



PUBLIC NOTICE

Date posted: 7/22/24

DEQ Requests Comments on Proposed Mercury Minimization Plan for the Lincoln City Wastewater Treatment Plant

HOW TO PROVIDE PUBLIC COMMENT

Facility name: Lincoln City Wastewater Treatment Plant
Permit type: National Pollutant Discharge Elimination System (NPDES) Domestic Minor
Comments due by: Monday, Aug. 26, 2024 at 5 p.m.

Send written comments to:

By mail: Trinh Hansen, Oregon DEQ
4026 Fairview Industrial Drive SE, Salem, OR 97302

By email: Trinh.Hansen@deq.oregon.gov

The Oregon Department of Environmental Quality invites the public to provide written comment on the proposed mercury minimization plan for the Lincoln City Wastewater Treatment Plant.

Summary

Subject to public review and comment, DEQ intends to approve the plan, which documents the City of Lincoln City's program to identify and reduce sources of mercury in the Lincoln City Wastewater Treatment Plant's treated wastewater. The city drafted the plan in accordance with requirements stipulated in the facility's National Pollutant Discharge Elimination System permit. Part of the review process is an opportunity for public comment. DEQ's approval of this plan is considered a permit modification but no changes are being made to permit language and the permit itself is not subject to public comment.

About the plan

Lincoln City developed the mercury minimization plan for the Lincoln City Wastewater Treatment Plant. The plan includes actions to identify and evaluate potential sources of mercury to the wastewater treatment plant, including industrial, commercial, and residential sources. The plan also identifies conditions within the sewage collection system and treatment system that may promote the production of a highly toxic form of mercury. As part of the proposed plan, Lincoln City developed a monitoring strategy to confirm the current or potential sources of mercury and quantify the concentrations.

The plan includes details on the city's intended methods of reducing or eliminating mercury received from sources, and potential process modifications to reduce or eliminate conditions that may convert mercury to a more toxic form.

The facility at 5000 SE Port in Lincoln City discharges treated wastewater to Schooner Creek under the assigned NPDES permit.

Translation or other formats

[Español](#) | [한국어](#) | [繁體中文](#) | [Русский](#) | [Tiếng Việt](#) | [العربية](#)
800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

Where can I get more information?

A link to the proposed plan is provided with this notice. You can review the plan in person at the DEQ Western Region Office at 4026 Fairview Industrial Drive, in Salem, Oregon. For a review appointment, contact Trinh Hansen, DEQ Permit Coordinator, at 503-378-5055 or email trinh.hansen@deq.oregon.gov.

What happens after the public comment period closes?

DEQ may hold a public hearing on the proposed plan if one is requested by 10 or more people or from an organization representing at least 10 or more members.

DEQ will consider and respond to all comments received and may request that the facility modify the plan based on received comments.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's [Civil Rights and Environmental Justice page](#).



Mercury Minimization Plan

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1. Facility Information

		Date:	04/04/2024	
Facility name:	Lincoln City STP	Permit No.:	101122	
Facility address:	5000 SE Port Ave			
City:	Lincoln City	State:	Oregon	ZIP code: 97367
Preparer name:	Daniel D. Christian	Preparer's telephone:	541-996-1285	
Preparer organization:	City of Lincoln City	Preparer's email:	dchristian@lincolncity.org	
Technical contact name:		Technical contact telephone:		
Legal contact name:		Legal contact telephone:		

Plant Process Description

The City of Lincoln City owns and operates a 4 basin AuquaAerobics Sequencing Batch Reactor with an ADWDF of 2.1 MGD and an AWWDF of 3.3 MGD.

- Plant Influent passes through two ¼" chain plate screens and then a PistaGrit grit removal system before the SBR basins.
- Decant from the SBR's goes through two bays of AquaAerobics cloth disk filters.
- Disinfection is achieved with a Trojan UV 3000plus Ultraviolet system consisting of two channels containing two banks of modules each. Each module contains 8 lamps.
- Effluent is discharged into nearby Schooner Creek which then feeds into Siletz Bay.
- Waste from the SBR's is sent to one of two 5.6MG digesters/aerated sludge storage tanks.
- Digester solids are fed to one of two dewatering units.
- Dewatered sludge is disposed of at the Coffin Butte Landfill.

