Will Gearhart
Dr Jordan Hanson
INTD 255 - Whittier College
Spring 2025

Pollutants in Antarctica & Remote Places

Humans may claim to have explored and conquered the entire Earth, but of course there still exist a few places where no person has ever ventured. Regions which prohibit or strictly regulate human entrance are maintained so as to be pristine and "untouched," but obviously no human is without impact, no matter where they may venture. While often misunderstood, human impacts have irreversible consequences to the environments they interact with, and these impacts exist whether understood or not. Despite taking precautions against most *known* environmental harms, these exploratory humans have left chemical trails of harm which actively accelerate glacial melt, cause irreversible damage & contamination to the environment, and otherwise question the mission of scientific exploration in unfamiliar regions.

Humans produce waste, both organic and synthetic. Scientific research stations, tourism, and global pollutants are unavoidable, yet they must be mitigated to avoid destructive catastrophe. Is solid waste to be landfilled, dumped in the ocean, sailed back, or incinerated? Is human shit a biohazard which introduces microbes and diseases tot he otherwise pristine environment? Of course, people have to *go* somewhere. In the past, that was when necessary and as desired. They, of course had no concept of biology or chemistry. Or even if they did, it was so embarrassingly rudimentary that they were unable to comprehend the environmental impact they would unquestionably have. While today solid waste is treated and/or shipped away, this was not always the case. Early explorers, like those studied in class, had no way of anticipating their

impacts as a result of left-over microbes and pollutants. While the diseases brought across oceans were largely a product of the 13th and 14th centuries, it still raises questions as to how these microbes may persist and impact other places in the future. Can the native organisms even survive when faced with these foreign contaminants?

Explorers to the arctic and antarctic regions have consistently employed fossil fuels to accomplish tasks despite the unimaginable consequences. Generators, heavy machinery, air transport, shipping, and more emit not just fossil fuels, but the very most destructive of petroleums (like Heavy Fuel Oil). It should be noted, heavy/dirty fuels, particularly including petroleum and other polymers, have a vastly increased impact in Antarctica. The beyond-freezing temperatures inhibit cell breakdown far more than ordinary - (and "ordinary" takes well over a century.) It must be noted, the heavy machinery used to shuffle things around rely exclusively on diesel.While the Antarctic Treaty System and the Madrid Protocol have created guidelines for mitigating such effects, these are mere bandages upon the excessive spewing of unfiltered carbons into the most fragile atmosphere. Shipping, aircraft, snowmobiles, excavators, and more release an unrelenting stream of irreversible compounds - in the most sensitive of environments.

Physical disruptions to the environment, while lesser than the other continents, create impacts upon wildlife, geology, and more. Even if it seems that walking and venturing have practically no impact, it has the potential to disrupt microbes and other beings which have otherwise gone undisturbed for millennia. Light, sound, and landscape disruptions confuse and disorient the few animals and will cause scars upon the landscape for centuries. Visitors may inadvertently bring organisms - or worse, seeds - without checking (as a result of their

ignorance). This will impact habitats, nesting, breeding, and feeding grounds of the limited animals, plus the potential future creatures who may rely on this landscape for survival. It is rather ironic that, while scientists study climate change in the arctic and antarctic, they cause further detriment to the climate crisis. And ongoing political disagreements lead to competing land claims which further exacerbate these issues.

The greatest harm to remote places, far more than any of the aforementioned, is easily (and has become somewhat obvious to be) forever chemicals. [citation]. Since there is no getting rid of them (by the time Earth explodes/boils/crumbles/etc), mitigation and a phase-out are the only reasonable solutions. But while some of these compounds have been banned from manufacturing for United States consumers for nine years, they still abound in newly-sold garments (since they have yet to wear off). One may wonder, why does the waterproofing reduce over time? Well, it's no secret. And time must't be wasted explaining where it goes; it is excessively obvious. Once it has been shed into the environment, there's no taking it out, except in the bloodstream of unsuspecting creatures. Some kinds of equipment are also coated with harsh chemicals, including teflon, which cause irreparable environmental harm for the sake of human convenience. Since ice melt is only gaining speed, the risk of exposure to these chemicals (which will enter the oceans and, of course, travel everywhere on Earth) is ever greater than before. And when these compounds enter smaller creatures, they rise up the food chain in such a way that every being is adversely affected. These can include reductions to hormones, immunology, and developmental processes. While there are few historical data to compare, these issues are only but increasing over time.

These profound impacts may only be ignored by the most arrogant of people. Why more has not been done is a matter of disillusion and entitlement. It is based in western systems of exploitation and an attitude that all is to be conquered, no matter the expense. But social and scientific understanding of impacts have grown over time to encompass great harms that explorers had no idea they were inflicting upon the very environments they purport to cherish. In other words - yes, they have such an obligation - but when people have no way of knowing they are causing harm, how are they to be expected to mitigate it? Well, it would only be accurate to assume that humans cause harm and must develop every necessary measure to mitigate such. One would be false and rather ignorant to assume they have no impact (i.e. Amundsen, Cook, and Scott). But given concepts like “manifest destiny” which allege the baby jesus in the sky *wants* people (wealthy whites, no less) to “explore,” or in other words, to conquer, desecrate, and pollute. How difficult is it not to act quite such a cantankerous bitch? As it happens, more effort than one can imagine. Besides, these are the attitudes held by early explorers, enslavers, and colonialists.

Bibliography

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