

November 14, 2024

VIA ELECTRONIC SUBMISSION

National Oceanic and Atmospheric Administration

Attn: Document No. NOAA-OAR-2024-0091

1401 Constitution Avenue NW, Room 5128

Washington, DC 20230

<https://www.federalregister.gov/documents/2024/09/20/2024-21567/notice-of-receipt-and-request-for-public-comment-on-petition-for-rulemaking-regarding-maintaining#open-comment>

Re: *Document No. NOAA-OAR-2024-0091, Request for Public Comment on Petition for Rulemaking to Amend NOAA's Reporting Regulations under the Weather Modification Reporting Act*

Dear Sir or Madam:

On behalf of our client, Informed Consent Action Network (“**ICAN**”), we submit the following comment to the National Oceanic and Atmospheric Administration (“**NOAA**”) regarding the Request for Public Comment (“**Comment**”) dated July 30, 2024 on the petition for rulemaking to amend NOAA’s reporting regulations under the Weather Modification Reporting Act (“**Reporting Act**”), document No. NOAA-OAR-2024-0091. ICAN is a not-for-profit organization with a mission of combatting manmade disease and a proven record of raising public awareness about medical products and their effects on health. ICAN actively investigates and reports on environmental pollutants/toxins and governmental activities, and it holds regulators accountable to the people so that every person is provided true informed consent.

Given its mission, ICAN is concerned by the federal government’s failure to provide necessary regulation and oversight of weather modification, geoengineering, and climate intervention activities which can adversely affect Americans’ health and the environment. This concern is not unfounded as private actors are already conducting and commercializing weather modification and climate intervention activities including, but not limited to, cloud seeding,¹ marine cloud brightening,² and solar radiation modification (“**SRM**”) outdoor field experiments.³ Further, government-funded researchers are seriously evaluating one particular SRM method, stratospheric aerosol injection (“**SAI**”), as a means of attempting to quickly reduce average global surface temperatures.⁴ But as of yet no federal governance scheme exists for such research, and certainly not for deployment, of SRM. This runs afoul of the 2021 National Academies of Sciences,

¹ <https://www.makerain.com> (<https://perma.cc/PGA2-N4D3>).

² <https://www.cbsnews.com/sanfrancisco/news/cloud-brightening-alameda-solar-geoengineering-climate-change-experiment/#:~:text=The%20research%20involved%20a%20device,and%20temporarily%20cool%20the%20planet.>

³ https://makesunsets.com/?gad_source=1&gclid=EAIaIQobChMI067U8I6giQMVJTQIBR3ZGTIoEAAYASAAEgI ZvfD_BwE (<https://perma.cc/9TRY-2XSK>).

⁴ See https://csl.noaa.gov/news/2023/390_1107.html (<https://perma.cc/G6RK-JLCU>); <https://climate.nasa.gov/news/1066/just-5-questions-hacking-the-planet/> (<https://perma.cc/T462-X37Z>).

Engineering, and Medicine (“NAS”) report, “Reflecting Sunlight: Recommendations for Solar Geoengineering Research and Research Governance” (collectively, “NAS Report”), wherein researchers in favor of geoengineering call for a governance plan for research of SRM and no deployment of SRM.⁵

As such, ICAN first implores NOAA to **implement a policy strategy to discourage all research, field experiments, or deployment of SRM activities** to protect the public and the environment from the potentially devastating consequences of SRM. Should NOAA unwisely choose not to implement such a policy, we request NOAA **amend its Reporting Act regulations to expand and clarify reporting requirements to mandate reporting of all public and private research, experimentation and deployment of any public or private weather modification or climate intervention activities, including SRM.** Second, it asks NOAA to **make all research, reports and information it receives under the revised regulations easily available to the public with advanced notice of any activities** so that people are fully informed on the purpose, scale, projected impact, and potential risks of these activities.

I. THERE SHOULD BE NO RESEARCH OR DEPLOYMENT OF SRM

ICAN vehemently opposes any research or deployment of SRM. SRM is a highly controversial and radical climate technofix with poorly understood and potentially devastating side effects. Even the NAS Report admits that if SRM is deployed, it could have potentially catastrophic effects on weather, agriculture, natural ecosystems, and human health.⁶ These consequences would likely be borne by the poorest and most vulnerable in society while any benefits would be relegated to an elite few. SRM is endorsed by a small group of researchers and scientists, funded in part by wealthy technocrats and philanthropists and their charitable organizations,⁷ who stand to profit from SRM research and deployment. For example, David Keith, a top geoengineering researcher and outspoken proponent of SRM research, whose own research has been funded by Bill Gates, sold his company Carbon Engineering last year to Occidental Petroleum for \$1.1 billion.⁸ Carbon Engineering is engaged in carbon dioxide removal, a different kind of geoengineering. Mr. Keith made \$72 million from the sale.⁹

