

# **Inspecting Industrial/Commercial Facilities For Pollutants Of Concern**



# Presentation Overview

- Regulatory Requirements
- Pollutants of Concern
  - Copper
  - Mercury
  - PCBs
- Inspection Forms

# Regulatory Requirements

- Stormwater Municipal Regional Permit
  - *Provision C.11 Mercury Controls*
  - *Provision C.12 Polychlorinated Biphenyls (PCBs) Controls*
  - *Provision C.13 Copper Controls*
- BASMAA Regional Training Materials
  - *Guidance Manual for SW Inspectors*

**Pollutant of Concern**

**COPPER**



# Copper

- POC since the late 1980s.
- SF Bay listed as impaired by copper in 1989
- Government agencies and businesses made significant investment in copper source identification and copper reduction measures
- As of July 2003, all San Francisco Bay segments listed for copper have been removed from the State's 303(d) list of impaired water bodies and placed on the monitoring list
- Site Specific Objectives (SSOs) adopted Jan 2009

# Sources of Copper in Stormwater

- Vehicle brake pads
- Copper air emissions
- Architectural copper
- Industrial copper use
- Improper discharge of pool and spa water
- Potable water discharged to storm drains
- Soil erosion
- Copper containing pesticides

# Provision C.13 Copper Control

- Identify commercial/industrial businesses likely to use copper or have sources of copper and include them in the inspection programs
- Inspectors need to ensure that proper BMPs are in place to minimize discharge of copper to storm drains
- Special emphasis on roof runoff that might accumulate copper deposits from on-site ventilation systems at industrial businesses

# **Industrial/Commercial Sources**

- Electroplating
- Semiconductor manufacturing
- Metal finishers
- Auto dismantlers
- Car Washes
- Automotive Services



# Sources of Copper in Stormwater – *State General Industrial Permit*

- A2 2491 Wood Preserving .....As; **Cu**
- F2 332X Iron and Steel  
Foundries.....Al;TSS; **Cu**;Fe;Zn
- F5 335X Rolling, Drawing, and Extruding of  
Nonferrous Metals ..... **Cu**;Zn
- F6 336X Nonferrous Foundries  
(Castings)..... **Cu**;Zn

# Sources of Copper in Stormwater – *State General Industrial Permit*

- NA 5093 Processing, Reclaiming, and  
Wholesale Distribution of Scrap  
..... **TSS;Fe;Pb**
- and Waste  
Materials.....**Al; *Cu*;Zn;COD**

# Industrial sources of copper



# Industrial sources of copper

- *Industrial applications—Copper has many industrial algae control applications, often*
- *in systems that do not regularly discharge to either the sewer or storm drain systems*
- *(e.g., irrigation ponds, recirculated cooling water)*

*Prepared for the Clean Estuary Partnership  
(by TDC Environmental)*

*November 2004*

# Copper in Roof Runoff

- Metal finishing, electroplating and semiconductor manufacturing industries
- Processes - copper chloride etchers, ammonia etchers, and acid plating bath exhaust vents

# Inspection for Copper Deposition

- Look for chemical deposition around vents, pipes, and other roof surfaces to determine if there is a potential source of copper.
- If discolorations or deposits are seen, implement BMPs to minimize the contamination of roof runoff.



# **Best Management Practices**

- Install vent covers and drip pans
- Prevent leaks in pipe fittings and containment vessels with routine maintenance
- Properly dispose of condensate from ventilation
- Promote condensation of ammonia etchant vapor
- Install scrubber system to treat ammonia etchant vapors

