Testimony of the
Semiconductor Industry Association (SIA)
Before the
Environment and the Economy Subcommittee
Of the
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Hearing on
"Regulation of New Chemicals, Protection of Confidential Business Information, and Innovation"
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The Semiconductor Industry Association (SIA), the voice of the U.S. semiconductor industry,[1] appreciates the opportunity to testify on "Regulation of New Chemicals, Protection of Confidential Business Information, and Innovation."

Semiconductors are the integrated circuits (commonly called ICs or "chips") that are the enabling technology for all modern electronics found in computers and cell phones, cars and health care devices, communications and military systems, and all other facets of modern technology. Because semiconductors are a foundational technology for virtually all areas of our economy, continued U.S. leadership in semiconductor technology is essential to America's continued global economic leadership. Semiconductors are one of the nation's top exports[2] and a bellwether measurement of the U.S. economy. The industry directly employs about 250,000 employees in jobs with wages that average over $120,000 – well above the average of the rest of US manufacturing – and results in approximately 1.1 million indirect jobs. In addition, semiconductor innovations form the foundation for America's $1.1 trillion dollar technology industry affecting a U.S. workforce of nearly 6 million.

Contrary to the popular perception that most high tech manufacturing has been offshored to Asia, it is important to emphasize that advanced semiconductor manufacturing in the U.S. remains strong and growing sector. The majority of production (56 percent) from U.S. semiconductor firms is located in the United States, and the U.S. is home to more leading-edge process technology manufacturing facilities (i.e., 22 nanometer process technology or less) than any other country in the world.[3] SIA member companies continue to invest and expand in the U.S., with the construction

[1] SIA seeks to strengthen U.S. leadership of semiconductor design and manufacturing by working with Congress, the Administration and other key stakeholders. SIA works to encourage policies and regulations that fuel innovation, propel business and drive international competition in order to maintain a thriving semiconductor industry in the United States. Additional information on SIA is available at www.semiconductors.org.
[2] During the period 2008-12, semiconductors were the second largest export from the U.S., after aircraft. *Source: U.S. International Trade Commission. Industry Defined By: NAIC Codes 336411 (Aircraft); 334413 (Semiconductors); 336111 (Automobiles); 324110 (Petroleum Refinery Products), Based from total exports revenue.*
[3] Source: IC Insights, Global Fab Database.

of new and expanded state-of-the-art fabrication facilities across the country. Overall, U.S.-based semiconductor companies retain over 50 percent of global market share in a highly competitive market. The core mission of SIA is to advance the leadership of U.S. companies in semiconductor research, design, and manufacturing.

I. Semiconductor Manufacturing and Chemicals Innovation

Semiconductor manufacturing is enabled by rapid change and innovation. The industry has successfully introduced new technologies and processes that have resulted in a doubling of the number of transistors on advanced semiconductors roughly every 18-24 months; a semiconductor now contains over a billion transistors on a single chip, at a feature size of 22-nanometer (i.e., 22 billionths of a meter, or roughly a 4,000th the width of a human hair).[4] This pace of advancement has resulted in the revolution in information and communications technology and other technological innovations which have been based on the availability of ever smaller, faster, more energy efficient electronics. To maintain this rapid pace of progress, the semiconductor industry relies on, among other things, attracting the best scientists and engineers from around the world, expending huge capital and research investments, developing and protecting intellectual property, and a flexible regulatory process.

Advancements in chemicals and materials science are one factor that contributes to the continued innovation in the semiconductor industry, and the responsible use of chemicals is essential to maintain the growth and competitiveness of the U.S. semiconductor industry. Accordingly, sound policy governing the regulation of chemicals and materials is a top priority for the industry. SIA's primary goals with regard to chemicals regulation are to protect human health and the environment in a manner that also facilitates continued innovation and the protection of intellectual property. SIA will evaluate all proposals to modify the Toxics Substances Control Act (TSCA) with these goals in mind.

1. Overview of the Semiconductor Manufacturing Process

Semiconductor manufacturing is a highly complex process involving the precise and controlled use of many chemicals and advanced materials. The industry utilizes specialty chemicals with unique chemical and physical properties that make possible the production of advanced semiconductors. The industry also uses bulk chemicals that are widely used and well-understood (e.g., sulfuric acid). In fact, most of the chemicals we use also have uses in other industries, which are likely to give rise to different risks and exposure scenarios. Therefore, a key attribute of an efficient regulatory system is to ensure that chemicals used in the semiconductor industry are evaluated according to the unique use, risk, and exposure models applicable to our industry.