Conversely, more than five hundred international scholars from sixty-one countries advocate for an international non-use agreement on solar engineering which demands effective political control and restriction of the development of SRM technologies.¹⁰ Even the most extreme

⁵ <https://www.nationalacademies.org/news/2021/03/new-report-says-u-s-should-cautiously-pursue-solar-geoengineering-research-to-better-understand-options-for-responding-to-climate-change-risks> (<https://perma.cc/J3JH-K8KF>).

⁶ <https://nap.nationalacademies.org/read/25762/chapter/4#90> (<https://perma.cc/8AZK-M3U3>).

⁷ https://www.solargeoeng.org/wp-content/uploads/2023/02/SGNUA_1_Briefing_note.pdf (<https://perma.cc/9KT3-P34X>).

⁸ <https://www.nytimes.com/2024/08/01/climate/david-keith-solar-geoengineering.html> (<https://perma.cc/P54U-A7BE> (paywall removed)).

⁹ *Id.*

¹⁰ <https://www.solargeoeng.org/non-use-agreement/> (<https://perma.cc/GXD3-LHCB>); <https://www.solargeoeng.org/non-use-agreement/open-letter/> (<https://perma.cc/K64W-3W4A>).

and infamous climate activists, such as Greta Thunberg, oppose SRM.¹¹ According to Raymond Pierrehumbert, an atmospheric physicist at the University of Oxford, “[SRM is] not only a bad idea in terms of something that would never be safe to deploy [. . .] [b]ut even doing research on it is not just a waste of money, but actively dangerous.”¹² Indeed, researchers across the globe demand that governments commit to halting any development of SRM, including further research.¹³

There are numerous significant risks to SRM deployment, all of which are acknowledged by proponents of SRM, including stratospheric ozone depletion,¹⁴ effects on global food production and biodiversity,¹⁵ increases in air pollution and UV exposure-related premature mortality,¹⁶ disruption of local and regional weather patterns leading to intensified droughts or flooding,¹⁷ disruption of monsoon cycles that provide critical rain to agriculture,¹⁸ ocean acidification,¹⁹ increased acid deposition resulting in air pollution and acid rain,²⁰ diminution of solar power systems,²¹ geopolitical conflict over who controls the global thermostat with SRM, and retaliation by countries suffering the effects therefrom,²² and unintended warming or excessive cooling due to uncertainty in estimates of the amount of SRM needed. SRM proponents acknowledge these risks while simultaneously acknowledging that the effects of SRM, good or bad, will be incredibly complex and cannot be fully known without deploying SRM and experimenting on our planet.²³

Critically, researchers project that once SRM starts, it must continue in perpetuity, binding successive generations to use of the technology.²⁴ If a future governmental regime decides to cease SRM operations, the result very well might be termination shock or a rapid onset of extreme

¹¹ <https://www.reuters.com/article/idUSKCN2DL2N2/>.

¹² <https://www.nytimes.com/2024/08/01/climate/david-keith-solar-geoengineering.html> (<https://perma.cc/P54U-A7BE>).

¹³ <https://www.solargeoeng.org/why-the-new-letter-of-support-for-solar-geoengineering-research-is-misguided/> (<https://perma.cc/4CWD-FEFY>).

¹⁴ <https://nap.nationalacademies.org/read/25762/chapter/4#43> (<https://perma.cc/AA5B-MNFK>).

¹⁵ <https://phys.org/news/2024-09-climate-crisis-scientists.html> (<https://perma.cc/R526-5X87>).

¹⁶ <https://online.ucpress.edu/elementa/article/10/1/00047/195026/Stratospheric-aerosol-injection-may-impact-global> (<https://perma.cc/ZY4N-ZBCE>).

¹⁷ <https://www.nature.com/articles/s41598-024-73149-6> (<https://perma.cc/FJ99-A2YC>).

¹⁸ *Id.*

¹⁹ <https://www.tandfonline.com/doi/epdf/10.1080/00963402.2008.11461140?needAccess=true>.

²⁰ *Id.*

²¹ *Id.*

²² <https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2021.720312/full> (<https://perma.cc/U29Q-6XMH>).

²³ <https://phys.org/news/2024-09-climate-crisis-scientists.html> (<https://perma.cc/R526-5X87>).

