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TO: Onondaga County Industrial Development Agency and CHIPS Program Office
By e-mail at: chipsNEPA@chips.gov
SUBJECT: "Kicking the Can Down the Road": Comments on the Micron New York 2025 Draft Environmental Impact Statement
FROM: Lenny Siegel, Executive Director, Center for Public Environmental Oversight
By e-mail at: Lsiegel@cpeo.org
DATE: August 8, 2025

Thank you for the opportunity to comment on the June, 2025 Draft Environmental Impact Statement for the Micron Semiconductor Manufacturing Project in Clay, New York.[1] We have shared earlier versions of this document with several other organizations, so you may find redundant or similar language in their submissions.

Micron, like other semiconductor producers, has always utilized and released into the environment a wide range of hazardous substances. In fact, the industry introduces hazardous substances into wafer fabrication faster than researchers can determine their toxicity and government agencies can regulate them. The Clay environmental review provides an opportunity to address potential semiconductor pollution in advance.

Unfortunately, the draft Environmental Impact Statement (DEIS) is vague, providing the public and relevant agencies insufficient information to determine if best practices will be used to prevent human and environmental exposure to chemicals from the Micron factory. The technical term for this is "kicking the can down the road."

[1] *Micron Semiconductor Manufacturing Project, Clay, NY Draft Environmental Impact Statement, (DEIS),* CHIPS Program Office and Onondaga County Industrial Development Agency, June, 2025, EISX-006-55-CPO-001. https://ongoved.com/wp-content/uploads/2025/06/Micron-Draft-EIS.pdf

One does not expect chipmakers to stop using hazardous substances that are intrinsic to their production. However, since the costs—health, environmental, and financial—of releases of these substances are borne by others, they have an obligation to reduce the use of such substances and prevent their release into surface water, groundwater, and the atmosphere, as well as comply with state and federal regulations and statutes.

Furthermore, the sixteen-year-plus timeframe in the Micron EIS does not appear to provide a mandatory mechanism for updating the review. The semiconductor industry is constantly upgrading its products and modifying its processes, so approval of the EIS should include a requirement for periodic updates to ensure that the additional impacts do not become significant.

Finally, the semiconductor industry, through organizations such as the Semiconductor Research Consortium, is sponsoring research with the objectives of understanding and addressing the potential environmental impacts of the use and release of PFAS "Forever Chemicals." I believe that this is because the companies expect PFAS to be both monitored and regulated. Therefore, careful review and documentation, in the EIS, of the current state of PFAS impacts of semiconductor production is key to promoting better management practices as well as beneficial substitution of other substances.

Forever Chemicals

The DEIS language on per- and polyfluoroalkyl substances (PFAS) "forever chemicals" is sketchy and general, providing little information about the PFAS to be used and/or discharged from the facility. Even the CHIPS program June, 2024 *Final Programmatic Environmental Assessment for the Modernization and Expansion of Existing Semiconductor Fabrication Facilities* contains more detail about the use of PFAS in wafer fabrication. It reported, "Semiconductor manufacturers use PFAS as an essential material in multiple steps in the fabrication process."[2] However, the entire semiconductor industry, including Micron, has stopped using PFOA and PFOS, the only two PFAS with federal drinking water standards.

The bottom line is that Micron will be using and potentially discharging a wide range of PFAS, only a few of which are identified, and none of which are currently regulated. Much more information is required to assure the public, as well as officials, that Micron will not significantly impact the environment by adding PFAS to the already PFAS-contaminated environment. Furthermore, Micron should adopt more protective PFAS management than what is promised in the draft EIS.

The DEIS says Micron will request "detailed chemical constituent documentation from its chemical vendors, including PFAS content, which often requires the use of non-disclosure

[2] *Final Programmatic Environmental Assessment [PEA] for Modernization and Internal Expansion of Existing Semiconductor Fabrication Facilities under the CHIPS Incentives Program*, (Final PEA), Chips Program Office, June 28, 2024, p. C-13.
https://www.nist.gov/system/files/documents/2024/06/28/Final%20PEA%20for%20Modernization%20and%20Expansion%20of%20Semiconductor%20Fabs%206-28-2024%20-%20OGC-508C.pdf

agreements to obtain such information."[3] Non-disclosure is unacceptable. The public has a right to know the identity of hazardous substances used and released in their communities. Most assuredly, Micron's competitors rely on the same chemical suppliers, so it's difficult to justify anything but full disclosure of the constituents of the industry's process and product chemicals.