The process of manufacturing semiconductors involves hundreds of carefully controlled steps in which highly advanced pieces of manufacturing equipment (known as "tools")

[4] "Moore's Law: The rule that really matters in tech (Oct. 15, 2012) (available at http://news.cnet.com/8301-11386_3-57526581-76/moores-law-the-rule-that-really-matters-in-tech/).

apply specific chemicals to a thin, round slice of silicon (known as a “wafer”) to create numerous patterned layers of the integrated circuit. These processes are conducted in a fabrication facility (a “fab”), a highly complex manufacturing facility where operations are conducted in an environmentally controlled clean room that is over 100 times more sterile than a medical operating room. Fabs are among the costliest capital investments in the world; a state-of-the-art fab can cost in excess of $5 billion. Semiconductor manufacturing operations involve highly automated processes in enclosed systems, with an exceptionally strong level of control during all aspects of the process.

The “fabrication” of a semiconductor device entails a repetitive patterning process in which materials are selectively deposited, modified, or removed from a wafer surface, to produce highly sophisticated structures that are the building blocks of transistors which then become integrated circuits (sometimes commonly referred to as “computer chips”). The key process steps in creating a semiconductor all employ the advanced use of chemicals: in the following ways:

1. Imaging (known as “photolithography”) – light is used to transfer a geometric pattern from a photo mask to a light sensitive chemical (photoresist) on the substrate.
2. Deposition (addition of material) – materials such as copper and tungsten are added to the substrate within the open patterned area through processes such as chemical vapor deposition (CVD), epitaxial deposition, doping, and plating.
3. Etch (removal of material) – the selective removal of materials like silicon from the open patterned area, using either chemicals or other processes. The most commonly used form of etching is “plasma etch,” in which source gases – typically fluorinated gases (“F-gases”) – are excited using radio frequency (RF) energy to create a plasma which releases ions, electrons and chemically reactive neutral molecular species, including fluorine radicals.

As circuit features get ever smaller, the semiconductor industry’s precise use of chemicals with specific properties becomes even more critical. The continued ability of the industry to innovate and produce ever smaller, faster, more energy efficient and capable integrated circuits depends, in part, on our industry’s access to chemicals with specific functionality. Chemicals are selected based on their unique properties and functionality, and the advanced manufacturing tools are designed to operate using these specific chemicals. As a result, there are typically no “drop-in” replacements for many of the chemicals currently in use in any given manufacturing process. Moreover, the manufacturing technology development process is usually quite long (10 or more years), while actual product lifecycles are relatively short (2-4 years). As a result, changes in manufacturing process technology are very difficult to implement quickly. The manufacturing process also involves continuous improvements and modifications to achieve very specialized circuit function with optimal performance, reliability, and consistency, including ongoing efforts to minimize the quantities of chemicals and to use the least hazardous substances for a given application. Nonetheless, it is typically impossible to replace the critical chemicals once they have been selected for the manufacturing process.

2. The Semiconductor Industry's Controls on the Use of Chemicals

The semiconductor manufacturing process is highly controlled and performed to exacting standards. In order to ensure quality and consistency in the production process, chemicals and materials used in semiconductor manufacturing are subject to significant and often redundant controls and safety measures. The entire process is conducted in a tightly controlled clean room environment, where there are specific controls on temperature, humidity and air contamination. In the semiconductor manufacturing process, uncontrolled particles, chemical vapors and gases are unacceptable from a production standpoint. Highly specialized manufacturing tools and processes deliver exactly the right amount of chemical, in exactly the right place, at exactly the right time. This exceptional level of control is needed in order to build chips with features at the nanoscale.[5]

The highly controlled systems in a fab include enclosed processes, automation, and chemical delivery systems. This results in high levels of protection of both the environment and fab workers. In order to safeguard the environment, the industry has been a leader in phasing out substances of concern[6] and reducing already low levels of emissions.[7] The enclosed processes and automated systems create a barrier between workers and the process, thereby protecting workers against chemical and physical hazards into the work environment. These standards and controls have helped

[5] Nanotechnology is the science, engineering, and technology conducted at the nanoscale, a range from 1 to 100 nanometers (nm). One nanometer is a billionth of a meter, or 10-9 of a meter.) See http://www.nano.gov/nanotech-101. Current leading edge chips have features of 22 nanometers (nm), and the industry is engaged in ongoing development at the scale of 10 nm.

