



## Reality Check: W. Va. chemical spill's plume and Ky.

*Updated: Tue 6:30 PM, Jan 14, 2014*

**LEXINGTON, Ky. (WKYT)** - As West Virginia continues to deal with a chemical spill putting thousands of people's tap water at risk, the plume of chemicals is headed down the Ohio River.

The plume is expected to be in the Cincinnati-Northern Kentucky area by Tuesday evening and the Louisville area by the end of the week, according to the Kentucky Department for Environmental Protection.

On Tuesday, the number of customers given the green light to use tap water continued to inch up after the spill in West Virginia. Thursday's spill affected 100,000 customers in the state, or about 300,000 people in all.

It could still be days before everyone in the Charleston metropolitan area gets the same good news. The water company encourages customers to check a map on its website for their status.

On Tuesday morning, a large swatch across the nine affected counties remained in the "do not use" red zone. Those in the blue zone should have safe washing and drinking water, as long as people flush out their systems. Officials say the water may still have a slight licorice odor.

"I wound up flushing for hours. And it's still blue. Still coming out blue. Basically, there is so much of this," said Emin Hardeman of West Virginia. "I'd love to take a shower. That's what I've been waiting to do this whole time is take a shower. This water is just clearly unsafe. I don't want to drink it, I don't want to bathe in it."

Now, the chemicals spilled into the Elk River in West Virginia are in the Ohio River and causing concern downstream.

"In this situation we are running emergency mode. We're running 24/7. This machine has gotten a lot of work over the last few days," said Jeff Swertfeger of the Cincinnati Water Works.

Cincinnati will keep its water intake valves shut off while the plume passes.

The Kentucky Department of Environmental Protection says it's keeping a close eye too, and there is no indication of any concerns with the safety or quality of drinking water in the state.

All the fuss is over the chemical 4-methycyclohexane methanol.

Some studies have shown that chronic exposure to the chemical can cause serious health problems, according to the Kentucky Department of Environmental Protection. However, the department says the chemical is not expected to remain in the water long enough for that to be a concern.

That same chemical is also used in some Kentucky coal prep plants to clean coal. But in Kentucky, places where the chemical is stored are required to have a groundwater protection plan and a backup system to contain spills.

The State Fire Marshal's Office reviews plans, grants permits, and inspects tanks in Kentucky, like the one in West Virginia that created all the problems prompting communities downstream to test their water.

Questions & Answers



MGN Online

Q: Is the Kentucky Department for Environmental Protection monitoring water issues for drinking water intakes?

A: The Kentucky Department for Environmental Protection, Environmental Response Team is assisting the Ohio River Valley Sanitation Commission (ORSANCO) with collecting samples for testing.

Q: Is the state working with the public water supply systems in the chemicals path?

A: The DOW is working with the three (3) PWSs using surface water in this area: Ashland, Russell and Maysville and will be in contact with downstream systems as necessary. No issues are expected in either Northern Kentucky or Louisville, the subsequent two downstream Kentucky public water supply intakes on the Ohio River.

The Kentucky Department for Environmental Protection has no indication of any concerns with the quality of the public drinking water at any of these systems in Kentucky.

Q: Where is the MCHM plume?

A: The MCHM plume has been detected in the Ohio River. It was first detected in the Ohio River on Sunday, January 12 at noon. The plume reached Ashland at 5:30 a.m., Monday, January 13 with minimal detection of 0.023 ppm. That is well below the level of 1 ppm that the federal Centers for Disease Control and Prevention reportedly told West Virginia officials would be an acceptable level in drinking water. Ashland and Russell took the appropriate precautions and temporarily shutdown their water intakes on the morning of January 13, 2014 while assessing ORSANCO data; both plants are now adding carbon and treating water.

ORSANCO, working with the Coast Guard, Kentucky Dept of Fish and Wildlife Resources and the Environmental Response Team are sampling the Ohio River to track the plume.

According to ORSANCO, as of noon, January 13, 2014, the chemical's odor was detected at Greenup Locks and Dam, which is at Ohio River Mile 341.0.

The plume (what residual levels may remain in the plume) is projected to reach Northern Kentucky, Tuesday evening, January 14. No issues are expected to occur in Northern Kentucky. Residual levels of MCHM may reach Louisville later this week where no concerns are expected.

Q: What programs are in place in Kentucky to protect public water systems from spills of this or other chemicals?

A: Public drinking water facilities in Kentucky using surface water are required to have carbon treatment available in the event of a contaminant like 4-methycyclohexane methanol (MCHM) is detected.

If the material is stored at a facility in Kentucky, they are required to have a Groundwater Protection Plan (GPP) as required. In addition, the facility would be required to have secondary containment consistent with their best management plans (BMP) required under the KPDES program.

The State Fire Marshal's Office reviews plans, grants permits for installation of above ground storage tanks - primarily flammables and combustibles - and inspects the installation once completed. The State Fire Marshal's Office also conducts periodic inspections of the tanks, depending upon the types of material stored.

The federal SPCC rule provides requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan (FRP) rule.

The 1995 Amendments to the Safe Drinking Water Act required states to develop Source Water Assessment and Protection programs. Kentucky's Source Water Protection Program was developed as part of County Water Supply Plans (1999) and was updated in 2002-2003.

Q: What do we know about 4-methycyclohexane methanol use in Kentucky?

A: One of the uses of the chemical MCHM is used in some Kentucky Coal Prep Plants as part of the cleaning process and recovery of coal fines.

**Q: What are the known health effects of MCHM?**

**A:** In evaluating the information on 4-methylcyclohexane methanol (MCHM) from the Material Safety Data Sheets (MSDS) it is apparent that very little information on the potential toxic effects of either the parent compound, methylcyclohexane, nor of MCHM is available. Methylcyclohexane has a low specific gravity (floats on water) and a low solubility in water and is mixed with methanol to increase its solubility in water.

The MCHM MSDS sheets from TCI America and Eastman indicate that it is harmful if swallowed, will cause skin irritation, and cause serious eye irritation based on exposure of rabbits and guinea pigs to the pure product. Eastman indicates an acute oral LC50 of 825 mg/Kg (parts per million) and a dermal LD50 of >2000 mg/Kg for rats (the length of exposure was not given; generally such studies are 24-48 hours). No data is available on mutagenicity, carcinogenicity, reproductive toxicity, repeated exposures, persistence in the environment and degradability in the environment.

MCHM is classified as an irritant. Some studies have shown that chronic exposure to the chemical can cause serious health problems, but it is not expected to remain in the water long enough for that to be a concern.

EPA limits the concentration of all foaming agency to 0.5 milligrams per liter. Foaming agents fall in the secondary drinking water standards. Secondary standards are intended to regulate aesthetic issues such as color, taste, and texture.

There is limited information about the chemical. Precautions are advisable to limit exposure and use alternate water sources. It does not appear to be highly toxic and is not specifically listed as being regulated under the Toxic Release Inventory (TRI) or EPCRA Tier 2 reporting. May cause skin or eye irritation and harmful if ingested. Lighter than water and a molecular weight of 128.21 (TCI America MSDS). Relatively soluble in water (Eastman MSDS) and volatility is relatively high given its chemical structure.

The chemical is anticipated to biodegrade over time given: the right bacteria, the right nutrients, and the right temperature (cold decreases bacterial growth and degradation).

Higher concentrations could cause harm to aquatic and terrestrial animals, but once diluted, bacteria would be able to break it down.

## WKYT

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