Business Pollution Prevention Program

Photo Processing

Thurston County Hazardous Waste Program

September 2004
Acknowledgments

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The Thurston County Hazardous Waste Program serves small businesses in Thurston County and the cities of Bucoda, Lacey, Olympia, Rainier, Tenino, Tumwater, and Yelm.

Special Thanks

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September 2004
Introduction

Thurston County Environmental Health, a division of the Public Health and Social Services Department, conducted a business technical assistance campaign for photo processors in Thurston County. The campaign was funded by solid waste tipping fees and a grant from the Washington State Department of Ecology.

The photo processing industry was identified as a good candidate for technical assistance due to the variety of potentially toxic chemicals used during film development. Silver, a toxic and persistent heavy metal, is generated in significant quantities during this process. The photo industry was selected in 1993 to take part in a Thurston County technical assistance campaign for Printing, Photography, and Medical Offices. Site visits found that fifty percent of the photo processors were not in compliance with waste management regulations at the beginning of the campaign. Even though all photo processors achieved compliance as a result of the 1993 effort, the industry was selected again for technical assistance due to the continued use of silver-bearing chemicals as well as changing technology in photo development and waste management methods.

In May 2003, Thurston County identified both commercial and home-based businesses thought to be conducting photo processing operations. Once the list of potential businesses was completed, the county contacted each business with an offer of free technical assistance. The technical assistance effort took place in July, August, and September of 2003. The focus of the campaign was to educate business owners about compliance with Article VI of the Thurston County Sanitary Code (also known as the Nonpoint Source Pollution Ordinance, Appendix A), to reduce hazardous waste generation, and to improve waste management practices. The Ordinance was designed to prevent pollution of water resources by requiring proper management of hazardous materials.

The Nonpoint Source Pollution Ordinance is based on the framework of the Washington State Dangerous Waste Regulations. This regulation is found in Chapter 173-303, Washington Administrative Code. Section –090 of the state regulation characterizes dangerous wastes (hazardous materials) as those solid wastes that exhibit any of the following characteristics.

a. Ignitability: a fire hazard. Generally, a material with a flash point less than 60°C (140°F).
b. Corrosivity: a solid or liquid with a pH of less than 2.0 or greater than 12.5.
c. Reactivity: a material that reacts violently with water, generates toxic gases when mixed with water, is capable of detonation or explosive reaction if heated under confinement, or is capable of detonation or explosive reaction at standard temperature and pressure.
d. Toxicity: a material that causes local or systemic detrimental effects in an organism, including asphyxiation, irritation, allergic sensitization, systemic poisoning, mutagenesis, teratogenesis, and/or carcinogenesis.

The businesses included in this campaign are classified as Small Quantity Generators (SQG) of hazardous wastes. Small Quantity Generators (as defined in WAC 173-303-070) may not generate more than 220 pounds of hazardous waste per month or batch, and may not accumulate or store more
than 2,200 pounds at any time. Thurston County regulates only those businesses with SQG status, while the Washington State Department of Ecology regulates businesses with Medium Quantity Generator (MQG) and Large Quantity Generator (LQG) status.

Goals

The Business Technical Assistance and Education Campaign is an element of the Thurston County Business Pollution Prevention Program. Success of the technical assistance and compliance elements of the Business Pollution Prevention Program is measured by goals established in the 1998 Hazardous Waste Plan for Thurston County. The goals are:

1. Protect ground water, surface water, soils, sediments, and private property from hazardous materials and hazardous waste contamination.
2. Increase the rate of waste reduction, which conserves resources and reduces demand for disposal and recycling services.
3. Increase the percentage of hazardous waste collected (that cannot be prevented through waste reduction in the first place).
4. Reduce the amount of hazardous materials that is improperly stored, improperly disposed, and accidentally spilled into the environment.
5. Reduce damage to collection and transfer vehicles, and disposal equipment, and reduce disruption of treatment facilities by ensuring hazardous waste is kept out of these facilities or systems.
6. Reduce potential for causing publicly owned facilities such as the landfill or sewage treatment plants to exceed pollutant discharge limits.

Methodology

The campaign began by conducting research about the photo processing industry. In order to gain knowledge about the various types of processing, county staff visited three local businesses and observed active photo labs first-hand. This information helped county staff design a site inspection plan that would be appropriate for both large and small photo processing facilities. Information was also obtained from educational literature produced by the Washington State Department of Ecology and the United States Environmental Protection Agency. This literature, which was reformatted and modified for applicability in Thurston County, was used to produce fact sheets, inspection forms, surveys, and other documents. Lastly, waste disposal and chemical information was obtained from local disposal vendors and film manufacturers.

Industry research revealed that silver-bearing chemicals represent the highest level of concern in the photo processing industry. Silver is a toxic, persistent heavy metal, which is produced by all types of film development processes. Since silver does not naturally degrade, it has the potential to negatively impact the environment and human health for many years if released or consumed. This lack of rapid
degradation can also potentially cause silver to accumulate to high levels in the environment as well as the human body. As a result the Lacey, Olympia, Tumwater, and Thurston County Wastewater Alliance (LOTT), Olympia’s wastewater treatment facility, limits silver discharges to 0.2 parts per million (ppm) in wastewaters. Photographic chemicals may also contain other toxic materials such as cyanide, hydroquinone, corrosives, and additional heavy metals.

Despite its toxic characteristics, silver is also a precious metal, which has value in the scrap metal market. In an effort to help businesses reclaim silver from various photo chemicals, numerous companies have designed silver recovery devices that can be utilized by large and small businesses alike. By removing silver from photo chemicals, the reclaimed metal can be collected and sold for profit, while the remaining solution is rendered non-hazardous and may be disposed and treated in the municipal sewer system. This allows businesses to potentially profit from silver, while reducing waste disposal costs. Since many companies manufacture these devices, significant research was conducted to evaluate the overall effectiveness. Although these devices have the potential to be profitable, they also require frequent maintenance and proper use in order to function effectively. Thus, it was soon apparent that equipment maintenance would be an important focus of the campaign. For those businesses choosing to send their silver waste to other vendors for treatment, a list of companies was researched and distributed.

Some businesses may not generate enough silver-bearing waste to justify purchasing silver recovery systems or utilize large-scale waste recycling companies. In order to assist these smaller businesses, local disposal options were researched. One local company, Don’s Camera, has been conducting free silver recycling for local photographers for many years. Since this service may also benefit local businesses, Thurston County approached Don’s Camera and inquired about their ability to handle additional businesses waste. They were happy to extend their services to small businesses, but expressed concern about exceeding treatment capacity, thus additional local recycling options were needed. Earlier in the campaign, county staff met with the Evergreen State College Photography Department for an instructional site visit. During that time, it was discovered that Evergreen also utilized a silver recovery system for their silver-bearing waste. Since their system was not used to capacity, Thurston County asked if they would extend their recycling capabilities to include waste from local businesses. The college agreed and their contact information was added to the County’s educational literature and fact sheets.

