Department of Defense

REACH: A Strategic Plan for Managing Chemicals, Materials, and Impacts on Readiness

The European Union's Registration, Evaluation, Authorisation, and Restriction of Chemicals Regulation

FINAL
November 2016

Disclaimer

This document is a strategic plan; it does not provide authority to take specific actions. Such authorization must be obtained through normal delegations found in other Department of Defense issuances and policy memoranda. All international agreements must comply with Department of Defense Directive (DoDD) 5530.3, International Agreements, and any other applicable issuance.

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EXECUTIVE SUMMARY

To promote military readiness, this Strategic Plan contains five Department of Defense (DoD) goals to manage the potential impacts on DoD activities of the European Union (EU) Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) regulation. As an EU regulation, REACH does not apply directly to DoD, although it does pose risks for DoD's supply chain, its industrial base, and, consequently, the performance of DoD's mission. REACH is a complex EU regulation that fundamentally changes the way in which chemicals are regulated. The five DoD goals[1] are:

- Goal 1: Ensure access to and the ability to use mission-critical and mission-essential substances.[2]
- Goal 2: Ensure the performance and promote the use of substitute substances to preclude significant mission impact throughout DoD's supply chain.
- Goal 3: Forecast and prepare for potential disruptions in DoD's supply chain due to the unavailability of REACH-regulated substances in mission-critical/essential uses.
- Goal 4: Minimize the impact on the Foreign Military Sales (FMS) Program due to the unavailability of REACH-regulated substances.
- Goal 5: Ensure broad understanding across DoD regarding the implementation of the REACH Strategic Plan.

The purpose of this Strategic Plan is to promote military readiness by:

- Adopting a risk management approach to identify strategies to minimize negative and promote positive impacts from the REACH regulation of substances; and
- Apportioning these responsibilities to the appropriate DoD offices and personnel.

Potential effects from the REACH regulation include: (1) disruptions to the defense supply chains due to decreased substances availability and increased costs; (2) unanticipated decreases in system performance due to undisclosed substitution of substances by manufacturers; and (3) disruptions of U.S. and North Atlantic Treaty Organization interoperability. REACH may also promote the accelerated development and implementation of substitute substances with reduced environment, safety, and occupational health (ESOH) impacts.

- This Strategic Plan provides a roadmap to unify, coordinate, and communicate these activities across the DoD components and functional (e.g., environment, installations, logistics) boundaries.

REACH is an evolving regulation, and its interpretation, implementation, and enforcement processes will continue to develop over many years (for example, see Appendix B, Issues of Evolving Concern for REACH-Nanomaterials). Consequently, this Strategic Plan will require annual reviews to monitor progress on the implementation of the Plan's objectives and

[1] See text box on page 3 for list of Objectives within each Goal.
[2] Under REACH, a "chemical" is undefined but, as a matter of implementation, consists of a "substance." A "substance" can have various characteristics (see Footnote 5). In this Strategic Plan, the term "substance" will generally be used to encompass the materials regulated by REACH.

achievement of the metrics to ensure they remain aligned with the evolving regulatory landscape of REACH. The Plan will require routine updates as appropriate to ensure its goals remain aligned with DoD interests. The Deputy Assistant Secretary of Defense for Environment, Safety, and Occupational Health (DASD(ESOH)) Chemical and Material Risk Management (CMRM) Program will conduct annual reviews, track progress toward meeting the goals and objectives, and update the Strategic Plan as needed. The lead proponents for the objectives will develop the necessary directives, instructions, and policies, secure their issuance, and ensure compliance within their own organizations.

Strategic Plan Goals and Objectives to Preserve and Enhance Military Readiness:

Goal #1: Ensure access to and the ability to use mission-critical and mission-essential substances.

1.1 Maintain the CMRM Program chemical "scanning" process to identify substances of interest to DoD that are regulated (currently or proposed) under REACH.
1.2 Determine which substances identified in Objective 1.1 are mission critical/essential.
1.3 Characterize the risks associated with the use of the substances identified in Objective 1.2 to determine if risk management action is necessary.
1.4 Evaluate and manage the risks associated with use of REACH-regulated substances, including cost and availability.
1.5 Establish and manage an Integrated Process/Product Team (IPT) for global chemical regulation and management that reports to the CMRM governance structure.
1.6 Determine what changes are required to the Business Enterprise Architecture (BEA) to address the capture and consolidation of data for substances identified as having significant mission impacts, and modify business systems accordingly.

