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February 26, 2018

PA Department of Environmental Protection
Policy Office
400 Market Street
P.O. Box 2063
Harrisburg, PA 17105-2063

Re: Water Quality Standard for Manganese; Advance Notice of Proposed Rulemaking
[48 Pa.B 605]
[Saturday, January 27, 2018]

Pursuant to the public notice published in the Pennsylvania Bulletin on January 27, 2018, Rosebud Mining Company ("Rosebud") offers the following comments on the Pennsylvania Department of Environmental Protection's (the "Department") Water Quality Standard for Manganese; Advance Notice of Proposed Rulemaking (ANPR) [48 Pa.B 605].

Coal Mining

Rosebud is an underground and surface coal mining company located in Pennsylvania. As a coal operator, all of Rosebud's manganese discharges are limited at the state level pursuant to 25 PA Code Chapters 87, 89, and 90, and at the federal level pursuant to 40 Code of Federal Regulations Part 434. The applicable federal regulations permit no more than a 30 day average assigned limit of 2.0 mg/l of manganese for any discharge from a coal surface mine, coal deep mine, coal preparation plant or coal refuse disposal area. This 2.0 mg/l manganese limitation will not change by virtue of the proposed regulation.

What will change is that the operator will be permitted to slightly increase its manganese discharge—but still, that discharge may be no greater than the 2.0 mg/l federal limit. Moreover, the proposed regulation will not change the manganese in-stream criterion at the potable water supply intake. Here the manganese limit will remain 1.0 mg/l.

Manganese

Manganese is a *naturally occurring* metal present throughout Pennsylvania's streams. It occurs naturally at low levels in soil, water, and food and is essential for normal physiological functioning in humans and all animal species.[1] The federal government does not have a recommended standard for acute or chronic levels of manganese for toxicity to humans or aquatic life. In fact, after reviewing the best available public health and occurrence information, the EPA decided not to regulate manganese with a National Primary Drinking Water Regulation "because it would not present meaningful opportunity for health risk reductions for persons served by [a public water supply]."[2]

[1] 67 Fed. Reg. 38235 (June 3, 2002), pages 38235-38236
[2] 68 Fed. Reg. 42898 (July 18, 2003), pages 42903-42904

Public Water Supply

The proposed change in manganese water quality criteria will not impact the current protection afforded to surface potable water supply (PWS) withdrawals (intakes). Right now, a 1.0 mg/l manganese criteria standard is in place at the PWS point of intake. That standard will not, and by law, cannot change. Accordingly, the Commonwealth's PWS will be as safe following the implementation of this regulation as it is now.

It is highly unlikely that PWS operators will see any increases in operating costs as a result of this proposed regulation inasmuch as any manganese concentration increase in the raw intake water resulting from the proposed regulation will be negligible. At most, adding manganese to the list of exceptions found in 25 Pa Code Section 96.3(d) raises the manganese limit for coal mining discharges from 1.0 mg/l to the federally allowable limit of 2.0 mg/l. Plus, in Rosebud's case, these mining discharges are on average greater than 48 miles upstream of the nearest PWS intake. By the time this minor amount of additional manganese reaches the PWS, it will be diluted by the receiving waterbody to the point that it will be undetectable. Furthermore, there are already additional protections in place to ensure that manganese levels do not go above 1.0 mg/l at the PWS intake. More specifically, the Department requires all coal operators to conduct a reasonable potential analysis on all coal mining activity NPDES discharges. If the reasonable potential analysis shows that the discharge will result in the PWS intake potentially exceeding the 25 PA Code Section 93.7 standard of 1.0 mg/l for manganese at the point of intake, then the Department will apply more stringent effluent limits to the NPDES discharge permit in order to protect the PWS.

Cost Savings with Environmental Benefit

While PWS operators are expected to see no change in their treatment costs, mine operators could see significant savings from the proposed regulation. The modest increase in the permitted manganese concentration will equate to annual chemical cost savings of upwards of 15% per mine. Beyond the cost savings, a marginal increase in manganese concentration in the discharge will have a positive net effect on the environment inasmuch as it will decrease the need for unnecessary chemical treatment. Mine operators often raise pH levels in order to treat elevated manganese levels. Increasing the pH too aggressively may cause aluminum (a known toxic metal) to go into solution and require additional chemical treatment. On the other hand allowing a modest increase in manganese (which again, will remain well below levels considered toxic, and within levels prescribed by the federal regulation) will eliminate this needless chemical treatment.