After conducting industry research, staff needed to identify all home-based and commercial businesses that could potentially generate photo processing waste. Since the Washington State Department of Licensing (DOL) is responsible for issuing business licenses, the first step was to obtain a current business list utilizing the Standard Industrial Code (SIC) system. This system assigns a unique SIC code to specific industry groups, which is recorded and managed by DOL. Staff used the specific SIC codes for the photo processing industry to obtain a comprehensive list of businesses. This list allowed county staff to identify smaller businesses that may not be listed in local telephone directories and thus would be overlooked. The SIC code list was then compared with telephone directories and business lists from past technical assistance campaigns. Since other types of businesses with non-photographic SIC codes may also be conducting photo processing (i.e. drug stores, discount stores), telephone directories were again used to complete the potential business list.
The original list included over 200 businesses, many of which were amateur photographers with business licenses, while the remainder were no longer in business. This number was then narrowed down to 49 businesses, 25 of which did not conduct photo processing or could not otherwise be contacted. The final list of businesses included in the campaign (24 total) is located in Appendix B. Beginning in July 2003, an invitation letter was sent to the 24 businesses selected for the campaign. The letter (Appendix C) announced the upcoming campaign and explained the details of the technical assistance visits and compliance audits. A brief history of the Business Pollution Prevention Program was also included. Businesses were then called approximately one week later to schedule a site visit. Site visits were conducted during July, August, and September of 2003.

For participating businesses, a commercial parcel inventory form was used to collect information about a business’ source of drinking water, volume of chemical products on site, solid waste and wastewater disposal, floor drains, historical land use, hazardous waste generation, and spill/emergency response preparedness (Appendix D). The form contained questions regarding silver recovery equipment as well as other industry-specific topics. When appropriate, educational literature about specific types of waste or management practices was provided to the business.

An on-site assessment of hazardous waste management was performed as a component of the technical assistance visit. The assessment focused on hazardous materials used by each business and, if possible, suggestions were made to voluntarily adopt Best Management Practices (BMPs) as described in Thurston County’s “Photo Processing Wastes” fact sheet (Appendix E). BMPs are non-regulated practices designed to reduce generation of hazardous waste, encourage the use of less-toxic products, promote recycling, and make improvements in housekeeping and hazardous waste management. All businesses were given the photo fact sheet as well as other fact sheets related to individual on-site practices (i.e. fluorescent lamp disposal, secondary containment, etc).

After the technical assistance visit took place, the business representative was notified as to whether their business was in compliance with the Thurston County Sanitary Code. A Notice of Compliance (Appendix F) was issued to businesses that were in compliance with the Code. Businesses that were not in compliance were issued a Notice of Non-Compliance (Appendix G) and given a mutually agreed upon time frame in which to correct the problem(s). If the problem(s) was corrected, a Notice of Compliance was issued during a follow-up visit.

A customer survey (Appendix H) with a self-addressed stamped envelope was also given to each business participating in the campaign. The survey asked businesses to describe any changes they had made in their hazardous waste management practices as a result of the campaign. It also asked businesses how they learn about hazardous waste management, how useful they found the campaign, and their impressions on the quality of service provided by Thurston County’s Business Pollution Prevention Program.

A Certificate of Environmental Achievement, signed by the members of the Board of Health, was awarded to all businesses in compliance with the provisions of the Nonpoint Source Pollution Ordinance.
Follow-up calls or site visits were conducted in early 2004 to evaluate BMPs. Since BMPs are voluntary and not considered compliance issues, businesses were given educational information and recommendations. A total of eight (8) follow-up visits were conducted.

Results

Compliance Summary

Of the 24 businesses receiving site visits, nineteen (79%) were already in compliance with the Sanitary Code at the time of the initial visit, while five (21%) were not. At the end of the campaign, 22 (92%) were in compliance, one (4%) was pending compliance, and one more (4%) was no longer in business. Compliance summaries from the 1993 and 2003 photography campaigns are listed below in Tables 1 and 2. The specific issues that resulted in noncompliance are listed in Table 3.

Table 1: Compliance Results - 2003

<table>
<thead>
<tr>
<th>Compliance Status</th>
<th>At the Time of the Initial Visit</th>
<th>At the End of Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>In compliance</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Out of compliance</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>No longer in business</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pending compliance</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total Sites</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 2: Compliance Results - 1993

<table>
<thead>
<tr>
<th>Compliance Status</th>
<th>At the Time of the Initial Visit</th>
<th>At the End of Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>In compliance</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Out of compliance</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>No longer in business</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Sites</td>
<td>26</td>
<td>26</td>
</tr>
</tbody>
</table>
Table 3: Sanitary Code Compliance Issues

<table>
<thead>
<tr>
<th>Compliance Issue</th>
<th>At the Time of the Initial Visit</th>
<th>After the Follow-Up Visit</th>
<th>Pending Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>No secondary containment</td>
<td>3 of 24</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Improper disposal in on-site septic system</td>
<td>1 of 24</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Improper disposal in LOTT sewer system</td>
<td>2 of 24</td>
<td>None</td>
<td>1 of 24</td>
</tr>
<tr>
<td>No disposal receipts</td>
<td>2 of 24</td>
<td>None</td>
<td>1 of 24</td>
</tr>
</tbody>
</table>

Secondary Containment and Proper Disposal

Table 4 lists the quantities of hazardous materials and waste found on-hand at the photo processing businesses at the initial visit and whether they are stored in proper secondary containment. These quantities represent a snapshot in time. They will fluctuate over time as product is used and wastes are disposed. It should also be noted that the amount of hazardous waste is a monthly total, which includes silver waste that is treated in the silver recovery systems on a daily basis. Since many of the photographic chemicals are purchased in a concentrated form and mixed with water, the final waste stream is composed mostly of water.

Table 4: Secondary Containment and Proper Disposal

| Amount of secondary containment installed as a result of site visits (estimate) | 299 gallons |
| Amount of hazardous materials (unused product) verified to be safely stored (estimate) | 901 gallons |
| Amount of hazardous waste verified to be safely disposed (estimate) per month | 2,835 gallons |

Best Management Practices

BMPs are divided into three categories: silver recovery, photographic chemicals, and general photo lab management. Since silver recovery systems, also known as metal replacement or chemical recovery cartridges (CRCs), require ongoing maintenance and regular use in order to function properly, specific BMPs were proposed. The other general waste management BMPs are designed for all other types of photographic chemical products and wastes. These are listed in the “Photo Processing Wastes” factsheet. The general photography lab management BMPs were evaluated during the site visits and are listed below in Table 5:
Table 5: Best Management Practices

<table>
<thead>
<tr>
<th>Best Management Practice (BMP)</th>
<th>Number Who are Already Doing</th>
<th>Number of Times Suggested</th>
<th>Number of Times Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP: MSDS Sheets</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Spill Kits</td>
<td>22 of 24</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>BMP: Recycle Batteries</td>
<td>20 of 24</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>BMP: Regenerated/low replenishment solutions</td>
<td>16 of 24</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>BMP: Employee chemical training</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Adequate PPE</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Adequate ventilation</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Eyewash/safety shower</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Proper chemical storage locations</td>
<td>22 of 24</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>BMP: Properly labeled chemicals</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: No Unknown chemicals</td>
<td>24 of 24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>BMP: Disposal of outdated/unused chem.</td>
<td>21 of 24</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total BMPs</strong></td>
<td><strong>257</strong></td>
<td><strong>19</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

Goals

Protect ground water, surface water, soils, sediments, and private property from hazardous materials and hazardous waste contamination.