Prior to August of 2017, digester solids were sent to one of two stabilization lagoons. Until 2016 the biosolids in the lagoons would be land applied onto agricultural property near the city of Siletz. There has been no land application since 2015. Due to push back from nearby land owners and lack of alternate land application sites, The City chose to install de-watering units. These units consist of an Andritz centrifuge that went online in August of 2017. The centrifuge dewateres digester sludge to an average of approximately 20% solids. A second dewatering unit was then installed for redundancy in the fall of 2022. This unit consists of an FKC Screw Press which dewateres sludge to an average of approximately 17.5%. All cake is then disposed of at the Coffin Butte Landfill.

2. Mercury Sources

Mercury in the environment

Mercury is a naturally occurring element found in cinnabar deposits and areas of geothermal activity. In Oregon, mercury was mined commercially and used extensively in gold and silver amalgamation. Mercury has been used historically in fungicide formulations and can still be found in many commercial products including fluorescent lights, thermometers, automobile switches and dental amalgam. Mercury is also naturally present in trees and fossil fuels such as coal, natural gas diesel fuel and heating oil. The mercury present in these fuel sources is released into the atmosphere upon combustion. This atmospheric mercury can be transported great distances and is known to be deposited on the landscape via either wet or dry deposition. (DEQ, 2006)

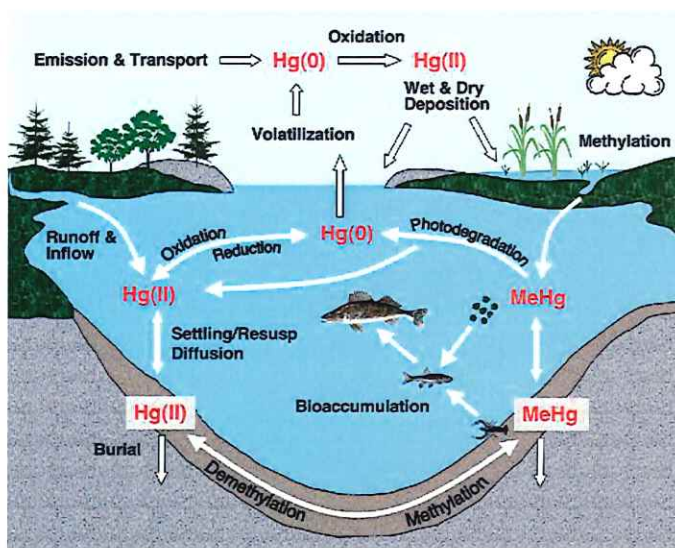


Figure 1: Mercury Cycle

Mercury can be present in various physical and chemical forms in the environment (Figure 1). The majority of the mercury found in the environment is in the form of inorganic or elemental mercury, but these forms of mercury can be converted to organic or methyl mercury by sulfate-reducing bacteria. Methyl mercury production is affected by a host of physical and chemical factors including temperature, redox potential, dissolved oxygen levels, organic carbon, sediment particle size, alkalinity, sulfate concentration and pH. Methyl mercury, once formed, represents the most bio-accumulative form of mercury in fish tissue and the most toxic form of mercury for human consumers. (DEQ, 2006). Accordingly, DEQ has adopted fish tissue criteria for methyl mercury to protect human health.

Sources of Mercury in Wastewater

Anthropogenic sources of mercury in wastewater can come from the residential, commercial or industrial sectors. In a 2002 study, the Association of Metropolitan Sewerage Agencies (AMSA is now known as National Association of Clean Water Agencies (NACWA) listed the most common sources of mercury pollution, which can be seen in Table 1 below (AMSA,2002).

Table 1: Common Sources of Mercury in Wastewater (NACWA,2002)

Commercial	Residential	Industrial
• Dental offices • Hospitals • Laboratories • Universities/Schools • Medical clinics • Vehicle Service Facilities	• Human waste (amalgam) • Human waste (dietary) • Laundry Graywater • Household products • Improper disposal of mercury thermometers	• Chlorine production • Portland Cement • Mining – i.e., gold mining • Sodium Hydroxide • Sulfuric Acid

Mercury is present in a variety of consumer and commercial products including dental amalgam, batteries, compact fluorescent lights, jewelry, skin creams, paint, thermometers, switches/relays, etc. While many of these products have a low probability of reaching the sanitary sewer system in large quantities, their removal from the environment is still beneficial.

