

Iron Fertilization

Few should not decide the fate of many when the risks remain uncertain

In 2012 the Haida Salmon Restoration Corp dumped over 100 metric tonnes of iron into the waters off of Haida Gwaii. Although the company gained permission from the Haida due to promises that fertilization would help to restore salmon runs in the area, the experiment violates several international moratoriums on dumping that Canada is a signatory to.

The impact of this unauthorized dumping remains unknown, and action must be taken to ensure that our marine ecosystem is not experimented with in this way again.

In light of the Haida Salmon Restoration Corporation Iron Fertilization experiment, the Canadian government must:

**STEP
1**



Launch a full investigation into the Haida Gwaii Salmon Corporation iron fertilization experiment

**STEP
2**



Develop protocol for preventing rogue science experiments, in particular future fertilization attempts

**STEP
3**



Educate the public about the uncertainty that remains around iron fertilization, and the penalties associated with unregulated experiments in our oceans

In the 1980s, Biogeochemist John Martin discovered that sprinkling iron dust in ocean waters experiencing iron limitation could trigger phytoplankton blooms. It was hypothesized that these blooms would uptake carbon dioxide from the atmosphere as they photosynthesized, leading to a cooler atmosphere.

As the proof of climate change has accumulated, acceptance of this global phenomenon has spread beyond the scientific community to the general public. Many are experiencing a sense of urgency about the need to take significant action to prevent drastic changes to our earth's climate, and interest about iron fertilization and its potential to combat accumulation of greenhouse gases in the atmosphere has also started to move out of the realm of the scientific community.

Unknowns about the efficacy of iron fertilization in reducing carbon in our atmosphere remain. There is some concern that as the initial phytoplankton bloom is decomposed by bacteria, ecosystem conditions will be altered, leading to conditions of depleted oxygen. This can create an environment that bacteria such as denitrifiers and methanogens thrive in, which produce greenhouse gases even more potent than carbon dioxide, including nitrous oxide and methane.

The scientific community remains uncertain about the capacity of iron fertilization to promote transfer of carbon dioxide from the atmosphere to the deep ocean, and it is unacceptable for private citizens or corporations to carry out large-scale experiments with our environment.

References

Powell, H. (2007). Fertilizing the ocean with iron: should we add iron to the sea to help reduce greenhouse gases in the air? Woods Hole Oceanographic Institution. Retrieved from: <http://www.whoi.edu/oceanus/viewArticle.do?id=34167>

Moore, D. (2014). Ocean fertilization experiment loses in BC court, charges now likely. The Globe and Mail. Retrieved from: <http://www.theglobeandmail.com/news/british-columbia/ocean-fertilization-experiment-loses-in-bc-court-charges-now-likely/article16672031/>.

Moore J.K., et al. (2002). Iron cycling and nutrient-limitation patterns in surface waters of the World Ocean. *Deep-Sea Res.* 49: 463-507
Watson, A. J. et al. (2000). Effect of iron supply on Southern Ocean CO₂ uptake and implications for glacial atmospheric CO₂. *Nature* 407, 730-733