- Five businesses achieved compliance with the Thurston County Nonpoint Source Pollution Ordinance.
- Thurston County verified that 19 businesses were already conducting proper management and disposal of hazardous materials.
- Three businesses improved their chemical storage practices by installing adequate secondary containment. This included the installation of spill containment pads and/or sealing floor drains to prevent hazardous material discharges into the environment.
- Approximately 299 gallons of hazardous materials were moved into secure storage with secondary containment.
- Three businesses stopped discharging spent photographic chemicals into on-site septic systems (one) or the LOTT sewer system (two).
Increase the rate of waste reduction, which conserves resources and reduces demand for disposal and recycling services.

✓ The campaign verified that 16 businesses conduct on-site chemical treatment, which recycles silver and eliminates the need for transportation, storage, and disposal of photographic fixer waste.
✓ Three additional businesses have agreed to utilize local vendors for silver recycling.
✓ Sixteen businesses currently regenerate photo solutions or utilize automated systems that reduce chemical consumption.
✓ All 24 businesses in the campaign received the “Photo Processing Wastes” fact sheet, which contains detailed waste reduction information and BMP’s.
✓ The campaign revealed that 16 businesses plan to begin or expand their digital photo processing, which produces no chemical waste.

Increase the percentage of hazardous waste collected (that cannot be prevented through waste reduction in the first place).

✓ As a result of the campaign, the Evergreen State College Photography Department agreed to offer free silver recycling services to local businesses.
✓ Four businesses opened accounts with the Thurston County HazoHouse for proper waste disposal.
✓ Three businesses agreed to recycle camera batteries.
✓ Two businesses agreed to recycle used fluorescent tubes.

Reduce the amount of hazardous materials that is improperly stored, improperly disposed, and accidentally spilled into the environment.

✓ One business purchased spill containment pallets for drum storage.
✓ Two businesses sealed floor drains to prevent accidental discharges to the environment as a result of spills.
✓ Two businesses purchased additional spill supplies.
✓ One business agreed to reduce their chemical stockpile. This particular business was storing excessive amounts of chemicals, which resulted in tall stacks (greater than six feet) of containers. By reducing these tall stacks, spills resulting from earthquakes and accidents were less likely to occur.
✓ One business agreed to store chemicals on lower shelves, which reduces spills resulting from earthquakes.
✓ One business agreed to move their chemical storage containers into an area with no floor drains.
Three businesses stopped discharging spent photographic chemicals into on-site septic systems or the LOTT wastewater treatment system.

Reduce damage to collection and transfer vehicles, and disposal equipment, and reduce disruption of treatment facilities by ensuring hazardous waste is kept out of these facilities or systems.

- The campaign verified proper disposal of all types of hazardous wastes produced by photo processors.
- Chemical storage containers were inspected to verify proper labeling.
- The campaign verified that all businesses maintained copies of Material Safety Data Sheets (MSDS) for employees, which provides safety, handling, and disposal information for various chemicals.
- The campaign verified adequate employee training for all businesses.

Reduce potential for causing publicly owned facilities such as waste disposal facilities or sewage treatment plants to exceed pollutant discharge limits.

- The campaign verified that 16 businesses properly service their silver recovery systems on a regular basis.
- One business stopped discharging photographic waste into their on-site septic system, preventing potential disruption to biological processes in the system.
- In order to prevent exceedances for silver in wastewater, all business were encouraged to regularly test their silver recovery systems. Each business was provided information regarding silver testing procedures and where to obtain the necessary testing supplies.
- All businesses were provided information regarding general silver recovery system maintenance, which prevents accidental discharges resulting from system malfunctions.
- All businesses were reminded to maintain up-to-date service records for their silver recovery equipment.
Customer Survey

Eight of 24 (30%) businesses that received a customer survey during the initial site visit completed and returned the form. A summary of the customer survey form is listed in Table 6.

### Table 6: Customer Survey Response

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>No change needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the visit(s) provide you with helpful information on the proper management and reduction of hazardous products and waste?</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2. Did the visit assist you in making changes in your hazardous materials management practices?</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disposal costs</td>
<td>Where to obtain disposal information</td>
<td>Understanding regulations</td>
<td>Extra time required for proper management and disposal</td>
</tr>
<tr>
<td>3. What concerns you most about proper hazardous waste management?</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4. Did you have any specific questions during the visit?</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Please describe:</td>
<td>County regulations, state regulations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. If so, did the county specialist provide specific answers that addressed your question?</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6. Was the specialist knowledgeable?</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td>No change needed</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. How informative were the fact sheets/materials you received during the visit?</th>
<th>Very</th>
<th>Uninformative</th>
<th>Somewhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Overall, did your business benefit from the technical assistance program</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>No change needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. In addition to the technical assistance program, TCEH provides businesses with an information line, disposal site, and a newsletter. Do you currently use or will you use these services?</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>No change needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country waste disposal site – 4 responses</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. Are there additional services TCEH can provide?</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>No change needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Additional Comments?</th>
<th>1). We appreciate your visit. 2). It was a good learning experience.</th>
</tr>
</thead>
</table>

All eight (8) businesses responding to the survey thought that the county specialist was knowledgeable and that the campaign provided helpful information. Five businesses (63%) felt that the fact sheet was very informative, while the other three businesses (37%) felt it was somewhat informative. Overall, six businesses (75%) stated that they benefited from the campaign.

When asked if the businesses had any specific questions during the visit, only one (13%) said yes. Similarly, six businesses (75%) said that no changes were needed in the way hazardous materials are managed.
Conclusions

This single-industry campaign focused on photo processors. Most single-industry campaigns focus on business types that represent a risk to public health and the environment. This risk is illustrated by improper storage, use, and disposal of hazardous materials. The photo processing industry was selected for technical assistance due to the variety of potentially toxic chemicals used during film development. Even though all photo processors achieved compliance after a similar campaign in 1993, the industry was again selected to receive technical assistance due to the continued use of silver-bearing chemicals as well as changing technology in photo development and waste management methods.

The majority of businesses inspected (79%) were in compliance with the Thurston County Sanitary Code. Two businesses (8%) were not in compliance for inadequate secondary containment and three others (13%) were conducting improper waste disposal. Otherwise, the majority of businesses properly managed their on-site waste treatment systems or utilized third-party waste disposal vendors. Regular maintenance of silver recovery systems likely contributed to the high level of compliance. Thirteen of 16 businesses had their recovery systems serviced by the vendor on a regular basis, which eliminates the need for staff to conduct their own maintenance and inspections. Most importantly, this type of professional service helps ensure proper equipment functioning, which greatly reduces the risk of unintentional waste discharges.

Upon completion of the campaign, several trends were identified, which are listed below. Additional trends are listed in Table 7.

1) Sixteen businesses (66%) utilized on-site silver recovery systems, which has increased 28% since the 1993 campaign.

2) Sixteen businesses (66%) plan to expand their digital photo processing in the future, which produces no chemical waste.