**Pollutant of Concern**

**MERCURY**



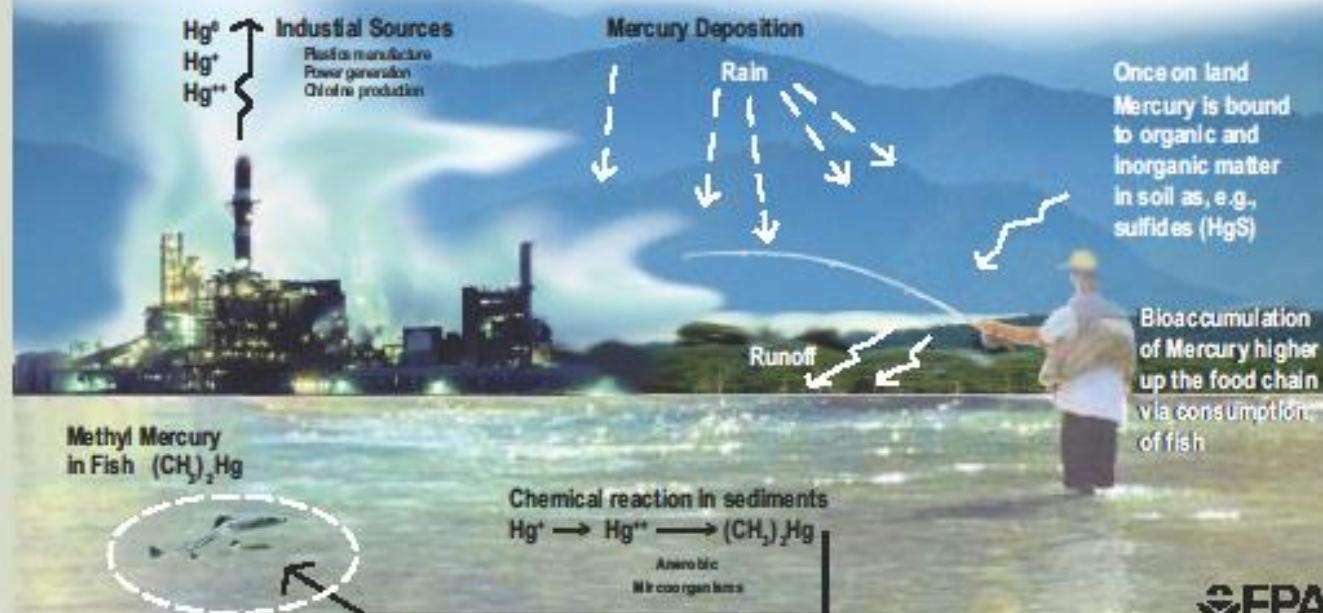


# MERCURY TRANSPORT AND FATE IN WATERSHEDS

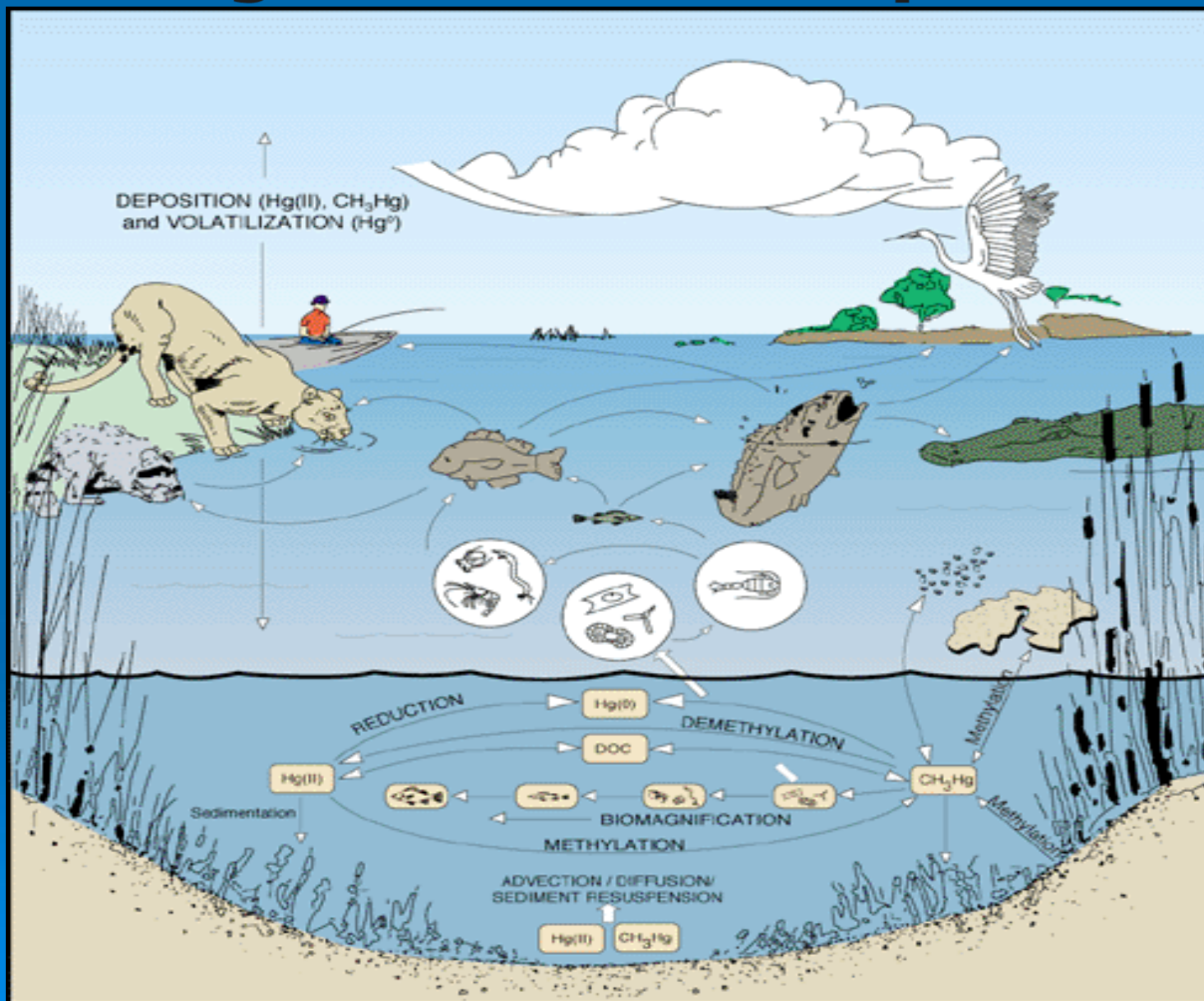
In December 1997, EPA's Mercury Study Report to Congress identified mercury as a critical human health and environmental problem needing additional scientific and technical research. Mercury poses risks to humans and wildlife, particularly because it concentrates in the tissues of animals as it moves up through a food chain. Observed adverse effects in mammals, fish and birds have included behavioral and neurological abnormalities, impaired growth and development, reproductive abnormalities such as fetal deformities, and in some

