

Written Testimony concerning proposed metallic mining rule
Board of Environmental Protection

I must voice my concern about the lack of time you have allowed for consideration of this vital issue by the citizens. After months of deliberation on the part of the DEP apparently dating back to at least December 11 of last year, the public has little more than a month to consider and formulate a response to these rules. Not only does such a hurried time frame stifle public participation but it decreases transparency and trust in your actions and raises the question of just administration and relief.

On September 7 Commissioner Mercer testified before the Energy and Natural Resources Committee that the DEP would employ data and science in its endeavors. I would like to present some data and science that was omitted in presentations by the DEP staff at your last 2 meetings.

Maine is already burdened with environmental toxicity from metals – lead, mercury and arsenic. Besides arsenic, uranium has been found in our water wells. In 2014 the journal Environmental Health published a study from 3 school districts in rural Maine that showed significant reductions in Full Scale IQ scores of 5 to 6 points when exposed to well water containing arsenic, some levels were even as low as low as 5 ug/l. The EPA drinking water standard is 10 ug/L.

Elise Gould from the Economic Policy Institute estimated that for the loss of every single IQ point, life time earning decreases approximately \$21,000 in today's dollars. This does not include loss of income taxes to the state, or societal costs for medical care of problems such as cancer diabetes cardiovascular disease associated with toxic exposures or psychological care and special education.

As Professor Eastler stated, we need to address today and not "prior time" as far as metallic mining's record of technology and safety. Today, of the 7 major industrial sectors in the US EPA's annual Toxic Release Inventory, the metallic mining sector has consistently generated almost half (45% in the most recently published inventory) of all the waste from all the industrial sectors. More concerning, 99% of metallic mining waste is left as on site disposal – that is left on the land forever. And this has been going on for years. Acid mine drainage from Maine's unusually high sulfur content will mobilize large quantities of these toxics to be disbursed.

Lead is extremely toxic and especially devastating to the fetus and children. While release from all the other sectors has decreased by 30% from 2003 to 2014, metallic mining's contribution of lead to our environment has steadily increased, and in 2014 accounted for 91% of all of the total release for all industrial sectors. The new Eagle mine in Michigan is in its incipient stage of operations but in 2015 it already produced 35,741.3 pounds of toxic lead waste (CAS N420) that was disposed of on site. (TRI Form R, 2015 for facility ID's of Eagle Mine 4986WRTNTG651TR and 4981WGLMNL4547C.)

The data clearly demonstrates that despite the mining industries claims, metallic mining continues to leave increasingly greater amounts of highly toxic materials in our environment. "Prior time" continues today!

The proposed rule allows for sintering, roasting, briquetting and calcining. By adding heat in the beneficiation process, all of these processes generate fine particulate matter (PM2.5) that will contain heavy metals. These are the very most toxic type of particulate matter with effects in extremely low concentrations.

Besides these dangerous forms of beneficiation, the proposed rule is not protective of human health because there is no proscription of smelting. In fact the only mention of smelting that I could find in the statutes was for the Saco River Corridor Commission, where it was proscribed. I did part of my medical training in a community that had an active smelter, and practiced many years in another community where the closed smelter had left a toxic legacy that is adversely affecting children. In both communities, multiple generations will suffer from birth defects, neurodevelopmental problems and cardiovascular disease. The soil and air was contaminated, so children while playing inside or outside of their homes exposed to dust were continually exposed to toxic metals.

In 2012, the Engineering Department at the University of Arizona published “Although there are numerous natural and anthropogenic sources of atmospheric particles, *mining operations pose the greatest potential risk to human health and environment*”

It appears that the Board should have authority under section 584 “Establishment of ambient air quality standards” to prevent these air toxic and hazardous substances from being released. Strict standards should be enacted to protect the quality of ambient air.

Risks of cancer in children have been associated by mother’s location to a watershed. (Thompson, Journal of Water and Health, 2010). Further, a study done on pregnant women in New Hampshire demonstrated that even low levels of arsenic in drinking water produce negative fetal effects (Karagas, Environmental Health 2013). Of all the common drinking water contaminants, arsenic produces 10 to 100 times the cancer rates compared to similar levels of other contaminants, and even in low concentration it can have an impact on cancer incidence (Smith, Science, 2002). People living in close proximity to the sites and sharing the aquifers are at great at risk from exposure to the toxic releases from mining. The rules must not allow for any contamination of ground water anywhere- within or outside of the mining site. Also, the rule must specifically prohibit underground injection wells in class I, III and V.

The US Navy has studied the sediments from Goose Pond at the Callahan Mine Corporation Superfund site in Brooksville Maine. They found “100% mortality for their organisms when exposed to the Goose Pond sediments.” (Callahan Mine Corporation, Public Update, 7/18/2012, US EPA, Region 1).

Despite expensive attempts at remediation, the Callahan Superfund site was found still to have toxic elevations of copper and zinc from seepage from waste rock piles, sediments and debris. These metals continuously fluxed into the water column and became bioavailable and concentrated. (Chen, Archives of Environmental Contamination and Toxicology, 2013). The hard working citizens of Maine continue to pay for the Callahan Mine Corporation Superfund remediation. To date we have paid almost 8 million dollars.