3) In general, the photo processing industry was very knowledgeable regarding health and safety. For example, all 24 businesses (100%) were already practicing the following BMPs prior to the initial inspection:
   a. Adequate personal protective equipment (gloves, goggles, etc)
   b. Adequate ventilation in the processing areas
   c. Eyewash and/or safety showers
   d. Properly labeled chemicals
   e. No unknown or unmarked chemicals
   f. All businesses with more than one employee possessed Material Safety Data Sheets (MSDS) for their chemicals.

4) The majority of businesses (79%) treat their silver waste on site, which eliminates the need for additional waste storage, thus reducing the potential for spills or leaks.

5) Seventeen businesses contain automated photo processing machines, which commonly utilize specific chemical products or manufactured chemical cartridges. Twelve of the 17 (71%) businesses currently utilize a chemical delivery service to supply these chemicals.
Since the individual chemical containers are transported in secondary plastic tubs, no secondary containment is required for these items at the business location.

**Table 7: Additional Trends in Photo Processing**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of home-based sites</td>
<td>6</td>
</tr>
<tr>
<td>Number of commercial sites</td>
<td>18</td>
</tr>
<tr>
<td>Sites using on-site septic</td>
<td>5</td>
</tr>
<tr>
<td>Sites using LOTT</td>
<td>19</td>
</tr>
<tr>
<td>Sites conducting automated developing</td>
<td>17</td>
</tr>
<tr>
<td>Sites conducting manual developing</td>
<td>9</td>
</tr>
<tr>
<td>Sites producing digital images</td>
<td>14</td>
</tr>
<tr>
<td>Sites planning to increase/conduct future digital imaging</td>
<td>16</td>
</tr>
<tr>
<td>Sites using pick-up waste services</td>
<td>17</td>
</tr>
<tr>
<td>Sites using mail-away waste services</td>
<td>11</td>
</tr>
<tr>
<td>Sites using drop-off waste services</td>
<td>4</td>
</tr>
<tr>
<td>Sites using silver recover systems</td>
<td>16</td>
</tr>
</tbody>
</table>

The high level of compliance with the Sanitary Code was also evident in the customer survey responses. Based on customer comments, it appears that the photo processing industry is very knowledgeable about waste management and regulations. For example, when respondents were asked what concerns them most about waste management, the most common response was safety and liability, not the understanding of regulations. None of the respondents were concerned about knowing where to obtain disposal information. When asked if the campaign helped the business make changes in the way they manage hazardous materials, six out of eight (75%) stated that no changes were needed. Similarly, seven out of eight respondents (88%) did not have any specific questions during the site visit regarding photo waste management.

The final stage of the campaign involved BMP follow-up visits or phone calls, which were conducted in the spring and summer of 2004. A total of 19 BMPs were recommended during the initial visits. After the follow-ups were complete, it was discovered that eight BMPs (42%) were implemented as a result of the campaign.

After concluding the campaign and follow-up visits, it was clear that the photo processing industry requires less technical assistance than other industry sectors. Compliance rates following the initial site visits increased from 50% in 1993 to 74% in 2003. Since the Washington State Department of Ecology has also distributed educational literature, it is believed that the industry has received adequate technical assistance over the last decade, which is also evident in the responses to questions #2 and #4 of the Customer Survey (Table 6). Additionally, 16 businesses (67%) plan to begin or expand their digital photo processing, which produces no chemical waste. As digital photographic technology increases in quality, affordability, and popularity, it is likely that chemical developing will decrease in the coming years.
Appendix A:

Compliance with the Nonpoint Source Pollution Ordinance
Compliance with the Nonpoint Source Pollution Ordinance

This fact sheet describes the Thurston County Health Department’s approach to implementing the hazardous waste sections of the Nonpoint Source Pollution Ordinance (Article VI of the Sanitary Code) and explains the procedures that govern its enforcement. The ordinance, which took effect in May 1993, is part of the Business Pollution Prevention Program’s efforts called for in the county’s Hazardous Waste Plan and supported by Thurston County and its incorporated cities.

PROACTIVE AND REACTIVE FIELD INSPECTIONS

The Health Department implements the ordinance with either a proactive or reactive approach.

Proactive inspections – those in which the Health Department takes the initiative to approach businesses rather than waiting for inquiries or complaints – will be directed, within a limited time frame, at all businesses of a given type, and will be preceded by an opportunity for education about the ordinance. The process is designed to resolve all violations while avoiding inequitable or arbitrary enforcement of the ordinance among different competitors in the same field.

When the Health Department receives a complaint from the public about a violation of the ordinance, the Department reacts to the report and investigates. In these cases, enforcement action may be taken. Nonetheless, the goal is still to correct the violation rather than issue tickets, so field staff will work as constructively as possible with the violator to make necessary changes.

“The Health Department’s approach to compliance assumes that the majority of hazardous waste generators want to ‘do the right thing’ and simply need to recognize how to make it happen.”
WHAT THE ORDINANCE SAYS

The following is an excerpt from Article VI, Section 4 of the Sanitary Code:

- 4.1 (a) Moderate risk waste and petroleum products including, but not limited to, oil and grease, shall be disposed of by recycling or use of a hazardous waste management facility operating under interim status or with a permit issued by EPA or an authorized state. . . . No person shall, intentionally or negligently, dump or deposit, or permit the dumping or depositing of any such waste in any other manner, including onto or under the surface of the ground or into surface or ground water.

- 4.1 (b) Moderate risk waste, petroleum products, and hazardous materials shall be kept in containers and shall be stored in such a manner and location that if the container is ruptured, the contents will not discharge, flow, be washed or fall into surface water or ground water.

- 4.1 (c) Any person violating this section or owning or in possession of the premises, facility, vehicle or vessel from or on which waste is discharged or placed in violation of this section, shall notify the Department of the location and nature of the violation and shall immediately take or cause to be taken all necessary steps to prevent injury and protect waters from pollution.

IF HEALTH DEPARTMENT STAFF OBSERVE A VIOLATION OF ARTICLE VI . . .

Field staff have three options for response to violations. The ordinance specifies that compliance officers must respond to any violation they believe has occurred or is occurring. The three options are:

- an informal notification to the violator explaining the violation and recommended options for correcting the problem;

- a Notice of Violation, which begins formal administrative enforcement; and

- a Notice of Civil Infraction, which is similar to a traffic citation in that it carries a fine and is resolved in court.

Which option is used will depend on the type and severity of the violation and prior opportunities the violator has had to learn about and comply with the law. It is important to understand that, regardless of the initial response chosen and time frame allowed, the ordinance requires the Health Department to follow-up with increasingly stronger measures until the violation is eventually corrected.

IF YOU RECEIVE AN INFORMAL NOTICE CONCERNING COMPLIANCE WITH ARTICLE VI . . .

An informal notification offers an opportunity to comply voluntarily. The Health Department’s approach to compliance assumes that the majority of hazardous waste generators want to “do the right thing” and simply need to recognize how to make it happen. The informal notification would typically consist of a letter or notice of noncompliance following a voluntary technical assistance visit during which a violation was observed. It is intended to help the business understand the reason for the violation and the options available for correcting the problem. This notification will not specify an exact time frame for compliance.
IF YOU RECEIVE A FORMAL COMPLIANCE INSPECTION . . .

A formal compliance inspection involves a visit to your business by a county hazardous waste specialist. The specialist will examine your facilities and practices with respect to two issues:

- management of hazardous wastes and petroleum products (all must be recycled or sent to a permitted disposal facility); and

- storage of hazardous wastes, petroleum products and hazardous products (all must be kept from reaching ground or surface water).