cases complete reproductive failure. Fish consumption is the dominant exposure pathway for humans and wildlife. In some cases, mostly in the past, wildlife were killed by extreme environmental concentrations of mercury, for example from seed grains treated with mercury, or from unusually severe instances of waste release. But the most pervasive wildlife effects involve reduced breeding success, which now poses severe consequences for water birds throughout North America and some endangered species, including panthers, in the Florida Everglades.

## Sources & Paths of Mercury in the Environment



# Hg- fate and transport



Mercury in the Environment  
Fact Sheet 146-00 (October  
2000)

# Hg- fate and transport



**Fish-eating birds in certain parts of the United States may ingest large amounts of methyl mercury in their diet.**

# MERCURY

- San Francisco Bay is considered to be “impaired” by mercury because some types of fish caught in the Bay contain mercury at concentrations that may threaten the health of humans consuming them.
- TMDL adopted in SF Bay Basin Plan Feb 2008

## **Provision C.11**

Permittees shall promote, facilitate, and/or participate in collection and recycling of mercury containing devices and equipment at the consumer level



# **Industrial/Commercial Sources**

- Facilities that use mercury in processes and equipment
  - metal finishing/electroplating facilities
- Facilities that have mercury containing products that need to be disposed properly
  - auto dismantlers/recyclers
  - E-waste collection centers

# Mercury Containing Products

## Fluorescent Bulbs



Tubular and  
Circuline lamps



Compact  
Fluorescent bulbs



Tanning Lamps



Germicidal Lamps

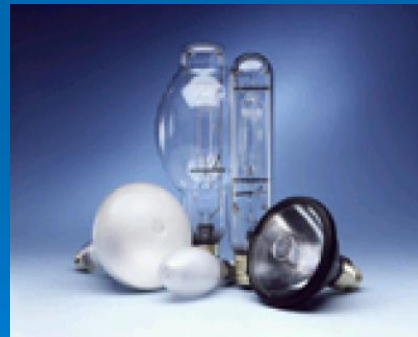
## High Intensity Discharge (HID) Lights