[6] The semiconductor industry has a long history of leadership of substituting chemicals of concern with more benign substances. For example, the industry replaced the use of chlorinated solvents with rubbing alcohol, phased-out glycol ethers with propelyne, and was one of the first industries to eliminate the use of ozone depleting substances (ODSs). More recently, in response to concerns of the environmental and health community associated with the use of perfluorooctanyl sulfonates (PFOS), the semiconductor industry has eliminated the use of PFOS in most applications and emissions have been reduced by 99 percent since 2005. See World Semiconductor Council (2011 Joint Statement) available at: http://www.semiconductorcouncil.org/wsc/uploads/WSC_2011_Joint_Statement.pdf.

[7] According to data in the Toxics Release Inventory (TRI), the entire sector within the Computers/Electronics Products category (334) contributes just 0.1 percent of the total of TRI releases for all industries. The TRI emissions for this sector amounts to 4.459 million pounds out of a total of over 4 billion pounds from all industries, and the semiconductor industry (NAICS code 334413) is just one subset of this larger sector. See http://www.epa.gov/tri/tridata/tri10/nationalanalysis/index.htm. In terms of greenhouse gas emissions, the semiconductor industry contributes 0.08 percent of total emissions in the U.S. EPA data show that out of 6.7 billion metric tons of CO_2-equivalents emitted in the entire US, only 5.4 million metric tons is emitted by the industry. http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf. The global industry has an ongoing voluntary program to further reduce its emissions of a group of greenhouse gases known as perfluorinated compounds (PFCs). See World Semiconductor Council (2011 Joint Statement) available at: http://www.semiconductorcouncil.org/wsc/uploads/WSC_2011_Joint_Statement.pdf.

achieve one of the best health and safety records among American industry.[8] And there is no exposure to consumers or the public at large to chemicals or materials that may be contained in finished semiconductor devices, or any release to the environment of these chemicals. The minute amounts of chemicals that may be present in a finished semiconductor are bound to the device in a monolithic fashion, cannot be separated from the device, and are enclosed by "packaging" that becomes part of an assembly that is found in larger electronic products.

II. EPA's Regulation of New Chemicals

Given that the semiconductor industry is a user of chemicals[9] and given the critical role of chemicals with specialized properties and performance attributes in contributing to ongoing innovations in our industry, the industry needs an effective and efficient system for regulating chemicals. This system must effectively balance the protection of human health and the environment with the ability to act promptly. It must employ a well-defined and objective chemical evaluation methodology for the approval of new chemicals and new uses. The evaluation methodology needs to consider the risk and exposure of chemicals in specific uses, and not just the inherent hazards of a chemical. The system needs to prioritize among the uses of specific chemicals and focus on applications with a high potential for exposure and risk. The system needs to account for the rapid pace of innovation in industries such as semiconductor manufacturing. The system also needs to protect confidential business information (CBI).

In general, SIA believes that EPA's existing program under TSCA Section 5 for new chemicals and significant new uses provides effective and balanced regulation of new chemical substances. Perhaps most importantly, the new chemicals program employs an appropriate risk-based approach that takes into account factors such as the conditions of use and exposure scenarios – not simply the inherent hazards of various chemicals. This allows EPA to focus on the highest priorities for the protection of human health and the environment, while also enabling users of chemicals to make technological advancements through the use of new chemicals and materials.

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[8] The following table compares the rates of accidents and injury of the semiconductor industry with other industries:

	All Industry	Semiconductor Industry
Case incidence rates per 100 full time employee (FTEs)	3.8	0.9
Lost workday case incidence rates per 100 FTEs	1.2	0.18
OSHA restricted workday case incidence rates	0.7	0.13

BLS data available at http://www.bls.gov/news.release/osh.t01.htm; semiconductor industry data based on internal benchmarking survey, SIA OHS Annual Benchmark Survey, Work Injuries & Illnesses In the U.S. Semiconductor Industry – 2011 (NAICS 334413).

[9] It is important to note that it is typically the industry's chemical suppliers – not the semiconductor manufacturers – who file and seek the appropriate regulatory approvals for new chemicals.

