**MN Chapter of the American Fisheries Society**

**Lead Fishing Tackle Position Statement**

**Adopted by MN AFS February 1st, 2021**

The Minnesota Chapter of the American Fisheries Society acknowledges that there is conclusive scientific proof that lead (Pb) is highly toxic to fish, wildlife, and humans. Based on the scientific evidence and the chapter’s desire to protect ecosystems, lead should not be added to the environment in Minnesota.

Lead is commonly used in fishing tackle in Minnesota where it is readily available and inexpensive. In lakes with high angling effort, annual tackle loss translates into many metric tons of lead (Radomski et al., 2006). Lead entering lakes, rivers and wetlands is toxic to animals that comprise these ecosystems. Lead is both ingested and absorbed from the water by fish and other aquatic organisms. Species are more susceptible in water with lower pH levels, which are expected to trend lower with climate change. Waterfowl such as loons and swans are especially affected by lead, resulting in well documented negative population-level effects (Grade et. al 2017). A single lead sinker can kill a loon[[1]](#footnote-1). Lead is also highly toxic to anglers, especially young children who may handle or consume it accidentally. There is no scientifically established safe level of lead exposure.

The seemingly universal nature of lead’s toxicity to animals can be attributed to its close resemblance to elemental calcium, which plays many critical roles in animal physiology. Hundreds of peer-reviewed articles document the damaging effects on the physiology, behavior, and biochemical functions of a wide variety of species at very low levels. Lead affects the central nervous system, peripheral nervous system, hematopoietic system, cardiovascular system, and various organs in vertebrates. Neural development and function (e.g. neurotransmitter release, synaptic function, myelin sheath formation), immunity (antibody formation), and enzymatic function are also all jeopardized by lead exposure (Lee et al., 2019). Lead does not degrade, and it bio-accumulates in food chains. Its effects are both immediate and long-term, extremely severe, and affect organismal development and ecosystem functions in irreversible ways that are not yet fully understood.

To limit lead exposure and its detrimental effects on wildlife and human health, lead was banned in America’s gasoline, paint, waterfowl ammunition in federal refuges, and many other materials decades ago. Furthermore as of 2019, six states (ME, MA, NH, NY, VT, and WA) enacted regulations banning the sale and/or use of lead in fishing tackle of specific smaller sizes. The national market for non-toxic fishing tackle has increased substantially; many companies are already producing tackle from tungsten, ceramics, glass, bismuth, steel, and tin. In Minnesota, while various groups have called for banning lead in fishing tackle and ammunition for decades, the Minnesota State Legislature which has the authority to create such regulations has yet to act. The Minnesota Pollution Control Agency funded a very ambitious public outreach campaign, and citizen groups and professional organizations have advocated for reducing the use of lead tackle through public education, but still these and similar education efforts have failed to affect meaningful change. Effective solutions to lead tackle pollution require a socio-political response (Grade et al., 2019). While non-toxic tackle is viewed by some as expensive, as supply for non-toxic tackle increases, prices for non-toxic tackle will decrease, as with other products.

The MN AFS stands with citizens and professional, science-based organizations in calling for action to restrict the use of lead tackle in Minnesota with the intent to remove it from usage this decade. This action will lead to safer alternatives which protect ourselves and the environment. Accordingly, strict restrictions on lead tackle in Minnesota are warranted, and the MN AFS Chapter recommends the following actions:

1. Provide policy makers with facts and references on lead tackle issues related to topics including aquatic toxicology, fisheries management, angler behavior, lead fishing tackle and alternatives, and legislation on fishing tackle in other states.
2. Promote and assist with educational efforts that increase public awareness, understanding of the consequences of lead exposure to anglers, wildlife, and fish, and identify reasonable alternatives.
3. Collaborate with fish and wildlife professionals and their various organizations, as well as fishing tackle manufacturers, retailers, anglers, policy makers and the general public to enable restrictions on lead tackle while strongly encouraging the use of non-lead fish sinkers and jig heads.

**Literature Cited**

Grade, T., P. Campbell, T. Cooley, M. Kneeland, E. Leslie, B. MacDonald, J. Melotti, J. Okoniewski. E. J. Parmley, C. Perry, H. Vogel, and M. Pokras. 2019. Lead poisoning from ingestion of fish gear: A review**.** **Ambio** 48:1023–1038.

Grade, T., M Pokras, E. Laflamme, and H. Vogel. 2017. Population‐level effects of lead fishing tackle on common loons. **Journal of Wildlife Management**. 82:155-164.

Lee, Ju-Wook, H. Choi, U-K. Hwang, J-C. Kang, Y. J. Kang, K. I. Kim, and J-H. Kim. 2019. Toxic effects of lead exposure on bioaccumulation, oxidative stress, neurotoxicity, and immune responses in fish: A review. **Environmental Toxicology and Pharmacology** 68:101–108.

Radomski, P., T. Heinrich, T. S. Jones, P. Rivers, and P. Talmage. 2006.Estimates of tackle loss for five Minnesota walleye fisheries*.* **North American Journal of Fisheries Management** 26:206–212.

1. Latest statistics from necropsy of Minnesota loons showed a lead poisoning rate of 14%, and based on these and other data, it is estimated that 100 to 200 loons die per year from lead fishing tackle in Minnesota (Carrol Henderson, retired nongame wildlife supervisor for the Minnesota Department of Natural Resources). [↑](#footnote-ref-1)