Metal Halide  
lamp



High Pressure  
Sodium Lamps



Mercury Vapor  
Lamps

**Source:** Northeast Waste Management Officials' Association ([www.newmoa.org](http://www.newmoa.org))

# Mercury Containing Products

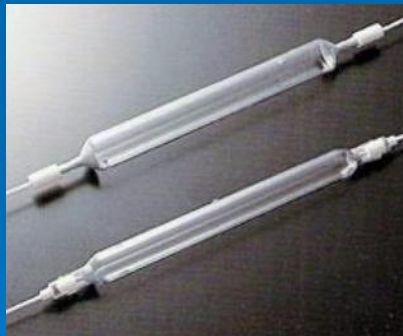
## Other Types of Lighting



Mercury Short Arc  
Metal Halide Lamp



Mercury Xenon  
Short-arc Lamps



Mercury Capillary  
Lamps



Neon Lights



# Mercury Containing Products

## Relays and Switches



Root Switch from  
Sump Pump



Tilt Switch from  
Washing Machine



Mercury  
Displacement Relay



Mercury Wetted  
Relay



Flame Sensor from  
Gas Range



Mercury Contact  
Relay

**Source:** Northeast Waste Management Official's Association ([www.newmoa.org](http://www.newmoa.org))

# Mercury Containing Products

## Batteries – Standard Mercury Batteries, Alkaline Batteries



Zinc Air Miniature Batteries



Silver Oxide Button Cell Batteries



Alkaline Manganese Oxide Button-Cell

## Thermostats



Mercury Thermostat



Mercury Switch inside Thermostat



Mercury Thermostat

**Source:** Northeast Waste Management Officials' Association ([www.newmoa.org](http://www.newmoa.org))

# **Best Management Practices**

- Proper Disposal
- Spill Management

# Proper Disposal

- Regulated by recycling and disposal requirements of the universal hazardous waste rules in the State of California
- Small business may qualify as a Conditionally Exempt Small Quantity Universal Waste Generator (CESQUWG).
- CESQUWGs can recycle their lamps at their local government sponsored Hazardous Waste Recycling and Disposal Program's sites or they can contract with a hazardous waste hauler to properly dispose of their hazardous waste.

# NPDES

Available on 'F' drive  
Clean Water Database,  
Along with DTSC fact sheets  
For Hg management



## Washington State Mercury Chemical Action Plan

January 2003

Department of Ecology Publication No. 03-03-001

Department of Health Publication No. 333-051

# NPDES

**STATE OF CALIFORNIA**  
California Environmental Protection Agency  
Department of Toxic Substances Control

**WASTE MANAGEMENT OPTIONS:  
FOR MERCURY – CONTAINING SWITCHES IN  
VEHICLES AND MAJOR APPLIANCES**

June 2004



# Spill Management

- Never touch mercury with bare hands
- Never use vacuum cleaners or brooms to clean up mercury spills
- Use cardboard pieces, a squeegee, or an eyedropper to gather and draw up the mercury
- Place the mercury and the items used to clean up the spill in a bag and dispose off as hazardous waste.

# Hg- fate and transport

- *Mercury and methylmercury exposure to sunlight (specifically ultra-violet light) has an overall detoxifying effect.* Sunlight can break down methylmercury to Hg(II) or Hg(0), which can leave the aquatic environment and reenter the atmosphere as a gas.