Fortunately, wastewater analysis provides valuable information about the PFAS found in semiconductor fabs. For example, a Cornell University analysis of chipmaking wastewater found, "Nontarget analysis revealed the presence of 41 homologous series of PFASs comprising 133 homologues."[4] The same study found that concentrations of non-targeted PFAS—that is, chemicals not detected using official analytic methods—significantly exceed the concentrations of known, "targeted" compounds in chip plant effluent. Furthermore, wastewater may include transformation products not found in chemical inputs.[5] It is important to recognize that "forever chemicals" may transform into other "forever chemicals."

The wide range of PFAS in Micron's wastewater will end up in one or more of four places: the Oneida River; biosolids shipped from the Oak Orchard plants for landfilling or land application; filtering media, or air emissions from treatment. All such pathways should be monitored and eliminated.

The DEIS promises, "The indirect discharge permit would be anticipated to include limits for PFOA and PFOS derived from the existing Oak Orchard WWTP's SPDES permit limits."[6] That's not enough. Analytic methods and treatment strategies based upon those relatively well understood compounds are inadequate for addressing wafer fabrication wastewater. The PFAS to be used by Micron are not currently regulated at the Oak Orchard plants, and treatment methods that remove long-chain PFAS such as PFOA and PFOS do not necessarily remove the hundred or more PFAS found in typical fab wastewater.

Furthermore, while the *persistence* of all forever chemicals is a given because of the strong carbon-fluorine bond, the *toxicity* of most of them varies, and for many, it is largely unknown. The state of Hawaii prepared the following chart, showing the relative non-cancer risk of several PFAS compounds. In general, it shows that short-chain PFAS—that is, where the molecules have fewer carbons than long-chain PFAS such as PFOA and PFOS—tend to be less toxic than PFOA and PFOS. However, they are still as toxic as other well-known contaminants of concern. And one PFAS found widely in the environment and chip plant wastewater, HPFO-DA (also known as Gen-X) ranks with the long-chain compounds even though it has fewer carbons

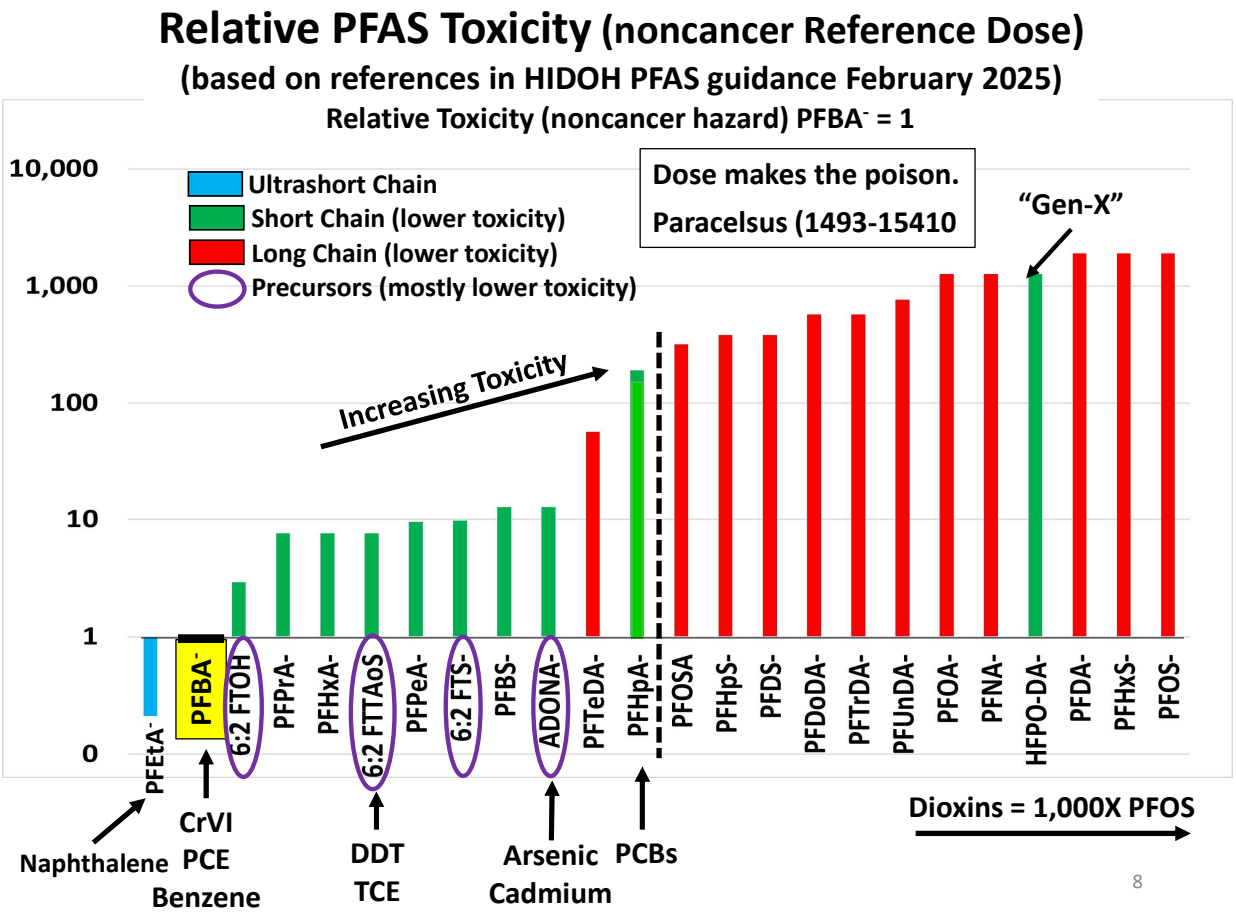
[3] *DEIS,* p. 3-240. https://ongoved.com/wp-content/uploads/2025/06/Micron-Draft-EIS.pdf

