POLYCHLORINATED BIPHENYLS (PCBs)

Community Development Department

Stormwater Management Division

5204 Bernard Drive
Roanoke, VA 24018

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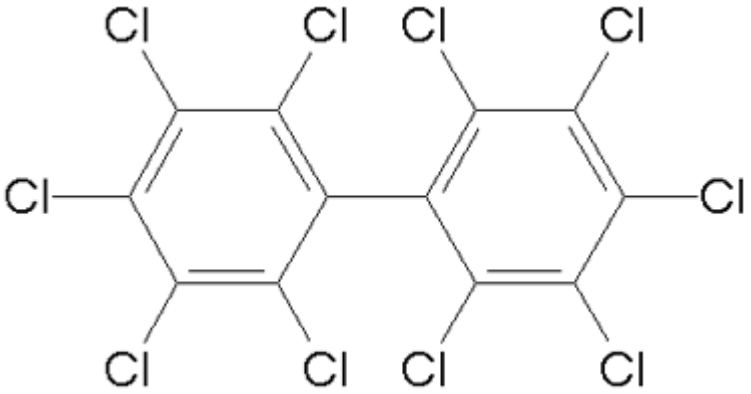
What are PCBs?

- Polychlorinated Biphenyls (PCBs)
- A group of 209 man-made compounds, widely used in the past, mainly in electrical equipment
- Properties of PCBs:
  - No taste or smell
  - Range in consistency from oil to a waxy solid
  - Non-flammable
  - High boiling point
  - Very stable



PCBs Manufacturing

- Manufactured between 1929 and 1979
- Properties of PCBs made them very attractive for use in:
  - Electrical or heat transfer equipment
  - Paints, plastics, and rubber materials
  - Pigments, dyes, carbonless copy paper
  - Numerous other materials
- In the 1970s, studies found that PCBs were *carcinogens* (cancer-causing agents)
  - Manufacturing of PCBs banned in the United States in 1979

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PCBs and the Environment

- Despite their ban, PCBs are still found in the environment.
- Levels of PCBs still exist in the air, soil, and water from previous releases and current incidental releases.
- PCBs do not easily break down in the environment.
- PCBs attach to sediment, which then get washed via stormwater runoff into local waterways.

Niagara Dam, Roanoke, VA

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Products that may Contain PCBs

- PCBs may be present in products and materials **made before the 1979 PCB ban.**
- Products that may ***still*** contain PCBs include:
  - Transformers and capacitors
  - Electrical equipment
  - Oil used in motors and hydraulic systems
  - Old electrical devices or appliances
  - Cable insulation
  - Thermal insulation material including fiberglass, felt, foam, and cork

PCB-contaminated transformers, which contain more than 50 ppm of PCBs, are subject to specific EPA regulations. Proper PCB identification labels must be visible near the access and on the transformer itself.

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Products that may Contain PCBs

- Products that may ***still*** contain PCBs include:
  - Adhesives and tapes
  - Oil-based paint
  - Caulking
  - Plastics
  - Floor finish
  - Fluorescent light ballasts

Old paint and caulk and surrounding substrate (brick, masonry, cinder block, wood, etc.) can create dust containing PCBs during renovations.

Fluorescent light ballasts (FLBs) containing PCBs should be removed and disposed of by trained professionals.

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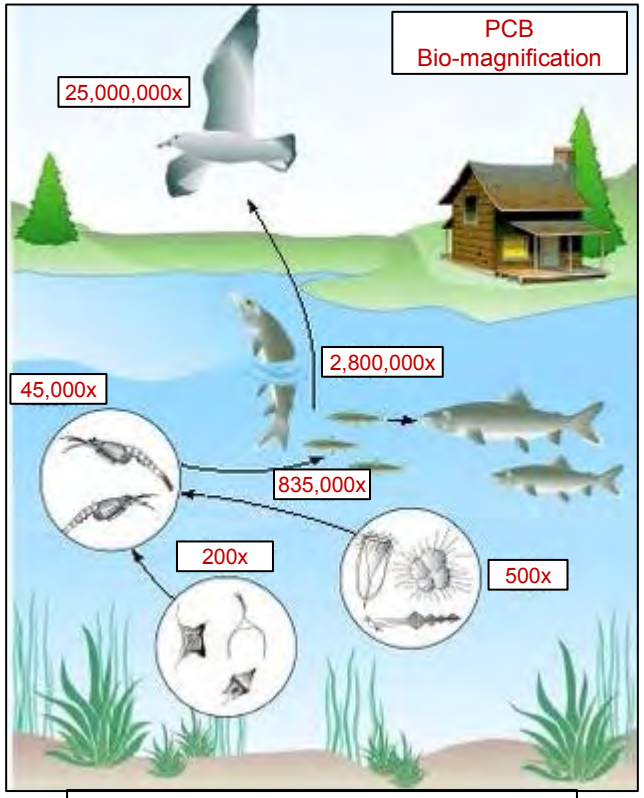
Exposure to PCBs

