Imaging Council of Australia (PICA).

The Code of Practice was developed in consultation with government environment agencies, water utilities and other key players in the industry from all states, and was first published in November 1991, and has been regularly updated.

The Code aims to achieve best environmental and waste management practices throughout the industry whilst ensuring its continued economic viability.

### Summary of Requirements

Waste chemical solutions from photographic processing laboratories are only to be discharged to the sewer in accordance with the following requirements:

- An industrial waste permit is required by all waste generators who discharge process or rinse waters to the sink, even where some chemical effluent is being taken off the site.
- In most cases, new installations will not be required to connect to a dilution tank.
- Silver-bearing wastes are to be directed to an approved silver recovery system or stored for collection by an appropriate waste transporter. Non silver-bearing wastes may be directed to the sewer.
- Chromium cleaners are not to be used.
- Acid cleaners must be neutralised before discharge to sewer.

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- The use of copper pipework is discouraged as corrosion can result with prolonged use of photographic chemicals.
- All chemicals must be stored in accordance with requirements set by other authorities. Spills must not be able to drain to the sewer.
- A program of regular testing, and the keeping of a log book, is required to ensure optimum use of chemicals and minimising of wastage.

### Detailed Requirements

Liquid photographic wastes may be discharged after pretreatment at the point of waste generation, as long as a permit to discharge industrial waste has first been obtained.

Where on-site pre-treatment is not feasible, collection and transport to an approved waste treatment or disposal site is permitted. Transport must be by an approved liquid waste or silver recovery company.

For most photographic operations, pre-treatment consists of recovering silver from the silver-bearing wastes.

#### 1. Discharge Categories

These requirements apply to the owners or operators of the following processes or establishments:

- waterless minilabs
- water-wash minilabs
- X-ray and microfilm laboratories
- graphic arts
- secondary schools
- other photographic laboratories

Home hobbyists may comply voluntarily if they wish.

For processes or establishments other than those listed above, the owner/operator should discuss suitable arrangements with the Industrial Waste section of the Corporation.

#### 2. Testing

Bleach-fix and film fixer baths are to be regularly tested with approved test strips for pH and silver content to identify cases of over-replenishment.

Chemical supply companies will provide dischargers with a list of recommended silver contents for comparison. A list of approved test strips can be obtained from PURE or from chemical suppliers.

#### 3. Silver Recovery Systems

The effluent from a silver recovery system must not contain more than 50 milligrams of silver per litre (mg/L) or more than 25 mg/L of iron above the iron level in untreated waste if 'steel wool' is used in the recovery system.

Silver recovery systems must be warranted by the manufacturer or distributor that the effluent quality out of the system meets the criterion of  $\leq 50$  mg/L of silver.

For existing silver recovery systems which are not warranted by the manufacturer and/or distributor, the waste discharger must submit an effluent sample from the system to a National Association of Testing Authorities (NATA) certified laboratory for silver analysis. A copy of the analysis certificate must be submitted with the industrial waste discharge application.

PURE is able to supply dischargers with a list of warranted systems.

For all systems, dischargers must have the effluent analysed for silver content by a NATA-certified laboratory every 3 months. Results are to be kept on site, recorded in the log book and submitted to the Water Corporation if requested.

#### 4. Tray Work

Where film or paper processing is carried out in trays of chemicals, the silver-bearing chemicals must be passed through a silver recovery system, unless the total quantity of silver averages less than 2 grams per day over a full week. Other chemical wastes can be discharged to sewer.

## **5. Data Sheets and Log Books**

Data sheets must be compiled and kept up-to-date by the waste generator. Completed sheets must also be submitted to the Corporation when application for an industrial waste discharge (or application for discharge amendment) is made.

Every waste generator is to keep a log book, which must be available for inspection by Corporation officers. The log book should include:

- Record of photo waste liquid collections
- Silver analysis results from quarterly tests of the effluent from the silver recovery system
- Up-to-date copy of the data sheet

## **6. Dilution Tanks**

For most photographic installations dilution tanks will not be required. In large installations a dilutions tank may be required through which all photographic waste, including effluent from the silver recovery system, must pass. The capacity of the tank will be dependent on the situation. The tank must be accessible to a Corporation officer during normal business hours. The tank can include any dilution tank or other pit already on the property provided it is downstream of the discharge point.

