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TESTIMONY
OF
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MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
SPEAKING IN OPPOSITION TO
L.D. 499
AN ACT TO PROHIBIT GEOENGINEERING
PRESENTED BY REP. SCHMERSAL-BURGESS
AND
L.D. 825
AN ACT TO PROHIBIT GEOENGINEERING, INCLUDING THE USE OF CLOUD
SEEDING, WEATHER MODIFICATION, EXCESSIVE RADIO WAVES AND
MICROWAVE RADIATION
PRESENTED BY SENATOR BLACK
BEFORE THE JOINT STANDING COMMITTEE
ON
ENVIRONMENT AND NATURAL RESOURCES

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Senator Tepler, Representative Doudera, and members of the Committee, I am Jeffrey S. Crawford, Director of the Bureau of Air Quality at the Department of Environmental Protection, speaking in opposition to L.D.s 499 and 825.

L.D. 499 would prohibit engaging in, authorizing, or funding "Geoengineering", which is defined in the proposal as "the deliberate, large-scale intervention in the Earth's natural systems for the purpose of counteracting climate change. "Geoengineering" includes, but is not limited to carbon dioxide management, solar radiation management, stratospheric aerosol injection and weather modification techniques." L.D. 825 has a similar definition for geoengineering. Neither bill defines what is meant by "large scale."

There are two broad categories of geoengineering: the first, known as "carbon geoengineering", focuses on carbon dioxide removal or reduction, whether through ocean fertilization, carbon capture and storage, or other techniques. The second is "solar geoengineering", which is intended to increase the fraction of solar radiation reflected back into space. Unlike carbon geoengineering, solar geoengineering would not reduce carbon dioxide levels but would instead disrupt the linkage between atmospheric carbon dioxide levels and global temperatures.

The Department recognizes that while geoengineering might help reduce climate impacts such as extreme temperatures and precipitation events, it has risks that are not fully understood. For example, stratospheric injection of sulfur dioxide has been suggested as one method to reflect the solar radiation reaching the lower atmosphere, but this strategy is not without significant risks and the potential for unintended consequences. As noted by the National Oceanic and Atmospheric Administration, stratospheric aerosol injection could result in a "diverse range of outcomes beyond just decreased surface temperatures, [including] impacts on the stratospheric ozone layer,

large-scale circulation patterns, and regional weather and precipitation, that vary both spatially and seasonally.”¹

While the Department is unaware of any solar geoengineering activity currently or historically occurring in Maine, we do receive regular complaints alleging that aircraft contrails (“chemtrails”) are evidence of this activity. Contrails are associated with aircraft flights at high altitudes. At typical cruising altitude, the ambient air temperature is on the order of minus 50 degrees Fahrenheit. These cold temperatures, combined with water vapor in the exhaust from aircraft engines, contribute to the formation of condensation, a phenomenon called contrails. Chemtrails is a blending of two words: chemicals and trails, and is associated with the widely debunked theory that government agencies or other organizations are purposefully using aircraft at high altitudes to spray the public and/or the atmosphere with chemicals or other agents on a widespread basis. Conspiracy theorists have proposed many motives for these alleged activities, including population control, involuntary vaccination, mind control, global-scale weather or climate manipulation, and others. The Department is not aware of, and has not seen credible evidence for, the purposeful high-altitude spraying of the public and/or the atmosphere with chemicals or other agents on a widespread basis.²

While I’ve focused on solar geoengineering and stratospheric aerosol injection, other types of geoengineering such as ocean fertilization with iron are also not without risks. Iron fertilization of algae could alter food chains, deprive large areas of the deep ocean of oxygen and worsen ocean acidification. Clearly, many types of geoengineering should be approached cautiously and we should focus on reducing emissions through proven strategies.

¹ https://csl.noaa.gov/news/2023/390_1107.html

² Solar geoengineering should not be conflated with cloud seeding, which is currently used in nine (primarily western) states to increase precipitation or reduce hail through the release of silver iodide particles. <https://www.gao.gov/products/gao-25-107328>

The Department has several concerns regarding enforceability of these bills, and would need additional staffing for implementation.

The United States Government has exclusive sovereignty over the airspace of the United States pursuant to 49 U.S.C.A. § 40103. The airspace, flight of an aircraft, and use of navigable airspace cannot be limited or otherwise regulated by the State. Additionally, the Department lacks both the resources and expertise necessary to enforce a prohibition against the funding of geoengineering activities—Department staff are experts in environmental protection, not finance. Also, the proposed definitions of “geoengineering” are so broad as to potentially include reforestation and afforestation projects, yet lacking in specificity with respect to the term “large-scale intervention.” Finally, we have very real concerns that these bills as written could so increase the number of “chemtrail” related calls that the Department would need additional staffing to handle them.

The Department’s opposition to L.D. 825 is grounded on additional concerns including the Department’s authority to pursue criminal investigations and prosecutions, the potential for preemption of federal law in violation of the supremacy clause found in Article VI of the U.S. Constitution³, and a regulatory scope so broad as to possibly encompass nearly any entity emitting air contaminants (including licensed air emission sources or fossil fuel producers and users).

L.D. 825 also contains language that would require active investigation of any allegation of geoengineering, including establishing and maintaining on-line resources for members of the public to use to report alleged violations, and to encourage them to do so. Given the frequency with which the Department receives unfounded complaints about so-called chemtrails, such an interface would require significant additional

³ The supremacy clause states that when federal law conflicts with state law, the federal law prevails.

LD 499, Act to Prohibit Geoengineering and LD 825, An Act to Prohibit Geoengineering, Including the Use of Cloud Seeding, Weather Modification, Excessive Radio Waves and Microwave Radiation
Written Testimony of Jeffrey Crawford/DEP
Public Hearing: March 12, 2025
Page 5 of 5

resources to address pointless and fruitless investigations of a known effect of ordinary air travel.

Thank you for the opportunity to testify before you today and I would be happy to answer any questions that you might have.