

Algae in the Clark Fork River

Related Measures. Nutrient discharges from point and non-point sources in Missoula Valley, Sewer connections and septic permits.

Why This Measure?

Excessive algae growth in the Clark Fork River can interfere with beneficial uses of the stream, including recreation, aesthetics and irrigation. In addition, heavy summer algae growths in combination with low flows and high river temperatures have resulted in depressed oxygen levels in the stream, violating state standards for dissolved oxygen and stressing aquatic life. Summer algae levels may also cause changes in water chemistry which stimulate the release of heavy metals from sediments in the stream, which is contaminated with mining wastes.

How Are We Doing?

Peak summertime algal levels in the Clark Fork River below Missoula were measured in 1987 and 1995 by Dr. Vicki Watson, of the University of Montana. The algal community in the river below Missoula is dominated by diatoms, which coat rocks in the stream with a slimy film. Measures included ash free dry weight and the amount of chlorophyll a extracted from algae within a 30cm ring on the stream bottom. Both Ash free dry weight and chlorophyll a were substantially reduced in 1995 compared to 1987. The concentration of phosphorous in the river below Missoula was also reduced substantially from 1987 to 1995. This resulted, in part, from Missoula's ban on the sale of phosphate detergents in 1990, and process improvements at the Missoula Wastewater Treatment Plant to allow improved phosphorous removal. These data indicate a substantial improvement in water quality in the Clark Fork River below Missoula from 1987 to 1995, relative to nutrient pollution and algae growth.

Trend Better

Data Rating

Available **

Reliable **

Relevant ***

History of Nuisance Algae Control Efforts in Clark Fork Watershed

- ! **1983** - Champion International (now Stone Container) Pulp Mill requests new permit allowing additional discharge to Clark Fork River, prompting controversy in Montana and Idaho.
- ! **1984** - Governor Ted Schwinden initiates Clark Fork Basin Project
- ! **1986** - Clark Fork Coalition and Stone Container negotiate revised discharge permit, limiting phosphorous and nitrogen discharges for first time in watershed.
- ! **1987** - Congress enacts Section 525 of the federal Clean Water Act, authorizing comprehensive investigation of nutrient pollution in the Clark Fork/Pend Oreille watershed in Montana, Idaho and Washington
- ! **1988** - Governor's Project Declares Nuisance Algae a Priority in Clark Fork River Watershed, and the major issue affecting both Idaho and Montana.
- ! **1990** - City of Missoula bans sale of phosphate detergents. Missoula's ordinance is followed by adoption of bans in sixteen other communities in Idaho and Montana
- ! **1993** - EPA and the three states adopt tri-state water quality management plan, focusing on control of nutrients and eutrophication.

Promising Strategies

- ! Complete “Voluntary Nutrient Reduction Program”, initiated in 1994, calling for voluntary measures at the Clark Fork’s four major point-source dischargers.
- ! Expand Voluntary Nutrient Reduction Program to include other stakeholders, including non-point sources such as agriculture, local governing bodies that regulate subdivisions, forestry.
- ! Implement biological nutrient removal at Missoula Wastewater Treatment Facility
- ! Connect high-density, unsewered areas to public sewer, offering improved nutrient removal at wastewater treatment plant
- ! Maintain rural densities (one per five acres or more) outside areas which can be served by public sewage collection and treatment
- ! Encourage development standards and best management practices to limit erosion and riparian habitat degradation in residential subdivisions
- ! Restore streams impacted by livestock grazing, and restrict livestock access to streams through fencing.