Additionally, a 2008 EPA report estimated that 50% of the nation's mercury in wastewater comes from the dental sector (USEPA, 2008). Supporting documentation for the EPA's Proposed Effluent Limitation Guidelines and Standards for the Dental Category (released October 2014) uses 2007 Census data and estimates that there were roughly 110,000 dental offices that place and/or remove dental amalgam in the United States. The EPA estimates that 4.4 tons of mercury waste from these dental offices is discharged to wastewater treatment facilities (WWTF's) annually (USEPA, 2014).

Potential Sources of Mercury at the WWTP

In reviewing the operations at the WWTP, including the chemicals and equipment used in the treatment process, we found a few potential sources of mercury. The first potential source is from the UV disinfection lamps that are currently in operation. The UV lamps themselves are contained in a sealed quartz sleeve and do not come in contact with the effluent. The potential for mercury contamination is during the replacement of the UV lamps, if they were to break inside the sealed quartz sleeve. In case of accidental breakage, the City ensures that the contents are safely disposed of.

Another potential source of mercury is from accidental release from our fluorescent lighting systems and mercury vapor lights. Our fluorescent lighting system and mercury vapor lights at the WWTP are being replaced with LED lighting systems inside and outside of each building as they burn out.

In reviewing chemicals used at the WWTP, none of the chemicals contain mercury. However, there are several thermometers in the lab which contain mercury. In case of accidental breakage of a thermometer there is a spill containment and clean up kit located in the laboratory.

Some of the floats that the City utilizes are mercury floats. As we move forward with our replacement and upgrade program, the City will consider replacing all the mercury floats throughout the wastewater system with mechanical switches.

Although elemental mercury is toxic, organic mercury or methylmercury is more toxic than the inorganic form. Methylmercury is mainly produced by anaerobic microorganisms in both the natural environment and within stagnant areas of wastewater collection systems. The most likely area for this methylation to occur in a collections system is in the bottom of lift station wet wells where organic material and anaerobic microorganisms can accumulate.

Overview

Table 1. Source Summary

Source Categories	Mercury			Notes/Comments
	Current	Potential	N/A	
6 DENTAL OFCS	☐	☒	☐	
1 HOSPITALS	☐	☒	☐	
3 LABORATORIES	☐	☒	☐	WWTP, WTP, & OR COMM COLL LAB
7 SCHOOLS	☐	☒	☐	
8 MEDICAL CLINICS	☐	☒	☐	INCLUDES VETERINARY
9 VEHICLE SERVICE	☐	☒	☐	
3 HVAC	☐	☒	☐	
	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	

3. Implementation Plan for Mercury Management and Reduction Measures for (at least) the Next Five Years

Overview

Medical facilities

The City has 9 medical facilities discharging to our collection system. The City plans to educate medical facilities with information on potential mercury pollution sources. The City will present medical facilities with information of mercury use and potential conditions causing potential mercury pollution. Best Management Practices are outlined in the document

Dental facilities

The City has 5 dental facilities. Dental clinics are the main source of mercury discharges to publicly owned treatment works. With the passage of Oregon Senate Bill 704, all dental offices must implement the Oregon Dental Association Best Management Practices of Dental Wastes. The document outlining the Best Management Practices can be found at the following web address;

https://www.oregondental.org/docs/statevaoregonlibraries/default-document-library/government/regulatory/amalgam/best-management-practices---the-environmentally-responsible-dentist.pdf?sfvrsn=3856cb4a_1

The City will conduct site visits to our dental facilities with the dental facilities mercury checklist found in this document. The City may consider the adoption of a policy to develop a program that requires all dentists to provide documentation as proof that the BMPs were followed and amalgam waste is properly disposed of.

Schools

The City is home to 7 schools and will conduct outreach with handouts from ACWA

Industrial facilities

The City does not currently have any significant industrial users. The City is currently conducting an Industrial User survey for our system. The survey results will help identify any other industrial users that may be discharging to the treatment plant. The City will educate these facilities on potential mercury pollution activities.