[4] Paige Jacob, Kristas Barzen-Hanson, and Damian Helbling, "Target and Nontarget Analysis of Per- and Polyfluoralkyl Substances in Wastewater from Electronics Fabrication Facilities," *Environmental Science & Technology,* February 16, 2021, p. 2346. https://pubs.acs.org/doi/10.1021/acs.est.0c06690

[5] See Paige Jacob and Damian Helbling, "Exploring the Evolution of Organofluorine-Containing Compounds during Simulated Photolithography Experiments," *Environmental Science & Technology,* August 17, 2023, https://doi.org/10.1021/acs.est.3c03410

[6] *DEIS*, p. 3-241

per molecule. Thus, concludes Brewer, to adequately assess the risk of PFAS exposure, one must measure all PFAS in mixtures, not just the top two or even EPA's target list.[7]



Supporting Brewer's findings, decades of research have shown that exposure to mixtures of different PFAS chemicals can result in cumulative adverse health effects. Even if the individual chemicals are at levels considered to be "safe," a mixture may cause significant adverse health effects. EPA recognized this in developing the Hazard Index approach to Safe Drinking Water Act limits on four PFAS, which states, "The high likelihood for different PFAS to co-occur in drinking water; the additive health concerns when present in mixtures; the diversity and sheer number of PFAS; and their general presence and persistence in the environment and the human body are reflective of the environmental and public health challenges the American

[7] Roger Brewer, "Testing and Risk Assessment of Complex Mixtures of PFASs in Wastewater and Sludges," Healthy Water Solutions, May 2025. https://www.youtube.com/watch?v=AqNNY3F358o

public faces with PFAS, which poses a particular threat for overburdened communities that experience disproportionate environmental impacts."[8]

The DEIS reports, "The IWWTP [Industrial Wastewater Treatment Plant] also would include technologies specifically designed to remove emerging contaminants, such as per- and polyfluoroalkyl substances (PFAS), including reverse osmosis and nanofiltration (membranes used to filter out PFAS, effectively removing them from the water), granular activated carbon (an effective method for removing PFAS through adsorption), ion exchange resins (which selectively capture and remove PFAS from wastewater)…"[9] Including such a statement in the EIS does not guarantee the adequacy and reliability of the treatment technologies. Their effectiveness depends upon the other constituents of the waste stream, water volume, and PFAS concentrations. There is no single best method for removal, and none of the filtration methods actually destroys PFAS.

