

Should ORSANCO engage in a Comprehensive Mercury Study of the Ohio River Basin ?

Looking at this issue from a big
picture perspective.....

What do we know ?

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- Mercury is a liquid metal found in natural deposits.
- Used and present in many industrial and commercial applications over the years.
- Mercury is a BCC.....a bio-accumulative chemical of concern.
- Form of mercury(methyl) is significant as it relates to bio-accumulation.

What do we know ?

- ORSANCO adopted a mixing zone ban for BCCs several years ago, in large part, because the ban was adopted for the Great Lakes.
- Right or wrong, the general public has been led to believe that Mercury is a significant threat to public health and aquatic life in the Ohio River Basin.
- ORSANCO's current water column standard for total mercury is 0.000012 mg/l....that's 12 parts per trillion.

What do we know ?

- To offer some perspective, that's equivalent to 1 foot in 16,000,000 miles or 12 seconds in 320 centuries.
- The drinking water maximum contaminant level(MCL) for mercury is 0.002 mg/l, or 2 parts per billion, two orders of magnitude higher. The highest Ohio River levels are two orders magnitude less.
- ORSANCO states vary considerably in their mercury standards, some higher and some lower.

What do we know ?

- Our monitoring has shown violations of the 0.000012 mg/l mercury criterion.
- USEPA has dropped the 0.000012 mg/l water column total mercury standard in favor of a methyl mercury fish tissue criterion.
- Our methyl mercury fish tissue standard is 0.3mg/kg (our states have various fish tissue criteria).

What do we know ?

- ORSANCO has reported the Ohio River fully supports its fish consumption use based on methyl mercury, although some fish and water samples exceed the criteria.
- Studies have shown the Ohio River is not a good methylator of Mercury.
- There are many possible sources of mercury in the Ohio River Basin.
- Point sources such as permitted dischargers, POTWs, Industrial dischargers, CSOs, storm sewers.

What do we know ?

- Sources of mercury cont.
- Non-point sources.....runoff.
- Tributaries
- Sediments
- Air deposition
- Erosion of natural deposits

What do we know ?

- Of the many possible sources of mercury, ORSANCO has focused on permitted dischargers.
- The Ohio River does not have the same dynamics as the Great Lakes. Long detention times given as rationale for eliminating Great Lakes MZ's.
- Assuming a 1 mph flow rate in the Ohio River, the detention time in the river from Pittsburgh to Cairo is about 40 days.
- In contrast, Lake Erie is 2.6 years, Lake Ontario is 6 years, Lake Huron is 22 years, Lake Michigan is 99 years and Lake Superior is 191 years.

What we don't know.

- We don't know if the 0.000012 mg/l total mercury criterion is the right number to adequately protect the fish tissue standard of 0.3 mg/kg methyl mercury.
- We don't know if a mixing zone ban for BCCs is appropriate for the Ohio River.
- We don't know what the assimilative capacity for the Ohio River is, with respect to BCCs.

What don't we know.

- We don't know what the appropriate bio-accumulation factor is for mercury.
- We don't know the total load for mercury to the Ohio River.
- We don't know the total load for mercury to the Ohio River Basin.
- What trends in mercury concentrations has the river experienced over time ?

What don't we know ?

- We don't know what the largest sources of mercury are.....where is most of it coming from ?
- We don't know if the mercury load is a current or legacy situation (point sources, atmospheric & natural sources would contribute).
- Why monitoring data show increasing concentrations with increasing flow.
- We don't know if we are focusing our limited resources on the larger sources of mercury.

Where do we go from here ?

- Is mercury as big of a problem as the public has been led to believe ?
- If so, are there other opportunities to help address it ?
- How can we not respond with the best science available ?