# Hg- cause and effect



# Hg- fate and transport

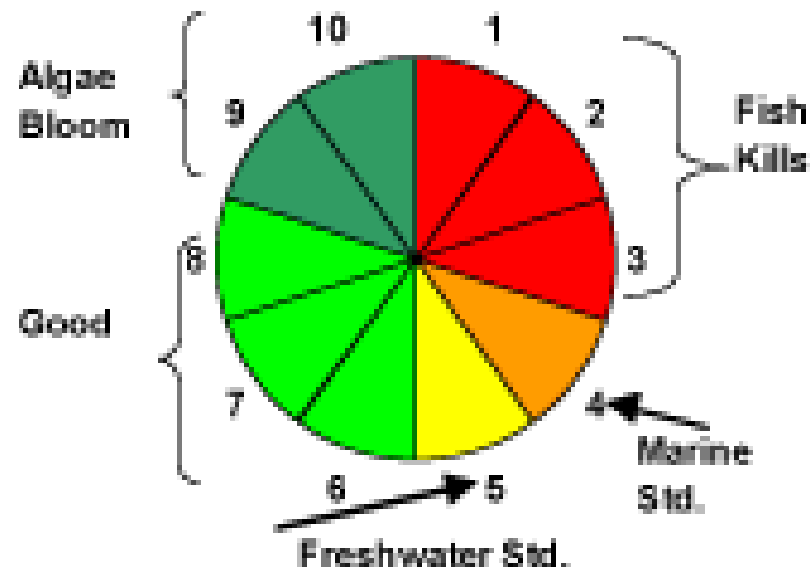




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## Dissolved Oxygen Milligrams per Liter









# **Pollutant of Concern**

**PCBs**



# PCBs

- Synthetic chemicals
- Manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects
- Regulated under the Toxic Substances Control Act (TSCA)



# **TSCA Regulations**

Designed to ban the manufacture of PCBs and ensure the proper disposal of PCBs and PCB equipment, while minimizing the risk posed by the storage, use, and handling of the substance.

# TSCA Regulations

- Include numerous exceptions and authorized activities
- Allowed uses of PCBs include servicing of PCBs in various PCB Equipment, such as transformers, capacitors, natural gas pipelines, and hydraulic systems

# **TSCA Regulations**

- Owners of PCB Transformers must register transformers with EPA
- Requirements for marking, storage, record keeping and disposal of PCB containing equipment

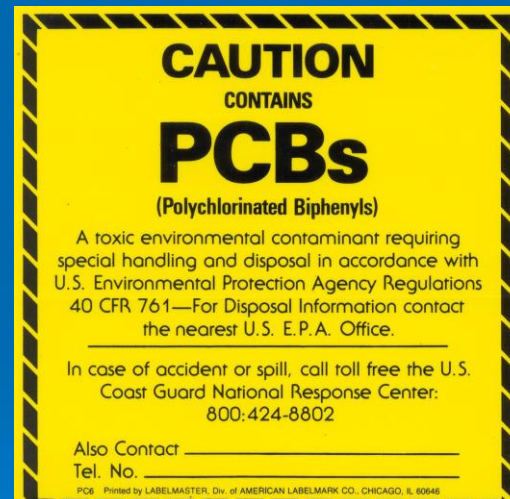
## **Provision C.12.a**

- Develop training materials
- Train municipal building inspectors to identify PCBs or PCB-containing equipment
- Integrate PCB inspections into existing inspections
- Reporting requirements

# Identification of PCB-Containing Equipment

- Equipment will be marked

Large PCB Mark (M<sub>L</sub>)



# Identification of PCBs-Containing Equipment

- Look at Records
- Recordkeeping Requirements include
  - PCB weights
  - identification and numbers of items
  - storage, transfer, and disposal dates
  - identification of shippers and receivers
- Manufacturer's label/PCB Fluid trade names
  - Aroclor, Askarel, Eucarel, Pyranol, Dykanol, Clorphen, Clorinol, Chlorextol, Diacolor, Hyvol, Asbestol, Inerteen, Elemex, Saf-T-Kuhl, No-Flanol, Nepolin, EEC-18