²⁴ https://www.researchgate.net/publication/324163092_Towards_legitimacy_of_the_solar_geoengineering_research_enterprise.

temperatures projected to be four times greater than temperatures scientists believe would be caused by climate change in the first place.²⁵ Such a result would devastate our planetary systems. Thus, researchers concerned about global warming, but skeptical of SRM, fear that the so-called “cure” of SRM could be worse than the “disease” of climate change due to such novel risks posed by SRM which are not predicted for climate change.²⁶

Finally, as troubling as these risks are, what is worse is that predictions of possible SRM efficacy are based solely on models which SRM proponents acknowledge are inherently limited in their ability to accurately estimate the potential benefits of SRM.²⁷ Consequently, if actors engage in SRM based on these models, we would only discover their inaccuracies after experimenting on our own people and ecological systems. In light of the uncertainty and dangers surrounding SRM, ICAN urges NOAA to amend its policies so that no SRM activities can be conducted without the informed consent of the American people.

II. NOAA MUST AMEND THE REPORTING ACT TO FULFILL ITS OBLIGATIONS TO THE AMERICAN PEOPLE

A. NOAA Must Fulfill Its Responsibilities to the American Public and Lead the International Community.

NOAA has acknowledged its unique responsibility “to provide science and information for a climate-smart nation.” According to NOAA Climate.gov,

Americas’ health, security, and economic well-being are closely linked to climate and weather. People are looking for information to help them understand climate and make decisions on how to manage climate-related risks and opportunities. To meet this need, NOAA Climate.gov provides timely and authoritative scientific data and information about climate science, adaptation, and mitigation.

Our goals are to promote public understanding of climate science and climate-related events, to make NOAA data products and services easy to access and use, to provide climate-related support to the private sector and the Nation’s economy, and to serve people making climate-related decisions with tools and resources that help them answer specific questions.²⁸

While these aims are admirable, this attempt will prove fruitless unless NOAA reexamines its current policies and reporting requirements regarding weather modification and climate intervention activities and its current method of publishing weather modification activity reports

²⁵ <https://doi.org/10.1038/s41467-017-01606-0> (<https://perma.cc/KV9R-DGEF>).

²⁶ <https://doi.org/10.1016/j.gloenvcha.2023.102674> (<https://perma.cc/QGL2-YJCW>).

²⁷ <https://nap.nationalacademies.org/read/25762/chapter/4#51> (<https://perma.cc/8ZEJ-RG39>).

²⁸ <https://www.climate.gov/about> (<https://perma.cc/9E5P-T7BD>).

to the public. Only when NOAA establishes and executes such regulations and practices with the highest levels of transparency and accountability can NOAA fulfill its mission. As such, ICAN writes to recommend that NOAA amend reporting regulations under the Reporting Act and it implores NOAA to step in the gap until or unless Congress chooses to take legislative action or all or any appropriate federal agencies undertake full notice-and-comment rulemaking.

B. These Amendments Will Enable NOAA to Fulfill Its Mission and Responsibilities to the American Public.

First, amending weather modification reporting is a necessary step towards furthering NOAA’s commitment to scientific integrity including encouraging publication of data and results and ensuring the free flow of information.²⁹

Second, these amendments would restore public confidence in NOAA’s oversight of weather modification and climate intervention activities. The amendments would directly effectuate “the intent of this policy [which] is to strengthen universal confidence – from scientists to decision-makers to the general public – in the quality, validity, and reliability of NOAA science.”³⁰

Further, NOAA’s immediate action to draft and implement these requested policies and amendments would provide a regulatory framework where current federal law and regulations do not clearly and explicitly protect the public from the unintended consequences of climate intervention activities and ensure the federal government has the data necessary to quickly and effectively assess and respond to such activities.

III. ACTIONS REQUESTED

ICAN requests NOAA amend its Reporting Act as follows:

A. NOAA Should Enlarge the Scope of Its Regulations Under the Reporting Act to Govern and Discourage Any Further SRM Research, Experimentation, or Deployment to Protect Human Health and the Environment.

NOAA should update 15 C.F.R. 908 to prohibit SRM research, outdoor experiments, and deployment because SRM poses unknown risks and long-term effects to human health and the environment.

1. Public Health Risks

First, NOAA should update 15 C.F.R. 908 to prohibit SRM research, experiments and deployment because of the potential for grave unintended consequences to public health. The use of chemicals or agents to modify weather and climate conditions can have direct and indirect

²⁹ <https://sciencecouncil.noaa.gov/Scientific-Integrity-Commons/SIC-About/> (<https://perma.cc/J6ZZ-Z2DT>).