While other factors may influence the choice of technology, the starting point should be the measurement of all PFAS in source wastewater as well as removal system effluent. The DEIS promises, "To comply with its SPDES permit for the IWWTP, OCDWEP [Onondaga County Department of Water Environment Protection] would be required to perform regular analytical testing of surface water and effluent samples collected using NYSDEC-approved methods and would be subject to ongoing sampling, monitoring, and reporting requirements."[10] The same requirements would apply to Micron's wastewater pretreatment system, governed by an indirect discharge permit negotiated with the OCDWEP.

To measure PFAS in wastewater, Qiao *et al* recommend using the TOP [Total Oxidizable Precursor] Assay method: "The TOP assay results emphasize the importance of implementing an integrated PFAS monitoring strategy that incorporates the TOP assay, along with routine monitoring of ultrashort-chain PFAS (e.g., TFA and PFPrA)."[11] Going further, Jacob et al concluded: "However, this [the elevated levels of combined target and non-target PFAS] does reinforce the idea that PFAS monitoring should incorporate complementary target and nontarget analyses or otherwise include measures of total organic fluorine to accurately assess PFAS abundance and potential environmental impacts. These data also support the recent push by policymakers to regulate total PFASs, rather than individual compounds, underscoring the importance of total PFAS concentration monitoring."[12]

In short, Micron's plan for monitoring discharges is vague and inadequate.

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[8] U.S. Environmental Protection Agency (EPA)." Per- and polyfluoroalkyl substances (PFAS): Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) National Primary Drinking Water Regulation Rulemaking." EPA-HQ-OW-2022-0114. June 25, 2024.

[9] *DEIS*, 3-83

[10] *DEIS*, 3-84

[11] Biting Qiao *et al*, "Nontarget Screening and Occurrence of Emerging Per- and Polyfluoroalkyl Substances in Municipal and Semiconductor Industrial Wastewater: A Large-Scale Survey in China," *Environmental Science & Technology*, May 6, 2025, p. J. https://doi.org/10.1021/acs.est.5c02035

[12] Jacob, p. 2353

To understand how to address wastewater from the Micron Clay facility, the company and agencies need not wait for production to begin. Micron's new fab in Boise, Idaho will be using the same or similar chemicals. The New York's evaluation could begin with analysis of Boise effluent.

Recommendations

All PFAS discharge pathways from the Micron plant should be monitored and eliminated.

The Oak Orchard plants and Micron should commit to using, and the New York State Department of Conservation should require, sampling and analysis methods that capture all PFAS in wastewater from Micron, starting with samples from the Micron Boise plant.

In addition to the removal technologies cited above, the DEIS reports:

"Micron also would segregate process solvent waste containing PFAS from facility wastewater streams to closed bulk storage systems for off-site management by licensed and permitted treatment and disposal facilities.… Micron would dispose of or otherwise manage waste known to contain regulated PFAS in accordance with applicable regulations and as appropriate given its content and characteristics."[13] The DEIS names Veolia, all of whose disposal facilities are outside of New York State, as the primary waste disposal vendor.

Even if Micron is able to segregate a portion of its PFAS-laden wastewater, these provisions are inadequate:

First, there is no assurance that the permitted treatment and disposal facilities—likely incinerators located in communities of color—would destroy the particular mixtures transferred from the Micron plant without creating toxic transformation products. In fact, mixing chipmaking wastes with other hazardous wastes would increase the likelihood that new hazardous substances would be emitted. If such off-site "disposal" is allowed, Micron should be responsible for proving that PFAS and other hazardous substances from its waste streams, such as solvents, are destroyed. It should also be required to show that thermal treatment does not create hazardous products of incomplete combustion.

The DEIS promises, "Micron would continue to review the waste and reuse facilities to which it would send hazardous waste,"[14] but there is insufficient detail to assure the public and regulators that PFAS, PFAS-containing media, and PFAS byproducts will be destroyed safely.

Second, the promise to comply with regulations is hollow. Of course, Micron should be expected to obey the law. However, we are unaware of any regulations governing the treatment and disposal of collected PFAS wastes, particularly when they are shipped out of state.

[13] *DEIS*, p. 3-341
[14] *DEIS*, p. 3-353

Similarly, removal technologies such as Granular Activated Charcoal, Anion Exchange Resins, and Foam Fractionation do not destroy PFAS. In general, the filtration media and gas emissions contain essentially the same PFAS that were contained in the original liquid. The filtration media are typically sent off site for landfilling or thermal treatment, neither of which is environmentally acceptable.

