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September 12 2012

Mr. Scott R. Schalles
Regulatory Analyst
Independent Regulatory Review Commission
333 Market Street
14th Floor
Harrisburg, PA 17101

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IRRC
2012 SEP 17 AM 9:41

Re: Proposed Water Quality Standards for Molybdenum

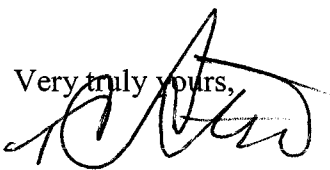
Dear Mr. Schalles:

On behalf of Langeloth Metallurgical Company ("LMC") and the Company's over 170 employees I want to thank you for taking the time to meet with me and others interesting in the above proposed regulatory amendment.

As was mentioned at our recent meeting it is my understanding that the Fish Commission recently raised an issue concerning the Tetra Tech 2012 Report. Specifically, the Commission was curious about why the Report did not factor in toxicity data relating to two species of fish, the white sucker and the northern pike. Enclosed is a short supplement report prepared for LMC by Tetra Tech which explains why that data was not considered and which reaffirms that its recent report (Tetra Tech 2012) accurately determines an appropriate chronic aquatic water quality standard for Molybdenum, which is substantially higher than that proposed in the above rulemaking.

If you have any questions about the enclosed material or any other matter relating to LMC's concerns about the above rulemaking please do not hesitate to contact either me or Mr. Dorfler.

Best regards,

Very truly yours,

Thomas C. Reed

cc: Mr. Robert Dorfler
w/enclosure

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2012 SEP 17 AM 9:42



MEMORANDUM

Tetra Tech, Inc.
400 Red Brook Blvd., Suite 200
Owings Mills, MD 21117-6102
phone 410-356-8993
fax 410-356-9005

DATE: September 11, 2012

TO: Thomas C. Reed, Dinsmore & Shohl, LLP

FROM: Henry Latimer

SUBJECT: Northern pike and white sucker representation in Mo criterion

As discussed in recent phone calls, The Pennsylvania Fish and Boat Commission has provided a brief comment on our report that they were concerned that chronic toxicity data for molybdenum for northern pike (*Esox lucius*) and white sucker (*Catostomus commersoni*) were not included in the derivation of the revised chronic molybdenum criterion. This concern appears to be related to the occurrence of these fish in Pennsylvania and the existence of toxicity data for these species that were considered, but not included in the derivation of the chronic criterion.

At your request, Tetra Tech has prepared this short memo which discusses these data and the reasons they were not included in the recently updated chronic criterion for molybdenum. However, prior to this discussion we emphasize that the decision to eliminate these data from consideration was procedural and was made during the derivation of the molybdenum criteria for Nevada (2008), which was based entirely on the suitability of the data for use and not on the presence or absence of these species in any state or the sensitivity of these species to Mo. Furthermore, these decisions were reviewed and approved by EPA. Finally, this memo reiterates that chronic toxicity for both a sensitive warm water fish (fathead minnow) and a sensitive cold water fish (rainbow trout), which occur in Pennsylvania, were included in the derivation of the chronic criterion of 30.8 mg/L, which is set forth in Tetra Tech 2012. We believe, therefore, that the proposed chronic criterion is fully protective of both the northern pike and the white sucker.

The acute and chronic toxicity data for all species are discussed in depth in both the 2012 Tetra Tech report and in the 2008 Tetra Tech criteria development report for Nevada. Acute and chronic molybdenum toxicity data were generated by Pyle (2000) for northern pike and white

sucker (Table 1). None of these acute or chronic studies observed significant toxic impact related to molybdenum (thus, all toxicity values are denoted with a “greater than” symbol indicating that the highest tested value had no impact and any effects would occur at concentrations greater than those tested). The acute white sucker study which generated an acute value of >2,000 mg/L was determined to be suitable for use and the data were included in the acute criterion database for Nevada. The control organisms in the northern pike acute study were observed to experience excessive mortality (>10%, which is the standard EPA limit for acceptability of acute toxicity tests). Therefore, in accordance with EPA’s criteria methodology (Stephan et al, 1985), the acute value of >127.7 mg/L is unreliable and was not considered further.

Both the northern pike and white sucker chronic studies exposed the fish to a maximum concentration of 1.7 mg/L and neither study observed a toxic response (Pyle 2000). Further, both test durations (13 days for northern pike and 22 days for white sucker) were too short (EPA guidance recommends a minimum of 28 days for fish or a minimum of 24 days post-hatch for exposures starting with eggs) for developing chronic criteria (as per Stephan et al, 1985). Since neither study reported an actual lowest observed effect level or similar endpoint (i.e., all we know is that fish were fine at 1.7 mg/L, the highest concentration tested) and the studies were not conducted for the prescribed length of time, neither study is suitable for use in developing a chronic criterion according to EPA. Based on the acute exposures demonstrated to have no impact, this would suggest that chronic exposure values used by Pyle (2000) were far too low to reasonably expect a toxic response.

Table 1. Summary of acute and chronic molybdenum toxicity data generated by Pyle (2000) for northern pike and white sucker. Greater than (>) values indicate that no toxic response was observed at the highest tested concentration.

Species	Acute Molybdenum Value (mg/L)	Chronic Molybdenum Value (mg/L)
northern pike	>127.7	>1.7
white sucker	>2,000	>1.7

In conclusion, the available chronic toxicity data for northern pike and white sucker failed to meet minimum EPA requirements for use in developing a chronic criterion. Further, even if these data were suitable for use, definitive chronic toxicity values were not generated. Finally, given the high acute toxicity endpoints for these species (generated by the same author), the endpoints resulting from these chronic studies do not even approximate concentrations that could reasonably be expected to result in chronic impacts. We remain confident that the conclusion set forth in Tetra Tech 2012 that a chronic standard for aquatic protection which is far higher than that currently under consideration by the Environmental Quality Board is valid and fully defensible.

Literature Cited

Pyle, G.G. 2000. The toxicity and bioavailability of nickel and molybdenum to standard toxicity-test fish species and fish species found in northern Canadian lakes. A thesis submitted to the College of Graduate Studies and Research in partial fulfillment of the

requirements for the degree of Doctor of Philosophy in the Department of Biology,
University of Saskatchewan, Saskatoon, SK.

Stephan, C.E., D.I. Mount, D.J. Hansen, J.H. Gentile, G.A. Chapman, and W.A. Brungs. 1985. Guidelines for deriving numerical water quality criteria for the protection of aquatic organisms and their uses. U.S. EPA, 822-R-85-100. Office of Research and Development, Duluth, MN.

Tetra Tech, Inc. 2008. Aquatic life water quality criteria for molybdenum. Prepared for Nevada Division of Environmental Protection, Bureau of Water Quality Planning. Prepared by Tetra Tech, Inc, Owings Mills, MD.

Tetra Tech, Inc. 2012. Review of proposed water quality standard for molybdenum for the State of Pennsylvania. July 27, 2012. Prepared for Dinsmore & Shohl, LLP, Pittsburg, PA. Prepared by Tetra Tech, Inc, Owings Mills, MD.