

Testimony of Dr. Elizabeth Southerland, PhD
Former Director, Office of Science and Technology, U.S. EPA Office of Water
Before the House Committee on Transportation and Infrastructure
Subcommittee on Water Resources and Environment

October 6, 2021

Chairwoman Napolitano, Ranking Member Rouzer, distinguished Members of the Subcommittee, my name is Elizabeth Southerland. I had the privilege of serving in the U.S. Environmental Protection Agency (EPA) from January 1984 until August 2017 when I retired as the Director of the Office of Science and Technology in the Office of Water.

Thank you for this opportunity to testify about “Emerging Contaminants, Forever Chemicals, and More: Challenges to Water Quality, Public Health, and Communities.” Today I will give you my thoughts on how states and EPA can use Clean Water Act (CWA) authorities to address contaminants of emerging concern (CECs), including the forever chemicals. I believe that the CWA provides adequate authority for states and EPA to address CECs, but they have not done so because they lack a systematic process to identify, prioritize, and monitor for CECs. Currently, the country lacks a coordinated monitoring program that proactively looks for CECs in water bodies used for drinking water, swimming, fishing, and aquatic life protection. We are suffering with a reactive system that waits for a public health or environmental crisis to occur before we begin monitoring and considering controls. This happened with the PFAS forever chemicals and will happen in the future with other contaminants if we fail to develop a proactive approach. I want to note at the outset that controlling CECs once they enter the environment presents serious challenges, as I will discuss in a moment. I urge the Committee to also consider the need to prevent harmful chemicals from entering the U.S. market by using the authorities of the Toxic Substance Control Act (TSCA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the Food, Drug, and Cosmetics Act (FDCA). Under TSCA, EPA needs to require more comprehensive data from companies seeking to bring new industrial chemicals into commerce. Also, EPA needs to improve the risk evaluation of

existing industrial chemicals by evaluating all pathways of exposure, including those regulated under the CWA and the Safe Drinking Water Act (SDWA). In addition, EPA and the Food and Drug Administration may need to improve their review and regulation of pesticides, pharmaceuticals, and cosmetics to better prevent contamination of surface and ground waters if these chemicals are found to be frequently occurring CECs.

Since my retirement, I have been a member of the Environmental Protection Network (EPN), a bipartisan organization of more than 550 EPA alumni volunteering their time to protect the health and welfare of the American people. My testimony incorporates information developed by EPN, but I am here in my personal capacity.

Contaminants of Emerging Concern

There is no statutory or regulatory definition of CECs, but the term refers to unregulated substances detected in the environment that may present risks to human health, aquatic life, or the environment. CECs can be naturally occurring substances such as algal toxins or man-made substances such as pharmaceuticals, personal care products, industrial chemicals, pesticides, and microplastics. Industrial and municipal wastewater treatment systems are often not designed to treat CECs, so they can enter water bodies through direct discharges as well as through agricultural and urban stormwater runoff. In the U.S. today there are over 40,000 industrial chemicals in commerce, and new chemicals are being introduced every year, so CECs may be discovered any time there is environmental monitoring. Whenever a new contaminant is detected in the air, water, fish, or soil, citizens expect their state and federal environmental agencies to answer their questions about the toxicity, occurrence, and treatment options for those contaminants. In most cases, state and federal agencies lack the information to answer those questions, and that lack of information heightens public concerns about health risks.

National List of Priority CECs

Congress should require the federal government to establish a national list of priority CECs, a formal process to develop and update that list, and a coordinated water monitoring program by federal, state, and interstate agencies that includes the priority contaminants. The FY20 National Defense Authorization Act (NDAA) took the first step towards initiating these actions by directing the Office of Science and Technology Policy (OSTP) to develop a National Emerging Contaminant Research Initiative to protect the nation's drinking water quality. On May 3, 2021, the National Institute of Environmental Health Sciences (NIEHS) published a Request for Information (RFI) for this new research initiative, asking for public comment on the research needed to identify, analyze, monitor, and mitigate drinking water contaminants of emerging concern. In this RFI, the NIEHS defined drinking water contaminants of emerging concern as “newly identified or re-emerging manufactured or naturally occurring physical, chemical, biological, radiological, or nuclear materials that may cause adverse effects to human health or the environment and do not currently have a national primary drinking water regulation.” This definition is broad enough to also support a priority list of contaminants posing risks to all beneficial uses of water bodies. The responses to this RFI should be evaluated to see if they adequately address risks to aquatic life, fish consumers, and swimmers and thus support a National Emerging Contaminant Research Initiative for all beneficial uses of the nation's waters. It is important to have a research initiative that focuses on more than drinking water. Aquatic organisms are more sensitive to pesticides and other types of contaminants than humans, and human exposure to certain contaminants can be greater from eating fish and shellfish than from drinking water. This is particularly true for contaminants that are highly hydrophobic, that partition to aquatic environments through surface sediment, and that bioaccumulate in fish and shellfish.

The NDAA directed EPA and Health and Human Services (HHS) to establish an Interagency Working Group on CECs to facilitate coordination of federal research under the new Research Initiative. Congress should direct the participating federal agencies to issue solicitations for research on CECs posing risks to uses other than drinking water. The NDAA also directed EPA to evaluate ways to increase technical

assistance and support for states to analyze CECs in drinking water, implement a program for states to apply for technical assistance on CECs, and develop a database of tools and resources to assist states with emerging contaminants. Congress should expand this new technical assistance program to apply to all beneficial uses of water.