Heating, ventilation and air conditioning (HVAC)

The City is home to 3 HVAC companies. The City will educate these businesses on potential mercury pollution activities.

Residential

ACWA handouts to the schools will help educate some of the residents of Lincoln City. The City will also create a mercury education page on our website. We may also consider a onetime mailer insert in with a water and sewer bill.

The City's resident population is around 9,500. Due to tourism, we calculate and report a population equivalent based on average influent BOD loading divided by 0.17lbs/person/day. For 2022 that average population was just over 25,000.

Collection System & Treatment Plant

The Lincoln City Wastewater Plant and collection system serves the area from the west side of Neotsu, all of Roads End and south through the Cutler City area. The geography of Lincoln City with its many elevation changes results in raw sewage being pumped through as many as 5 stations before reaching the treatment plant. Lincoln city has 28 sewage lift stations, 3 storm stations, 74.4 miles of gravity lines, 11.25 miles of force mains, 1,898 manholes, and 6 state certified operators. The lift stations are on a maintenance schedule to maintain odor free and aerobic conditions in the collection system. Seven liftstations are equipped with flush valves that stir the wetwell before a pump comes on each time. The remainder of our liftstations get pumped out with our vac truck and scoured with our wet well washer attachment at least twice a year during shoulder seasons.

Raw sewage flows under Schooner Creek, to the treatment plant, from the Nelscott and 48th and Jetty lift stations via one 24-inch and two-14-inch lines to directly in front of our two headworks screens. The treatment plant is located in the Taft area of Lincoln City. The treatment plant has a mercury spill kit.

Septage

The City does accept septage from two local haulers. The development of a Hauled Waste Control Plan was a requirement of our new permit and this plan was completed in July of 2021. The plan defines, daily volume restrictions, and random testing for a minimum of 3 loads per week for pH and microscope checks for evidence of toxicity. The City's sewer ordinance already enforced an area boundary for acceptance. Beginning in Q1 of 2023 we began quarterly testing of the septage for BOD₅, T.S.S. an NH₃-N and a list of metals including mercury. The results of these tests can be found in the four rows labelled "Septage" in table 2 below. These tests were run using EPA 7471 A and are reported in mg/KG-dry weight.

4. Facility Changes

Facility

This is The City's first mercury minimization plan.

Collection System

As the program development and implementation progresses, existing facilities and new permit applications will be monitored and our database updated. All changes to the plant, collection system, Industrial Users, or changes in source water supply will be updated annually.

Changes in Industrial Users (added or removed)

As the program development and implementation progresses, existing facilities and new permit applications will be monitored and our database updated. All changes to the plant, collection system, Industrial Users, or changes in source water supply will be updated annually.

Changes in Source Water Supply

As the program development and implementation progresses, existing facilities and new permit applications will be monitored and our database updated. All changes to the plant, collection system, Industrial Users, or changes in source water supply will be updated annually.

Other

Any other sources of mercury that may be discovered, not included in this plan, will be properly documented and incorporated into the City's overall mercury reduction plan/activities.

5. Mercury Monitoring (total mercury)

There has been no mercury testing for biosolids since 2015 and those results were 0.0024 mg/KG per dry weight

The City does test dewatered sludge for TCLP's, SVOC's, and TS every three years to obtain our Special Waste Permit through Republic Services for disposal at the Coffin Butte landfill. The results of these samples are entered into the two rows labelled "Dewatered Sludge" in Table 2 below. These tests were run using EPA 1311/SW7470A and are reported in mg/Kg-dry weight.

The City also tests septage quarterly as per our Hauled Waste Control Plan. The results of these samples are entered into the four rows labelled "Septage" in Table 2. Below. These tests were run using EPA 7471 A, and are reported in mg/Kg-dry weight.

The City's NPDES Discharge Permit requires 4 more quarterly effluent mercury samples in year 5. This "year" has been defined as Q4 of 2024, and Q's 1 through 3 of 2025.

