BWON Downstream Verification

April 3, 2018

Bruce Douglas, P.E.
Principal Consultant, Denver, CO

Kati Petersburg
Managing Consultant, Denver, CO
The BWON is a Wastewater Regulation

- Successful BWON compliance requires a wastewater perspective
- There are caveats to this:
  - Some air requirements in the BWON control provisions
  - The definition of a BWON “waste” captures more than wastewaters
- Nonetheless, many critical aspects of the BWON are wastewater issues
A Facility Must Know the Benzene Loading in its Sewered Wastewaters

- "Loading" units are mass per time (Mg/yr) and thus require an understanding of both:
  - Wastewater quantity (or flow rate)
  - Benzene concentration
- The best place to learn this information is at the WWTP headworks:
  - Sewered POG discharges flow to the headworks
  - Good flow rate measurements accessible
  - Good concentration results obtainable
- It is also true that the BWON citations require the characterization of wastewaters individually, at the points of generation
Why, then, does the BWON emphasize upstream characterizations?

The EPA had good reasons

- There is volatilization
- We do want to know where the benzene is coming from
- Controls are often placed on individual high-benzene streams

- Nonetheless, the POG (upstream) characterizations can be very difficult to do correctly
- With a downstream characterization, we can confirm that we done the POGs well
A Facility Must Know the Benzene Loading in its Sewered Wastewaters (cont.)

❖ So we need wastewater characterizations at both locations—upstream and downstream
  ♦ Downstream characterizations are likely to the best, most accurate numbers
  ♦ Downstream characterizations enable a confirmation that the POG numbers are correct
  ♦ Downstream characterizations are our starting point for understanding facility wastewater benzene loading
Presentation Organization

- Discuss importance of downstream characterization of wastewaters
- Acknowledge complexities in downstream characterizations involving benzene
- Explore issues that appear to make the downstream confirmation difficult to accomplish
What are some complexities about benzene-related downstream characterizations?

❖ This is not a water balance. It is a benzene balance, and benzene is not a conservative constituent
❖ At facilities subject to the BWON, wastewaters often have an organic phase component
❖ Benzene volatilize en route to the downstream location
Recap Of Downstream Characterization

- Wastewater professionals know that downstream is where to get the best characterization number, especially for the organic phase.
- There are complexities associated with understanding downstream characterizations (notably, interphase transfer and volatilization).
- A good downstream understanding enables the development and confirmation of good POG characterizations.
What are the barriers to conducting a downstream characterization?

- First, let’s more thoroughly describe the ideal configuration
- Some barriers can be cleared away by focusing on the objective of a compliance program
- Approaches for dealing with issues arising from complicated wastewater management systems
Ideal Downstream Configuration Scenario

Incoming oily wastewater

OIL-WATER SEPARATOR

Recovered Oil

Wastewater effluent
The Ideal Wastewater System Configuration for Downstream Confirmation

- All sewered oily wastewaters go to one oil-water separator
- Good effluent water flow rate meter
- Recovered oil managed to enable quantification; for example:
  - Two-tank skimmings management system
  - While one tank in pump-up, the other settling before dewatering
  - Tracking each transfer from dewatered tank
These Barriers to Downstream Characterization Do Not Need to Exist

- The downstream confirmation is not required
- Belief that downstream characterization is only for uncontrolled benzene
Barriers Related to Complicated Wastewater Management Systems

Controlled, high-benzene wastewater

Uncontrolled, low-benzene wastewater

CONTROLLED OIL-WATER SEPARATOR

Recovered Oil

Wastewater effluent
Barriers Related to Complicated Wastewater Management Systems (cont’d)

POGs → (Regional) SUMP → Main Oil-Water Separator
Barriers Related to Complicated Wastewater Management Systems (cont’d)

Isolated discharges from specific areas of the Facility

POGs

S_x

S_x

S_x

S_x

OIL-WATER SEPARATOR

Higher-than-expected Benzene concentrations
Summary

❖ The BWON calls for knowing the benzene loading in sewered wastewaters
❖ Wastewater professionals know that a downstream characterization:
  ✦ Is the standard method for obtaining a facility-wide understanding of the wastewater
  ✦ Enables a confirmation of the POG characterizations
  ✦ May require site-specific approaches for complicated wastewater management systems
BWON Downstream Verification

Kati Petersburg
kpetersburg@trinityconsultants.com
720-638-7647 ext 106

Local Trinity Office
www.trinityconsultants.com
800-229-6655