- PCBs (a known cancer-causing chemical) accumulate in living organisms and get passed along the food chain.
  - PCBs remain stored in fatty tissues.
- PCBs generally “bio-magnify” along the food-chain.
  - Meaning PCB concentrations are greater in organisms that are higher up in the food chain
- Humans can absorb PCBs from what they eat or drink.
  - Consuming fish, shell fish, and other aquatic animals from waters contaminated with PCBs
  - Drinking contaminated water
  - Infants may be exposed to PCBs passed along through breast milk.



Source: http://www.southernfriedscience.com/

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The Clean Water Act and PCBs

- According to the federal Clean Water Act, each state must develop **TMDL**s for all the waters identified on their list of impaired waters.
- TMDL = Total Maximum Daily Load
  - Maximum amount of a pollutant (i.e., PCBs) allowed to enter a waterbody in order that it will still meet water quality standards
  - “Pollution Diet”
- A TMDL determines a pollutant reduction target and allocates load reductions necessary to reduce the source(s) of the pollutant.

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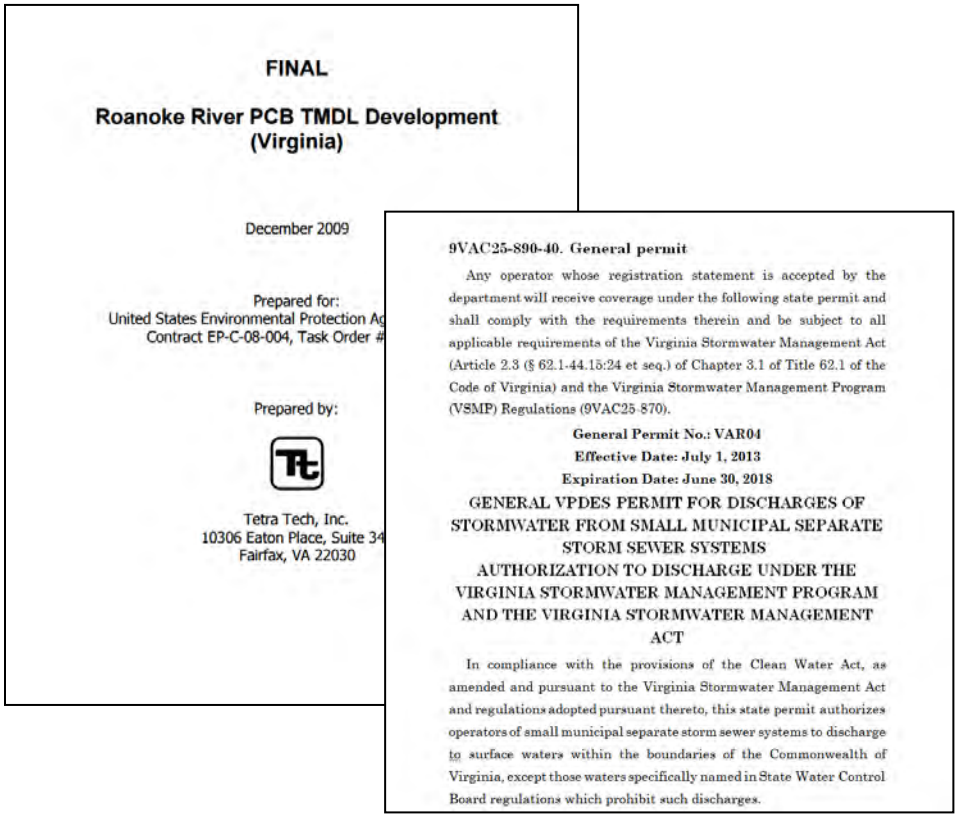
The TMDL Impacts Roanoke County

- A PCB TMDL has been developed for the Roanoke River.
- Roanoke County must reduce the input of PCBs from its Municipal Separate Storm Sewer System (MS4) in accordance with the PCB TMDL in order to comply with the County's MS4 [stormwater] permit.



FINAL

Roanoke River PCB TMDL Development (Virginia)

December 2009

Prepared for:
United States Environmental Protection Ag
Contract EP-C-08-004, Task Order #

Prepared by:

Tetra Tech, Inc.
10306 Eaton Place, Suite 34
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9VAC25-890-40. General permit

Any operator whose registration statement is accepted by the department will receive coverage under the following state permit and shall comply with the requirements therein and be subject to all applicable requirements of the Virginia Stormwater Management Act (Article 2.3 (§ 62.1-44.15:24 et seq.) of Chapter 3.1 of Title 62.1 of the Code of Virginia) and the Virginia Stormwater Management Program (VSMP) Regulations (9VAC25-870).