Fortunately, the federal government, through the Department of Defense, has been supporting the development of new technologies that actually destroy PFAS, breaking down the otherwise persistent molecules into non-toxic substances. The DEIS actually mentions one category of these technologies, Advanced Oxidation. These technologies may either treat the wastewater directly or destroy concentrated PFAS removed from wastewater through technologies such as foam fractionation. This is the most protective approach to treating wastewater that contains a wide range of PFAS compounds.

Recommendation

Micron should commit to, and NYS DEC should require that Micron evaluate available PFAS destruction technologies for use on site with the goal of implementing one or more as close to the points of use as feasible. NYS DEC should regulate these systems.

The DEIS points out that New York state has guidance values for PFOA and PFOS in "raw water." However, there are no standards for the PFAS that Micron will actually be using. In fact, even in the best of cases there will not be standards or guidance values for the preponderance of PFAS used or released by Micron.

Yet current science demonstrates that all PFAS are toxic as well as persistent. Any release of PFAS into the environment adds to the already unacceptable load on the environment.

Recommendation

The goal of any program of removal, treatment, or destruction for PFAS should be ZERO releases, as much as practical. That is, technologies, not numerical standards—which do not exist—should be the basis of the approach to eliminating PFAS in chipmaking wastewater.

Fluoropolymers

Fluoropolymers are PFAS that should be regulated like other PFAS, not only at the Micron project but throughout their life cycle. Still, the EIS should document their massive use by the semiconductor industry. Mark Newman, CEO of Chemours, explained:

> "You cannot make chips without a whole PFA infrastructure," he said. "We estimate that in a modern-day fab, there's a half-kilo of PFA in every square foot. So in a 400,000- to

> 600,000-square-foot fab, that's 200 to 300 metric tons of this stuff." It's not just valves, of course, but all types of pipes, tubes and pumps in semiconductor equipment.[15]

The article continues, "On its website, Chemours says flat-out that "without PFA, domestic semiconductor manufacturing would not be possible."

Chemours is the only domestic producer of PFA. In fact, in 2024 it announced the expansion of its notorious Washington Works plant in West Virginia to meet increased demand from the semiconductor industry.[16]

Fluoropolymers are particularly hazardous where they are manufactured, and at the end of their useful life. Lohmann *et al* concluded:

> The evidence reviewed in this analysis does not find a scientific rationale for concluding that fluoropolymers are of low concern for environmental and human health. Given fluoropolymers' extreme persistence; emissions associated with their production, use, and disposal; and a high likelihood for human exposure to PFAS, their production and uses should be curtailed except in cases of essential uses.[17]

Furthermore, the semiconductor Industry has introduced and embedded a wide variety of PFAS into semiconductor packaging and packages with no consideration of the potential environmental and worker safety risks. Chipmakers have little idea how much of which PFAS are contained in their final products. In fact, they admit that the absence of regulation is responsible for their lack of knowledge of the use of these chemicals. Chips produced at the Micron plant may end up in such packages. Since those products end up distributed in electronic equipment throughout the country and the world, there is no accounting of the environmental impacts of their disposal when no longer used. The Semiconductor Industry PFAS Consortium speculated, "it is unknown if end of life controls are necessary during the reclamation of electronic products."[18] In fact, the safe disposal of electronic equipment in general is a significant unsolved environmental problem. In this case, however, there are emerging alternatives, such as *glass substrates*, that may reduce the need for reclamation.

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[15] Amy Feldman, "More Domestic Chip-Making Means More 'Forever Chemicals,'" *Forbes*, October 5, 2023. https://www.forbes.com/sites/amyfeldman/2023/10/05/more-domestic-chip-making-means-more-forever-chemicals/

[16] Sara Samora, "Chemours expands Teflon PFA production in West Virginia," *Manufacturing Dive*, August 22, 2024. https://www.manufacturingdive.com/news/chemours-plans-teflon-pfa-forever-chemicals-plant-expansion-west-virginia/724609/

[17] Rainer Lohmann *et al,* "Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?" *Environmental Science & Technology*, October 12, 2020. https://dx.doi.org/10.1021/acs.est.0c03244

[18] "PFAS-Containing Materials Used in Semiconductor Manufacturing Assembly Test Packaging and Substrate Processes," Semiconductor PFAS Consortium Assembly, Test, Packaging and Substrates Working Group, June 2, 2023. https://www.semiconductors.org/pfas-containing-materials-used-in-semiconductor-manufacturing-assembly-test-packaging-and-substrate-processes/

Recommendations

The final EIS should contain an estimate of the quantities of fluoropolymers in each Micron fab, by category of use.