Monitoring of CECs

Once a national list of priority CECs has been developed, EPA should include the priority contaminants in its National Aquatic Resource Surveys of rivers/streams, lakes, coastal waters, and wetlands and in its Unregulated Contaminant Monitoring Program for drinking water systems. EPA should provide technical assistance and support to state and interstate agencies to analyze for these contaminants in their monitoring of surface and ground waters. The U.S. Geological Survey should include these contaminants in their National Water Quality Assessment Program and in their special studies for states. Federal and state monitoring programs should also include non-targeted laboratory analyses to discover unknown CECs so these can be added to the priority list in future years.

Detecting CECs does not prove that risks exist. The public needs to know if these substances are occurring at levels adversely affecting human health or aquatic life. At the present time, the public depends on EPA, other federal agencies, and university researchers to determine the toxicity of CECs and for EPA and the states to recommend safe levels in air, water, fish, and soil. Federal agencies and university researchers do not have the resources to assess all the CECs found in the environment and need industry to contribute to these efforts. Using Section 8 authority of TSCA, EPA should require industry to provide toxicity assessments and analytical methods they have developed for priority CECs. When industry has not yet developed these assessments and methods, EPA should issue testing orders under Section 4 of TSCA to require industry to develop this information so that monitoring and risk evaluations can begin as quickly as possible.

Control of CECs

Once monitoring has identified the concentrations and locations of CECs, studies have identified toxic effects, and exposure routes are known, EPA and states can develop regulations or voluntary approaches to limit exposures and can remediate contaminated areas. Under the CWA, the primary mechanism to control pollutants in surface water is through National Pollutant Discharge Elimination System permits. The CWA authorizes EPA and the states to limit or prohibit the discharge of pollutants through technology-based effluent limitations and through water quality-based permit limits. It is critically important that CEC discharges be controlled at the source, with polluters paying to treat their wastewater instead of downstream drinking water consumers paying to treat their tap water.

The CWA requires EPA to publish effluent limitation guidelines (ELGs), which are the required minimum technology-based standards for industrial wastewater discharges. These national permit limits must be based on a treatment technology that is economically achievable for the entire industry category being regulated. Where EPA has not set ELGs for a particular industrial category or where pollutants and processes were not considered when an ELG was developed, the CWA authorizes the permitting authority (EPA or 47 states) to impose technology-based effluent limits on a case-by-case basis using Best Professional Judgement (BPJ). Those BPJ limits must be based on a technology that is economically achievable for the single facility covered by the permit. Since it typically takes EPA about six years to promulgate an ELG for an entire industry category, states should use this BPJ authority to set facility-specific limits more quickly for dischargers of CECs posing risks to their citizens. The National Emerging Contaminant Research Initiative should be designed to provide states with the data to support these BPJ limits by funding research on effective treatment technologies for CECs in wastewater.

Where technology-based permit limits are not adequate to meet the state's water quality standards, the permitting authority needs to set water quality-based limits. Development of water quality-based permit

limits for CECs will be slower than development of technology-based limits because of the process involved. The CWA requires states to adopt water quality standards to protect the designated uses of their water bodies and to adopt criteria for all pollutants on the Toxic Pollutant List for which EPA has published criteria. Most states rely on EPA to publish and “from time to time thereafter revise” water quality criteria that reflect the latest scientific knowledge. EPA can develop these criteria for CECs whenever data are available on their toxicity and routes of exposure. EPA develops human health criteria to protect people who drink the water and eat the fish, recreational criteria to protect swimmers, and aquatic life criteria to protect fish and shellfish. States use EPA’s criteria as guidance in adopting enforceable water quality standards and then set water quality-based permit limits for point source dischargers that meet these standards.

The CWA clearly gives EPA and the states the authority to limit or prohibit the discharge of CECs through technology-based and water quality-based permit limits, but these limits require adequate data on the concentrations and toxicity of CECs in wastewater and receiving waters. EPA and the states do not currently have the staff, funding, or proactive approach to collect this critical information in most cases. Absent these data, CECs will not effectively be controlled through CWA programs.

Prevention of Future CECs

The federal government must improve its new chemical review programs to prevent high-risk, man-made chemicals from contaminating the nation’s surface and groundwater. Under TSCA, EPA needs to require more comprehensive data from companies seeking to bring new industrial chemicals into commerce. Under TSCA, EPA also needs to improve the risk evaluation of industrial chemicals already in commerce by evaluating all pathways of exposure, including those regulated under the CWA and the SDWA. In addition, EPA and the Food and Drug Administration may need to improve their regulation of pesticides,

pharmaceuticals, and cosmetics to better prevent contamination of surface and ground waters if these chemicals are found to be frequently occurring CECs.

Conclusion

The CWA gives EPA and the states adequate authority to address CECs once they have entered the water cycle, but they cannot use this authority unless national monitoring data identify where these CECs pose risks to public health and the environment. Congress needs to require the development and maintenance of a national list of priority CECs so federal, state and interstate water monitoring programs can proactively look for these contaminants. Congress should expand the National Emerging Contaminant Research Initiative to cover contaminants posing risks to all beneficial uses of the nation's waterways. EPA should improve its use of TSCA authority to prevent new and existing chemicals from contaminating waterways and to require industry development of analytical methods and toxicity data for existing CECs. EPA and states should make broader use of their authority to set technology-based permit limits to control wastewater discharges of these contaminants.

Thank you for this opportunity to share my thoughts. I look forward to answering your questions.