Why is a Water Quality Education Program a Critical Issue in The District of Columbia?

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Wellela Hirpassa,
Extension Agent/Water Quality Coordinator
Water Quality Education Program
Cooperative Extension Service
University of the District of Columbia
Washington, DC 20008

Surface, Ground, and Drinking Water Quality in the District of Columbia

- Federal water quality standards and regulation set and enforced by the Environmental Protection Agency (EPA)

- Local water quality standards and regulation set and enforced by DC Department of the Environment/ Water Quality Division

Critical Issues Associated with Water Quality in the District of Columbia

- Anacostia River is one of the top ten most polluted rivers in the Nation;
- Anacostia River is a tributary of the Potomac River which is the source of DC drinking water;
- Recent lead contamination in DC drinking water due to old lead based pipes and change in water treatment chemistry;
- Combined Sewer Overflow System that discharges raw sewage into the Rock Creek, Anacostia and Potomac Rivers with less than an inch of rainfall; and
- The commitment to clean up the Chesapeake Bay by both states and federal government in the bay watershed.

Population increase vs. pollution

- Garbage and oils
- Constructions, Play grounds, roads, parking lots → Impervious spaces

Challenges

CSOs

➢**Obsolete drainage systems sewage overflow enters the nearest rivers**

- **Eutrophication:**

  increased nitrogen and phosphorus concentration

- **Oxygen Depletion:**

  Death of Aquatic animals and sub-aquatic vegetations

Objectives

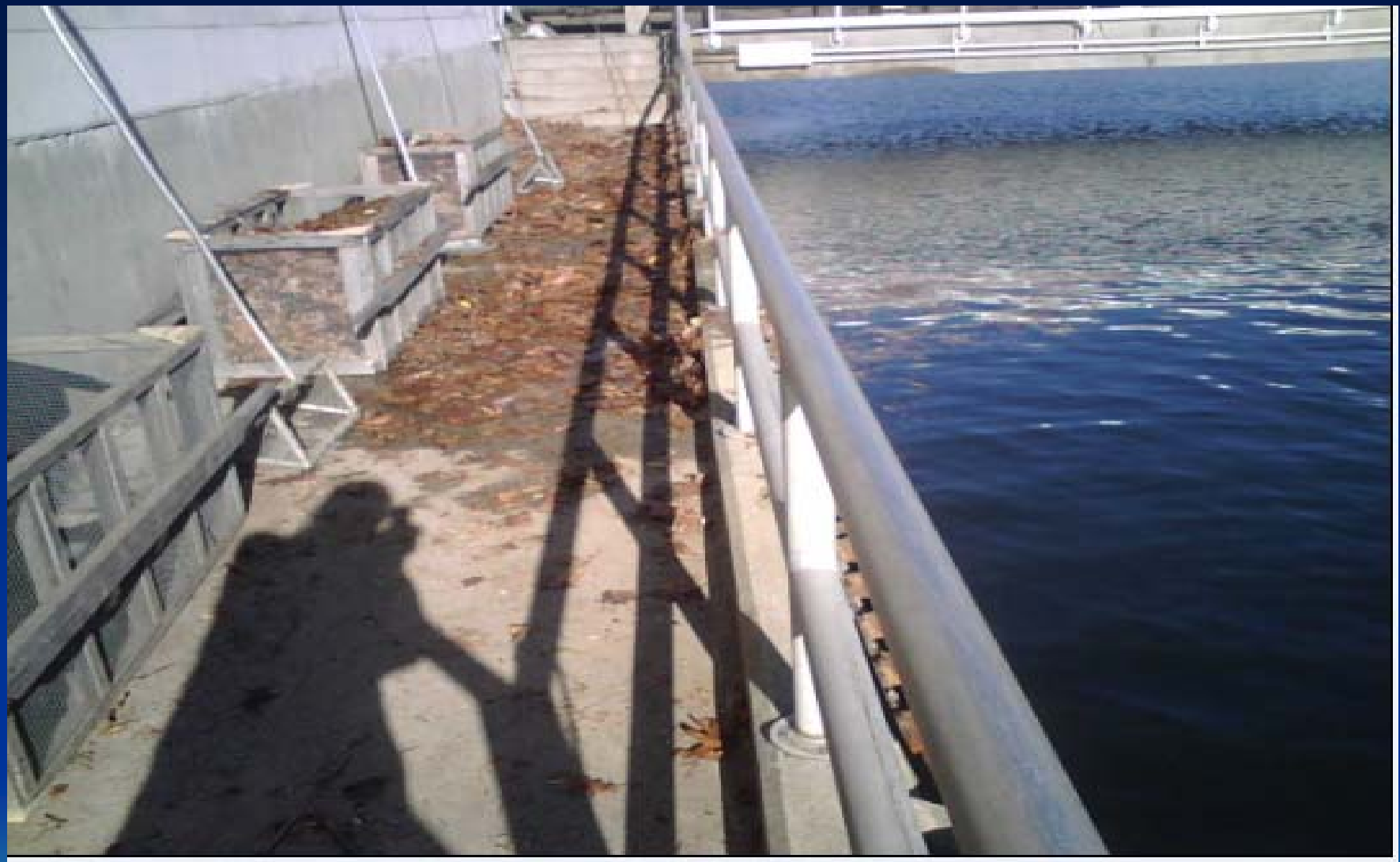
- To provide an overview of DC drinking water quality treatment, regulation, and monitoring process; and

- To highlight results of pre and post-tests from Water Quality Education Program on DC Drinking Water Lead Contamination workshop at DC Public Schools and Local Community Centers.

