



Tamarack Water Alliance Community Zoom Meeting Thursday, October 5, 2023, 10am CT

Hello from the Tamarack Water Alliance! If you are new to our email list we welcome you. Local residents who volunteer with Tamarack Water Alliance compile and send this monthly newsletter to share updates, invitations, and informational articles.

Everyone is invited to attend our open community virtual Zoom meeting on **Thursday, October 5, 2023 at 10am CT**. This is a new date for the month of October. The topic is **Sulfide Mining and Human Health Risks**. We are pleased to have Dr. Jennifer Pearson, MD and Dr. Emily Onello, both faculty members on the UMD Medical School present and answer questions on the risks and costs of sulfide mining to human health.

Download Tamarack Water Alliance fact sheets
<https://www.tamarackwateralliance.org/resources.html>

Sign-Up To Receive Updates from the DNR on Talon Metals Environmental Impact Statement
<https://www.dnr.state.mn.us/input/environmentalreview/tamarack-nickel-project.html>

If you believe nickel-sulfide mining is too risky in Aitkin County, Tamarack Water Alliance has yard signs with this messaging available. Your \$6 donation helps defray costs. Email waters@tamarackwateralliance.org to arrange pickup of your sign.

Volunteer with the Tamarack Water Alliance. Send us an **email** at waters@tamarackwateralliance.org.

Encourage your friends, family and neighbors to sign up for the monthly Tamarack Water Alliance **email newsletter** (<http://eepurl.com/hOboEb>).

Human Health Effects of Sulfide Mining

Dr. Jennifer Pearson and Dr. Emily Onello and other colleagues summarize their priority for addressing the proposed sulfide-ore copper nickel (SOCN) mining project in Tamarack with the statement, “There is no hard and fast science that has yet proven cause/effect to human health, but rather a ground-swell of concern by healthcare professionals given the harmful effects to human health of the heavy metals/sulfates that will forever leach from the mining sites. Part of the ask has been that this science/assessment be baked into any EA or EIS moving forward.”

With the context of SOCN mining being considered in water-rich Minnesota, and given pollution resulting from SOCN mining elsewhere, Pearson and colleagues have written about the need for careful scrutiny in examining the associated risks.

“Recent federal decisions to reinstate mineral leases and abort the environmental assessment process have placed our unique and irreplaceable region at substantial risk. The overall health and wellness of this region will very likely be negatively affected by SOCN mining, and economic costs will predictably outweigh benefits. In addition, negative impacts on water, fish and wild rice will likely degrade nutritional and tribal resources resulting in violation of usufructuary rights of tribal communities,” Pearson says.

Dr. Pearson and her colleague Dr. Emily Onello will speak on Thursday, October 5, 2023 about the changing legislative and permitting landscape around permits and leases for hard-rock mining, in particular the effects the changes will have with regard to human, wildlife and environmental health in Minnesota. They will also explain how Minnesota’s health care providers are mobilizing to inform the public about the potential risks of mining to Minnesotans.

In their article *Sulfide-ore mining and human health in Minnesota*, Pearson and Onello and colleagues point out the, “Inextricable connection between ecosystem health, animal health and human health . . . and the toxic track record of sulfide-ore mining elsewhere,” saying that, “concern for human health must be part of the public dialogue.”

In the same article, Dr. Pearson cites the World Health Organization as listing 10 environmental toxins that are of the greatest concern to human health, and states that SOCN mining like that being proposed for Aitkin County has the potential to release six of these including mercury, lead, arsenic, cadmium, asbestos and particulate air pollution. Sulfide-ore mining also releases sulfates that promote methylation of elemental mercury already present in wetlands and sediments.

Copper-nickel ore frequently contains iron sulfide minerals such as pyrite (FeS₂), one of the world’s most common sulfide minerals. The atmospheric oxidation of pyrite ultimately results in the release of sulfuric acid. Under certain conditions, ferric iron