Manganese Impact on Aquatic Life

Rosebud agrees with the Department's approach of specifically reviewing published aquatic life toxicity studies that are representative of Pennsylvania species and waterbodies. To that effect, aquatic toxicity manganese studies performed using marine organisms or invertebrate and fish species that are not native to, or unlikely to inhabit Pennsylvania surface waters should be excluded for consideration in any rulemaking, as should any studies that address water chemistries that differ greatly from PA waterbodies.

Using this standard, studies using water hardness levels approximating those found in Pennsylvania should be favored. Hardness is a measure of dissolved calcium or magnesium in water, and in Pennsylvania, a default of 100 mg/l (as $CaCO_3$) is used by the Department to calculate hardness dependent water quality criteria. The majority of aquatic toxicity tests conducted by investigators at a test hardness of at least 100 mg/L (as $CaCO_3$), using manganese as the toxicant (see Exhibit A) resulted in acute LC50 values and chronic endpoints for salmonids and invertebrates above at least 5.0 mg/l, which is greater than the proposed limit

of 2.0 mg/l Mn at the discharge point. Accordingly, in water consistent with that found in Pennsylvania, the applicable literature indicates that applying a 2.0 mg/l limitation will not pose a risk. *See for example*, Lasier (2000) (performing acute and chronic toxicity tests using the daphnid *Ceriodaphnia dubia* and the amphipod *Hyalella Azteca*—organisms that are found in Pennsylvania waters—and finding manganese LC_{50} values of 13.7 mg/l and IC_{50} values of 11.5 mg/l at 164 mg/l hardness); *see also* USEPA (2010) (performing acute testing on two freshwater mussel species found in Pennsylvania waters, *Lampsilis siliquoidea* (fatmucket) and *Megalonaias nervosa* (washboard) and finding manganese LC_{50} values of 31.5 mg/l to 43.3 mg/l at 112 mg/l and 152 mg/l hardness).

Rosebud did find three inapplicable studies that opponents to this proposed regulation may raise. First is the Reimer (1999) Master's Thesis. There, the study used soft water not at all consistent with that seen in Pennsylvania, and as the study itself acknowledged, its toxicity testing program was not comprehensive enough to permit derivation of guidelines for manganese. Likewise, a study conducted by Davies and Brinkman (1994) used very soft water (34 to 37.5 mg/l) that is not at all indicative of Pennsylvania water, and therefore, is unreliable in this context. Finally, a study conducted by Lewis (1976) also used very soft water (5 mg/l hardness) and tested fish eggs, which have a high natural mortality rate, making it unusable for the purposes of this proposed regulation. These studies should not be considered due to their obvious shortcomings and incongruity with Pennsylvania waters.

Consistency with Surrounding Coal Mining States

It is noteworthy that measures similar to this proposed regulation have been adopted by other coal states. Accordingly, it is not as if Pennsylvania is entering uncharted territory here. Rather, West Virginia, Indiana, Illinois, Kentucky, and Ohio all have already adopted less restrictive manganese thresholds than currently exists in Pennsylvania. This proposed regulation brings Pennsylvania in line with these other coal mining states, and at the same time, ensures that human health and the environment will not be negatively impacted by virtue of the continued compliance requirement of the 1.0 mg/l limit at the PWS intake and the overall 2.0 mg/l federal limit at the discharge.

Conclusion

When the Department approves moving the numeric criterion on manganese from 96.3(c) to 96.3(d) as directed by the statute; coal mining NPDES discharges will still be limited by the state and federal regulations at 2.0 mg/l, PWS will still be provided the same protection as they currently are afforded, PWS should see no additional cost of operations, any increases in stream manganese concentrations will be negligible, and finally, the manganese regulation will be consistent with surrounding coal mining states.

Rosebud appreciates the opportunity to provide comments regarding the ANPR. If there are any questions regarding these comments, please contact me at john.st.clair@rosebudmining.com.

Sincerely,

John St. Clair

John St. Clair
Manager of Permitting
Rosebud Mining Company

EXHBIT A - REFERENCES

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