Southern Oregon Climate Action Now

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Confronting Climate Change

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Reference Senate Bill 543:

Senator Sollman and members of the Senate Committee on Energy and Environment:

I write as cofacilitator of Southern Oregon Climate Action Now, an organization of over 2,000 rural Southern Oregonians who are concerned about the climate crisis and urge legislative action to address it. Our mission is to promote awareness and understanding of the science behind global warming and climate change and stimulate individual and collective action to address it.

Many years ago, David Satterthwaite (2009) pointed out that "growth in consumption drives climate change." An examination of greenhouse gas emissions from Oregon (DEQ 2018) reveals that our consumption emissions substantially exceed our in-boundary or sector-based emissions (Figure 1).

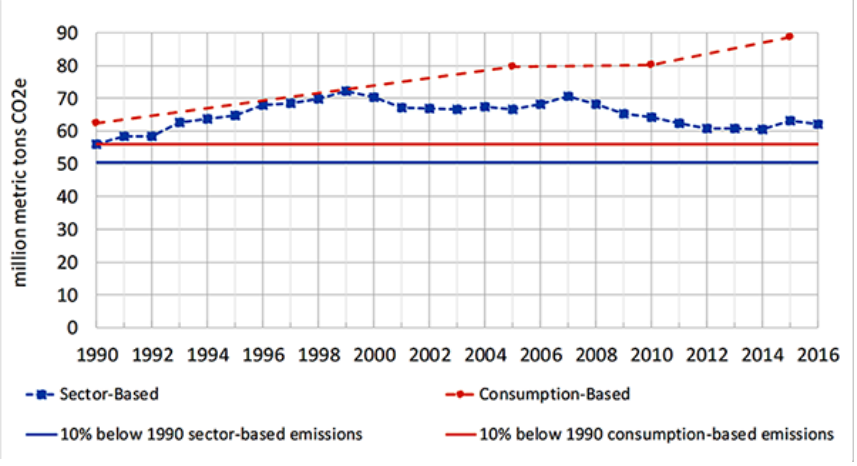

Figure 1. Millions of metric tons of CO_2e released annually in Oregon from 1990 to 2016 (DEQ 2018).

Sector- based emission largely comprise emissions resulting from action inside the border of the state (with electricity production emissions added regardless of wher it is generated). Meanwhile, consumption-based emissions count emissions resulting from the manufacture and shipping of goods from around the world into the state.

As can be seen, while our sector-based emissions were relatively level over the early years of this century, potentially even declining slightly, consumption emissions rose steadily to reach a value half as high again as the sector-based emissions value in millions of tons of carbon dioxide equivalent by 2016.

On face value, it seems likely that consumption-based emissions will be larger than sector-based emissions in states that have little manufacturing and thus import large quantities of goods while it may be lower in states that have a large manufacturing economy and thus export large quantities of goods.

In Mike Nichols portentous 1967 film "The Graduate," Ben Braddock (Dustin Hoffman) is advised by his neighbor Mr. McGuire (Walter Brooke) that the future is: "Plastics!" And here we are, over 50 years later, with an ocean awash in plastic debris that is killing our marine ecosystem. One of the plastic products we have come to value is expanded polystyrene.

Bauman (2019) points out that between 4 and 8% of annual global oil consumption is devoted to producing plastics, and further notes that the World Economic Forum suggests that this will rise to 20% of oil consumption by 2050. Since substantial greenhouse gas emissions involving several critical gases result from the extraction, processing and transportation of the basic ingredients of plastics, we should look carefully at the use of these materials and ask ourselves if these uses are a net positive or a net negative for society. In the Executive Summary of their report 'Plastic & Climate: The Hidden Costs of a Plastic Planet' Hamilton and Feit (2019) state: "At current levels, greenhouse gas emissions from the plastic lifecycle threaten the ability of the global community to keep global temperature rise below 1.5°C degrees. By 2050, the greenhouse gas emissions from plastic could reach over 56 gigatons—10-13 percent of the entire remaining carbon budget."

