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LANGELOTH METALLURGICAL COMPANY

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February 8, 2008

Richard H. Shertzer
Chief
Division of Water Quality Standards
and Facility Regulation
11th Floor
Rachel Carson State Office Building
P.O. Box 8467
Harrisburg PA 17105

Re: Notice of Proposed Rulemakings (Water Quality Toxics Management Strategy-Statement of Policy-39 Pa.B.258; Triennial Review of Water Quality Standards-39 Pa.B.236), Comments of Langeloth Metallurgical Company ("LMC").

Dear Mr. Shertzer:

LMC submits the following initial comments concerning the above referenced Rulemaking(s). Of particular concern to LMC are the proposals to modify Chapters 16 and 93 of Title 25, Pa.Code, to classify Molybdenum as a "toxic substance," to obligate the Department to consider the water quality impacts of Molybdenum ("Mo") on humans when calculating effluent limitations for NDPES Permits, and which establishes an "in-stream" water quality standard of .210 mg/L for Mo.

Interest of LMC/Introduction To Comments

LMC is located in Langeloth, Washington County, Pennsylvania. It has operated in this location for close to 100 years, and currently operates a metals roasting facility, where among other activities, it roasts molybdenum ore to produce molybdenum-based products for use by others. LMC employs 152 local residents, including over 120 of whom are members of the United Auto Workers of America in high-paying, skilled jobs.

Because there is no known method for removal of Mo to levels such as those which may be imposed if the proposed Rulemaking(s) relating to Mo are adopted, and because there is no justification for adopting a state-wide standard, the Rulemaking(s), if implemented, will threaten LMC's ability to continue to operate its facilities.

Summary of Objections

LMC objects to the above cited aspects of the rulemaking and believes that the proposed molybdenum standard should not be adopted by the Environmental Quality Board for the following reasons:

- LMC and the public have not been afforded any technical supporting information as to a justification for proposing an in-stream standard for molybdenum of 0.210 mg/L;
- LMC does not believe that there is a need to develop a statewide standard for molybdenum in drinking water, nor has the state demonstrated any such need;
- Molybdenum is not considered a "toxic" substance and science has clearly shown molybdenum to be an essential micro nutrient in plants, animals and humans;
- LMC has operated under an NPDES from the DEP for the past 25 years, a permit that has provided for discharge of molybdenum of 30 mg/L (monthly average) with no negative impacts noted by LMC or by the State in the Burgettsfork drainage into which LMC discharges;
- LMC believes that this rulemaking represents a gross misuse of state and private (LMC) resources by proposing to adopt a statewide standard, when the State has not demonstrated a clear need for such a standard to deal with issues that can be addressed on a site specific, localized basis under the existing regulatory program dealing with Mo;
- The technical basis that might be support for the States justification of a very restrictive in-stream molybdenum standard (assuming that a basis is indeed presented by the state) is very weak even as noted by EPA; and,
- The State has been made aware that there is not a technology available that will reduce molybdenum in NPDES discharges to the 0.210 mg/L concentration that is being proposed.[1]

Specific Comments

1. The Rulemaking(s) Fail To Provide The Public With Any Meaningful Information to Enable It To Determine The Basis For The Proposals Relating To Mo And Is, Therefore, Procedural Defective.

The proposals relating to Mo will have an immediate, direct and substantive impact upon LMC, and presumably, other industrial waste water dischargers as well. However, the following is the **only** discussion about Mo in the Rulemaking(s)" *The Board is proposing to add ambient water quality human health criteria for molybdenum (210ug/L)....to the water quality standards*

[1] In connection with a pending application to renew its NPDES Permit, LMC and DEP have investigated whether there exist technologies which can reduce the levels of Mo present in its effluent. Initially, DEP believed that an ion exchange treatment unit in use at another company's Washington County, Pennsylvania facility could be successful in reducing Mo concentrations (although not to levels sufficient to meet an in-stream water quality standard of .210 mg/L). However, after studying the effectiveness of Molycorp's system, DEP eventually concluded that system "showed little or no removal of molybdenum," and authorized Molycorp to suspend use of the treatment system being evaluated. LMC's own investigation of available treatment technologies also confirms that there exists no currently available technology which would remove Mo to levels sufficient to comply with the proposed in-stream standard.

since these compounds are expected to be present in discharges." 38 Pa.B. 241 (Jan. 12, 2008). To date, and despite both oral and written requests for copies of the all materials relied upon to justify the Mo proposals, LMC has not received such data. Absent specific information, *inter alia*, as to "why" the Mo proposals are purportedly needed and "what risks" and at "what levels" Mo is known to pose to humans, the public in general, and LMC in particular, have been denied a meaningful opportunity to comment on the proposals relating to Mo. Accordingly, it respectfully submits that the Environmental Quality Board ("EQB") should table further consideration of the Mo proposals until it (and the public) is provided with the basis for the proposals and all interested parties are afforded the opportunity to study the same and respond as appropriate.