³⁰ NAO 202-7735D-3: Scientific Integrity. <https://www.noaa.gov/organization/administration/nao-202-735d-2-scientific-integrity> (<https://perma.cc/72YX-6C5D>).

effects on public health. The long-term exposure to these substances has not been sufficiently studied to ensure safety. As explained above, SRM could lead to increases in air pollution and UV exposure-related premature mortality, acid rain, disruption of agriculture and food supply, and health effects stemming from droughts, flooding and extreme temperatures. NOAA should amend its Reporting Act to prevent misguided researchers and scientists, especially those at our own government agencies, from engaging in research aimed at experimenting on our people with SRM and exposing them to such potentially devastating health effects.

2. *Environmental Risks*

Second, NOAA should update 15 C.F.R. 908 to prohibit SRM research, experiments and deployment because of the potential for grave unintended environmental harm. As explained above, prevailing research cautions SRM could lead to drought, heat waves, acid rain, food shortages, ozone layer depletion, and geopolitical conflict. While SRM is being discussed as a potential future policy option to alter the climate by modifying the earth's albedo to reflect solar radiation away from the earth's surface, these policies are based on idealized computer modeling and presumptive international political relationships. Even if more research concluded that any potential benefits outweigh the risks, proponents of SRM admit that the effectiveness of SRM could never be fully understood before deployment and experimentation opens the door for unknown risks and long-term effects to the environment. Further, there are serious concerns whether the effects of SRM could be stopped or reversed if deployed, or worse yet, if our planet systems would become dependent upon perpetual deployment of SRM.

3. *Political Risks*

NOAA should update 15 C.F.R. 908 to prohibit SRM research, experiments, and deployment because outdoor SRM is likely to instigate international and domestic political conflict.

The international community is deeply divided on SRM deployment, including under what circumstances deployment would be necessary, what governance model would be appropriate, and whether any deployment or governance model could be broadly acceptable to all countries. For example, in early 2024, Switzerland proposed a SRM resolution at the United Nations Environment Assembly (UNEA-6), but the resolution failed after numerous African countries and others from the Global South opposed it.³¹ The opposition expressed concerns with the promotion of SRM technologies and called for a global governance mechanism for non-use of SRM.³² Their concerns include whether SRM deployment could disrupt local and regional patterns, negatively impact water availability and food production, threaten biodiversity, and increase pollution levels in an already over polluted world. Further, we know countries like Russia³³ and China are

³¹ <https://nation.africa/kenya/news/solar-radiation-modification-why-this-science-fiction-climate-hack-was-rejected-at-unea-6-4547200>.

³² <https://wedocs.unep.org/bitstream/handle/20.500.11822/43789/K2316003E-AMCEN-19-6-ADVANCE-REPORT.pdf?sequence=3> at 32 (<https://perma.cc/KM6W-845P>).

³³ <https://thediplomat.com/2023/01/how-china-uses-geoengineering-to-pursue-a-hybrid-warfare-strategy/> (<https://perma.cc/YBB3-MSTF>).

researching SRM deployment, with China considering geoengineering as a potential warfare strategy.³⁴

While SRM could cause international conflicts, it could also cause interstate conflicts within the United States. Divisions among states regarding weather modification activities already exist. Several western states including as Texas, Utah, Colorado, Nevada, Idaho, New Mexico, and California utilize and employ active weather modification programs to increase precipitation. Most eastern states, on the other hand, do not employ weather modification programs. Some states have also expressed interest in banning all forms of weather modification activities, including SRM. For example, Tennessee passed a law expressly prohibiting “the intentional injection, release, or dispersion, by any means of chemicals, chemical compounds, substances, or apparatus within the borders of this state into the atmosphere with the express purposes of affecting temperature, weather, or the intensity of the sunlight.”³⁵

Because it would be impossible to precisely define and limit the target impact area of SRM to a particular state, SRM conducted in one state may adversely affect neighboring states and countries. For these reasons, NOAA should update its regulations to prohibit SRM research, experimentation, and deployment to prevent international and domestic geopolitical conflicts.

B. NOAA Should Update Reporting Requirements to Ensure Full Transparency in Weather Modification and Climate Intervention Activities

The American people must be kept fully informed about all past, ongoing, and future planned weather modification or climate intervention projects by the Agency tasked with collecting this information. Weather modification and climate intervention activities can have profound impacts on precipitation, weather patterns, agriculture, the environment, and public health. As such, weather modification activities must be subject to stringent reporting requirements and public oversight.