Table 1. Wastewater treatment plant calendar month average influent, effluent and biosolids data

Date	Location	Result (ug/L)	Result (mg/Kg-dry)	Method
2/28/2018	Effluent	0.00047		Hg by EPA 1631E
3/21/18	Effluent	0.00060		Hg by EPA 1631E
4/25/2018	Effluent	0.00058		Hg by EPA 1631E
5/23/2018	Effluent	0.00042		Hg by EPA 1631E
7/11/2018	Effluent	0.00052		Hg by EPA 1631E
8/15/2018	Effluent	0.00045		Hg by EPA 1631E
9/12/2018	Effluent	0.00043		Hg by EPA 1631E
10/17/2018	Effluent	0.00070		Hg by EPA 1631E
11/28/2018	Effluent	0.00045		Hg by EPA 1631E
12/12/2018	Effluent	0.00056		Hg by EPA 1631E
1/9/2019	Effluent	0.00078		Hg by EPA 1631E
2/6/2019	Effluent	0.00070		Hg by EPA 1631E
2-24-2021	Effluent	0.000610		Hg by EPA 1631E
4-29-2021	Effluent	0.00027		Hg by EPA 1631E
8-5-2021	Effluent	0.0023		Hg by EPA 1631E
10-27-2021	Effluent	<0.0008		Hg by EPA 1631E
10-16-2018	Dewatered Sludge		ND	EPA 1311/SW7470A
7-13-2021	Dewatered Sludge		ND	EPA 1311/SW1470A
3-7-2023	Septage		0.130	EPA 7471 A
5-15-2023	Septage		ND	EPA 7471 A
7-17-2023	Septage		0.303	EPA 7471 A

10-3-2023	Septage		0.286	EPA 7471 A
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Table 2. Flow/Load Information

Date	Influent			Effluent			Bio-Solid		
	Flow	Conc.	Mass	Flow	Conc.	Mass	Flow	Conc.	Mass
				MGD	ng/L	Grams/day			
2/28/2018				2.029	0.47	0.003722			
3/21/2018				1.741	0.60	0.003954			
4/25/2018				1.839	0.58	0.004037			
5/23/2018				1.434	0.42	0.00228			
7/11/2018				1.446	0.52	0.002846			
8/15/2018				1.71	0.45	0.002913			
9/12/2018				1.485	0.43	0.002417			
10/17/2018				1.226	0.70	0.003248			
11/28/2018				2.386	0.45	0.004064			
12/12/2018				2.167	0.56	0.004593			
1/9/2019				2.543	0.78	0.007508			
2/6/2019				1.553	0.70	0.004115			
2-24-21				3.434	0.610	0.007929			
4-29-2021				1.595	1.2	0.007244			
8-5-2021				1.607	2.3	0.01399			
10-27-2021				2.694	<0.8	0.008157			

6. Summarize Mercury Reduction Activities Implemented during (at least) the Previous Five Years (from the date this plan was prepared):

Overview

Other than gradually replacing fluorescent bulbs as they go bad, with LED lamps at the wastewater treatment plant, there have been no mercury reduction activities to report in the previous five years in any of the below sectors.

Medical facilities

Dental facilities

Schools

Industrial facilities

Heating, ventilation and air conditioning (HVAC)
Residential, collection systems, and septage sources

7. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Dan Christian

WASTEWATER OPERATIONS MANAGER

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Appendix 1. Medical Facility Mercury Checklist

Best Management Practices for Mercury are taken from the AHA/EPA "Making Medical Mercury-Free" Criteria. Compliance with these BMPs may be considered as compliance with reducing mercury; wastewater sampling and analysis may also be waived by the City.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP
Policy				1. Has your facility established a mercury plan and timeline for the reduction and eventual elimination for mercury-containing equipment and chemicals?
				2. Has your facility implemented an Environmentally Preferable Purchasing (EPP) policy for mercury products and process to regularly review mercury use reduction and elimination progress?
				3. Has your facility established mercury management protocols for safe handling, mercury spill clean-up procedures, disposal procedures, and education and training of employees?
Mercury Products				4. Has your facility replaced patient mercury thermometers?
				5. Has your facility replaced all or a majority (75%) of mercury sphygmomanometers?
				6. Has your facility replaced all or a majority (75%) of Mercury clinical devices (bougies, miller-abbott tubes, dilators, etc.)?
				7. Has your facility inventoried and labeled all mercury-containing facility devices (switches, thermostats, etc.)? **
Lab				8. Has your facility implemented a program to recycle fluorescent lamps? **
				9. Has your facility implemented a battery collection program? **
				10. Has your facility replaced all or majority (75%) of mercury lab thermometers?
				11. Has your facility replaced B5/Zenkers stains with non-mercury substitute?
				12. Has your facility inventoried mercury-containing lab chemicals?