2. Until the Public Is Provided With An Adequate, Meaningful Explanation As To Why There Exists A Need For the Proposals Relating to Mo The Same Should Be Tabled.

Of equal importance, absolutely no information is provided the public (or LMC) as to why an in-stream water quality criteria of 0.210 mg/L is needed to protect "human health." No studies, standards or other data that indicate Mo in state waters is any threat to human health is referenced, nor is any data presented that indicates a statewide problem exists due to contained molybdenum in water supplies; or for that matter, any problem exists due to waters that may contain molybdenum. No explanation as the type of health effects that may be associated with Mo intake is provided. Again, the public (and LMC) are left to guess as to what specific (if any) health concern is being addressed by the Mo proposals----is there now some previously unknown evidence that Mo intake is linked to something other than a potential for increased incidences of gout?

In summary, assuming that the adoption of a molybdenum standard is needed, no justification is given by the State as to why a standard that will have statewide applicability should be adopted.

3. There Is No Evidence That Mo Is A Substance That "Is Expected To Be Found In Discharges" Nor Any Basis For Concluding That To The Extent There Is A Need To Address Mo In LCM's Discharge That It Cannot Be Accomplished Under The Regulations As They Now Exist.

Although the Notice of Proposed Rulemaking states that there exists a need for the Mo Rulemakings because Mo is "a compound expected to be present in discharges," no support for this statement is set forth in the Notice.

In the time LMC has had available to it to respond to the Notice it is has attempted to identify other industrial wastewater dischargers that might "expect Mo to be present in their discharges." They have found none in Western Pennsylvania, who would be effected by the proposed Mo Rulemakings. While there may be dischargers in other parts of Pennsylvania whose discharges are expected to contain Mo, LMC submits unless DEP can indicate who they might be, the proposed Mo rulemaking has all the "ear marks" of a special regulation designed to deal with one discharger.

Furthermore, there is no need to promulgate a new regulation to address Mo in LMC's discharge or in the discharge of any other company, to extent any actually exist, because well over a year ago DEP informed LMC that it was considering amending its NPDES permit to impose more stringent Mo limits in its discharge. This proposal was developed under the regulations as they now exist---why then is there any need to change the regulations?

In addition, after meetings with DEP and after DEP ultimately conceded that there currently exists no known treatment technology that would achieve a reduction in Mo to levels any where near what DEP initially suggested might be appropriate, LMC was led to believe DEP was revaluating how best to deal with LMC's pending permit renewal application. Now, instead of being contacted by the DEP office working on its renewal application about how it NPDES permit might be modified, it learned that DEP has proposed an entire newly regulatory initiative, apparently designed to deal directly with is pending renewal application.

If it was possible almost two years ago to properly regulate LMC's industrial discharge under the regulations as now exist, including the Mo component thereof, there is clearly no need to promulgate a entirely new set of regulations which, once finalize, cannot be easily changed or modified.

4. There is no known method for sufficiently removing Mo to such levels as to achieve an instream criteria as low as 0.210 Mg/L. Mo Is Not A Carcinogen, There Is No Peer-Reviewed Science To Support Classifying Mo as a "Toxic Substance" for Humans, and There Exists A Clear On-Going Debate Among Scientists As To Acceptable Levels of Mo Intake in Humans, It Would Be Completely Unreasonable And An Abuse Of Discretion To Adopt The Proposals Relating To Mo.

For over 25 years LMC has discharged waste water containing Mo limits of up to 30 mg/L on a monthly average, with a maximum daily limit of 60 mg/L of Mo into an unnamed "tributary" of an otherwise polluted stream in southwestern Pennsylvania. During this period (and for years prior thereto when discharges were not, as a practical matter regulated at all) there has been no recorded "out break" of "gout" in and around Southwestern Pennsylvania, in general, or the Langleloth/Burgettstown area, in particular.

Nevertheless, in the absence of any evidence that anyone would actually intake Mo at any levels,[2] DEP is proposing to reduce the levels of Mo that LMC can discharge

[2] Presumably in the case of LMC, DEP has based its "risk" to humans from Mo intake on the theory that a human of a certain weight will, continuously, over an extended period of time, drink the water in Burgetts Fork and, at some point, develop gout. That, of course, is pure nonsense because Burgetts Fork has never in recent memory, (if ever) been used as a source of potable drinking water. However, even if one accepts DEP's "theory" of exposure, the fact remains there is no evidence that anyone has suffered any ills effects

to levels that would achieve an in-stream level of Mo not to exceed 0.210 mg/L, a level which almost 150 times lower than that which LMC is currently allowed to discharge on average each month. It is estimated that such an in-stream criteria would, if adopted, result in LMC being required to reduce the Mo levels in its discharge to less than 3.0 mg/L.