## **7. pH of Wastewater**

The pH of the wastewater at the point of discharge to sewer should be within the range pH6-10. This may be tested by the Corporation from time to time.

## **8. Chromium and Acidic System Cleaners**

Chromium system cleaners are not permitted to be used. Acidic cleaners are to be neutralised prior to discharge to the sewer.

## **9. Wash Water Limiter**

A wash water limiter or control system is to be used on any water wash processor so that:

- Water is only used when film or paper is being processed, and
- Water usage is reduced to the minimum levels sufficient for adequate washing.

Note: Some processors have a limiter built-in, and its presence and operation should be confirmed.

## **10. Bleach Tank Overflow**

Overflow from the film bleach tank is to be collected for on-site recycling by the addition of appropriate regeneration chemicals supplied by the chemical manufacturer.

Alternatively, a low-flow film bleach can be used if it can be demonstrated to yield similar effluent characteristics to those when using the regeneration approach.

## **11. Sink Waste and Tank Cleaning**

For existing sites, sink waste generated by cleaning activities such as washing racks can continue to be discharged to sewer through the existing plumbing system.

When processor tanks are dumped for cleaning, silver-bearing chemicals must be passed through a silver recovery system, or carted offsite. Acid cleaners must be neutralised by addition of a suitable neutraliser supplied with the cleaner, prior to discharge from the processor. This applies to existing installations as well as new ones.

## **12. Copper Pipes**

Discharge to copper drainage pipes is permitted but discouraged.

## **13. Bromide-Based Paper**

All photoprocessing laboratories must convert from bromide-based photographic paper to chloride-based photographic paper. If this cannot be done immediately, the operator must submit to the Corporation in writing why this can not be done.

**Table 1: Summary of Requirements by Discharge Category**

REQUIREMENTS	Waterless Minilabs	Water-wash Minilabs	Other Photo Labs	X-ray and Microfilm	Secondary Schools	Graphic Arts
<b>Permit to discharge industrial waste from Water Corporation</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Dilution Tank</b>	No	No	case-by-case	case-by-case	No	case-by-case
<b>Log Book and Data Sheet</b>	Yes	Yes	Yes	Yes	No	Yes
<b>Silver</b> Recovery system or carted off-site	Yes	Yes	Yes	Yes	Yes	Yes
<b>Bleach Tank Overflow</b> Recycled or Low Flow Bleach	Yes	Yes	Yes	No	No	No
<b>pH Testing of Bleach Fix Bath</b> (regular testing )	Yes	Yes	Yes	Yes	Yes	Yes
<b>Washwater Limiter</b>	No	Yes	Yes	Yes	Yes	Yes
<b>Silver Recovery System</b> Effluent analysis (quarterly)	Yes	Yes	Yes	Yes	No	Yes
<b>Silver Testing of Fixer Bath</b> (regular testing)	Yes	Yes	Yes	Yes	Yes	Yes

For home hobbyists, compliance is voluntary.

For categories other than those listed, the discharger should negotiate appropriate conditions with the Corporation. Such negotiations are based on the principle that the photographic industry should remain viable, whilst accepting the responsibility to adopt environmental best practice.

### Applying to Discharge Photographic Wastes

When applying to the Corporation for permission to discharge photographic wastes to the sewer you will need to prepare:

- Application to Discharge Industrial Waste
- Application Supplement 6 – Photographic and X-ray Services

These documents can be downloaded from [www.watercorporation.com.au/indwaste](http://www.watercorporation.com.au/indwaste). Other documents may be required depending on the nature of the business.

### More Information?

You can find more information about the [Industrial Waste](http://www.watercorporation.com.au/indwaste) service on our website at: [www.watercorporation.com.au/indwaste](http://www.watercorporation.com.au/indwaste) Or if you prefer, please call us on 13 13 95.

The code of practice, and datasheet, can be downloaded from the PURE section of the Photographic and Imaging Council of Australia (PICA) website at [www.photoimaging.com.au](http://www.photoimaging.com.au).