

National Aquaculture Association

Policy on Plastics

Background

Plastics are in widespread use in the world today, including in aquaculture. Plastics have replaced wood, cotton, manila hemp, glass, steel, iron, tin, and copper for aquaculture production equipment such as netting, lines, bags, buoys, baskets, buckets, and cages, and are components of a wide variety of hand tools, boat and motor parts, or protective coatings.

Plastic alternatives to traditional materials are effective, durable, flexible, light, adaptable, and generally low-cost and recyclable. Plastic does not readily breakdown or decompose, has a long working life, is typically easier to maintain and use, and is ultimately far more cost effective than metals, glass, plant fibers, or wood. If plastic materials are lost or discarded into the environment, they remain there for thousands of years, will breakdown through abrasion and sunlight to form smaller particles – micro- and nanoplastics - all of which can impact freshwater and marine ecosystems which aquaculturists depend upon.

The ubiquity of microplastic and nanoplastic particles have been reported in foods and beverages, air, water (freshwater and marine surface waters), groundwater drinking water sources, and have been found in fish and shellfish. They have been identified wherever they have been investigated. Microplastics enter the human body via food, water, and air. Research to assess the relative risks of micro and nanoplastics to humans and the world around us is inconclusive at best and the risks associated with micro-and nano-organic and inorganic particles have not been comprehensively assessed for their contribution to the overall risk. Initial microplastic assessments suggest risks are unlikely for human health, marine organisms, aquaculture, and the environment (Adam et al. 2021; Gouin 2020; Lusher and Welden 2020; Vethaak and Legler 2021). Nonetheless, it behooves the aquaculture farming community to manage the use and disposal of plastics to reduce impacts on the environment.

Policy

NAA and its membership encourages the following actions:

1. **REDUCE:** Consider the function and utility of each component of aquaculture production gear. Single-use plastic equipment, such as zip-ties, can often be replaced with a biodegradable alternative without adding costs.
2. **REUSE:** Examine whether single-use products are appropriate economically and environmentally over the long term. Choose products that can be used more than once with proper care or consider natural alternative materials.

3. RECOVER and RECYCLE: When equipment wears out or is no longer needed, recover it and dispose of it properly. Many plastic items can be recycled instead of dumped into a local landfill where they can decrease the lifespan and functional decomposition of landfill processes.
4. RESPOND: Ensure plastic gear is well secured on farms so it does not escape and contribute to marine debris. Respond to reports of escaped gear, periodically patrol adjacent areas for escaped gear and participate in or create community efforts to cleanup plastics and other debris in the environment as part of a larger effort, [International Coastal Cleanup](#), or by self-organizing [community cleanups](#).
5. RESEARCH: Support applied research to:
 - a. standardize micro- and nano-plastic sampling, analysis, and reporting,
 - b. conduct comparable environmental and human risk analyses,
 - c. develop biodegradable plastics that avoid environmental and human health risks;
 - d. characterize degradation characteristics of the various plastics and ropes used in US aquaculture to ensure the farming community is using the most durable materials and retiring them before they start to breakdown: and,
 - e. describe new plastic recycling technologies to recover, reuse and remanufacture.

References

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- Gouin, T. 2020. Toward an improved understanding of the ingestion and tropic transfer of microplastic particles: Critical review and implications for future research. *Environmental Toxicology and Chemistry* 39(6):1119-1137.
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