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September 13, 2024

Dr. Laurie Locascio
Director
National Institute of Standards and Technology
100 Bureau Drive, Mail Stop 8970
Gaithersburg, MD 20899-8970

Dear Dr. Locascio,

Thank you for your letter dated June 5, 2024, in response to my inquiries about actions taken by the CHIPS Program Office to ensure worker health and safety under the CHIPS for America Program. The actions you outlined with respect to project labor agreements, workforce partnerships, occupational health and safety, and toxic chemicals and PFAS all represent meaningful steps forward in ensuring that worker health and safety and environmental sustainability are treated by your agency and funded companies as priorities from the construction phase through operations of each CHIPS facility. I am truly grateful for your efforts to ensure they remain so.

As the CHIPS Program is moving towards finalizing contracts for semiconductor facilities, I wanted to highlight some important areas on which I hope the Department will focus. Following up in response to specific actions outlined in your letter, in the second paragraph, you wrote "We are committed to working with the industry to advance our shared goals…" I would encourage you, in addition to working directly with industry, to also maintain an open channel of communication with organizations representing semiconductor workers and local communities in which the facilities are being built. Doing so will help you verify reports you receive from industry with conditions experienced by those on the ground and ensure you have all of the information you need to conduct proper oversight.

One concept that could prove helpful in this regard are worker health and safety groups. The CHIPS office should encourage companies, through CHIPS contracts, to establish worker-led health and safety groups. These types of groups can provide the front-line workers with the highest exposure to occupational dangers with a retaliation-free forum to report safety concerns. Optimally, such reporting would be provided, unrestricted, to the Department of Commerce so that it can inform the Department's oversight of CHIPS Act implementation. Moreover, if such reporting were publicly accessible, through the Department, it could also help to inform local communities to health and safety issues in these taxpayer financed facilities. And the Department

should coordinate in these efforts with the Department of Labor, which has expertise in these matters.

While collaboration with industry, workers, and local communities will be important, ultimately you will need quantitative measurements in order to have certainty that workers and the environment are being protected. Fortunately, the agency you lead, the National Institute of Standards and Technology (NIST), is the world's leading measurement agency. NIST has long partnered with the Environmental Protection Agency (EPA) to develop standard reference materials and measurement technologies to identify and quantify contaminants in environmental samples, including air, water, and ground samples.

I am pleased that you are evaluating how to require companies to apply the lowest limit (most protective) for each chemical used in its operations. I strongly encourage you, as part of such requirements, to ensure that companies regularly monitor and publicly report the chemicals involved and their corresponding detected amounts throughout the fabrication facility using the best available technology for detection limits. In the past, manufacturers have not disclosed the chemicals used in their facilities under the justification that this information is confidential business information. Given the legacy of toxic pollution and worker health effects from semiconductor manufacturing in my own community, I don't find this to be a persuasive justification to keep workers and communities in the dark. Workers and communities have the right to know what toxic chemicals are being used in taxpayer financed facilities, and the Department should facilitate the transparent reporting of this information.

Where chemical detection technology is not available or not sufficient, I am also glad to hear that you will be investing CHIPS R&D funds to better measure PFAS and other toxic chemicals in wastewater and air, as well as to develop capture and destruction technologies for those chemicals. I encourage to you maintain an easily accessible website describing all funding awards for research into the replacement, management, monitoring, and remediation of hazardous substances in semiconductor production.

I would also like to urge the Department to leverage the substantial research budget from the CHIPS and Science Act to help reduce the environmental impact of semiconductor manufacturing. Modern semiconductor manufacturing is extremely energy intensive. Some estimates have placed the additional energy consumption of CHIPS-related facilities in the thousands of megawatts.[1] This additional energy consumption has the potential to increase both greenhouse gas emissions as well as criteria air pollutants. Increasing the energy efficiency of chips manufacturing should be a priority of the CHIPS research program. Likewise, semiconductor manufacturing consumes very large quantities of water at nearly every stage.[2] Reduction of the water-intensity of semiconductor manufacturing seems like an important topic for federal research and development. Moreover, both of these research topics would have the added benefit of increasing the economic competitiveness of domestic semiconductor

[1] Gary Cook, Clean Clicks or Dirty Chips, Stand.Earth (Feb. 2024), https://stand.earth/wp-content/uploads/2024/02/Clean-Clicks-or-Dirty-Chips-Feb-2024_230224.pdf

[2] Kristen James, "The water challenge for semiconductor manufacturing: What needs to be done?" World Economic Forum, July 19, 2024, https://www.weforum.org/agenda/2024/07/the-water-challenge-for-semiconductor-manufacturing-and-big-tech-what-needs-to-be-done/.

manufacturing. They are wins for the American public, our environment, and our economy. I would note that other agencies in the Federal government could contribute to this research in meaningful ways. I encourage the CHIPS Program to look to partner with stellar research agencies like the Department of Energy and the EPA to further this research.

Thank you again for your continued commitment to addressing worker health and safety and environmental sustainability under the CHIPS Program. If you have any questions, please contact Dahlia Sokolov or Alan McQuinn of the Committee's minority staff at (202) 225-6375.

Sincerely,

Zoe Lofgren
Ranking Member
Committee on Science, Space, and Technology

Cc: Secretary Gina Raimondo
U.S. Secretary of Commerce

Chairman Frank Lucas
Committee on Science, Space,
and Technology