# Transformers



PCB Transformer

**Source:** EPA

# Capacitors

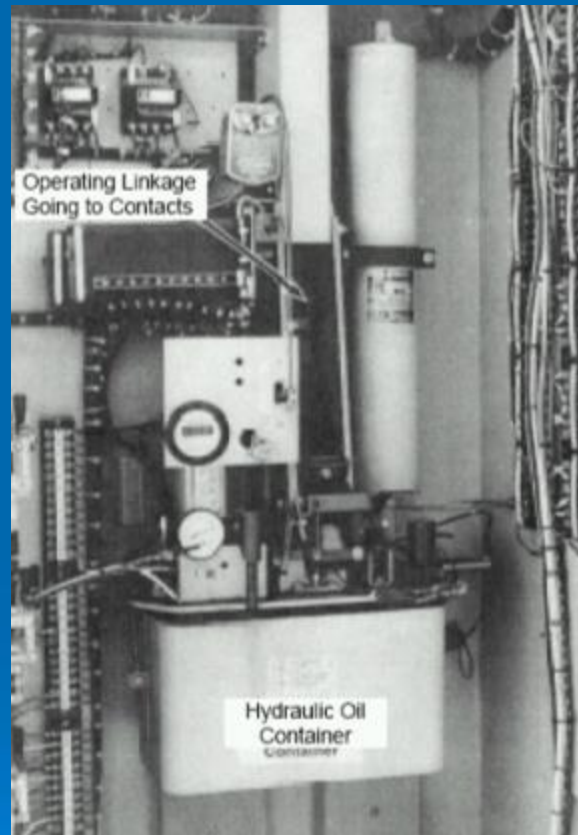


PCB Capacitor

**Source:** EPA



# Hydraulic Systems



Hydraulic Systems

**Source:** EPA

# Fluorescent Light Ballasts



**Source:** National Lamps and Components

# **Other Equipment Containing PCBs**

- Heat Transfer Systems
- Electric Motors
- Electromagnets

# Other Equipment

- These will be unmarked and possibly found in older buildings:
  - **Investment casting wax**
  - **Carbonless copy paper**
  - **Resins**
  - **General sealants and coatings, including windshield sealant and silo sealant**
  - **Lubricants, including bridge bearings and additives to transmission fluids**
  - **Paint, including marine paint**
  - **Electrical cable insulation (If electrical cable contains liquids or damp insulation, PCBs should be suspected.)**
  - **Gaskets Roofing materials**

# **Best Management Practices**

- Employee Awareness
- Spill Containment Provisions in Work Area
- Proper Storage
- Proper Disposal
- No Leaks

# Best Management Practices

Concentrations of total mercury same in sediments residential/commercial, industrial and mixed land use sites.

*Constant in sediments.* -joint storm water agency project, hg, pesticides and organochlorine study.

# Best Management Practices

Practices that *reduce sediment discharges* from storm water conveyances probably have the greatest potential to reduce discharges of pcbs. (review of potential measures to reduce urban runoff loads of pcbs to sfbay.- 2004)

# **INSPECTION FORMS**





# **Regulatory Agency Referrals**

- MRP C.12.a.ii requires inspectors to “document incidents in inspection reports and refer to appropriate regulatory agencies”
- Examples of incidents
  - PCB-containing equipment or storage container not properly labeled
  - Spills
- Referrals: phone call, email, fax inspection record

# **Regulatory Agency Referrals cont.**

- Regulatory Agencies
  - Regional Water Board
  - DTSC
  - County Environmental Health Department (CUPA)
  - EPA Region 9

*by Ch(i)*  
***Coordination with  
Hazardous  
Material Release  
Response and  
Inventory Plans.***



CONTRA COSTA  
HEALTH SERVICES

**Contra Costa Health Services / Hazardous Materials Programs**  
**4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553**  
**Telephone (925) 335-3200 FAX (925) 646-2073**  
**[WWW.CCHEALTH.ORG/HAZMAT](http://WWW.CCHEALTH.ORG/HAZMAT)**  
**WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR**



## Hazardous Materials Business Plan Inspection/Compliance Checklist

[illegible]

# County Hazmat Storm Water Inspection Form

## 1014-4.012 Reduction of pollutants in stormwater.

(a) Generally. Any person engaging in activities that may result in pollutants entering the county's stormwater system shall undertake all practicable measures to reduce such pollutants