As DEP knows full well, there does not exist any currently available technology that is capable of achieving such a low concentration of Mo. As noted previously in footnote 1, *supra*, DEP has known for sometime that technology it "hoped" might prove successful in removing more Mo from industrial waste streams simply did not work. Why then, would DEP proceed to propose an in-stream standard it knows cannot be met by at least one company, thus placing at risk the high paying jobs of 100's of Pennsylvanians?

Given that DEP is fully aware that there exists no known practical technologies than could achieve the in-stream standard for Mo that it is proposing, LMC submits that such a proposal is clearly an abuse of discretion, particularly in the circumstances present here.

This is NOT a situation where the substance in question might cause cancer in humans or even a life-threatening health problem. This is NOT a situation where there even exists any clearly accepted science that Mo at levels as low as that associated with the proposed in-stream standard pose increase in risk of any life-altering condition. This is also NOT a situation where Mo, at levels any where near that associated with LMC's current discharge, poses any risk to aquatic life.

5. Molybdenum is an Essential Micronutrient and EPA Has Chosen Not to Adopt National Drinking Water Standards for Mo.

Molybdenum is a metal, essential trace mineral, and cofactor for enzymes xanthine oxidase, aldehyde oxidase, and sulfide oxidase. These enzymes are needed for a variety of metabolic processes in animals. In plants, Mo is required for nitrogen fixation and for reduction of nitrate to nitrite in bacteria.

A significant body of information has been developed with particular focus on the relationship of molybdenum deficiency and the incidence of cancer. This relationship between molybdenum deficiency and the incidence of esophageal cancer in humans was first reported in 1966 among the Bantu of Transkei is Southern Africa was attributed to the consumption of food locally grown in soil low in molybdenum. In the ensuing years, a number of US researchers, notably Dr. S. P. Yang of Texas Tech, have validated this relationship of molybdenum deficiency to increased severity of cancer in mice and rats.

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from potential Mo exposure in and around the area where LMC has operated since the 1920's. While there may be other locations in Pennsylvania where Mo is discharged into receiving streams, since DEP has failed to indicate, in the Notice of Proposed Rulemaking, where such locations might be it is impossible for the public to know whether any actually exist.

Mo is not "toxic" to aquatic life and, as discussed below in more detail, has never before been considered for designation as a "toxic" subject to regulation under Chapter 16 and no "in-stream" water quality criteria designed to protect "human health" has ever been promulgated for this metal.

This is not surprising because Mo is not considered a "priority pollutant" by EPA, has never been classified as a carcinogen, and is a substance for which EPA has never seen the need to establish a Maximum Contaminant Level ("MCL"), or Maximum Contaminant Level Goal ("MCLG") pursuant to the Federal Safe Drinking Water Act. There is also no basis to conclude that Mo, ingested at any levels, has a teratological impact. Indeed, the only suspected "health effect" associated with excessive Mo intake is a potential increase in the incidence of gout, a non-life threatening medical condition, most often associated with the excessive intake of alcohol or heredity. Furthermore, there exists very little credible scientific data on the "health effects" of Mo and, what little credible evidence there is confirms that the in-stream criteria in the proposed Rulemaking(s) is without scientific foundation.

The Mo proposals in the Proposed Rulemaking should be tabled and not again considered until DEP presents to the EQB (and the public) a sound reason for why it is NOW imperative that an in-stream criteria be established for Mo, coupled with credible, scientifically sound data that Mo is a truly "toxic" and further; DEP is able to support with such evidence, a level of tolerance that, if exceeded, will actually pose some legitimate risk to humans.

6. Even Absent Any Explanation As To How DEP Arrived At An In-stream Water Quality Criteria of .210 mg/L, The "Science" On The Effects of Mo Intake On Humans Is Not Sufficient To Justify The Proposed Rulemaking.

There are **NO** federal regulatory standards setting a water quality limit for Mo. Mo is not regulated by either State or Federal "safe drinking water criteria." While EPA has issued a "Health Advisory," which is a non-binding advisory publication the "standard" for Mo discussed therein has not been peer reviewed. EPA does not consider its Mo "advisory" to be binding.

No EPA Publication classifies Mo as a potential or even suspected human carcinogen.