In contrast, other jurisdictions have employed a hazard-based approach that results in the imposition of high costs with little or no corresponding benefit to health or the environment. For example, a decade ago the European Union adopted a directive that included, among other things, a ban on lead solder, a basic building block of the electronics industry for decades.[10] Despite the lack of evidence of risks from lead solder in electronic products[11] – as opposed to the known risks associated with lead in other applications (e.g., gasoline, paint, etc.) – semiconductor manufacturers and others in the global electronics supply chain were forced to make a costly shift from lead solder to other alternatives. Fortunately, the semiconductor industry was given enough time to implement this complex and costly transition, and the EU properly provided certain critical exemptions when substitutes for lead solder were unavailable. But this example illustrates the problems inherent in a hazard-based approach.

Regarding the "new use" authorities under TSCA section 5, EPA has used its authority to regulate specific chemicals such as perfluorooctanyl sulfonates (PFOS). This chemical was previously used in the industry in numerous applications, including anti-reflective coatings, photoacid generators (an element of photoresists used in the critical photolithography patterning process), and as a surfactant. In response to environmental and health concerns associated with the use of PFOS, the global semiconductor industry has eliminated the use of this chemical in most applications and reduced 99 percent of emissions of this substance.[12] Finding and qualifying substitutes was an extremely complex process, and the industry was given sufficient time and flexibility to identify, test, and deploy suitable alternatives. Despite the complexity of replacing this chemical, an important aspect of EPA's approach in this instance was to provide exemptions for certain critical uses and a reasonable implementation timeline to make necessary adjustments to manufacturing processes.

There are several additional aspects of the new chemicals program under TSCA section 5 that are the key to its effectiveness and practicality.

1. *Reasonable Approval Timeline* – The statute and implementing regulations set forth a reasonable timeline and structure for EPA's review of new chemicals. EPA's review period is generally 90 days, and if EPA takes no action within the 90-day period, manufacture of the new chemical may begin. There is also a shorter review period—30 days – available for low-volume chemicals under the so-called low volume exemption (LVE). Over the years, EPA scientists have developed and refined a review process that enables EPA to evaluate chemicals accurately in these timeframes. Predictable and prompt review is vital to our

[10] Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive (2002/95/EC).

[11] Indeed, a study funded by EPA's Design for the Environment Program conducted a life cycle assessment of lead solder and various alternatives, and concluded that various available alternatives did not benefit the environment as compared with lead solder. "Solders in Electronics: A Life Cycle Assessment Summary" (EPA-744-S-05-001 August 2005).

[12] World Semiconductor Council (2011 Joint Statement) available at: http://www.semiconductorcouncil.org/wsc/uploads/WSC_2011_Joint_Statement.pdf.

industry, and EPA has generally conducted these reviews in a manner that is consistent with our industry's development cycles.

2. *Reasonable Data Requirements* – The current new chemicals program generally involves a reasonable set of test data. Submitters of a premanufacture notice (PMN) provide data that they have on the chemicals and often develop additional data, based on EPA guidance regarding chemical categories associated with certain hazards, which help inform PMN reviews.[13] EPA uses available data and models in its review of each new chemical, and has ample authority to require additional data when necessary. As a whole, the current process provides EPA with the information it needs to review new chemicals while not unduly burdening our industry's suppliers that prepare the PMNs.

3. *Focus on Intended Uses* – EPA's review of a PMN for a new chemical and significant new uses includes detailed information on the intended uses of and exposure for the chemical. Given the semiconductor industry's unique processes and controls, along with the specific chemical properties needed in the materials being used, we believe that it is essential that EPA employ a tailored evaluation of new chemicals and significant new uses of chemicals.

4. *Appropriate Regulatory Exemptions* – The current system has reasonable risk-based exemptions. Some exemptions, like the exemption for research and development, were spelled out in the statute. Others were developed by EPA during rulemaking to implement TSCA in a manner that is practical and appropriate while still enabling the Agency to address potential risks from chemicals. These include exemptions for impurities, byproducts, and chemicals formed incidentally during the manufacture of an article. Another important exemption is for chemical substances that "are not manufactured for distribution in commerce as chemical substances per se and have no commercial purpose separate from the substance, mixture, or article of which they are a part."[14] As stated above, the production of semiconductors involves multiple complex steps of chemical application to silicon wafers, and many of these steps involve reaction with the silicon and/or changes in the chemical substances that are applied. As a result, this exemption is critical for the workability of the regulatory system in an industry like ours, which involves many chemicals that may exist in our processes but never make it into commerce as chemicals per se.