FACILITY NAME		ADDRESS		INSPECTION DATE	
				SITE ID	
INSPECTION TYPE: Routine / Follow-Up	SIC CODE / NAICS	NOI Facility <input type="checkbox"/> Yes <input type="checkbox"/> No	WDID # or NPDES Permit #	Minor: Correct within 30 days Class I Violation: Cease activity/mitigate immed. Class II: Correct within 10 business days/before the next rain (whichever 1st)	
SELF CERTIFIED - NO EXPOSE <input type="checkbox"/> Yes <input type="checkbox"/> No					
Contra Costa Co. Code, Title 10 Public Works and Flood Control, Division 1014 Stormwater Management and Discharge Control; California Porter-Cologne Water Quality Control Act and Federal Clean Water Act incorporated by reference					
Viol Code	Authority	Requirement		Viol Class	Violation Due Date/ Violation Corrected
SW01	1014-4.006	Illicit discharge to the Contra Costa County stormwater system. "Illicit discharge" means any discharge to the county's stormwater system that is not composed entirely of stormwater, except a discharge in compliance with a NPDES permit.			
SW02	1014-4.008	Discharge that results in or contributes to a violation of the Contra Costa County NPDES permit.			
SW03	1014-4.010	Unlawful drainage connection to the Contra Costa County stormwater system.			
SW04	1014-4.012(a)	Any person engaging in activities that may result in pollutants entering the county's stormwater system shall undertake all practicable measures to reduce such pollutants.			
SW05	1014-4.012(b)	No person shall throw, deposit, leave, or keep trash (discarded objects) in or upon any street, alley, sidewalk, business place, creek, stormwater system, fountain, pool, lake, stream, river or any other body of water, or upon any public or private parcel of land, except in containers or in lawfully established waste disposal facilities.			
SW06	1014-4.012(d)	Facility cleans paved parking lots, paved areas of gasoline stations, paved private roads, or related stormwater systems as frequently and thoroughly as practicable in a manner that does not result in the discharge of pollutants to the county's stormwater system.			
SW07	1014-4.012(g)	Facility complies with any and all applicable Best Management Practices adopted by any federal, state or local agency.			
SW08	1014-4.016(c)	Facility maintains a notification procedure, trains personnel in the procedures, and personnel make notifications of any release or suspected release of pollutants to the Contra Costa County Stormwater system.			
SW09	1014-4.016(c)	Facility takes all necessary steps to ensure the discovery, containment, and clean up of any release constituting an illicit discharge to the Contra Costa County stormwater system.			
Viol Code	Authority	Notice of Intent Facilities		Viol Class	Viol Due Date/ Viol Corrected
SW10	1014-4.012(f)	Notice of intent filed with State Water Quality Control Board			
SW11	1014-4.012(h)	Facility has a Storm Water Pollution Prevention Plan (SWPPP).			
SW12	1014-4.012(f)	Facility has submitted the results of annual storm water runoff analyses to the State Water Quality Control Board.			
Best Management Practices				Exist - E, Recommended - R or (follow-up) Implemented - I	
BMP 1	Outdoor storage of materials with a potential for polluting (chemicals, wastes, equipment etc.) moved indoors; alternatively, materials raised above the ground and covered to prevent contact with run-off and rain.				
BMP 2	Vehicle and equipment washing located away from drains or any area with a potential for run-off to the County stormwater system.				
BMP 3	Adequate spill control and spill mitigation materials are available (e.g. absorbents, rags, booms, oil absorbent pads, etc).				
BMP 4	Minimal spills in storage area. All spills promptly addressed to prevent discharge to soil or surface water.				
BMP 5	Secondary containment in place for hazardous materials/wastes storage tanks and containers.				
BMP 6	Facility personnel are trained in the SWPPP and/or SPCC (Spill Prevention, Control and Countermeasures).				
BMP 7	Other existing or recommended BMPs (see continuation sheet for description).				
Total Time for Review and Inspection (in 15 minute increments):				<input type="checkbox"/> No Violations Observed	
Facility Rep Initials		CC Hazmat Rep Initials		Date	

Form SW / rev. 02/10 Page \_\_\_\_ of \_\_\_\_

# CCC Storm water Ordinance

## ***1014-4.006 Prohibited discharges.***

*(a) The release of illicit discharges to the county stormwater system is prohibited.*





# CCC Storm water Ordinance

*(h) "Illicit discharge" means any discharge to the county's stormwater system that is not composed entirely of stormwater, except a discharge in compliance with a NPDES permit*

## County Code

### Title 10 PUBLIC WORKS AND FLOOD CONTROL

#### Division 1014 STORMWATER MANAGEMENT AND DISCHARGE CONTROL

#### **1014-4.008 Discharge in violation of NPDES permit.**

Any discharge that would result in or contribute to a *violation of the county's NPDES permits*, either separately considered or when combined with other discharges, is prohibited



# WRAP UP

- POC inspections to be integrated into existing inspection programs.
  - Use Guidance Manual for quick reference
  - Use Outreach Material for educating business operators
  - Complete Inspection Forms



# Questions?

- Name and Contact Information of Trainer



Spawning Sockeye Salmon - underwater footage [HD].flv