Current weather modification reporting requirements fail to collect the information necessary to inform the public and reports are not made available before weather modification activities take place. Transparency is crucial to ensuring actors are accountable for any unintended consequences of weather modification or climate intervention activities, that involved technology is subject to proper safety testing before use, and that all activities are evaluated for efficacy prior to implementation.

Should NOAA fail to implement ICAN’s request for a policy strategy under the Reporting Act to ban all SRM research, experimentation, and deployment, then ICAN requests NOAA amend its Reporting Act regulations to expand and clarify reporting requirements to mandate reporting of all public and private research, experimentation and deployment of any public or private weather

³⁴ <https://thediplomat.com/2023/01/how-china-uses-geoengineering-to-pursue-a-hybrid-warfare-strategy/> (<https://perma.cc/YBB3-MSTF>).

³⁵ <https://wapp.capitol.tn.gov/apps/BillInfo/default.aspx?BillNumber=SB2691&GA=113> (<https://perma.cc/ZB53-K2PM>).

modification activities, including SRM activities. Such reporting should include identification of all persons or entities involved and all sources of funding for such research or activities.

As such, NOAA should update weather modification reporting requirements as follows:

1. *Give Public Access to Weather Modification Records*

While the Reporting Act requires companies that intend to engage in weather modification activities to provide a report to the Administrator of NOAA at least 10 days prior to undertaking the activity, NOAA does not upload these reports prior to such activities occurring. First, NOAA should amend the Reporting Act to require reports be provided to NOAA at least 180 days prior to the undertaking of any weather modification or climate intervention research project, experimentation scheme, or planned deployment.

Next, NOAA should post all such weather modification or climate intervention reports, forms 17-4 and 17-4A, on their website as soon as they are received, and well before weather modification activities occur. These reports should be available to the public in a clear, accessible, searchable, online database where the public can view, download, and analyze such records. This would not only provide transparency, but it would provide the public with notice to prepare for changing weather conditions and to raise concerns if necessary. It would also create accountability for environmental, physical, and monetary loss from both legal and clandestine weather modification. Finally, public access would allow researchers to utilize otherwise unobtainable data to improve the accuracy of weather and climate prediction models.

For these reasons, NOAA must amend the Reporting Act to give the public prior notice of activities that are intended to change local weather patterns or our climate given NOAA's responsibilities include providing accurate, reliable weather forecasts and "to keep the public informed of the changing environment around them."³⁶

2. *Expand Current Reporting Requirements to Include Mandatory Reporting of All Public or Private Weather Modification or Climate Intervention Research, Experimentation and Deployment*

ICAN implores NOAA to broaden the scope of the Reporting Act to require any person or entity seeking to research, experiment with, or deploy any weather modification or climate intervention activity, including SRM, to first provide a report to the Administrator of NOAA at least 180 days prior to undertaking any action related to the activity. As suggested in this petition, any amendment under this Reporting Act should apply to any persons or entities subject to U.S. jurisdiction, even if the activities are conducted outside of the United States. This amendment would allow the public to review all proposed weather modification or climate intervention projects by U.S. actors prior to their undertaking both domestically and abroad. Only then can the public give their informed consent to such activities being implemented on our soil or by American actors.

³⁶ <https://www.noaa.gov/about-our-agency> (<https://perma.cc/8FKT-KC98>).

IV. CONCLUSION

Full transparency and public oversight are crucial to restoring the public's confidence in NOAA's authority and to safeguarding public health and the environment from potentially harmful technologies. ICAN opposes weather modification and climate intervention. However, understanding that these activities are already occurring, ICAN believes the public has a right to know about all past, ongoing, and future planned weather modification and climate intervention activities unless or until Congress passes legislation to ban such technologies. Transparency is the only means of ensuring any weather modification or climate intervention activities, if conducted at all, are done with proper evaluation, accountability, safety testing, and public awareness.

The American people have entrusted NOAA with the unique responsibility to provide accurate, reliable weather forecasts and "to keep the public informed of the changing environment around them."³⁷ This should not be confused with any authority to engage in research or tacitly approve any weather modification or climate intervention technologies without the informed consent of the American people.

Given these concerns, ICAN respectfully requests NOAA to conduct a rulemaking process in a manner that allows for a robust public debate on the state, purposes, impacts, and consequences of weather modification and climate intervention activities. ICAN urges NOAA to prohibit SRM research, experimentation, and deployment, and to strengthen weather modification reporting requirements as a necessary step towards greater transparency and public accountability.

Very truly yours,

/s/ Elizabeth Brehm

Elizabeth A. Brehm, Esq.

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³⁷ <https://www.noaa.gov/about-our-agency> (<https://perma.cc/8FKT-KC98>).