** May not affect wastewater

Actions:

Date	Description of action taken

Comments:

Appendix 2. Dental Facility Mercury Checklist

Best Management Practices are those defined by the ADA.

Compliance with the ADA recommended mercury management practices plus the installation and maintenance of an amalgam separation meeting ISO 11143 standards may be considered as compliance with the limiting of mercury; wastewater sampling and analysis may also be waived by the city.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

Yes	No	Date	Best Management Practice
			1. Has all bulk mercury been eliminated from your stock at your dental office?
			2. Does your dental office use pre-capsulated alloys?
			3. Does your dental office recycle disposable amalgam capsules?
			4. Does your dental office capture and recycle non-contact scrap amalgam?
			5. Does your dental office capture and recycle contact amalgam including the contents of chair-side traps?
			6. Does your dental office recycle contact amalgam retained by the vacuum pump filter?
			7. Does your dental office disinfect and recycle extracted teeth with amalgam fillings?
			8. Does your dental office use non-chlorine, non-bleach line cleaners that minimize the dissolution of amalgam?
			9. Does your dental office have and maintain an amalgam separator meeting ISO standards? Manufacture: _____ Model: _____
			10. Does your dental office recycle florescent bulbs?**

** May not affect wastewater

Actions:

Date	Description of action taken

Comments:

Appendix 3. Industrial Facility Mercury Checklist

Industrial Best Management Practices for Mercury

Compliance with these BMPs may be considered as compliance with the local sewer use limit for mercury; wastewater sampling and analysis may also be waived by the city.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP
Policy				1. Has your facility established a mercury policy statement that includes the reduction of virtual animation of mercury?
				2. Has your facility developed a plan to phase-out mercury-containing devices?
				3. Has your facility implemented a chemical management program that includes pre-purchase review and approval?
Mercury Products				4. Has your facility established mercury management protocols for safe handling mercury spill clean-up procedures, disposal procedures, and education and training of employees about these protocols?
				5. Has your facility inventoried all mercury-containing devices (such as switches, thermostats, etc.)?**
				6. Has your facility labeled mercury-containing devices to recycle at the end of life?**
				7. Has your facility implemented a program to recycle florescent lamps?**
				8. Has your facility implemented a program to properly recover and recycle elemental mercury and mercury-containing products?**
Lab				9. Has your facility requested certificates of analysis for bulk chemicals known to have potential mercury contamination?
				10. Has your facility reduced the use of mercury-containing chemicals as much as feasible?
				11. If applicable, has your facility inventoried mercury-containing lab chemicals, thermometers and other devices with a plan for non-mercury product substitution?

** May not affect wastewater

Actions:

Date	Description of action taken

Comments:

Appendix 4. School Mercury Checklist

Best Management Practices for Mercury are taken from the DEQ's Green and Healthy Schools Criteria. Compliance with these BMPs may be considered as compliance with reducing mercury; wastewater sampling and analysis may also be waived by the City.

Facility Name: _____ Account# _____

Contact Person: _____ Phone number _____

	Yes	No	Date	BMP
Policy				1. Has your school completed a mercury products inventory for the entire school?
				2. Does your school have an action plan in place to eliminate mercury-containing items that were found as a result of the inventory?
				3. Has all elemental mercury been eliminated from classrooms at your school?
Mercury Products				4. Have all mercury compounds been eliminated from classrooms and storerooms?
				5. Have all mercury lab thermometers been eliminated from the classroom?
				6. Have all mercury lab barometers been eliminated from the classrooms?
				7. Have all mercury fever thermometers been eliminated from the school?
				8. Have all mercury blood-pressure cuffs been eliminated from the school?
Optional				9. Are all mercury-containing items being stored in airtight, unbreakable containers?
				10. Has the danger of a mercury spill been mitigated by having a mercury spill kit and trained staffed to use the kit?
				11. If your school has completed any of these activities, check below: **
				____ Classroom presentations on mercury ____ Recycling of fluorescent bulbs ____ Phase-out of mercury thermostats ____ Recycling of mercury batteries

** May not affect wastewater

Actions:

Date	Description of action taken

Comments:

Appendix 5. General Public Mercury Checklist and Outreach Summary

Best Management Practices for mercury are defined as reducing and eliminating household use of mercury containing products, and recycling (rather than discarding) old mercury containing products.