Overview of the Nation's Capital Drinking Water Treatment and Distribution System

- The Source of Washington DC drinking water is the Potomac River

Tributary of the Potomac River



Raw diverted water from Potomac River at Dalecarlia Water Treatment Plant before processing

Drinking Water Quality Processes

- Washington Aqueduct Division of the U.S. Army Corps of Engineers manages and operates Water Treatment Plants at McMillan and Dalecarlia in Washington, DC;

- The District of Columbia Water and Sewer Authority (DC WASA) buys treated water from the Washington Aqueduct;

- WASA distributes and sells treated water to its customers in the District of Columbia;

Drinking Water Quality Processes

- WASA collects 210 samples/month fixed site and submits to Washington Aqueduct for testing;

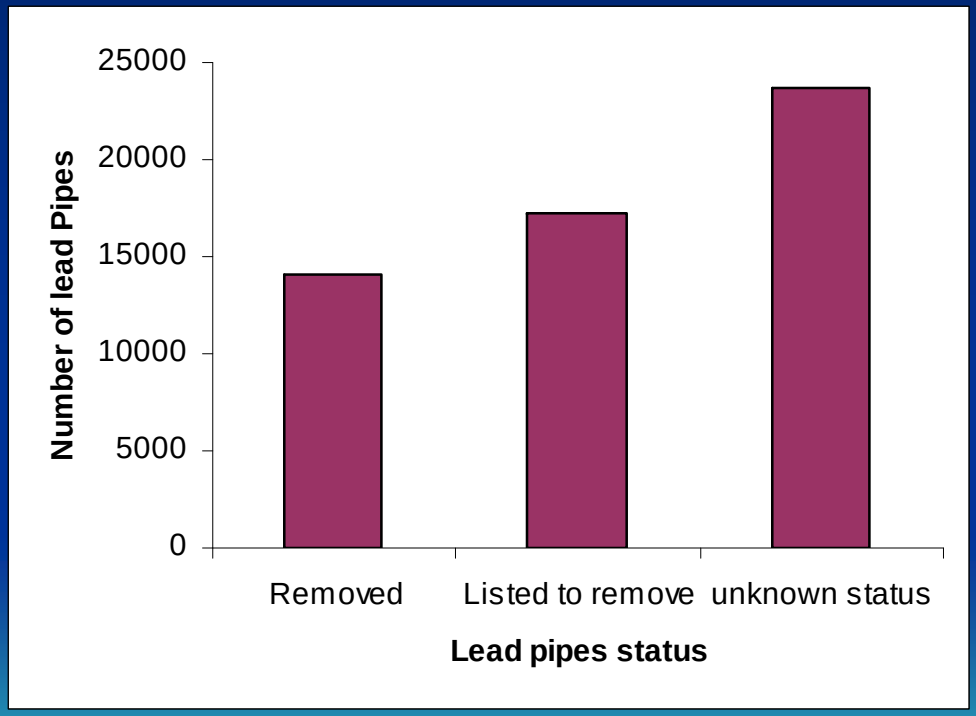
- Washington Aqueduct test for all EPA water quality parameters and sends results back to WASA;

- WASA submits results to DC Department of the Environment/Water Quality Division (DDOE) and EPA; and

- DDOE and EPA assess results for compliance.

Lead Contamination in DC Drinking Water

Total pipes 55,067



- **Excessive Lead contamination in drinking water was reported:**

In 2004
2005
2006
2007

- **14,112 pipes removed**
- **17,256 pipes on the list to be removed**
- **23,699 pipes unknown status**

Cause of Lead Contamination in DC Drinking Water

- Presence of lead-based service pipe (old infrastructure)

- Change in DC disinfectant chemistry from chlorine to chloramine that requires a base buffering treatment process

Survey Questions on Lead Contamination in DC Drinking Water

- Why is lead a problem?
- How does lead get into drinking water?
- How can I tell if my water contains too much lead?
- Do you know the source of DC drinking water?

Results of Surveys from DC Public schools

Site	# of Participant	Pre-test Score (%)	Post-test Score (%)
Elem. Schools	90	5%	80%
High Schools	200	15%	90%

Results of Surveys from Community Centers

Site	# of Participant	Pre-test Score (%)	Post-test Score (%)
Fort Davis (Ward 7)	50	5%	80%
Turkey Thicket (Ward 5)	35	10%	90%
Kennedy (Ward 2)	42	8%	75%
Greenleaf (Ward 6)	8	2%	90%

- High school students learning how to measure pH of water and data recording

Benefits of Water Quality Education

- Increases awareness of risks associated with poor water quality;
- Increases knowledge regarding the functions of water to nutrition, health and the environment;
- Reduces environmental pollution;
- Reduces water treatment cost;
- Reduces public health risks; and
- Change public behavior to adopt managing water resources

Summary

- Pre-test data show that both students and community residents in the District of Columbia do not know basic information regarding their drinking, ground and surface water quality;
- Post-test data indicated that basic concepts were acquired after water quality education workshop; and
- Allocating more funds to educate the community about their role in monitoring water quality is a critical issue that can lower non-point source pollution and eventually reduce water quality treatment cost.

whirpassa@udc.edu