Whatever Happened to Ozone Layer Politics?

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The Montreal Protocol on Substances that Depletes the Ozone Layer (1997) is arguably the most successful global environmental agreement ever created. The ozone layer is the Earth's sunscreen, absorbing up to 99 per cent of the sun's ultraviolet (UV) radiation. Without it, life on earth would not exist. The Montreal Protocol was created to eliminate human-made chemicals that destroy the ozone layer, what we call "ozone-depleting substances" (ODSs). ODSs destroy the ozone layer, thus allowing more UV radiation to hit the surface and increasing skin cancer and skin disease rates, eye cataracts, damage to the immune system, and sunburn in humans and other animals. The Protocol sought to put a halt to such harmful effects, chiefly to rid the world of chlorofluorocarbons, or CFCs.

The most famous ozone holes occur over the Antarctic. In 2006, an Antarctic ozone hole reached a record 11.4 million square miles wide, larger than all of North America. While it mostly covers uninhabited land, the Antarctic ozone hole does reach some populated areas in South America as it is quite mobile. The Arctic hole, a newer phenomenon, has a potentially larger impact on humans. The 2011 Arctic ozone hole moved from the North Pole into Scandinavia and Greenland. The World Meteorological Organization cautioned habitants to protect themselves from the strong UV rays. Parts of Canada and Russia have also been affected lately. It is possible that "ozone depleted air" will move south with the Arctic polar vortex, potentially reaching northern Italy, New York, and San Francisco.

The US Environmental Protection Agency estimates that increased UV exposure will lead to "150 million cases of skin cancer and three million deaths during the course of the 21st century at an economic cost of $6 trillion."[1] Beyond skin cancer, reduced ozone has also been shown to "increase rates of malaria and other infectious diseases."[2] According to the American Cancer Society, in 2010 in the US alone more than 1 million new cases of skin cancer were expected, 68,000 of which would be melanoma. The odds of contracting melanoma increased from 1:250 to 1:84 over the last quarter century. By the age of 70, 2/3 of Australians will be diagnosed with skin cancer, accounting for "80% of all new cancers diagnosed each year in Australia."[3] More than 1,000 people in Australia are treated for skin cancer daily. In southern Chile, where ozone layer thinning is extreme, skin cancer rates have escalated 66 per cent since 1994. UV radiation also contributes to genetic disorders – especially in small aquatic species and amphibians. While plants require solar energy to photosynthesize, too much UV radiation stunts plant growth and can lead to a decrease in yields for important crops. Additionally, more UV radiation creates other economic costs by accelerating the degradation of materials such as plastics, paints, and rubber.

ODSs such as CFCs were used as early on as the late nineteenth century, when they became chief ingredients for fire extinguishers. By the 1970s, 200,000 metric tons of CFCs were used in aerosols annually in the US alone. Soon after, it became increasingly evident that CFCs had a major side-effect: they depleted the ozone layer. CFC and other ODSs are being eliminated through the Montreal Protocol because these and other ODSs threaten life on earth. Today, every single country on the planet has ratified the Montreal Protocol.

Since the Montreal Protocol first entered into force in 1989, CFC levels in the atmosphere have declined. Scientific research predicts that, without the Montreal Protocol, by 2050 even the middle latitudes of the Northern Hemisphere would have lost half of their ozone layer, and the Southern Hemisphere would have lost 70 percent. As Jonathan Shanklin of the British Antarctic Survey put it, the Montreal Protocol "is working. We can quite clearly see that the amount of ozone-destroying substances in the atmosphere is declining."[4] Because of the high level of compliance and cooperation among countries, it is no exaggeration to state that the Montreal Protocol is the most successful

global environmental treaty ever created.

Montreal versus Kyoto: Insights for the Climate Regime?

Many scholars working in global environmental governance have rightly welcomed the unparalleled successes of the Montreal Protocol. Many believe that the Protocol contains all the ingredients necessary for any successful global environmental regime: scientific consensus and good networking among those scientists; cooperative nation-states willing to put global health ahead of national concerns; and an involved global civil society. Global climate change, we are told, presents an obvious example where the successes of the Montreal Protocol may shed light on global treaties such as the Kyoto Protocol, where attempts at real action to thwart climate change remain stalled. Recognizing that the Montreal Protocol arose out of specific circumstances, many ozone scholars maintain that it is possible that those circumstances could be duplicated in other global environmental treaties.

However, if we look at the Montreal Protocol in its more recent past, we can see that it has suffered significantly from major setbacks that more closely resemble the ruinous state of global climate change politics than the flourishing early days of ozone politics. Comparisons could even be made between the Climate Gate scandal, where climatologists were accused by climate skeptics of "acting political" by manipulating climate data, and the Montreal Protocol, where ozone scientists were also accused of "acting political" and manipulating MeBr data by the US government.

Urgency regarding global environmental challenges like global climate change has only grown over the years. This even applies to the ozone situation today. In 2011 the BBC reported on how "ozone depletion is often viewed as an environmental problem that has been solved," but much uncertainty remains with regards to ozone layer recovery, especially since climate change science is so complicated and interconnected with the ozone layer.[5] "The ozone layer remains vulnerable to large depletions because total stratospheric chlorine levels are still high, in spite of the regulation of ozone-depleting substances by the Montreal Protocol" warns Paul Newman, an atmospheric scientist at NASA's Goddard Space Flight Center.[6]

Today, interest groups attempting to hold back global and regional environmental governance appear to be up against a growing wall of scientific evidence that humans are having serious negative effects on the global environment. Ironically, at such a moment of heightened environmental awareness, the Montreal Protocol entered its own moment of uncertainty.

