



SIERRA CLUB
NORTH STAR CHAPTER

North Star Chapter
2300 Myrtle Avenue Suite 260
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March 8, 2023

Re: Testimony on HF 2126

Minnesota House Environment and Natural Resources Finance and Policy Committee

Thank you for the opportunity to submit testimony on HF 2126. My name is Steven Ring, and I am the volunteer chair of the Sierra Club North Star Chapter's Waters and Wetlands Stewards. I am retired from a more than 30-year career at the Minnesota Department of Health. At MDH, I worked for more than 20 years in the Public Health Laboratory. In the mid 1970's, I helped develop an analytical method to analyze asbestos in water and air using a transmission electron microscope.

The Sierra Club North Star Chapter represents over 80,000 Minnesotans working to help our state's communities flourish through environmental protection, and we appreciate the opportunity to submit testimony on this important bill.

Microplastics can be found seemingly everywhere on the earth's surface. There are some studies that show impacts to aquatic organisms exposed to microplastics. There are several papers that explain the possible pathways for impacts on human health due to microplastics. We need to be able to quantify the concentration of microplastics, including nanoplastics. And we need to characterize the chemical makeup of the particles that aquatic organisms and humans are being exposed to. This bill is an important step to respond to those needs.

Environmental Effects of Microplastics

There are many studies on the environmental impacts of microplastics or their possible impact on human health. We will mention two that point to the intense need for a standard analytical method to determine the concentrations of microplastics in water and other media.

The first is: the World Health Organization's (WHO's) conclusion in their 2019 report, "Microplastics in Drinking Water", lists several hazards to humans, including physical, toxic monomers, additives, adsorbed chemicals, and biofilms. Later, this WHO report points to the need for the development of standard methods:

“Development of standard methods: There is a need to improve microplastic sampling and analysis using quality-assured methods. Standard methods for measuring microplastic particles, including nanoplastics in water should be developed to improve the quality of studies and enable researchers to compare and reproduce results. To date, there are no data on the occurrence of nanoplastics in drinking- water or drinking-water sources.”

The second study, “Plastic and Human Health: A Micro Issue?”, is a broad review of the potential for microplastics to have an impact on human health. It lists several possible mechanisms to cause damage (Wright, 2017). They conclude:

“Exposure concentrations are predicted to be low, although this is partly due to the present technical limitations in sampling and identifying microplastics. Measuring and assessing true exposure concentrations is a current scientific challenge, largely limited by particle size. Thus, current predicted exposure levels are also probably an underestimation. Once we have a better understanding of human exposure levels, and whether micro- plastics are uptaken/able to translocate, we can begin to unravel the potential toxicological mechanisms of microplastics and hence therein possible health effects.”

Need for Standard Analytical Method

There are many studies of impacts of microplastics on aquatic organisms, and many studies showing the presence of microplastics in drinking water, surface water (fresh and salt), beer, and bottled water. However, it is very difficult to make accurate comparisons of the concentrations of microparticles because the analytical methodologies are not standardized.

A recent global interlaboratory study on microplastics that sent the same material to 34 laboratories concluded “The large variation in reported particle numbers shows the need for harmonization” (van Mourik, 2021). In other words, they did not get the same result when analyzing the same material. The methods that the laboratories were using varied so much that they there was a large spread in the reported results.

Attempts to Develop a Standard Method

The State of California, in 2019, established an international research project to develop microplastics monitoring methods. California has a law requiring the state to measure microplastics in drinking water and costal environments. This was a four-year project that recently culminated in the California Water Board releasing a “Policy Handbook Establishing a Standard Method of Testing And Reporting of Microplastics In Drinking Water” (August 9, 2022).

Suggestions for H.F. 2126

Microplastics come in a diverse array of different polymers and a myriad of shapes and sizes. To assess environmental and human health impacts, we need to know the quantity of the particles and the type of plastic. That requires standard analytical methods. With data produced from standard methods, we can compare concentrations of microplastics in natural waters with concentration that cause impacts in laboratory tests. We can confidently compare concentrations determined by different laboratories. Ultimately, water quality standards can be determined and promulgated.

We strongly support H.F. 2126, and we understand that developing sound analytical methods for microplastics in waters will be very challenging. However, H.F. 2126 refers to the development of “protocols” to be used by departments and agencies to test water in various environments. We are concerned that “protocols” does not specify clearly enough what the bill is trying to achieve. We advocate specifying what is intended, perhaps by considering some of these issues:

- Are we developing a method to measure the mass of plastic material in a liter of water? Mass of the different varieties of plastic?
- Will the method be usable by different laboratories or is assumed that only one lab will run all the samples?
- Will the method capture the size of the particles? And shape?
- Will the method identify the different plastic varieties?
- Will the method identify certain particle origins (tire tread wear particles, fleece clothing particles, etc.)?
- Will the method identify primary vs secondary plastics?
- Will the method be comparable to other states’ methods, like California.

We urge you to approve this very important bill and move it forward to final passage. Please feel free to contact me if you have any questions.

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Citations:

van Mourik, L.M., Crum, S., Martinez-Frances, E., van Bavel, B., Leslie, H.A., de Boer, J., Cofino, W.P., (2021), Results of WEPAL-QUASIMEME/NORMANs first global interlaboratory study on microplastics reveal urgent need for harmonization, *Science of The Total Environment*, Volume 772, 145071, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2021.145071>.

(<https://www.sciencedirect.com/science/article/pii/S0048969721001376>)

Wright, S.L., Kelly, F.J., (2017), Plastic and Human Health: A Micro Issue? *Environmental Science & Technology*