

# COMBINED SEWER SYSTEM



## Human-Related Issues

### Summary:

In a Combined Sewer System, the water that comes from industrial wastewater, home sewage, and rainwater runoff funnels into a single pipe going to a treatment plant. When there is too much runoff, such as after a heavy rainstorm, the single pipe cannot handle the amount of runoff plus wastewater and the water must be sent somewhere else. For cities along the Missouri River, the Missouri River is where that overflowing waste ends up.

On an ordinary day, all combined sewage and wastewater would go through the system to treatment plants where it could be processed and reasonably cleaned. When there is overflow, this treatment cannot happen, so excess sewage can be dumped into the Missouri River without treatment. This is called a Combined System Overflow, or CSO.

After a record-breaking 9 inches of rainfall in December 2015, 200 million gallons of sewage overflow flooded the Missouri River in the St. Louis region. As climate change progresses, this problem will continue to get worse. Heavy downpours have become 60 percent more frequent in the state of Missouri since the 1950s.

This can be problematic for the Missouri River, depending on what was in the sewage and how much dilution takes place in the river. CSOs and stormwater runoff degrade water quality, threaten environmental ecosystems and public health and can lead to outbreaks of waterborne diseases. Studies during and after rainstorms have shown significantly increased levels of phosphorus, ammonia concentration, fecal coliform, and E. Coli in CSO waterways.

This is a major issue in every city with a Combined Sewer System. St. Louis, Cape Girardeau, Kansas City, Macon, Moberly, St. Joseph, and Sedalia are all cities in Missouri that have one or more CSO. The Environmental Protection Agency issued a CSO Control Policy in 1994 to establish a consistent national approach for controlling



***In a Combined Sewer System, water from industrial waste, home sewage, and rainwater runoff all flows into a single pipe.***

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discharges and to help communities meet Clean Water Act goals. The policy utilizes National Pollutant Discharge Elimination Systems (NPDESs), which is a permit that contains limits on what can be discharged and has monitoring and reporting requirements. Various cities with Combined Sewer Systems are working to update their systems, but it is a long and expensive process that not every city can afford. In 2003 it was estimated that minimizing CSOs in Kansas City would cost \$2 billion. CSOs are not just a pollution concern for cities along the Missouri River, but for approximately 772 cities in the U.S.

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**For More Information:** This is issue number 13 in volume I of issues all related to the Missouri River. To access the rest of the collection, visit the Missouri River Relief Education page at [riverrelief.org](http://riverrelief.org). This issue was published in June 2018.