In Oklahoma, the effects of proximity of living near a mining site are well demonstrated. The Pediatric Clinics of North America (February 2007) showed the pervasiveness of the neurotoxic heavy metal lead from the Tar Creek mining Superfund site on children's intellectual development. Lead toxicity from mining has also been reported in Australia, Poland and Mexico.

In August 2016, another study about Tar Creek mining Superfund site from the Harvard School of Public Health examined maternal and umbilical cord blood samples at delivery from 622 mother–infant pairs. Maternal blood arsenic was negatively associated with fetal growth. The authors concluded from the Tar Creek data that “Given the potential for relatively common fetal and early childhood arsenic exposures, our finding that *prenatal arsenic can adversely affect birth outcomes is of considerable public health importance*” (Henn, Environmental Health Perspectives, 2016).

Actual waste from a metallic mine was diluted and mixed with in with feed given to rats. It had a detrimental effect on neurotransmitters and brain development (Rodriquez, Environmental Health Perspectives, 1998). In 2006 study, children in France, Poland and Czech Republic were studied for the health effects of exposure to arsenic, lead, mercury and cadmium (de Burbure, Environmental Health Perspectives, 2006).The study concludes that “Heavy metals polluting the environment can cause subtle effects on children’s renal and dopaminergic systems without clear evidence of a threshold, *which reinforces the need to control and regulate potential sources of contamination by heavy metals*” .

In the proposed rule, I counted approximately 47 times public health was mentioned. But specifics to protect from adverse effects were lacking. There should be a human health assessment preformed early in the permitting process to determine baseline health conditions of those who would be adversely affected if there was a decrement in air, water or soil quality. This is should include those in close proximity with the mining area and those who would be affected by distant migration of toxics from the mining area. The recent metallic mining disasters at Mount Polley, Brazils Rio Doce River and Colorado’s Gold King mine on the Animas River are examples of massive acute incidents that can have a profound effect and lasting effect on human health. The chronic lower dose but continual exposure to mining toxics on vulnerable populations must be evaluated.

Finally, the mine operator’s liability insurance policies must specifically NOT exclude pollution liability coverage. Subchapter 4 does not cover the injury to the general population from mining operations. Although employees may be cover by insurance and occupational health and safety standards, the general population is not. Liability for pollution events must be covered by insurance obtained by the mining operations. The burden is on the permittee who voluntarily requests to operate in Maine. The burden should never rest on the individual and family or the hard working taxpayers of Maine. It is imperative that an occurrence policy be in place for as long as the toxic pollutants are in the environment. Since the mining industry claims that now due to technological advances that mining operations are risk free from any catastrophic event or chronic pollution, it should be very inexpensive and very easy for them to get comprehensive pollution insurance covering pollution related injuries for any affected citizen.

I again voice my concern about the compressed time frame that limits the public’s thoughtful input.

I realize that chapter 200 is under consideration, but it is based on a flawed enabling statute. Instead of enacting this rule, I would hope that the Board instead recommends a revision of the enabling statute.

The proposed metallic mining rule has the following defects that must be corrected:

1. Smelting and forms of beneficiation such as sintering, calcining roasting and briquetting must be forbidden.
2. The rule does not enact strict ambient air standards in view of the risks involved. The rule does not take into account the unique toxicity of metallic particulate toxic waste and the specific vulnerable populations that could be exposed such as asthmatics, young children (whose lungs are still developing and very sensitive). Air modeling for toxic and hazardous air contaminants must be required in the permitting process. Release of asbestos particles must be banned.
3. Any contamination of the ground water within and outside of the mining area must be adequately prohibited. The rule must be strengthened. Underground injection wells, specifically class I, III, and V, should not be allowed. Continuous real time monitoring of ground water must be available on the internet to the public.
4. The mining operation must have liability insurance without pollution exclusion. It must be mandated that there be occurrence coverage for medical injuries that result from both chronic exposure to metallic mining pollution and an acute catastrophic event. This coverage must be in place until all toxic waste is remediated. There must be coverage for any adverse effect from pollution, contamination or toxic waste arising from any mining operation.
5. Off site deposition of toxic waste must require a separate permit under this rule. The CAS classification, weight, method or transfer, route and receiving site be specified and determined to be acceptable.
6. Due to the demonstrable toxic risk from metallic mining, a Human Health Assessment must be required in subchapter 2 in the permitting process. This must identify any prior existing baseline exposures such as to arsenic and also vulnerable populations that will be more adversely affected by the health effects of metallic mining operations. Cumulative risk (not cumulative impact) must be evaluated. NEPA covers non human ecological effects and potential economic effects which are important but does not address human health.
7. Despite the verbiage, the proposed rule does not adequately protect the public's health. There must be substantive and specific protections in this rule to protect human health.

Despite the verbiage in the proposed rule, the rule does not adequately address the public's health. There must be substantive and specific protection of the public's health from the toxic effects of metallic mining.

Thank you for your consideration.

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