Educate households in reducing and eliminating their use of mercury containing products. Encourage participation by household in recycling their old mercury containing products.

Household Mercury Product	Discontinued Sale (Describe)	Recycled Products (Quantity)

Note: Common household mercury products include fever and other thermometers, thermostats, and "silent" light switches.

Outreach activities to households (and retail stores). List date accomplished.

Activity: Date:	Website /Ads in Paper/ Displays	Mailing Surveys	Collection Events	Workshops Community Events	Site Visits or Personal Contacts	Other Describe:

Protecting Your Watershed



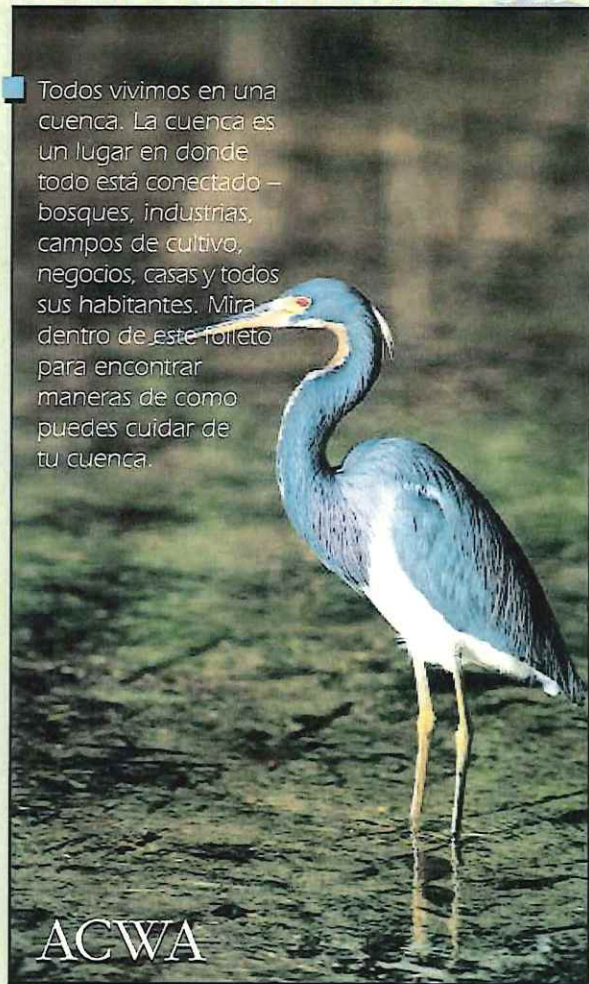
Everyone lives in a watershed. It is the place where everything is connected—forests, fields, industries, businesses, houses, and all creatures. Look inside to see how you can take care of your watershed.

ACWA

Association of Clean Water Agencies

Protegiendo nuestra cuenca

Todos vivimos en una cuenca. La cuenca es un lugar en donde todo está conectado — bosques, industrias, campos de cultivo, negocios, casas y todos sus habitantes. Mira dentro de este folleto para encontrar maneras de como puedes cuidar de tu cuenca.



ACWA

La Asociación de Agencias de Agua Limpia



Home Checklist

Look for these possible sources of mercury:

- ☐ Household lamps (fluorescent, HID, neon—mercury vapor is released if bulbs break)
- ☐ Thermostats
- ☐ Thermometers
- ☐ Switches
(thermostat, iron, freezer, washing machine)
- ☐ Old alkaline batteries/Button batteries
(watches, hearing aids, toys, calculators, cameras)
- ☐ Old toys and games
(Mercury Maze, chemistry set)
- ☐ Athletic shoes that light up
- ☐ Paint, pesticides, fungicides containing mercury
(before 1992)
- ☐ Nasal spray and contact lens solution containing Thimerosal

Items containing mercury should be disposed of at a hazardous materials collection center. Contact the Department of Environmental Quality for a center near you.