As Sustainability (2022) reports Styrofoam (a trademarked Dow Chemical brand name for their expanded polystyrene plastic product) is bad for the environment for many reasons:

1 – about 25 billion Styrofoam cups are thrown away each year, cups that are not biodegradable thus do not decompose in landfills;
2 – animals often mistake broken down Styrofoam for food and ingest this toxic chemical causing harm or death; some of this returning to our dining tables in the food we eat;
3 – because production of each cup produces 0.07229 pounds of CO_2 emissions the U.S. production of 3 million tons of Styrofoam each year results in 21 million needless tons of CO_2 emissions with another 1.3 million tons of emissions resulting from the water supplies used to clean the product;
4 – the chemical benzene and styrene used to make Styrofoam are carcinogens, thus promoting cancer;
5 – food and beverage containers allow leaching of styrene, compromising the health of users of these containers;
In response to the environmental and health concerns, Maine was the first state to ban Styrofoam and many others such as New York and New Jersey have followed with Connecticut right behind.

Adding climate pollution insult to the production injury, we find (Ward *et al.* 2019) that while polystyrene is not susceptible to microbial decomposition, it degrades under the influence of solar radiation (sunlight). They state: "Our results demonstrate that sunlight can completely oxidize PS [polystyrene] to CO_2 and partially oxidize PS to dissolved organic carbon (DOC)." These authors also note that tens of millions of tons of this product are produced each year, making it 6% of the global plastics market. This solar degradation will add substantially to the estimate of greenhouse gas emissions resulting from expanded polystyrene use noted above.

Syren (2018) reports that workers exposed to styrene suffer: irritation of the skin; irritation of the eyes; irritation of the upper respiratory tract; and gastrointestinal effects. Under chronic exposure, the consequences can include: depression; headache; fatigue; weakness; and minor effects on kidney function. She also underlines the dangers to those consuming food from the containers as they are exposed to leaching chemicals which affect human health and reproductive systems. Unfortunately, although polystyrene can be recycled, this is not happening. CEHN (undated) reports these problems have led the following cities to adopt bans: New York, NY; Takoma Park, MD; Seattle, WA; Washington

DC; Miami Beach , FL; Freeport, ME; Portland, ME; Nantucket (City and county), MA; Minneapolis, MN; Portland, OR; Baltimore, MD; San Francisco, CA. To these, Syren (2018) adds Seattle WA. Apparently interest in banning this hazardous product is growing.

Over the years of our development as a society, the ingenuity of humanity has resulted in discoveries that have proven extremely valuable once entrepreneurs have developed marketable products incorporating those discoveries. In some cases, we have come to learn that discoveries / inventions, once thought amazing, have drawbacks. When this happens, society has to decide how to reduce the hazard, sometimes by regulating and sometimes by banning items. When individuals have developed businesses producing and marketing such items, it is unfortunate if the cost to society requires society to constrain their freedom to produce and market the hazardous product – but sometimes such is the case. There is no doubt that fossil fuels fall into such a category because of the global warming and climate chaos their use is imposing on all humanity and global life. We are now learning that plastics fall into a similar category.

The first law of holes is: “if you find yourself in a hole, stop digging." Yet we keep digging! It’s time for Oregon to stop digging the expanded polystyrene hole and fill it in. Passing SB543 represents a good first step.

Respectfully Submitted

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Sources Cited.

Bauman B 2019 How plastics contribute to climate change. Yale Climate Connections. https://yaleclimateconnections.org/2019/08/how-plastics-contribute-to-climate-change/

CEHN undated. FAQs: Polystyrene Foam. Children's Environmental Health Network. https://cehn.org/our-work/eco-healthy-child-care/ehcc-faqs/faqs-styrofoam/

DEQ 2018 Oregon Greenhouse Gas Emissions. Oregon Department of Environmental Quality https://www.oregon.gov/deq/ghgp/Pages/GHG-Oregon-Emissions.aspx

Sustainability 2022 Styrofoam Cups - Environmental Impact. Sustainable Business Toolkit. https://www.sustainablebusinesstoolkit.com/styrofoam-environmental-impact/

Satterthwaite D 2009 Big emitters: how growth in consumption drives climate change. International Institute for Environment and Development International Institute for Environment and Development https://www.iied.org/sites/default/files/pdfs/migrate/17077IIED.pdf

Syren F 2018 Why Styrofoam is so bad for the environment. Zero Waster. https://zerowastefamily.com/styrofoam-bad-environment

Ward C, Armstrong C, Walsh A, Jackson J, Reddy C 2019 Sunlight Converts Polystyrene to Carbon Dioxide and Dissolved Organic Carbon. Environmental Science & technology Letters: 6 (11) 669 – 674. https://pubs.acs.org/doi/10.1021/acs.estlett.9b00532