There are several reasons that the 10 ppm sulfate standard should not be imposed.

1) The Minnesota Taconite plants were constructed from the 1950s through the early 1970s. These plants have been operating on the Minnesota Iron Range for the last 50 to 75 years. There is no cost-effective method to remove sulfate from water that will not result in the closure of these plants. Minnesota Taconite plants are currently competing with Iron Ore coming from Brazil. Brazil's environmental regulations are very poor when compared to Minnesota standards. The resulting closure of Minnesota Taconite plants will result in Brazil increasing iron ore output with little or no environmental regulation.
2) The initial wild rice survey that estimated that wild rice required water with less than 10 ppm sulfate was performed in the late 1940s. At this time, the best analytical method to analyze for sulfate was a precipitation method with barium sulfate as the precipitate. A second method not as effective was a turbidimetric method by precipitating barium sulfate and suspending the precipitate and determining how much light went through the cloudy suspension. A solution containing 10 ppm sulfate was a very low concentration of sulfate to determine using either of these two methods. The analytical error at 10 ppm sulfate is substantial when using either of these 2 methods. The sulfate detection limit using either of these methods is at or very close to 10 ppm sulfate.
3) Because of the inadequate sulfate detection limits of these 2 old analytical methods, a new state wide wild rice survey is needed to determine the sulfate concentration in all waters where wild rice is growing in Minnesota. The sulfate concentration of the water would be determined using new analytical methods with very minimal error and much lower detection limits. When looking at the DNR map where wild rice is growing in Minnesota, it is obvious that wild rice is growing in many areas where the sulfate concentration of the water is greater than 10 ppm.
4) I first started investigating sulfate in taconite process water in the early 1980s at the USS Research Laboratory in Coleraine, MN. It became a part of the University of Minnesota Natural Resources Research Institute where I was a Research Scientist and wrote several research papers concerning water chemistry of taconite process water. The results of these projects indicated that there was no cost-effective method of removing sulfate from taconite process water.
    a) Reverse Osmosis will remove sulfate to less than 10 ppm; however, there is a brine that needs to be disposed of. The brine will be 2 to 5 percent of the total water treated and the cost for disposal will be exorbitant without a deep-water disposal permit. The brine would have to be transported to another state for deep water disposal, or evaporated, which would require a large amount of energy.

b) Barium sulfate precipitation will remove sulfate from water, but obtaining a sulfate concentration of less than 10 ppm will result in a Barium concentration in the treated water of more than the 2 ppm primary drinking water standard.
c) Bacterial treatment in wetlands will only decrease the concentration of sulfate to about 50 ppm and would require vast acreages of wetlands.
d) Following are research report references concerning research that I conducted while at the University of Minnesota Natural Resources Research Institute. The first report contains data on Barium Sulfate precipitation and demonstrates that when the Sulfate concentration is less than 10 ppm the Barium concentration is greater than the drinking water standard. The data also indicates that the precipitation methods used in the 1940s had a detection limit that was about 10 ppm sulfate:

   Engesser, John, April 1994, "Effect of Plant Process Water Chemistry on Silica Flotation and Balling," Coleraine Minerals Research Laboratory, Natural Resources Research Institute, University of Minnesota Duluth

   Engesser, John, April 1998, "The removal of sulfate and fluoride from process water – the effect of water chemistry on filtering and flotation," 71st Annual Meeting Minnesota Section SME and 59th Annual University of Minnesota Mining Symposium, pp 177-260

5) Prior to instituting a 10 ppm sulfate standard for any Minnesota Taconite plant, the MPCA should perform a cost benefit analysis. The analysis would determine if the expense and cost of treating taconite process water to 10 ppm sulfate will result in the closure of the taconite plant due to the increased cost of producing iron ore pellets (i.e. Will the plant have to close because the cost of the pellet is uncompetitive due to expensive water treatment?)

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