How the Methyl Bromide Controversy Nearly Cracked the Montreal Protocol

Famous for the CFC phase-out, more recently the Montreal Protocol almost completely stalled in its efforts to phase out methyl bromide (MeBr). MeBr is extremely toxic, comparable with arsenic and DDT, is readily absorbed through the lungs, damages the central nervous system, causes birth defects, can kill in relatively small doses, and depletes the ozone layer. The US EPA classifies MeBr as a "Category I acute toxin," the most lethal category of chemical substances. Since 2003, MeBr became the center of a great controversy in the Montreal Protocol. This neurotoxin is used primarily as a pre-plant fumigant in strawberry production, and for quarantine pre-shipment. According to the watchdog organization, the Environmental Working Group, a 1997 report released by the California Department of Pesticide Regulation revealed that millions of pounds of MeBr were being used near schools and daycare centers, and that MeBr drift levels from fields to such public spaces greatly exceeded the DPR's safety standards.

In 2003 the US warned the global community that its leadership role in the treaty could become compromised if it were not allowed to use MeBr in strawberry production beyond the phase-out year of 2005. This threat marked a new chapter for the Protocol and indeed for global environmental governance in general. At the center of the controversy was debate around MeBr "critical use exemptions" (CUEs). Briefly, the US claimed that alternatives to MeBr in strawberry production would have negative economic effects on strawberry growers, and thus such MeBr use would be exempt from the phase-out, while the majority of the global scientific community argued that the alternatives were feasible both technically and economically. MeBr has generated a great deal of controversy and debate between powerful nations, less-development nations, the agro-chemical industry, ozone scientific experts and

facets of civil society.

Opposition from US and international civil society groups regarding the US's CUE request has been largely ignored by the US government. US-based environmental watchdogs such as the Natural Resources Defense Council (NRDC), the Environmental Investigation Agency (EIA), and Greenpeace all voiced strong disapproval of the continued use of MeBr with little visible impact at Montreal Protocol meetings. Additionally, points made by global scientific experts on MeBr and the efficacy of MeBr alternatives have been subject to much condemnation by the US and allied delegations, and by interest groups participating in Protocol meetings. Instead, the US has reduced MeBr use on its own terms – slowly – replacing it with other chemicals with their own (albeit locally-contained) risks.

The reasons for such failure are far from simple. One is that the US is steadfast in holding onto MeBr in order to protect its strawberry industry from foreign competition while the majority of the world believes that the bulk of US MeBr exemption requests are unjustified. At Montreal Protocol meetings, the US claims that it has "put aside politics" and "backroom deals" regarding the MeBr issue and its relation to strawberry production in particular, and seeks "non-political solutions to non-political problems" regarding strawberry production. Moreover, the US claims that its approach includes relying on the knowledge of the Montreal Protocol's scientific experts for guidance on how to handle the MeBr phase-out. The US is claiming, rhetorically at least, that Protocol science/knowledge is politics-free. Here, the US claims that other constituents are "acting political" while it is not. Yet, the US played a major role in helping shape scientific knowledge of the Protocol to its advantage.

The US was a main advocate for the initial ratification of the Montreal Protocol, so why would it jeopardize past progress in phasing out ODSs on a commodity as trivial as strawberries, going as far as to suggest that it would leave the treaty if its demands were not met? After all, the CFC industry was much larger, much more important economically to the US and globally. Clearly, science/knowledge, politics, economics, and NGO involvement co-produce one another in unique ways depending upon the specific circumstances at hand.

Such an understanding forces us to take seriously the barriers facing all environmental agreements today. Many observers of global environmental agreements attribute the inability to enforce a viable climate change agreement to the lack of clear evidence, or to the lack of an economically feasible option for global powers like the US. With climate change, as ozone hole-discoverer Shanklin argues, we are often told that "the political changes that are necessary to change our lifestyles so we consume less are much harder to achieve" than eliminating ODSs.[7] But, the MeBr controversy illustrates that the reasons are much more complex than simply consuming less, and it exemplifies the political challenges facing global environmental governance that have intensified since the late 1980s.

While the MeBr controversy culminated during the George W. Bush years, the increasingly sceptical attitude towards global scientific knowledge, global governance, and precautionary action so celebrated in the post 1972 UN Conference on the Human Environment era had been on the rise for over a decade prior. The early success of the CFC phase-out in the Montreal Protocol reflects faith in and application of these "Stockholm principles" whereas the MeBr phase-out reflects a turn, a neoliberal turn, in ozone governance that does not mesh with these erstwhile principles.

The MeBr controversy involves much more than just economics per se; it also involves protecting the legitimacy of US science in a neoliberal era of globalization. While the global community pushes for acknowledgement of global scientific knowledge on MeBr alternatives, US actors stress the primacy of US scientific knowledge based on data provided by the private sector. Therefore, while the US is indeed interested in protecting its economic interests, the MeBr case shows how it is perhaps just as keen on protecting the legitimacy of US-based scientific knowledge as the spokesperson for global science/knowledge.

Ironically perhaps, changes in the rules and political attitudes of the Montreal Protocol from precaution (the CFC case) to ones based on neoliberal principles of free markets, privatization, individualism, and a lack of faith in government have made the MeBr controversy possible. It is the world of environmental governance that has gradually shifted away from precaution-first toward profit-first tenets, from social concerns to individual concerns,

from public knowledge to private sector science.

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