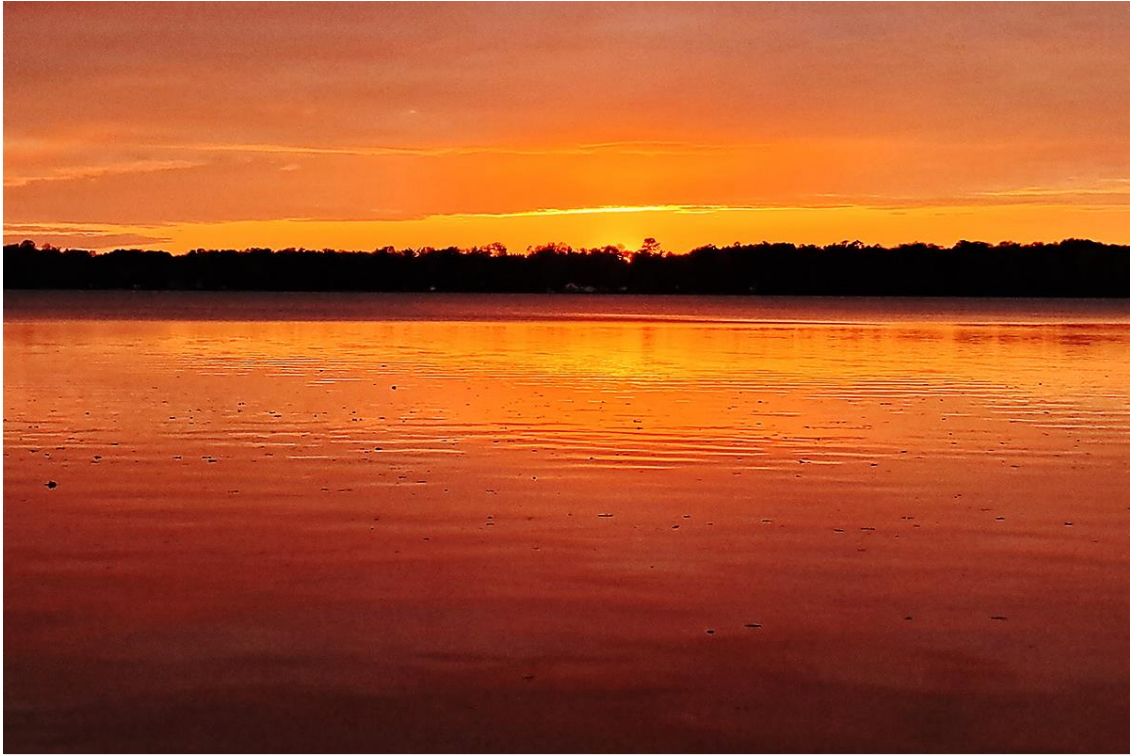
(Fe³⁺) remains soluble in acidic outflows and forms the reddish-orange to yellow ferric hydroxide (Fe(OH)₃), a precipitate often recognized as the hallmark of waters containing acid mine drainage.

A key difference between the majority of the copper sulfide mines currently operating in the United States and those proposed for Minnesota is that most are located in the Southwest, a region that receives little rain and snow. Those environments minimize communication between surface and groundwater. In wetter climates like Minnesota's, surface and shallow groundwater are more vulnerable to the negative effects of sulfide mining. More detail on this issue can be found in the article, *Sulfide Mining and Human Health in Minnesota*, co-authored by Dr. Pearson and Dr. Emily Onello and other colleagues.

We look forward to having you join us for this interesting presentation. Links to three papers providing more in depth treatment of the issues are listed here:

Resources Consulted

- Sulfide Mining and Human Health in Minnesota, National Library of Medicine, Nov. 2016, <https://pubmed.ncbi.nlm.nih.gov/30476429/>
 - Risks and Costs to Human Health of Sulfide-Ore Mining Near the Boundary Waters Canoe Area Wilderness Human Health and Ecological Assessment, Feb. 2019, <https://www.tandfonline.com/doi/full/10.1080/10807039.2019.1576026>
 - Sulfide Ore Mining and Human Health in Minnesota, March/April 2022 p.33-38, <https://www.mnmed.org/application/files/2916/6913/9688/Mar-Apr-22.pdf>
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Metal Mining Pollution Impacts 23 Million People Worldwide

"UK scientists mapped the world's 22,609 active and 159,735 abandoned metal mines and calculated the extent of pollution from them. Chemicals can leach from mining operations into soil and waterways. Over 23 million people could be affected on ground that could be contaminated...

...This is particularly critical as the demand surges for metals that will support battery technology and electrification, including lithium and copper, says Prof Mark Macklin from the University of Lincoln, who led the research.

We've known about this for a long time," he told BBC News. "What's alarming for me is the legacy - [pollution from abandoned mines] is still affecting millions of people."

BBC News, Sept. 22, 2023, Victoria Gill

<https://www.bbc.com/news/science-environment-66880697>

Who We Are

Tamarack Water Alliance (tamarackwateralliance.org) is a group of local residents

and landowners working together with others from across Minnesota to protect water and community health from the dangers of sulfide mining near our beloved lakes and wild rice beds, at the headwaters of the Kettle River and in the Mississippi River watershed.

A proposal by a foreign owned mining company to mine nickel and other metals near Tamarack in Aitkin County threatens the health of our communities. This kind of sulfide mining, especially in water-rich environments, has never been done without severe impacts to water and the health of those downstream. Mining here is also a threat to environmental justice and the long-term economic security of nearby native and rural communities.

Review our community slide presentation,
(tamarackwateralliance.org/docs/TamarackMineConcerns-Consolidated.pdf)

Download informative flyers: (<https://tamarackwateralliance.org/resources.html>)

- Talon Mine Risks,
- Geology of Aitkin County,
- High Sulfide Mines Create Acid Mine Drainage,
- Nickel Not Needed for Future EV Batteries,
- Minnesota's Prime Wild Rice Lakes Under Threat,
- Minnesota Regulators Poor Record In Protecting The Environment,
- Eagle Mine Environmental Report & Saving Our Meager Nickel Reserves

We will be sending this monthly newsletter to keep you informed about this project, to share information and opportunities to act, and to invite you to gatherings where you can connect with others who share a passion for clean water and community health.