General Permit No.: VAR04
Effective Date: July 1, 2013
Expiration Date: June 30, 2018

GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER MANAGEMENT PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT ACT

In compliance with the provisions of the Clean Water Act, as amended and pursuant to the Virginia Stormwater Management Act and regulations adopted pursuant thereto, this state permit authorizes operators of small municipal separate storm sewer systems to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those waters specifically named in State Water Control Board regulations which prohibit such discharges.

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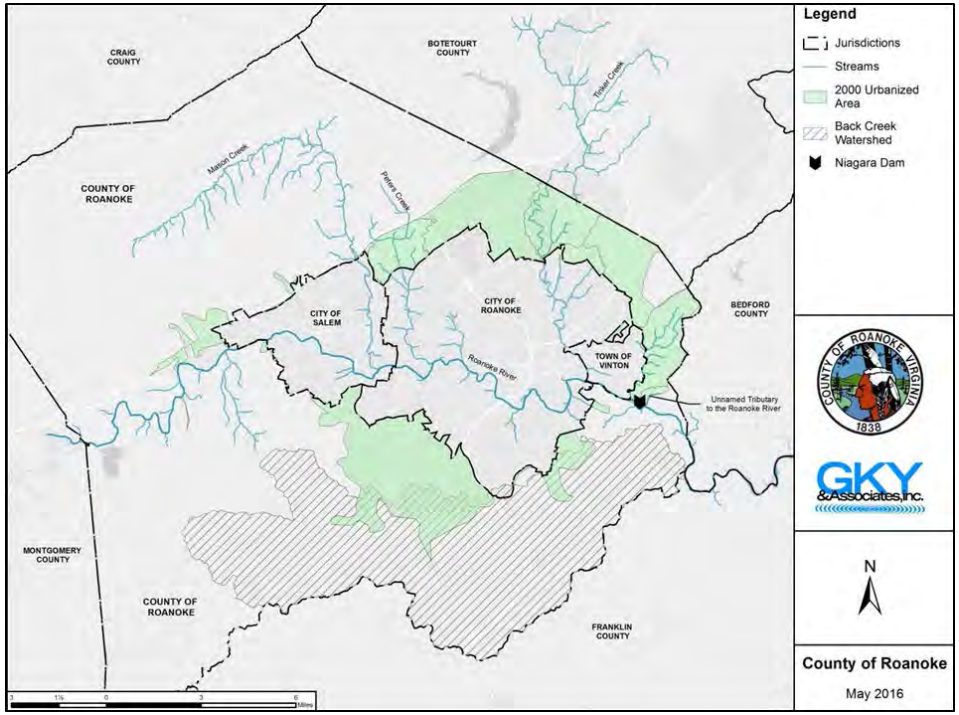
And Local Waters

- The PCB TMDL allocated the County's MS4 the following wasteloads:
  - Mason Creek (0.1 mg/yr.)
  - Peters Creek (4.7 mg/yr.)
  - Tinker Creek (38.4 mg/yr.)
  - Wolf Creek (10 mg/yr.)
  - An unnamed tributary to the Roanoke River (0.5 mg/yr.)
  - Roanoke River (47.9 mg/yr.)



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The County MS4 Allocation is Minute

The annual wasteload (quantity allowed to be discharged) allocated to the Roanoke County MS4 is approximately equivalent in weight to 1/10 of a $1 bill.*

*Not to Scale

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Every Little Effort Helps

- Everyone can help stop PCBs from being released by using their knowledge of PCBs and employing caution to prevent:
  - Spills and leaks from electrical and other equipment containing PCBs
  - Improper disposal and storage of materials containing PCBs
  - Illegal or improper dumping of PCBs-containing wastes
  - Burning of wastes containing PCBs

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Minimizing PCB Releases

- Everyone can help minimize the amount of PCBs in the environment by:
  - Properly replacing all PCBs-containing fluorescent light ballasts
  - Properly disposing of caulk, paint, and other PCBs-containing building materials during planned renovations and repairs
  - Taking precautions during renovations so that PCBs-containing building material does not contaminate surrounding surfaces
  - Using properly trained and licensed contractors to remove, clean-up, and dispose of PCBs-containing materials
  - Consulting with regulatory officials when questions arise regarding PCBs

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More Information on PCBs

- To learn more about PCBs visit:
  - Virginia Department of Environmental Quality (http://www.deq.virginia.gov)
  - Environmental Protection Agency (https://www.epa.gov/pcbs)

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