At the end of a compliance inspection, you will receive a Notice of Compliance, a Technical Assistance Notice of Noncompliance, or a Notice of Violation, described briefly here.

A Notice of Compliance documents your good-standing at the time of the inspection. If you are managing your hazardous wastes properly – either recycling them at your facility or sending them to another facility for disposal or recycling – you will receive a Notice of Compliance for you to file as a record of your status. If you are recycling the waste on site, the inspector will need to see the recycling methods and/or equipment used and may want to verify the proper operation of the equipment. If you are sending the waste off site, the inspector will need to see documentation of at least one recent pick-up that includes the name and phone number of the collection service.

Note that a Notice of Compliance documents your status only with respect to the Nonpoint Source Pollution Ordinance and only on the day of the inspection. It does not preclude a later change in status if your practices change, or if new information indicates the inspection results were inaccurate. It also does not comment on compliance with any other laws you may be subject to, such as fire, building, zoning, licensing, and worker safety regulations.

A Technical Assistance Notice of Noncompliance identifies why the site is out of compliance. A Technical Assistance Notice of Noncompliance typically is used for lack of secondary containment or lack of waste disposal documentation. It is signed by both the violator and the inspector and includes a mutually agreeable grace period for the site to come into compliance.

A Notice of Violation is the first step in the “formal” administrative enforcement process. Field staff would typically issue a Notice of Violation (NOV) in cases where the alleged violator has already had at least one opportunity to learn about, and comply with, the ordinance. It may also be issued immediately in cases of flagrant or particularly negligent violations. The NOV can be presented to the violator in person or sent by registered or certified mail. It will state the section of the ordinance that was or is being violated, a brief description of facts supporting this finding, a list of actions that must be taken to resolve the matter, and a date by which these actions must be taken. The process for responding to an NOV and your rights under this process are described on the back of the NOV. Some important elements of this process are listed below.

- You have the right to appeal. You may do so by submitting a written request for an administrative hearing to the Health Officer at the Thurston County Health Department, 2000 Lakeridge Dr. SW, Olympia WA 98502-6045, within ten days of the date of issuance of the Notice of Violation.
• Corrective actions are postponed until after the hearing. If you file a request for a hearing, you may temporarily postpone taking corrective actions pending the hearing outcome.

• Administrative hearings allow an opportunity to present evidence that you did not violate the ordinance. Evidence may include testimony of witnesses, affidavits and documents, and other exhibits such as photographs.

• You may appeal the results of an administrative hearing. If you are unsatisfied with the results of an administrative hearing, you may appeal these findings and actions to the Thurston County Board of Health.

If You Receive a Notice of Civil Infraction...

Violations of Article VI of the Sanitary Code are civil infractions enforceable by the court and subject to fines of up to $498 (including court costs). Once a Notice of Violation has been issued, the process of issuing and enforcing a civil infraction will not begin until and unless the administrative process described above runs its course without resolution. If you do not, in the specified time frame, take the actions required by a Notice of Violation, or those required by a subsequent administrative or Board of Health hearing, you will be issued a Notice of Civil Infraction (a “ticket”), which is handled similarly to a traffic citation. You may:

• pay the penalty;

• request a hearing to contest or explain the circumstances of the alleged violation; or

• ignore the ticket, which would automatically result in your being found guilty and responsible for the full amount of the fine.

The Notice of Civil Infraction, when issued, explains in more detail your options and rights under the civil process.

If you would like a copy of the Thurston Count Nonpoint Source Pollution Ordinance or any part of the Sanitary Code, or if you have questions on this enforcement process, please call the Business Pollution Prevention Program at (360) 786-5457 or TDD (360) 754-2933, Monday through Friday from 8:00 a.m. to 5:00 p.m or see our website, http://www.co.thurston.wa.us/health/ehp/hwaste.html

Other Hazardous Waste Management and Disposal Fact Sheets
• Antifreeze, Used Oil, & Oil Filters
• Disposal of Petroleum-Contaminated Absorbent Materials
• Floor Drains
• Hazardous Waste Disposal
• Oil/Water Separators
• Residential Heating Oil Tanks
• Secondary Containment

• Solvents and Parts Cleaners
• Storing and Labeling Hazardous Waste
• Used Shop Towels

March 2003
Appendix B

Photo Processor Business List
Photo Processor Business List

1) Aaron Nelson Photography
2) Artful Moments and Wide Awake Photography
3) Carl Cook Photography
4) Cherished Moments
5) Costco Wholesale
6) Department of Natural Resources
7) Don’s Camera
8) Duncan Green Photography
9) Evergreen State College
10) Kits Camera, Capital Mall
11) Kits Camera, Lacey
12) Mark Noble Photography
13) Michael Stone Photography
14) Picture People
15) Rite Aid, Martin Way, Lacey
16) Rite Aid, Whitman Lane, Lacey
17) Rite Aid, Yelm
18) Rob Hess Photography
19) Target, Lacey
20) Target, Olympia
21) Walgreen, Olympia
22) Walgreen, Lacey Blvd., Lacey
23) Walgreen, Martin Way, Lacey
24) Wal-Mart
Appendix C:

Letter of Invitation
August 1, 2003

Business Name
Address
City, State, Zip

RE: 2003 Technical Assistance Campaign – Photo Processing

Dear Business Owner:

This summer, the Thurston County Business Pollution Prevention Program is conducting a Technical Assistance Campaign for photo processing businesses. The purpose of our campaign is to assess the storage and handling of photo chemicals and offer information regarding proper disposal. In addition, we will also suggest Best Management Practices as they pertain to waste disposal, recycling, and waste reduction. **If you do not use photographic chemicals, please let us know by August 13th and you will not be included in this campaign.** Contact me at (360) 754-4111 ext. 6451 or by email, zulewsb@co.thurston.wa.us.

During our technical assistance visit (less than 30 minutes), Thurston County staff will provide information to help your business gain or maintain compliance with the Thurston County Nonpoint Source Pollution Ordinance as well as local sewer regulations (LOTT Wastewater Alliance). These ordinances require the proper storage and disposal of hazardous materials. If issues are found that cannot be corrected during the visit, we will conduct a follow-up visit to help your site attain compliance. Businesses that are not interested in participating in a technical assistance visit will receive drop-in compliance audits.

The Thurston County Environmental Health Division has been conducting Technical Assistance Campaigns since 1994. These past campaigns have included wrecking yards, automobile repair shops, marinas, commercial painters, furniture manufacturers, and school chemistry laboratories. The photo processor campaign is a continuation of our efforts to protect the public health and the environment by providing free assistance to businesses that store and dispose of hazardous wastes.

You may have already participated in a site visit during our last campaign in 1994. However, since those visits were conducted, disposal regulations have changed. In addition, new disposal services and technologies are available that may save you time or money. If you have already participated in our last campaign, Thurston County staff will verify that your business is still in compliance with local regulations and help identify ways you can take advantage of these new services.

We will be contacting you in the near future to schedule a time for your technical assistance visit. If you have any questions or would like to schedule the timing of our visit, please call me at 754-4111, ext. 6451. We look forward to working with you.