In addition, and while EPA's Integrated Risk Information System ("IRIS") also discusses Mo and discusses a Lowest Observable Adverse Effect Level for Mo, even EPA concedes that its data on Mo has, at best, a "medium" confidence level. Also, as is clear from a review of the "backup" materials used in the development of the IRIS information this "level" was based exclusively on a limited study conducted on humans during 1961 in Armenia ("Koval'skiy, et al. 1961), when it was part of the Soviet Union.

The Koval'skiy Study found only one potential "health" issue with Mo intake namely, an increased potential for "gout" in the group studied. However, others, who have reviewed the Koval'skiy Study have concluded there were:

> "...**serious methodological difficulties are noted with this particular study** including possible analytical problems in the assessment of blood and urinary copper levels and the very small size of the control group in contrast to the molybdenum-exposed group;" (emphasis added);

and, further

> "**Other studies in humans do not support the existence of this particular adverse manifestation [gout] in association with elevated dietary intakes of molybdenum.** For example, Chappell and coworkers (1979) reported reduced uric acid concentrations in serum after molybdenum intakes of greater than 7ug/kg/day from drinking water. Dcosthale and Gopalan (1974) reported no change in uric acid excretion at intakes up to 1.5 mg/day in four volunteers." (emphasis added).

Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium and Zinc (National Academy of Sciences 2001)(hereinafter "Food and Nutrition Board Report"), page 434.

While the NAS Report also set forth an "upper limit" of intake for Mo for humans ("UL") it is important to consider that this same report stated:

> "**inadequate data exist to identify a causal association between excess molybdenum intake in normal, apparently healthy individuals and any adverse health outcomes.**" (Emphasis added).

Ibid. at page 435.[3]

Also, a more recent (2007) peer reviewed report published by the Linus Paulings Institute, which is associated with Oregon State University, observed the following with respect to Food and Nutrition Board Study, and Mo "toxicity" in general:

> "The toxicity of molybdenum compounds appears to be relatively low in humans [and] The Food and Nutrition Board (FNB) of the Institute of Medicine found little evidence that molybdenum excess was associated with adverse health out-

[3] The Food and Nutrition Board Report also conceded that there is an extremely limited data on the effects of Mo on humans: "There are limited toxicity data for molybdenum in humans," and most of the data available is derived from "data for animals, especially ruminants." at page 433. Moreover, this Report goes on to state: "the basis for toxicity of molybednum in ruminants is not relevant for humans," because none of the affects from Mo intake observed in laboratory animals have ever been observed in humans." Ibid. Nevertheless, the Food and Nutrition Board Report suggests a UL value for human based on observed effects on rodents, relying, exclusively on two studies.

comes in generally healthy people. To determine the tolerable upper level of intake, the FNB selected adverse reproductive effects in rats as the most sensitive index of toxicity and applied a large uncertainty factor because animal data were used."

See, http://lpi.oregonstate.edu/infocenter/minerals/molybdenum/

The above references constitute virtually the entire "body of science" concerning Mo toxicity with respect to humans.

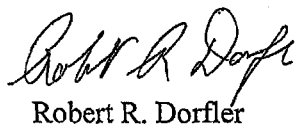
Although there is no basis for concluding that an in-stream criteria for Mo is needed, in circumstances where it is undisputed that Mo is NOT a concern to aquatic life, the appropriate course of action, should the rulemaking proceed, is to modify the proposal to provide that the criteria will be applied not at the point of discharge but at the first point downstream where a potable water supply intake is located.

Mo has simply never been a concern to aquatic life. Therefore, should the rulemaking proceed on the basis that it is "needed" to protect humans against as yet undetermined and yet undocumented ailments, the appropriate course of action (particularly in the clear absence of any known treatment technologies) would be to provide, as DEP has done for other substances not "toxic" to aquatic life, that the in-stream criteria for Mo be assessed not at the point of discharge but at the first point downstream where an actual public water supply intake exists.

There is no reason to treat Mo differently than, for example other substances that are not a concern to aquatic life such as chlorides, fluoride, phenolics and sulfates. See, 25 Pa.Code§93.7.

LMC is fully sensitive to the need to protect humans and the environmental from unreasonable exposure to all types of substances. However, in circumstances where there is no evidence that Mo has resulted in any "adverse" health consequences to humans at any level, and DEP has been comfortable not setting any in-stream level for this substance in the past, in the of absent some explanation from DEP as to why "now" it is imperative to do so (the data in IRIS, the Health Advisory and the Food and Nutrition Board Study has been available for years), the Mo proposals in the Proposed Rulemaking should be tabled.

Respectfully submitted,



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