5. *Protection of CBI* – As discussed in the next section, the protection of confidential business information remains vitally important. We believe that the current system allows companies to protect from disclosure valuable information about new chemicals they are bringing to market.

An additional area where we would like to commend the Agency is engagement with our industry on improving exposure modeling. EPA is currently in the process of updating

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[13] See, e.g., TSCA New Chemicals Program (NCP) Chemical Categories (October 2002).
[14] 40 CFR § 720.30(h).

exposure scenario documents that are out-of-date for various industries, including the semiconductor industry. SIA has been working with EPA to ensure that these documents are accurate and current, and we appreciate the willingness of EPA to take our input into account.

III. Confidential Business Information (CBI)

The protection of confidential business information is critical to the U.S. semiconductor industry. The semiconductor industry is research intensive. SIA member companies invest, on average, 18 percent of revenues to research and development – one of the highest percentages of revenue of any industry. In 2012, this amounted to approximately $32 billion in research and development. Nearly half of the top 15 American patent recipients are semiconductor companies. The continued success of our industry and continued American leadership in semiconductor design and manufacturing depends on the protection of intellectual property from disclosure.

For purposes of the regulation of chemicals, patents and trade secrets are the primary types of intellectual property sought to be protected by the semiconductor industry. The specific chemicals processes used by a semiconductor company to devise high performance, reliable semiconductors in an efficient manner constitute extremely valuable intellectual property. These processes may include the identity of specific chemicals and chemical formulations, the amounts of chemicals used, and the processing conditions and tool configurations under which the chemicals are used (which are often collectively referred to by the industry as "recipes").

In order to remain globally competitive, a semiconductor company must innovate on an ongoing basis to bring new high performance products to market and improve production capability and efficiency. The disclosure of recipe and related information regarding these processes would expose specific knowledge of proprietary device designs and manufacturing processes, and thereby compromise the trade secrets within a company's recipe portfolio and damage the company's competiveness. For this reason, etch, deposition, and other recipes are frequently handled as trade secrets that are tightly controlled, rather than through the patent process and the public disclosure that accompanies the filing and approval of patents.

Policies that risk the disclosure of CBI threaten to harm the competitive position of the U.S. semiconductor industry. To cite one recent example, SIA is currently working with EPA to resolve ongoing litigation surrounding a final rule[15] that would have been highly detrimental to the industry by forcing the disclosure of proprietary process technology. As part of the greenhouse gas reporting program, this regulation would have required semiconductor manufacturers to disclose individual "recipes" used to etch silicon wafers

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[15] Mandatory Reporting of Greenhouse Gases: Additional Sources of Fluorinated GHGs; Final Rule, 75 Fed. Reg. 74,774 (Dec. 1, 2010), Subpart I, codified at 40 C.F.R. § 98.90, et seq. In response to the CBI and other concerns raised by SIA, EPA granted SIA's petition for reconsideration and is the process of finalizing a new rule. See 77 Fed. Reg. 63,538 (Oct. 16, 2012).

in the semiconductor production process.[16] As noted, recipes are often proprietary process technology that is a key aspect of the competitive advantage for U.S. semiconductor companies. The disclosure of these recipes, including types of gases used, and the specific steps employed, and processing conditions would have been highly detrimental to the viability of individual U.S. semiconductor companies as well as the overall competitive position of the U.S. industry. We are relieved that, after a multi-year and costly legal process, EPA has agreed to modify the regulation and protect this valuable information. But this example illustrates the need for regulations to be carefully crafted at the outset to prevent the disclosure of damaging CBI and avoid imposing an unnecessary burden on critical industries like ours.

SIA believes that the current system for managing CBI under the TSCA program is generally working well. EPA has implemented strong internal policies for handling CBI, and the system overall achieves the proper balance between protection of CBI and public disclosure. Submitters of PMNs and other information under TSCA can designate specific information as CBI, and this data is redacted from public documents. When chemical identity is CBI, a generic structurally descriptive name is substituted in public documents. Usually only certain elements of a document are claimed CBI (redacted) and the rest of the document is public. At the same time, the current system has reasonable limits, such as generally not allowing health and safety studies to be claimed to be CBI. We believe that the current system generally requires a reasonable amount of substantiation from companies seeking to protect information as CBI, such as written substantiation for chemical identity if it is going to be listed generically on the TSCA Inventory. Companies may declassify CBI, but CBI does not have a set expiration period. We think this approach is appropriate.