Sincerely,

Brad Zulewski, R.S.
Environmental Health Specialist
Appendix D:

Photo Processors - Commercial Parcel Inventory
# Photo Processors - Commercial Parcel Inventory

<table>
<thead>
<tr>
<th>Visit Date:</th>
<th>County Staff:</th>
<th>Time On Site:</th>
<th>Time Off Site:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Name:</td>
<td>WHPA (name &amp; capture Zone):</td>
<td>Mailing Address:</td>
<td></td>
</tr>
<tr>
<td>Site Address:</td>
<td>Mailing Address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner or Manager:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mailing Address:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parcel #</td>
<td>EPA ID #:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **Nature of Property:**
   - [ ] Commercial
   - [ ] Home-based business
   - [ ] Government Site (Circle one: County, City, State, Federal)

2. **Is the facility:**
   - [ ] Owned
   - [ ] Rented
   - [ ] Leased

3. **What year was business started?**

4. **What kind of past businesses have been conducted at the property?**

5. **Generator Status:**
   - [ ] CESQG
   - [ ] MQG
   - [ ] LQG

6. **Has there been past environmental inspections at the facility?**
   - [ ] Yes, Year ______ Type of inspection: [ ] No
   - [ ] Unknown

7. **Does facility have floor drains?**
   - [ ] No
   - [ ] Yes
   - [ ] Not Applicable
   **If yes, where do they drain?**

8. **What is facility’s means of wastewater disposal?**
   - [ ] City sewer
   - [ ] Community septic
   - [ ] Unknown
   - [ ] On-site septic (Type: Gravity, Mound, Sand filter, Pressure dist., other_________________________)


<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. What is your facilities drinking water source?</td>
<td>☐ City water ☐ Community well ☐ Private well ☐ Unknown</td>
</tr>
<tr>
<td>Name of water system (well #)</td>
<td></td>
</tr>
<tr>
<td>10. Is there an on-site well?</td>
<td>☐ Active ☐ Inactive ☐ Decommissioned</td>
</tr>
<tr>
<td>If well was decommissioned</td>
<td>Method:  Year:</td>
</tr>
<tr>
<td>Was well decommissioned by a licensed driller?</td>
<td></td>
</tr>
<tr>
<td>11. What type of photo processing is conducted on-site (include equipment types)?</td>
<td></td>
</tr>
<tr>
<td>Are digital images produced? If so, what percentage?</td>
<td></td>
</tr>
<tr>
<td>Do you plan to utilize or increase the use of digital technology in the future?</td>
<td></td>
</tr>
</tbody>
</table>
12. What types of waste are generated?

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Liquid/Solid</th>
<th>Qty.</th>
<th>Containment</th>
<th>Waste or Product</th>
<th>Disposal Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixer/Bleach Fix</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C-41 RA Bleach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washless Stabilizer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop Bath</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Cleaner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wash Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solution Filters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batteries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluorescent Tubes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRTs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Containers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrap Film &amp; Paper</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper Cores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Use Cameras</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. What is the monthly amount of waste generated (lbs.)? If liquid, assume 8.5 lbs. per gallon.

If silver recovery system is used, what is the monthly volume of treated waste?
14. What type of disposal service is used (list vendor)?
- Pick-up services
- Mail-away services
- Drop-off services
- other (explain)

15. Silver recovery systems:
   Does the facility have on-site silver recovery systems?
   If yes, what type:
   Does the unit have a sampling port?
   How often is it used?
   How is it serviced (vendor, owner)?
   Service frequency?
   Service records or log book (date of last entry)?
   Are silver or pH tests conducted?  
   If yes, how often (date of last test)?

16. Are MSDS sheets available?

17. Which type of spill kit(s) does the facility have?
   Is spill kit(s) adequate for size and scope of potential spill?
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Are any waste products disposed in the septic system (if applicable)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Are bleach solutions regenerated?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Are low replenishment developers used?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Are low replenishment bleach-fixers used?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Are disposal receipts available?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Do employees receive training regarding chemical management and disposal (list type)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Is adequate personal protective equipment available for employees (list)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Does the lab area contain adequate ventilation?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
27. Does the lab contain an eyewash station or safety shower?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
</table>

28. Are chemicals stored in their proper locations (not on counter tops or floor)?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
</table>

29. Are chemicals properly labeled?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
</table>

30. Does the lab contain unknown or unmarked chemicals?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
</table>

31. Does the lab contain unused or outdated chemicals.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Date Implemented</th>
</tr>
</thead>
</table>

**Notes and Comments:**

**Recommendations:**
Appendix E

Photo Processing Wastes
Photo Processing Wastes

"No type of photographic waste may ever be disposed in a septic system."

Photo developing produces various hazardous wastes, which must be managed properly to protect the environment and worker health and safety. The Thurston County Nonpoint Source Pollution Ordinance requires that hazardous chemicals be disposed of by recycling or use of a permitted hazardous waste management facility. Chemicals such as fixer, bleach fixer, stabilizer, C-41 RA bleach, and wash water may all contain silver, which is toxic to humans and aquatic organisms and therefore cannot be dumped down the drain. Used developers commonly contain hydroquinone, which may be disposed in the local sanitary sewer. However, no type of photographic waste may ever be disposed in a septic system.

How you decide to manage your waste partially depends on your generator status. Those who generate less than 220 pounds of hazardous waste per month are small quantity generators (SQG) and are conditionally exempt from state or federal rules; however, Thurston County regulations still apply. If you generate more than 220 pounds of hazardous waste per month, you must notify the Department of Ecology about your waste activities. Most photo processors are SQGs; if you are unsure, call the Thurston County Business Pollution Prevention Program at 360-786-5457.

ON-SITE MANAGEMENT OPTIONS

Managing silver-bearing waste is unique because silver is a valuable commodity. For businesses that generate a large amount of silver waste, installing an on-site silver recovery system may be a profitable method of waste disposal. These systems remove silver from your solutions and discharge the non-hazardous liquid into the local sewer system. There are many different types of systems available, at a variety of costs, so it is important to get a system that suits your needs. Whichever system you decide to purchase, you must comply with local discharge regulations by ensuring that your wastewater never exceeds 0.2 parts per million (ppm) total silver.

On-Site Silver Recovery Systems

Advantages
- Treated waste will not count towards your 220 lb. SQG limit
- Reclaimed silver is valuable and may offset some of your treatment system costs
- Convenience
- Eliminates liability risks associated with off-site shipment

Disadvantages
- Due to high start-up costs, may not be cost-effective for small waste volumes
- Requires regular use and maintenance to work effectively
- Requires adequate space near a sink drain
- If the system malfunctions, you may violate local sewer discharge limits
- Treated waste still cannot go into a septic system
- Some recovery systems may not remove enough silver to comply with local sewer discharge limits
In order to ensure that your system complies with local sewer discharge regulations, LOTT Wastewater Alliance requires you to purchase a system that contains two recovery units in series, with a sample port located in the middle. These dual systems provide the greatest assurance that your silver will be adequately treated before being discharged. Utilizing silver test strips, you will be required to test your wastewater from this sample port on a monthly basis to ensure that the system is operating properly. You will also be required to keep a log detailing sample dates and cartridge change-out frequency. For more information on the various types of silver recovery systems, call the Department of Ecology or visit http://www.ecy.wa.gov/biblio/94138.html.