The final EIS should contain a life-cycle analysis of the environmental impacts of fluoropolymers, including:

1. *Analysis of the environmental releases and occupational exposures at fluoropolymer production plants. Since Chemours uses the "essentiality" of its products to the semiconductor industry to justify continuing, indeed expanded production of PFA, chipmakers should be held accountable for those environmental impacts.*
2. *Analysis of any Micron on-site releases caused by the use or machining of fluoropolymers.*
3. *Information about the likely end-of-life impacts from the fluoropolymer-containing equipment used at the Micron plant.*
4. *Information about the use and release of fluoropolymers in packaging the chips produced from wafers fabricated at Micron, as well as their end-of-life environmental impacts. There are emerging substitutes, such as glass substrates, that should be used where feasible.*

Occupational Exposure to PFAS

Micron "promises to apply the most protective occupational exposure limit (OEL), based on published industry standards, for each individual chemical or hazardous substance that would be used in the facility manufacturing process…"[19] This is by no means reassuring**. Are there published OELs for the full spectrum of PFAS? Mixtures of PFAS?** How do existing limits compare to *environmental* standards for the same substances? Historically, OELs are less protective than environmental standards, in part because of dated science, in part because it was assumed that workers would have adequate health and safety training and personal protective equipment, where called for.

Since much of the Micron wafer handling will be automated, machine operators might suffer less exposure to hazardous substances than in older, less automated plants. Rather, maintenance and supply personnel, including contractors, will be on the frontlines of exposure. The DEIS should identify these at-risk workers, who may include people who do not routinely work in hazardous areas. Unless they are adequately trained and provided with protective equipment, the more protective chemical-specific environmental standards should be applied.

[19] *DEIS,* p. 3-258

Recommendation

The DEIS should identify any occupational exposure limits currently (or soon to be) published for PFAS used in the semiconductor agency.

Greenhouse Gases

The DEIS concluded, "The GHG [greenhouse gas] emissions that would result from construction and operation of the Proposed Project are expected to be **unavoidably significant**. Even with significant avoidance and minimization efforts as well as mitigation, GHG emissions associated with operation of the Micron fabs and related facilities will represent a significant increase in overall GHG emissions in the Five County Area and New York State." [emphasis added][20]

To their credit, the authors of the DEIS find that the GHG emissions will significantly contribute to climate change. But we are shocked that less has been done to make them avoidable, given the local and global efforts to combat climate change.

The most significant GHG emissions from semiconductor processing, as opposed to energy use by Micron, are fluorinated gases, which are extremely potent and persistent greenhouse gases. Some of these gases last tens of thousands of years in the atmosphere. The DEIS estimates that the project will release 881,699 metric tons CO_{2e} per year of such gases, even after thermal oxidation (incineration) on site.[21] Furthermore, the stack emissions are treated by wet scrubbing to reduce acid releases. These scrubbers may send pollutants, including PFAS, into wastewater, where it must be removed and/or treated.

The DEIS, again to its credit, identifies another category of process greenhouse gas emissions, heat transfer fluids. The DEIS projects annual fugitive (HTF) emissions of 199,699 MT/y CO_{2e}.

The DEIS also reports that the semiconductor industry is researching ways to halt such releases, but it offers few details. For now, Micron expects to externalize the environmental costs of its greenhouse gas emissions.

Recommendation

The state of New York should incentivize the reduction of Micron's GHG process gases by withholding incentives or penalizing the emissions. If officials accept the "unavoidable" impact, Micron will have a blank check to contribute significantly to climate change while others—residents, companies, and government agencies—struggle to make less significant reductions.