IV. Conclusion

SIA believes that the current system for regulating new chemicals and protecting CBI is working well, and we are carefully watching a number of issues to ensure that the current balance in the system is maintained. Among other things, we are monitoring the following:

1. *Regulatory approach to nanoparticles* – EPA's regulatory approach to nanoparticles will be critical for the U.S. semiconductor industry. In particular, how will EPA define distinct substances that may have to be separately reviewed as new chemical substances? As the semiconductor industry continues to progress towards ever smaller feature sizes in order to enable increased processing power, faster speeds, and reduced energy consumption, the industry may see wide applications of nanoparticles.

2. *Maintain existing exemptions* – Existing exemptions must be maintained in order to make the system workable. For example, existing exemptions

[16] A "recipe" was defined as the "specific combination of gases, under specific conditions of reactor temperature, pressure, flow, radio frequency (RF) power and duration, used repeatedly to fabricate a specific feature on a specific film or substrate." 40 C.F.R. § 98.98 (rescinded under EPA's grant of the SIA petition for reconsideration).

such as the LVE exemption previously noted and the exemption for new chemicals used in small quantities for research and development purposes, are critical to continued innovation in the semiconductor industry.

3. *Chemical risk assessment* – Assessment of a new or existing chemical substance needs to focus on exposure scenarios and risks of concern applicable to specific uses. Semiconductor chemical uses are unique--they involve highly automated processes in enclosed systems, with an exceptionally strong level of control during all aspects of the process. We want to ensure that chemicals continue to be assessed appropriately in any chemical review framework.

4. *Treatment of Articles* – The treatment of "articles" in the current TSCA system is important to our industry, as well as many other industries that market products in finished form that are classified as "articles." Finished semiconductor products are small – most semiconductors weigh no more than a few grams and are about 2 cm squared in size. Many chemicals and materials may be found in extremely small volumes in the semiconductor, deposited as ultra-thin films and subsequently etched or otherwise formed into the layers and sections of the metals, organic-metallic complexes, organics and other materials in the semiconductor product. These materials are bound to the device in a monolithic fashion and cannot be separated from the device and are not released to the environment without taking extreme and unusual destructive measures. As such, it is critical that articles continue to be exempt from the import certification or export notification requirements of TSCA, and that the new chemical review process continue to exclude chemicals that are imported as part of an article. EPA has the authority to regulate chemicals in articles, and it may be appropriate for EPA to exercise this authority under special circumstances where a significant health or environmental risk cannot be adequately addressed through direct regulation of chemical substances or mixtures.

5. *Sufficient Resources for EPA* – We also need to ensure that EPA has adequate resources to implement its existing requirements under TSCA, as well as any new requirements adopted as part of an effort to modernize U.S. chemicals regulation. For example, in order for the industry to maintain its global competitiveness, it is imperative that EPA has sufficient resources to make regulatory determinations in a prompt manner. As discussed above, given the rapid pace of change in the semiconductor industry and our need for expedited regulatory approvals of new materials or new uses of chemicals, it is essential that EPA be in a position to keep up with this pace of change.

6. *Preserve Strong CBI Protections* – As discussed above, EPA needs to maintain strong protections of CBI, while ensuring the public has appropriate access to health and safety information.

7. *International and Domestic Consistency* – The alignment of approaches to regulating chemicals and materials, particularly for regulations related to product content, are also of critical importance given the global nature of today's supply chains and markets. Where feasible and consistent with well-recognized principles of risk assessment, both international and domestic requirements should be consistent. For domestic requirements, it is essential to avoid a situation in which U.S. states enact their own chemical requirements, resulting in different regulation of a material or product depending on the State in which it is made or marketed.

We look forward to working with this subcommittee and the Congress as a whole as it continues its review of U.S. chemicals regulation.

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Thank you for the opportunity to submit this testimony on behalf of the U.S. semiconductor industry. For more information, please contact David Isaacs at disaacs@semiconductors.org.