To help determine if a silver recovery unit is cost effective for your business, consider the calculations listed below. If the value of recovered silver exceeds your operating and maintenance costs, a recovery system may be a good option. Please note that these calculations are only estimates and may vary based on the type or manufacturer of a system.

### Estimated Silver Value for Solutions Containing 2000 parts per million (ppm) Total Silver

<table>
<thead>
<tr>
<th>Liters/gallons of silver solution per month</th>
<th>Troy oz. of recovered silver per month</th>
<th>Silver Price</th>
<th>Projected value of silver per month*</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8 L (1 gal)</td>
<td>0.2 oz.</td>
<td>$4.85</td>
<td>$1.12</td>
</tr>
<tr>
<td>19 L (5 gal)</td>
<td>1.2 oz.</td>
<td>$4.85</td>
<td>$5.89</td>
</tr>
<tr>
<td>75 L (20 gal)</td>
<td>4.8 oz.</td>
<td>$4.85</td>
<td>$23.39</td>
</tr>
<tr>
<td>200 L (55 gal)</td>
<td>12.7 oz.</td>
<td>$4.85</td>
<td>$61.75</td>
</tr>
</tbody>
</table>

*Note: Projected value does not include refining fees.

### Metallic Replacement or Chemical Recovery Cartridges (CRCs)

CRCs are hollow canisters that contain steel wool or fiberglass impregnated with iron. When silver-bearing liquids are passed through this filter, the iron dissolves and is replaced by silver. CRCs are typically the most economical type of silver recovery system, ranging from $200 to $1,500 or more for a dual-canister system.

These systems, however, have several drawbacks. In order to work properly, CRCs require regular use and maintenance. If the cartridges are only used intermittently, the filter media may dry out and not work effectively. Even with proper care, these systems may not remove enough silver to comply with LOTT wastewater discharge regulations, so check with the individual manufacturers. If your business currently uses CRCs, please use these maintenance procedures:

1. Use two CRCs in a series.
2. Install a sampling valve located between the two cartridges. Using silver test papers, regularly test your effluent to see when the first cartridge is spent (200-500 ppm silver). When the effluent from the first canister reaches this level, it is time to remove it, putting the second cartridge first in line and adding a new second cartridge. In addition, if your CRCs have clear tubing between them, visually inspect the solution flowing through it. If it contains brown debris, it’s a good indication that the first cartridge is spent. Silver test strips are available from the following vendors:
   a. Gallard-Schlesinger, [www.gallard.com](http://www.gallard.com), (800) 645-3044
   b. Hallmark Refining Corporation, [www.hallmarkrefining.com](http://www.hallmarkrefining.com), (800) 327-7759
   c. Metafix: [www.metafix.com](http://www.metafix.com), (514) 633-8663
   d. White Mountain: [www.wmi42.com](http://www.wmi42.com), (603) 648-2124
3. Keep a sampling/changeover logbook. Sampling and changeover will vary based on your waste volume and type of cartridge. Work with your CRC supplier to establish a maintenance schedule.
4. Combine your silver-bearing waste prior to treatment. Add washless stabilizers and C-41 RA bleach into spent fixer and run them through as a single batch.
5. Monitor the flow of solution through the cartridges and always follow the manufacturer’s recommendations. If the flow is too fast, the CRCs will not work properly, resulting in non-compliance with LOTT wastewater discharge regulations. Use a metered pump or restricted gravity feed system and adjust the flow rate according to the manufacturer’s specifications.
6. Using simple pH test papers, make sure that the waste entering the CRCs has a pH between 5.5 and 6.5. This will maximize the life of your CRCs and help them work efficiently.
7. Fill the CRCs with water before putting them into service. This will extend the life of the cartridges by preventing the steel wool from dissolving as they fill with fixer.

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OFF-SITE MANAGEMENT OPTIONS

Waste Management Companies. Utilizing a company to pick up your waste has certain advantages over on-site silvery recovery systems. There are no start-up costs, and you never need to worry about equipment failure or maintenance. However, there are downsides to sending your waste off-site:

1) You will need to purchase storage containers, which require extra space and will add to your maintenance costs.
2) If you produce small quantities of waste, you may need to store the material for a long time before filling the container.
3) Storing waste on-site for long periods increases the risk of spills or leaks.
4) Even if your waste is managed by a third party, you are still responsible for the proper disposal of the material, so be sure to carefully select the right company.

In some cases, companies may allow you to mail small quantities of silver waste directly to their facilities, but be aware of shipping guidelines from the Department of Transportation. Contact your preferred mail service directly for the latest regulations and shipping prices.

Recycling at another Local Business. If you are a small quantity generator, you have the option of taking your silver waste to a local business that is able to properly treat photographic wastes with on-site silver recovery. If you choose this service, be sure to obtain a receipt so you can document where your waste is managed. Any business that receives waste from an SQG must conduct proper treatment and ensure that local wastewater discharge limits are being met (0.2 ppm total silver).

The following companies sell silver recovery systems and/or transport silver waste for recycling:

<table>
<thead>
<tr>
<th>Drop-Off Services</th>
<th>Pick-Up Services and/or Silver Recovery Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Don’s Camera, Olympia, free by appointment, (360) 943-1703</td>
<td>• Agco Metals, Mukilteo (888) 743-7887</td>
</tr>
<tr>
<td>• Evergreen State College, free by appointment, contact Hugh Lentz, (360) 867-6313</td>
<td>• CMX Corporation, Seattle (800) 869-7191</td>
</tr>
<tr>
<td>• Philip Services, Tacoma, pre-registration required, disposal fees apply, (800) 327-7759</td>
<td>• EnviroTech, Seattle (800) 922-9395</td>
</tr>
<tr>
<td>• Thurston County HazoHouse, pre-registration required, disposal fees apply, (360) 786-5457</td>
<td>• Hallmark Refining, Mt. Vernon (800) 255-1895</td>
</tr>
<tr>
<td></td>
<td>• Kleen Env. Tech., Seattle (206) 285-8010</td>
</tr>
<tr>
<td></td>
<td>• Onyx Env. Services, Tukwila (206) 241-3900</td>
</tr>
<tr>
<td></td>
<td>• Safety-Kleen, Auburn (800) 609-594</td>
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</tbody>
</table>

BEST MANAGEMENT PRACTICES

Developer: Photo developer contains hydroquinone and is considered hazardous waste if unused. However, hydroquinone is chemically consumed during the developing process and consequently, spent developer is not considered hazardous.

- It is illegal to dump developer into a septic system, storm drain, dry well, or on the ground.
- Used developer may be disposed in the sanitary sewer, which will be treated at the LOTT wastewater treatment plant. However, unused product is not acceptable for sewer disposal.
- Consider using low-replenishment developers for both film and paper. They can substantially reduce replenishment rates.
- Do not put developer into chemical recovery cartridges (CRCs) for silver-bearing wastes. They can plug the CRCs, resulting in pressure build-up.

Fixer and Bleach-Fixer Solution: Fixers typically contain high amounts of silver (3,000-8,000 ppm) and designate as a hazardous waste. Thus, all fixers must be treated on-site or properly disposed or recycled off-site.