Extremely Hazardous Substances

The DEIS states, "Pending further review based on evolving Micron Campus designs, Micron would expect the RMP [Risk Management Plan] to cover eight regulated chemicals (ammonium

[20] *DEIS*, p. 5-2
[21] *DEIS*, p. 3-205

hydroxide, anhydrous ammonia, hydrogen, hydrogen chloride, silane, chlorine, dichlorosilane, and HF [hydrogen fluoride] and would evaluate and add additional chemicals to the RMP on a case-by-case basis." Earlier it mentions sodium hydroxide, and it promises, "hazardous chemicals and materials would be properly stored in containers and drums in storage areas with secondary containment to provide added protection in the event of a spill or release."[22] This is good, but it's not enough. Leaks and spills may still occur during transport or use, so it's important that employees, neighbors, and government agencies be fully aware of the presence of extremely hazardous substances.

Semiconductor fabs typically also use arsine and phosphine, which are extremely toxic gases, even lethal, and diborane, which is highly toxic and pyrophoric. Perhaps they aren't mentioned because the EIS uses EPA's reporting thresholds, which are generally an order of magnitude less protective that California's.[23] Even in low volumes, a leak or spill of extremely toxic gases may necessitate the evacuation of buildings as well as warnings to nearby properties.

This information is important to be included in the environmental review, because local planners need to know how close sensitive uses should be located to the potential toxic release site. For example, in Mountain View, California, the city banned childcare centers in parts of town with semiconductor production.

The DEIS reports, "Clay Fire and Cicero Fire coordinate with the City of Syracuse Fire Department for responses to incidents involving potential hazardous materials, as the Syracuse Fire Department employs a specialty hazardous material response unit."[24] More detail should be provided. Does the Syracuse Fire Department have the expertise and resources to handle the emergencies associated with semiconductor manufacturing? How close, by both time and distance, are personnel and equipment from the specialty unit to the Micron campus? The dangers of hazardous gas releases are so severe that "anticipating adequate capacity to respond to future incidents," without full transparency is a hollow promise.

Recommendations

The final Micron EIS should include a complete list of extremely hazardous substances expected to be used on the property, regardless of anticipated quantity. The public has a right to know even if the federal thresholds for storage are not exceeded.

Micron or DEC should conduct dispersion modeling for the most hazardous of the gases, to guide decisions on the location of sensitive use. For example, would an arsine release from Micron put children at its nearby childcare center at risk?

[22] *DEIS*, pp. 341-344
[23] Compare the tables at "CalARP Program Resources," viewed July, 2025. https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-resources/
[24] *DEIS,* p. 560

Other Hazardous Substances

Other than the extremely hazardous substances mentioned above, the DEIS does not specifically name hazardous chemicals. The Final PEA, on the other hand, contains a short list in Section 3.8 and a longer list in Appendix D.[25]

The DEIS does not address the long-standing environmental threat caused by solvents used in production. Once again, the Final PEA provided more detail: "For example, traditional solvents used in fab cleaning processes contain N-Methylpyrrolidone (NMP), which is known to cause harm to reproductive systems."[26] It noted that some companies—in this case a Taiwan-based producer was using alternatives.

Recommendation

The DEIS should provide complete list of hazardous substances used in production, their function, and possible exposure pathways. Once again, the public has a right to know which hazards are present and may be released from semiconductor production.

Cumulative Effects

The DEIS fails to assess the cumulative impacts of PFAS, industrial Greenhouse Gases, and Extremely Hazardous Substances in its Cumulative Effects analysis. The Micron project is expected to attract related activities, including research and development, chemical suppliers, and even competitors to the area. That is, other facilities may release hazardous substances to the environment, and in particular to Onondaga County's wastewater system, in addition to the PFAS discharges from other, unrelated industries.

Therefore, the DEIS should analyze and mitigate the cumulative impacts associated with hazardous substance use, storage, and release. Without a comprehensive understanding of the types and amount of PFAS discharges on site and for anticipated sites across the region, cumulative impacts for surface water, groundwater, air emissions, and environmental justice cannot be understood.

Recommendation

The DEIS should include a comprehensive analysis of the cumulative impacts of Micron's PFAS discharges to the environment, with a focus on the releases to the Oak Orchard wastewater plants and, in turn, to surface water and wastewater biosolids. As stated earlier, Micron should commit to zero discharge of all PFAS, and its industrial pre-treatment permit should make this an enforceable requirement. Because the cumulative impacts are regional in nature, the environmental justice assessment (Section 3.16) should consider these regional impacts.

[25] *Final PEA*
[26] *Final PEA*, p. 69.

