Industrial Waste

Information Brochure

For further information, please visit our website at http://www.watercorporation.com.au/indwaste
Or if you prefer, call us on 13 13 95, or visit your nearest Water Corporation office

PHOTOGRAPHIC WASTES – IWPUB27

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.
- Acid cleaners must be neutralised before discharge to sewer.
- 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-1) or more than 25 mg L-1 of iron above the iron level in untreated waste if 'steel wool' is used in the recovery system.

Manufacturers and/or distributors of recovery systems must provide a warranty that the effluent quality out of their systems meets the limit of 50 mg L-1 of silver and must specify the operating conditions under which the warranty will apply.

For existing silver recovery systems which are not warranted by the manufacturer and/or distributor, the waste discharger must submit an effluent sample from his system to a National Association of Testing Authorities (NATA) certified laboratory for silver analysis. A copy of the analysis certificate must be attached to the data sheet (see 5. below) and submitted with an 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

A specimen copy of a typical data sheet is attached to this brochure. Copies of a typical logsheet can be downloaded from the PICA website, www.photoimaging.com.au.

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 6-10. This may be tested by Corporation officers from time to time.

8. Chromium System Cleaners

For all discharge categories, supply of chromium system cleaners is to be stopped and replacement provided. Neutralizer is to be supplied with acidic cleaners.

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 checked first.

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 discouraged but permitted, provided the owner of the property acknowledges in writing prior to installation that s/he is aware of the risks to the drainage system and accepts them. A copy of this letter must be attached to the industrial waste application.

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
Permit to discharge industrial waste from Water Corporation	Yes	Yes	Yes	Yes	Yes	Yes
Dilution Tank	No	No	case-by-case	case-by-case	No	case-by-case
Log Book and Data Sheet	Yes	Yes	Yes	Yes	No	Yes
Silver Recovery System, OR Carted Off-site	Yes	Yes	Yes	Yes	Yes	Yes
Bleach Tank Overflow Recycled, OR Low Flow Bleach	Yes	Yes	Yes	No	No	No
pH Testing of Bleach Fix Bath (regular testing)	Yes	Yes	Yes	Yes	Yes	Yes
Washwater Limiter	No	Yes	Yes	Yes	Yes	Yes
Analysis of Silver Recovery System Effluent (quarterly)	Yes	Yes	Yes	Yes	No	Yes
Silver Testing of Fixer Bath (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.

Making Application to Discharge Photographic Wastes

When making application to the Corporation for permission to discharge photographic wastes to the sewer you need to fill out:

- A Water Corporation Application to Discharge Industrial Waste.
- A PURE Datasheet for Trade Wastewater (copy attached to this brochure)

Please Note:

The site drawing on p3 of the PURE datasheet must show the position of all processors, sinks, silver recovery system, dilution tank (where required) and size and all interconnecting pipe work as far as the connection to the Corporation's sewer.

A copy of the Industrial Waste Service application form can be downloaded from our website.

Attachments

The "P.U.R.E. Datasheet for Trade Wastewater" is attached to this brochure

More Information?

Copies of the PURE Code of Practice can be obtained from your chemical supplier, or from:

PURE,
9 Murphy St
Richmond
Vic, 3121

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

You can find more information about the Industrial Waste service on our website at http:\\www.watercorporation.com.au/indwaste

Or if you prefer, please call us on 13 13 95.

P.U.R.E Datasheet for Trade Wastewater

for use when applying for an Industrial Waste Permit with the Water Corporation (WA)

1. Business Type

Definition	Examples (please tick as appropriate)		
X-ray process – Professional *(up to 10 films per day of 35x43mm or equivalent)*	Chiropractor Doctor – GP	Dentist Other (_____)	Vet clinic
Photo Process – Educational	School Other (_____)	TAFE	University
Photo Process – Hobby	Home Hobbyist	Tray Developer	
Waterless Minilab	with 1 or 2 processors		with 3 or more
Waterwash Minilab	with 1 or 2 processors		with 3 or more
Photo Outlab	Waterless	Waterwash	Combination
Wholesale photo lab	Waterless	Waterwash	Combination
Professional photo lab	Waterless	Waterwash	Combination
Graphic Arts Film Processing	Yes		
Industrial Dischargers	Photo waste re-processor Waste receival depot		Motion picture
X-ray (larger sites)	Radiology Practice Industrial x-ray	Hospital (general, private, dental)	
Other photo process	Microfilm	Microfiche	Other (_____)

2. Business Name and Site Details

Trading Name: _____

Industrial Waste Permit No: _____

Address (where discharge will occur): _____

Address (for mailings): _____

Operating Hours:

Sun	Mon	Tue	Wed	Thur	Fri	Sat

3. Processor Equipment

Photo Processors	How many ?
Waterless minilabs – colour film processors	
Waterless Minilab – colour paper processors	
Waterwash – colour film processors	
Waterwash – colour paper processors	
Black and White – film processors	
Black and White – paper processors	
Waterwash Graphic Arts film processors	
Waterwash X-ray film processor	
Dry X-ray film processor	
Other photographic processors	

Processor Type	Manufacturer	Model #

4. Silver Recovery System Used (if you have one)

Type of System	Manufacturer	Model Number	Serviced by	PURE regn No.	NATA lab for testing	NATA lab Tel #

5. Balancing Tank/Pit Details

Do your processor waste liquids drain to a balancing tank or pit before discharging to main sewer?

YES NO If YES, what is the size of the pit? _____L

6. Liquid Waste Transport Arrangements (if waste liquid is taken away for treatment or disposal)

Type of liquid taken to another place	Developer	Fix	Bleach Fix	Other	A Mixture?
Usual collection volume (L)					
Collection frequency (eg. weekly)					
Company name of Approved Transporter or Waste Treater					
EPA (or other) Licence No.					
Where is the liquid taken?					
Are receipts issued for volume? (YES/NO)					

7. Chemistry Regeneration and Water Minimisation

Do you regenerate (or reconstitute or reuse) the following?

Developer YES/NO Fixer YES/NO Bleach Fix YES/NO

Do you have water-limiters installed? YES/NO if YES, please give detail:_____

_____

8. Suppliers of photo chemistry

Usual Supplier Brand Name	Type of Chemical

9. Daily Production (usual average)

Square meters of film used per day _____ OR Number x-rays per day _____

Number of X-ray patients per day _____ OR Rolls of film per day _____

Other (please detail): _____

10. Declaration

Are you (the undersigned) the owner of the property where discharge to sewer will occur? YES/NO

Trading Name: _____

Name of applicant: _____

Tel: ( ) Fax: ( )

Signature: Date: / / 2001

11. Site Drawing – show the flow of waste liquids

Draw a floor plan of the layout of your photographic processing area. Keep is simple, but make it clear. Name the various items of equipment and **show the liquid flows.**

Be sure to show the location of:

- ⇒ **film and paper processors**
- ⇒ **sinks**
- ⇒ **storage areas**
- ⇒ **Silver Recovery Unit**
- ⇒ **balancing tank**
- ⇒ **recirculation or regeneration units**

Also show:

- **sample points**
- **discharge points to sewer**
- **flow reduction devices**
- **floor drain**
- **water supply**
- **waste piping**

Trading Name: _____

If insufficient space or you have an accurate printed site plan, please attach a separate sheet.