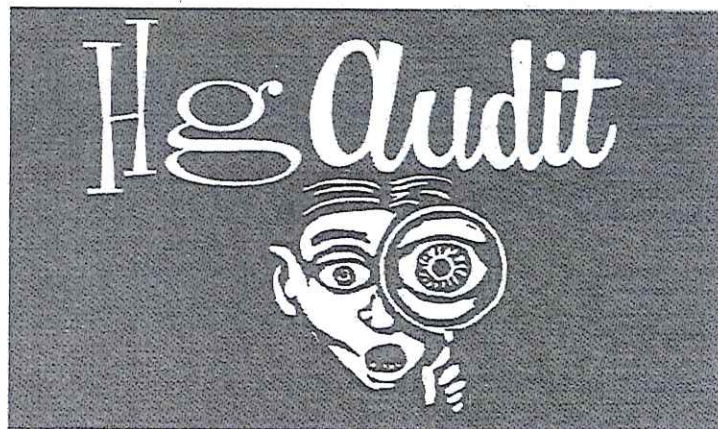
Replace items with mercury-free alternatives:

- ☐ Low-mercury lamps (look for the green end cap)
- ☐ Silver oxide, zinc-air, or lithium batteries
- ☐ Alcohol or digital thermometers

Report any mercury spill, no matter how small you think it is. Do not wash mercury spilled into a sink down the drain. Have the spill cleaned up by authorized personnel trained in handling hazardous materials.

If mercury vapor has been inhaled or ingested, call the poison control center.

Poison Control (800) 222-1222
Oregon Emergency Response System (800) 452-0311



Healthcare Provider Checklist

Look for these possible sources of mercury
(and properly dispose of or recycle):

- ☐ Thermometer
- ☐ Sphygmomanometer
- ☐ Lamps/bulbs (fluorescent, compact fluorescent, HID, neon—mercury vapor is released if bulbs break)
- ☐ Thermostats
- ☐ Switches
- ☐ (Old, before 1996) Button batteries
- ☐ Nasal spray and contact lens solution containing Thimerosal

Replace items with mercury-free alternatives:

- ☐ Low-mercury lamps (look for the green end cap)
- ☐ Silver oxide, zinc-air, or lithium batteries
- ☐ Digital thermometer
- ☐ Aneroid blood pressure device
- ☐ Thimerosal-free nasal spray and contact solution

To be added to each Teacher's Guide

To be added to each Student Folder

UPDATED ON-LINE MERCURY RESOURCES

Oregon DEQ	www.oregon.gov/deq/Hazards-and-Cleanup/hw/Pages/Mercury-info.aspx
EPA	www.epa.gov/mercury
USGS	https://www.usgs.gov/mission-areas/water-resources/science/mercury#
History	https://sites.dartmouth.edu/toxmetal/mercury/mercury-element-of-the-ancients/
NIH Mercury-Free Campaign	www.orf.od.nih.gov/EnvironmentalProtection/MercuryFree/Pages/MercuryFreePages/default.aspx
School Information	www.atsdr.cdc.gov/dontmesswithmercury/mercury_school.html

UPDATED ON-LINE MERCURY RESOURCES

Hg Audit



School Site Checklist

Look for these possible sources of mercury in the following places (and properly dispose of or recycle):

Classroom

- ☐ Fluorescent lights
- ☐ Thermostats
- ☐ Switches

*Science Lab**

- ☐ Barometer
- ☐ Thermometers—lab, soil, cooking, fever
- ☐ Air pressure gauge
- ☐ Vacuum gauge
- ☐ Hg Spectral tubes
- ☐ Molecular motion devices
- ☐ Hygrometers, sling psychrometers
- ☐ Mercury, mercury compounds, mercury solutions
- ☐ Old Batteries
- ☐ Contaminated spill kit

Art Studio

- ☐ True vermillion paint
- ☐ Cadmium vermillion red paint

Cafeteria

- ☐ Old microwave oven

Parking lot/gym

- ☐ HID lamps

* Have a spill kit available and be sure everyone knows the precautions to take and procedures to follow before mercury is used.

a closer look at
Mercury.

STUDENT FOLDER



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Teacher's Guide

