

Delaware River Basin Commission

Delaware River and Bay Water Quality Assessment 2016: Toxic Pollutants

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Introduction

- The 2016 Delaware River and Bay Water Quality Assessment (2016 Assessment) reports the extent to which waters of the **Delaware River and Bay** are attaining designated uses in accordance with Delaware River Basin Commission's Water Quality Regulations (18 CFR 410, DRBC WQR) for the period **October 1, 2010 through September 30, 2015.**

Toxics

DRBC has adopted **numeric toxics criteria in Zones 2 through 6**. In addition, DRBC has a **narrative standard** applicable to waters of the Basin requiring that: “the waters shall be substantially **free from ... substances in concentrations or combinations** which are **toxic or harmful** to human, animal, plant, or aquatic life”

Zone 1 Toxics

In the most current 2016 assessment of the Delaware River where the DRBC has not adopted numeric toxics criteria (Zones 1A through 1E), DRBC **narrative toxics standard** were implemented by comparing measured toxics concentrations to the **most stringent of basin state standards** in Zones 1A through 1E to ensure attainment and maintenance of downstream water quality standards and to facilitate consistent and efficient implementation and coordination of water quality-related management actions in shared interstate waters.

Data Quantity and Quality

Water quality monitoring data from **multiple organizations** (DRBC, DNREC, NYSDEC, NJDEP, PADEP and USGS)

Includes data from **DRBC enhanced studies of PAHs and pesticides in the Delaware Estuary** (Zones 2 to 6) as well as **non-tidal (Zone 1) and tidal (Zone 5) studies of metals.**

EPA approved or equivalent methods with the level of monitoring varying by Zone and toxic pollutant.

Hardness Dependent Stream Quality Objectives (SQO)

- Toxics data compared to SQO using hardness values listed in DRBC WQR for Zones 2 through 5 (i.e., 74 mg/L as CaCO₂).
- Additional comparison with site-specific paired hardness.
- For Zone 1, criteria numeric value is computed with site-specific paired hardness and the measured ambient water concentrations of metal were also compared to criteria numeric values calculated with median, minimum and maximum hardness values measured at the nearest interstate control point (ICP).

Polycyclic Aromatic Hydrocarbons (PAH)

In a 2012 DRBC pilot survey of PAHs analyzed by EPA Method 525.2 LL using both low level SCAN analysis and low level SIM analysis to achieve reporting levels of 0.25 to 5 ng/L, single sample date.

DRBC water quality assessment methodology does not currently include assessment for PAH mixtures.

Whole Effluent Toxicity

Focused on assessment of DRBC Water Quality Zone 5 in the main stem Delaware River.

Recommendations for Future Action

- * The DRBC recommends collection of **high quality copper data** utilizing clean sample collection, clean laboratory technique, and ICP/MS or equivalent low detection level analytical methods, as well as collection of **site specific dissolved organic carbon (DOC)**. DRBC and its partner organizations must develop a consensus on appropriate management approaches toward achieving surface water quality standards for copper.
- * Coordination among basin states and agencies should continue to ensure the use of the **most appropriate analytical and assessment methodologies** for polycyclic aromatic hydrocarbons (**PAHs**).

Recommendations for Future Action

- * **Aluminum** criteria (acute and chronic freshwater objectives for the support of aquatic life) in Zone 4 warrant further attention.
- * Additional monitoring and assessment of **pesticides** in Zones 2 through 5.
- * Additional monitoring and assessment of **toxics in Zone 1**.
- * Further characterization of persistent and bioaccumulative **perfluorinated compounds (PFAS)**

Recommendations for Future Action

- * More comprehensive evaluation of potential **ecological effects from pharmaceuticals** in the estuary.
- * **Benchmark values for environmental safety** are needed and in some cases water quality criteria may need to be derived for some **emerging contaminants** to facilitate future water quality assessment.