Overview

Technical and Management Support to the Chemical & Material Risk Management (CMRM) Program Office of the Assistant Secretary of Defense (Energy, Installations & Environment)

Emerging Contaminants (ECs) are chemicals or materials relevant to Department of Defense (DoD) activities and that present a perceived or real threat to human health or the environment. An EC either lacks published human health and environmental standards or the standards are evolving due to new science. ECs include both newly-developed chemicals and materials, e.g., nanomaterials, and existing chemicals and materials, e.g., lead. ECs may be chemicals and materials with potentially complex, global supply chains.

Given the potential wide-ranging risk of impacts on the DoD from ECs, an EC Directorate was established approximately a decade ago. The EC Directorate has evolved to become the Chemical and Material Risk Management (CMRM) Program within the Office of the Assistant Secretary of Defense (Energy, Installations & Environment). This Office is dedicated to providing the services needed to support military forces in a safe, sustainable, and environmentally sound manner. In addition, this Office supports informed resource stewardship: protecting the environment on its installations, preserving natural and cultural resources for future generations, and ensuring that the land, water, and air required for military readiness are available and sustainably managed today and into the future.

With oversight and support across the DoD's Services, the CMRM Program has focused on reducing the risk of impact associated with ECs to DoD activities by managing life cycle environmental, safety, and occupational health (ESOH) impacts. Today, a team of multidisciplinary staff manages the EC Scan-Watch-Action process for proactive risk assessment in addition to product stewardship activities such as life cycle-based thinking, alternatives assessment, and practices for sustainable supply chain management. The CMRM Program is dedicated to engaging with other Federal agencies, states, industry, and nongovernmental organizations to identify and systematically study EC issues. The diverse CMRM Program staff work together to proactively assess, mitigate or manage life cycle risks associated with hazardous and toxic chemicals and materials and measures DoD's progress towards its sustainability goals.

The following sections describe the Environmental & Energy Management Institute (EEMI) within the George Washington University School of Engineering & Applied Science's understanding of each task's requirements and our strategy to achieve these requirements by providing a technically sound, realistic approach based on our expertise and experience.

The GW Team has experience with risk assessment (e.g., hazard identification, exposure assessment, risk characterization), life cycle assessment (e.g., impact assessment), and chemical alternatives assessment methodologies used to evaluate potential impacts to human health and the environment from exposure to hazardous chemicals and materials. In addition, the Team has broad experience in environmental and occupational health sciences, including worker health and safety. These methodologies and science base are useful to CMRM Program staff responsible for informing DoD decision makers.

At the request of the client, the GW Team will prepare executive summaries of technical issues and multi-stakeholder perspectives and present them in policy-relevant terms along with the pros and cons of alternative policy considerations. The scientific and regulatory research conducted will be transformed and explained such that the user community can understand the intended technical advice. The Team will use its capabilities to produce clear, concise, and targeted summaries of complex data. Because CMRM Program staff regularly communicate and collaborate with diverse stakeholders including scientists,

engineers, economists, policy makers, and executive decision makers who are both civilian and military, the Team's communications will appropriately align with the intended audience.

Deliverables for this task may include point papers that aim to concisely express areas of agreement and disagreement, background papers that provide a basis for decision making, presentations, and memoranda and other executive correspondence. The GW Team is familiar with these various types of policy mechanisms and has experience constructing Risk Alerts for the DoD Services on lead and phthalates as well as memoranda on risk management options for sustainable product stewardship. The GW Team recognizes and understands that assignments will require development of defensible positions often with time-sensitive, short turnaround. The Team has experience with time sensitive production of written documents. For example, Team members have produced science-based memoranda for management briefings, technical manuscripts for peer-review, and critical review of manuscripts at the request of scientific and technical journals. In addition, the Team's broad and deep knowledge of chemical-specific environmental and occupational health aspects and science policy expertise, including in-depth knowledge of regulatory review processes, position them for success in providing technical and management support on tasks relevant to the CMRM Program during the period of performance. All deliverables will be written to be understood by the intended audience and formatted using government-specific templates when needed.

The GW Team will work with representatives across the DoD to adjudicate their input and develop consensus-based comments to be submitted to the Environmental Protection Agency (EPA) regarding the Toxic Substances Control Act (TSCA) Work Plan Chemicals and associated support documentation. The TSCA Work Plan is a cross-divisional effort at EPA that uses a systematic process for screening existing chemicals based on hazard, exposure, and persistence and bioaccumulation potential. EPA's chemical safety program uses the TSCA Work Plan to focus its activities so that chemicals identified as having the highest potential for hazard and exposure are assessed and, if warranted, subject to risk reduction actions. It is expected that EPA will issue relevant draft assessments and other supporting information that will require DoD's input during the period of performance. Comment review, adjudication, and compilation will occur as needed based on the issuance of these assessments and information from the EPA.

EPA has used the TSCA Work Plan Chemical Assessment Process to strengthen its chemical safety work. In June 2016, the Frank R. Lautenberg Chemical Safety for the 21st Century Act was signed into law. This action reforms the Toxic Substances Control Act (TSCA) and establishes new regulatory requirements for EPA to ensure health-based protections. Actively monitoring EPA's progress in achieving their new regulatory requirements and coordinating how these requirements change the Work Plan schedule will be important to ensuring proactive chemical and material risk management at the DoD.

The GW Team is accustomed to providing comment review and adjudication to reach consensus. Team members participate in several consensus-based organizations (e.g., ASTM and ASHRAE) in support of the development of standards that promote sustainable decisions about chemicals and materials. The Team has been on both sides of the comment process: reviewing draft working documents and providing technical comments grounded in science and consolidating technical comments across a government division and across a government agency. Also, the GW Team has experience with DoD's comment adjudication process to include requests for review, tabularization of comments, and review to eliminate duplicates and resolve or clarify discrepancies. The Team recognizes that DoD's process aims to gather input across Services and funnel them into a consolidation process the outcome of which is a clear and consistent message that best represents DoD's mission.

The GW Team will review the draft DoD Guidance on Integrating Sustainability into DoD Acquisitions (also referred to as the Sustainability Analysis) for technical soundness and consistency with existing DoD policies. Also, the GW Team will assist in the demonstration of the methodology proposed in the

guidance document using a realistic example and assist in the demonstration of an online Sustainability Analysis tool.

The draft DoD Guidance is a technical document for DoD acquisition professionals to ensure life cycle ESOH impacts and the costs associated with these potential impacts are assessed and considered during the weapon system acquisition process. The draft DoD Guidance aligns with the DoD's Better Buying Power 2.0 principles: achieving affordable programs, and promoting sustainable decisions that consider economic, environmental, and social aspects of the life cycle of weapon systems. The ultimate intent of the DoD Guidance is the linkage of weapon system design decisions with long-term ESOH impacts and total ownership costs. It introduces the Sustainability Analysis methodology, an approach that combines streamlined LCA and life cycle costing methods with DoD ESOH data.

The methodology proposed in the DoD Guidance should be field-tested to determine fidelity. The GW Team will work with the CMRM Program to select a realistic example that will best field the methodology and demonstrate capabilities. The GW Team will work with CMRM Program contract support who have developed an online Sustainability Analysis tool that allows users to more easily step through the DoD Guidance's methodology. The demonstration of the methodology and tool will provide the team with the ability to better refine both and to expand life cycle impact assessment categories. For example, the impact category for human health can be further refined to address worksite hazards and exposures using an impact category developed for worker health.