



Some Problems with Plastic – at a Glance

- Since 1950, the production of plastic has increased 70-fold, while the human population has tripled. Humans have produced over 10 billion tons of plastic in that time.
- Only 9% of plastic has ever been repurposed or recycled. Currently, the American rate of plastic recycling is about 5%.
- The rest is still with us. Some has been incinerated, some sits in landfills, and between 8 and 15 million tons of plastic enter the ocean each year.
- By 2025 (two years from now) ,scientists estimate that for every 3lbs of fish in the ocean, there will be 1lb of plastic. By 2050, there will be more plastic than fish.

Some Health Impacts of Plastic

- Plastic is made of fossil fuels and chemical additives – so many additives that 50% of many plastics are chemical by weight.
- Plastic is stable, but it is not inert. The added chemicals leach out at every phase of the plastic life cycle, including during use as items like straws, eating utensils, food packaging, and baby toys.
- Many present health risks that scientists are only beginning to understand, and which are irreversible.
- A significant percentage of plastic additives, for instance, are endocrine disruptors, which mimic hormones and interrupt vital processes all over the human body. *There are no safe levels of endocrine disrupting chemicals.*
- Endocrine disruptors are especially dangerous for babies and children. For instance, fetal exposure to endocrine disrupting plasticizers has been linked to autism and ADHD, which is now present in 1 in 6 children. At current rates, one in two children will be on the autism spectrum by 2045.
- Endocrine disruptors interfere with metabolism and contribute to obesity and type 2 diabetes.
- Endocrine disruptors contribute to early puberty in girls and declining fertility. They are associated with a dramatic reduction in human sperm count since the 1970s.

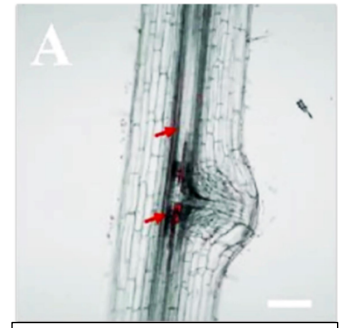


Some Hazards of Microplastic

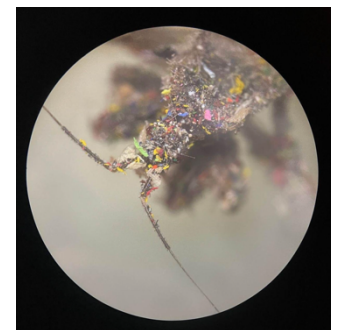
- Plastic cannot break down in nature. Instead, it breaks *up* – first into visible fragments, then gradually into pieces as small as a grain of rice or sand (microplastics). Eventually, plastic particles become smaller than a human blood cell (nanoplastics).
- These pieces are so tiny that they evaporate with water and become part of the hydrological cycle. They rain down onto every corner of the globe, and travel on wind currents as dust.
- Microplastics have been found at the peak of Mt. Everest and the bottom of the Mariana Trench. In Montana, they have been identified in the snow at Big Sky and Teton Pass, the watershed of the Gallatin River, and Flathead Lake.
- Microplastics are ingested by every creature that drinks water or breathes air, including all the fish and wildlife in Montana. In addition to Montana’s water bodies, they are now present in every inch of the food web. They can even be taken up into the vasculature of plants.
- Scientists estimate the humans ingest or breathe in a credit card worth of plastic a week – about 5g.
- Inhaled and ingested microplastics do not simply “pass” through the digestive system. They have been found within human tissue, including lungs, intestines, veins, and even the placenta. They have also been identified in human blood, breast milk, and meconium (the first stool of the newborn infant).
- Presently, there is no known method for “cleaning up” the macro, micro, and nano plastics diffused throughout the environment.



Microplastic on a snowflake



Microplastic inside plant vasculature



Microplastic coats an insect

There is Hope in Action

- Many applications of single use plastics are not essential. Packaging can be reduced and eliminated. Reusable items like bags and water bottles can be promoted over single use ones. The solutions are in our hands.
- Allowing towns, cities, and counties to pass local ordinances will allow Montanans try solutions locally, and demonstrate which measures work best to protect the environment and the health of our beautiful state.