- Never put treated or untreated fixer into your septic system, storm drain, dry well, or on the ground.
- If you generate large amounts of waste fixer, a silver recovery system may be beneficial to your operation. These systems remove silver from fixer solutions, which can be sold to metal recyclers.
- Never put fixer into the sanitary sewer unless it has been treated and meets sewer discharge limits.
- Consider using low replenishment bleach-fixers, which can substantially reduce replenishment rates.
If your fixer is sent off-site for disposal or stored on-site, the amount of waste counts towards your Washington State waste generator status on a monthly basis. This is not necessary if your fixer is sent directly to a silver recovery system.

- Make sure your employees know that fixer and bleach-fixers is a hazardous waste.

**Bleach Solution:** Used C-41 bleach may contain 3 ppm silver, which exceeds the sanitary sewer discharge limit of 0.2 ppm.
- It is illegal to put bleach solution into your septic system, storm drain, dry well, or on the ground.
- If you use CRCs for on-site silver recovery, consider mixing used C-41 bleach with your used fixer and washless stabilizer prior to recovery.
- Consider regenerating your used bleach solutions. This will reduce waste and save you money. Check with your chemical supplier for more information.
- Make sure your employees know that bleach solutions must not be disposed in the sanitary sewer.

**Stabilizer:** Stabilizers typically contain 100-300 ppm silver, which designates as a hazardous waste.
- Never put stabilizer into your septic system, storm drain, dry well, or on the ground.
- If you do on-site silver recovery, mix stabilizer with your used fixer and bleach prior to treatment.
- If your stabilizer is sent off-site for disposal or stored on-site, the amount of waste must count towards your monthly total. This is not necessary if your stabilizer is sent directly to a silver recovery system.
- Make sure your employees know that stabilizer solutions must not be disposed in the sanitary sewer.

**Wash Water:** Wash waters may contain small amounts of film developing chemicals, including fixer. Although these chemicals are found in very small amounts, the silver content may still exceed local sewer discharge limits. Before disposing of wash waters into the sanitary sewer, routinely test the water to ensure that the silver levels meet the local discharge limits (0.2 ppm). However, wash waters that are contaminated with silver or other chemicals must never go into a septic system.

**Photographic Solution Filters:** Fixer and washless stabilizer filters likely contain enough silver to be considered hazardous, so they should not be thrown into the garbage unless they can be proven non-hazardous by lab tests. If hazardous, these filters should be managed by a waste disposal company.

**Cleaning Wastes:** Various cleaning agents, such as bleaches and system cleaners, may be considered hazardous waste due to chromium, cyanide, corrosive characteristics, or other heavy metals.
- If the cleaners are considered hazardous wastes, it is illegal to dispose in the sanitary sewer, septic system, storm drain, dry well, or on the ground. If they are hazardous, collect and send off-site to a licensed disposal business.
- See if your chemical supplier sells less-toxic cleaners that do not designate as a dangerous waste.

**Other Wastes:** The following items are not considered hazardous waste and may be recycled. Contact the product manufacturer or local camera shops for additional information.
- Paper cores, film containers, single use cameras, film magazines: These items may be accepted for recycling by the various manufacturers. Check with individual manufacturers or local camera shops for more information.
- Scrap film and paper: In color photo finishing, all of the silver is removed from the film or paper during the photo finishing process. As a result, processed scrap film and paper do not designate as a hazardous waste and may be thrown away in the trash. Unprocessed film or paper will have some silver on it, but data indicates that silver in this form will not leach out over time. However, soaking film-ends in fixer to remove silver will leave a coating of leachable silver that may make the film-ends a hazardous waste.

**Additional Information**
For any questions regarding wastewater discharge regulations, please contact LOTT Wastewater Alliance at (360) 664-2333. For other questions on small business hazardous waste, contact the Business Pollution Prevention Program at (360) 786-5457, Monday through Friday during regular business hours or TDD (360) 754-2933 or visit: http://www.co.thurston.wa.us/health/ehwp/hwaste.html

May 2004
Appendix F:

Nonpoint Source Pollution Ordinance
Inspection Checklist
Nonpoint Source Pollution Ordinance Inspection Checklist

Business Name ___________________________ Phone __________________
Business Owner ___________________________ Birthdate __________________
Address ___________________________ City __________________ Zip ________
Compliance Officer ___________________________ Issue Date ________ Time ________

MODERATE RISK WASTE: ___________________________ Avg. Qty/Mo ________

NOTICE OF COMPLIANCE

☐ NO MODERATE RISK WASTE GENERATED.
   Explain: ___________________________________________

☐ RECYCLED Type of system: ___________________________
   ON-SITE Qty/Mo: _______ Date of installation: ________

☐ SENT Vendor: ___________________________ Phone: ________
   OFF-SITE Qty/Mo: _______ Date of last shipment: ________
       □ Documentation verified.
    ☐ SECONDARY CONTAINMENT ADEQUATE.

NOTICE OF VIOLATION

☐ I find you in violation of Thurston County Sanitary Code, Article VI, Section 4.1(a),
4.1.(b) OR 4.1(c) as specified below:
   Description of violation: ___________________________________________
   ___________________________________________
   ___________________________________________
   ___________________________________________
   ___________________________________________
   Corrective action to be taken by ________(date) will be as follows: ________
   ___________________________________________
   ___________________________________________

See reverse for important information on your right to appeal this notice of violation.

Compliance officer: ___________________________ Date: ________
Received by: ___________________________ Date: ________

Thurston County Public Health and Social Services Department
Environmental Health Division

White Copy: Health Department; Canary Copy: Business Representative
Appendix G:

Technical Assistance Notice of Noncompliance
Technical Assistance Notice of Noncompliance

Business Name ___________________________________________ Phone __________________________

Business Owner _________________________________________

Address ________________________________________________________________________________________

<table>
<thead>
<tr>
<th>HAZARDOUS MATERIAL / WASTE</th>
<th>QUANTITY</th>
<th>PROVIDE CONTAINMENT</th>
<th>OBTAIN RECEIPTS</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

The hazardous materials or wastes listed above are currently being stored without secondary containment or receipts verifying proper disposal were not provided. The Thurston County Nonpoint Source Pollution Ordinance, Article VI of the Thurston County Sanitary Code, Section 4.1(a) states:

“Moderate risk waste and petroleum products including, but not limited to, oil and grease, shall be disposed of by recycling or use of a hazardous waste management facility operating under interim status or with a permit issued by EPA or authorized state....”

Section 4.1(b) states:

“Moderate risk waste, petroleum products, and hazardous materials shall be kept in containers and shall be stored in such a manner and location that if the container is ruptured, contents will not discharge, flow, be washed or fall into surface water or groundwater. This does not supersede any regulations as stated in the Uniform Fire Code.”

Since your business is participating in a technical assistance campaign, a mutually agreeable grace period is being provided to help you obtain compliance. See the back of this sheet for procedures to come into compliance with the Sanitary Code.

Noncompliance to be corrected by (date): ____________________________________________________________

Received by: __________________________________________ Date: __________________________

Compliance Officer: __________________________________________ Date: __________________________

Revised 02/01/02, NoncomplianceNoticeForm.doc