Inequality

I was asked to analyze the Micron DEIS because of my expertise in addressing the hazardous substances used and released by the semiconductor industry, but in reviewing the document I noticed a significant shortcoming in the section on Socioeconomic Conditions. As background, I have been living and studying California's Silicon Valley for nearly six decades. I have served as City Council member and Mayor of Mountain View, the birthplace of the commercial semiconductor industry.

Silicon Valley, as well as other areas with concentrations of high-tech employers, suffers from significant inequalities in income and wealth.[27] To a large degree, this is a result of the influx of well-paid managers and professionals, leaving lower-paid production and service workers to compete for housing. The upper tiers can afford to live near centers of employment, while the lower socioeconomic tiers not only must struggle to pay their bills, but they end up with longer, time-swallowing commutes and weaker public schools. We call this the "jobs-housing imbalance."

Plans to build more housing and hire union construction workers are commendable, but they are likely to be inadequate in enabling equitable income and wealth distributions. Creating large numbers of jobs, without sufficient mitigation, can create more problems than it resolves.

Recommendations

The draft EIS should expand its section on Socioeconomic Conditions to consider the direct and indirect impacts of the Micron development on the distribution of income and wealth, as well as the resulting impact on lower-income workers and residents. This should include wage and salary projections for each class of worker, whether directly employed by Micron or its contractors and suppliers. Typical categories including managers, professionals, production workers, and service workers such as janitors, security guard, and cafeteria workers.

Micron should explore mechanisms for leveling pay levels, such as the recognition of labor unions for production and service workers.

In Summary

The draft Environmental Impact Statement for Micron New York contains valuable information, but in the case of hazardous substances it does not provide enough detail to satisfy the public's right to know or to guide decisions designed to protect worker health, public health, and the environment. If the final EIS fails to disclose essential details, members of the public may find

[27] See Rachel Massaro and Daniel Wessler, "2025 Silicon Valley Index, Joint Venture Silicon Valley, March, 2025. https://jointventure.org/publications/institute-publications/2706-2025-silicon-valley-index and Anji Buckner-Capone *et al*, "2025 Silicon Valley Pain Index," San Jose State University Human Rights Institute, July, 2025. https://www.sjsu.edu/hri/docs/SVPI%202025%20Annual%20Report%20-%20Press%20Release%20.pdf

the only way to influence the project is to oppose it outright as it moves through the permitting process—much which will take place after construction has started.

More than a decade ago, I served as a consultant to the Bronx Committee for Toxic Free Schools, which successfully sued the New York City School Construction Authority to require a detailed maintenance and monitoring plan to ensure that children at the Mott Haven Campus would not be exposed to toxic substances in the long-term and submit the plan for public review. The courts found, "In essence, the position of petitioners here, and the holding of the courts below, is that the methods chosen by the Authority for long-term maintenance and monitoring of its engineering controls were too important not to be described in an EIS."[28] I recognize that the Micron project is subject to different regulatory authorities. Nevertheless, I believe the same principle applies: Where public health and safety is expected to be at risk due to unacceptable hazardous substance exposure from a project under SEQRA review, detailed plans for monitoring should be included in the EIS, not left for subsequent permitting processes.

Furthermore, the semiconductor industry for decades has been characterized by Moore's Law, which projects significant periodic improvements in circuit density. For this and other reasons, over the course of the sixteen-year project Micron is expected to constantly update its production technology. This will include the introduction of new, un-assessed, process chemicals.

In addition, the DEIS notes the likelihood of advances in environmental analysis and treatment. Therefore, there should be a mechanism to revisit key elements of the EIS. That is, impact analysis and the protection of workers, neighbors, and the environment should keep up with the remarkable progress of semiconductor chips, their applications, and associated environmental technologies.

Recommendations

The Final EIS should contain detailed plans for monitoring the release of hazardous substances, including all forms of PFAS, from the Micron plant.

The Final EIS should contain "triggers" for updating portions of the EIS, based upon advances in production and environmental technologies as well as environmental and land use conditions at the Micron site.

[28] Matter of Bronx Comm. for Toxic Free Schools v New York City Sch. Constr. Auth. 2012 NY Slip Op 07051 Decided on October 23, 2012 Court of Appeals Smith, J. Published by New York State Law Reporting Bureau pursuant to Judiciary Law § 431. https://law.justia.com/cases/new-york/court-of-appeals/2012/171.html