

November 17, 2014

Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

SUBMITTED ELECTRONICALLY VIA www.regulations.gov

Re: Comments on “Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans and 2012 and 2013 Annual Effluent Guidelines Review Reports”; Docket No. EPA-HQ-OW-2014-0170

To Whom It May Concern:

The Nanotechnology Panel of the American Chemistry Council¹ appreciates the opportunity to submit comments on the U.S. Environmental Protection Agency’s (EPA) “Final 2012 and Preliminary 2014 Effluent Guidelines Program Plans and 2012 and 2013 Annual Effluent Guidelines Review Reports”² That report states, “As a part of its 2014 Annual Review of industrial wastewater discharges, EPA will report on a methodology and interim findings of its investigation into the environmental toxicity and industrial wastewater discharge of nanomaterials.” The panel offers these comments to inform EPA’s report.

1. Nanomaterials are a diverse group of substances that should not be considered as a single class of substances or a single industrial category. The term “nanomaterials” is a broad, generic term that denotes materials having one or more dimension or structure at the nanoscale. In reality, the group “nanomaterials” includes a diverse array of organic, inorganic, and polymeric substances that possess an equally diverse array of physical, chemical, and toxicological properties. In addition, nanomaterials are used in a variety of industries, so their manufacture, processing, and use should not be treated as a single industrial category. The panel urges EPA to report its methodology and interim findings in a way that recognizes both the diversity of nanomaterials and their applications across multiple industries. Doing so will produce a report that is more informative and useful than a report that treats nanomaterials as a single class of materials or industrial category.

2. EPA’s New Chemicals Program has strictly regulated the releases of nanomaterials to water. EPA’s New Chemicals Program has promulgated Significant New Use Rules (SNURs) under Section 5 of

¹ Members of the ACC Nanotechnology Panel are 3M, BASF Corporation, Cabot Corporation, The Dow Chemical Company, DuPont, Evonik Corporation, Ferro Corporation, Lockheed Martin Corporation, and Procter & Gamble.

² 79 Fed. Reg. 55, 472 (September 16, 2014).

The American Chemistry Council (ACC) represents the leading companies engaged in the business of chemistry. ACC members apply the science of chemistry to make innovative products and services that make people’s lives better, healthier and safer. ACC is committed to improved environmental, health and safety performance through Responsible Care®, common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is an \$812 billion enterprise and a key element of the nation’s economy. It is the nation’s largest exporter, accounting for twelve percent of all U.S. exports. Chemistry companies are among the largest investors in research and development. Safety and security have always been primary concerns of ACC members, and they have intensified their efforts, working closely with government agencies to improve security and to defend against any threat to the nation’s critical infrastructure.



the Toxic Substances Control Act for multiple nanomaterials.³ A common feature of these SNURs is prohibiting the “predictable or purposeful release” of the material in a manufacturing, process, and/or use stream.⁴ The panel requests that the Office of Water coordinate closely with the New Chemicals Program to understand the degree to which the release of new nanomaterials to the waters of the United States is regulated through the use of SNURs.

3. EPA should note the extensive work on the environmental fate and transport of nanomaterials has been published and is in development. Detecting and quantifying the concentrations of engineered nanomaterials in the environment are two related issues raised by stakeholders and investigated extensively by industry, academics, and government agencies. Studies of the impact and elimination of nanomaterials in wastewater or wastewater treatment facilities have been conducted. Of particular note is a series of peer-reviewed papers developed by a consortium of industry and academic scientists that provide perspective on state-of-the-art sampling strategies and instrumentation that could be used to detect and quantify engineered nanomaterials in the environment. The papers were published in 2013 in a special issue of *Environmental Engineering Science*. While not all of them focus on wastewater, the panel believes the discussion of analytical techniques across various media can inform EPA's efforts. The *Environmental Engineering Science* papers and other relevant sources are in the attached list of papers we hope the Agency will find useful.

The panel would like to bring to EPA's attention that the *Environmental Engineering Science* articles will be included in a New Work Item Proposal (NWIP) in the ISO Technical Committee 229 (Nanotechnologies) that was proposed by the ACC Nanotechnology Panel representative to the committee. The NWIP proposes the development of an ISO technical report that will provide strategies and methodologies for collection and analysis of environmental samples that can detect engineered or manufactured nanomaterials, distinguish engineered or manufactured nanomaterials from background levels of naturally occurring nano-scale particles, and quantify the concentrations of engineered or manufactured nanomaterials in the environment (ambient air, surface water, sediment, and soil). The focus is on engineered or manufactured nanomaterials, not on incidental particles such as combustion byproducts (except as they impact background measurements). The panel believes the ISO project will complement EPA's research and provide an opportunity to share information and engage in additional stakeholder dialogue on the topic.

4. Nanomaterials hold promise for treating wastewater more efficiently and providing clean drinking water. Access to clean, reliable sources of water has been identified as a global sustainability challenge by multiple organizations.⁵ The panel would like to take this opportunity to recognize that some nanomaterials might be used to enable better, more efficient wastewater treatment technologies and therefore support the global goal of cleaner water.⁶ While the EPA report is constrained to looking at nanotechnology through a lens of concern, the panel urges EPA to also consider the potential of nanotechnology as a tool for addressing an increasingly water-constrained world.

³ See for example 10 final SNURs noticed in 78 Fed. Reg. 78, 38210 (June 26, 2013).

⁴ See 40 CFR 721.90 (a)(1), (b)(1), and (c)(1).

⁵ See for example: National Academy of Engineering. NAE Grand Challenges for Engineering. <http://www.engineeringchallenges.org/cms/8996/9142.aspx>. Accessed Nov. 12, 2014; United Nations. Global Issues. Water. <http://www.un.org/en/globalissues/water/>. Accessed Nov. 10, 2014; and U.S. Agency for International Development. Grand Challenges for Development. <http://www.usaid.gov/grandchallenges>. Accessed Nov. 10, 2014.

⁶ See for example: Qu X, Alvarez PJJ, Li Q. Applications of nanotechnology in water and wastewater treatment. *Water Res.* 2013; 47:3931-3946; Wang X, Guo Y, Yang L, et al. Nanomaterials as sorbents to remove heavy metal ions in wastewater treatment. *J Environ Anal Toxicol.* 2012; 2:154; Xu P, Zeng GM, Huang DL, et al. Use of iron oxide nanomaterials in wastewater treatment: a review. *Sci Total Environ.* 2012 May; 424:1-10.

In summary, the ACC Nanotechnology Panel urges EPA to:

- Report its methodology and interim findings in a way that recognizes both the diversity of nanomaterial substances and their applications;
- Work with the New Chemicals Program to understand the degree to which nanomaterial releases to waters have are regulated;
- Consider the extensive work done or underway in this area; and
- Recognize the potential for nanotechnology to provide new and improved tools for wastewater treatment.

We appreciate the opportunity to comment and would welcome an opportunity for further dialogue with the agency on this topic. Please contact me at Jay_West@americanchemistry.com or 202-249-6407 if you have any questions.

Sincerely,

Jay West
Senior Director, Chemical Products and Technology Division
ACC Nanotechnology Panel

List of Papers

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