Goal #2: Ensure the performance and promote the use of substitute substances to preclude significant mission impact throughout DoD's supply chain.

2.1 Establish where and how reformulated/substitute substances (identified in Objective 3.1) are or may be used in place of critical substances identified in Objective 1.2 and assess the ESOH impacts from their use.
2.2 Leverage the private sector and DoD's RDT&E activities in regard to substitute substances to promote their use and mitigate significant mission or ESOH impacts.

Goal #3: Forecast and prepare for potential disruptions in DoD's supply chain due to the unavailability of REACH-regulated substances in mission-critical/essential uses.

3.1 Proactively survey the Defense Industrial Base (DIB) to identify added cost, reformulations/ substitutes, or unavailability for critical substances (identified in Objective 1.2).
3.2 Compile information on Member States' REACH exemption procedures, points of contact, and history of exemptions in order to reduce impacts on the supply chain.
3.3 Address and manage effects of the added cost, reformulations, or unavailability of mission-critical substances (identified in Objective 1.2).

Goal #4: Minimize the impact on the Foreign Military Sales (FMS) Program due to the unavailability of REACH-regulated substances.

4.1 Defense Security Cooperation Agency monitor FMS cases for customer requirements for REACH compliance.
4.2 DoD Components seek to accommodate FMS customer requests for "REACH compliance" data on a customer-funded basis.
4.3 DoD Components seek to accommodate FMS customer requests for substance substitution on a customer-funded basis.

Goal #5: Ensure broad understanding across DoD regarding the implementation of the REACH Strategic Plan.

5.1 Develop, communicate, and implement communication strategies that identify risks associated with REACH, guard against impacts on the DoD supply chain, and reduce impacts on the DoD mission and ESOH.

WHAT IS REACH?

REACH[3] is a complex EU regulation[4] that fundamentally changes the way chemicals are regulated within the EU. The regulation applies to manufacturers, importers, downstream users, and suppliers of a substance,[5] and producers and suppliers of an article,[6] in all EU member states (MSs) and three non-member countries economically associated with the EU.[7] As a matter of law, REACH does not apply to the United States or to its activities except to the extent the United States has affirmatively agreed, through international agreements, that it does apply for specified purposes.[8] REACH contains no blanket exemption for military products or activities. Nevertheless, for purposes of REACH, DoD does not import substances or articles into the EU when DoD is providing such items in direct support to its forces stationed in the EU. REACH does, however, pose potentially significant consequences for DoD and U.S. allies and partners—due to expected shifts in material availability, product formulations, and the global nature of defense supply chains—that require DoD's immediate attention and action.[9]

The primary aim of REACH is to ensure a high level of protection of human health and the environment from the risks posed by chemicals. REACH implements the Precautionary Principle in which the burden of proof is shifted from government to industry, e.g., from requiring governments to prove chemicals are unsafe, to requiring industry to prove they are safe. Consequently, REACH may restrict the use of many substances important to the manufacturing, maintenance, and operation of weapons and support systems. Although REACH entered into force in 2007, its implementation by the European Chemicals Agency (ECHA) is still ongoing, and the full extent of its effects is difficult to predict.

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[3] Full title is "Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency."

[4] The United States does not comply with EU laws or regulations because the United States does not have an agreement to that effect with the EU. Pursuant to its basing and status of forces agreements with host nations, the United States generally has agreed to respect host nation law. The fact that the host nation law may have an EU genesis is not relevant. Although REACH is an EU-promulgated regulation, it becomes the domestic law of the EU member countries by operation of the EU treaties.

[5] Definition in Article 3(1) of REACH—"substance: means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition." A substance may include, e.g., a mixture or an article.

[6] Definition in Article 3(3) of REACH—"article: means an object which during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition."

[7] The United States is not a manufacturer or importer, as those terms are defined under REACH.

[8] As a separate sovereign under international law, the United States does not comply with the laws of other countries except when it has agreed to do so; it generally has agreed to respect, but not comply with, those laws. Respect for host nation law generally consists of developing internal processes that meet the substantive (but not procedural) standards of the host nation law.

[9] Much of DoD's activities in the EU are performed by host nation nationals or outside of DoD facilities. Because REACH does apply to host nation nationals (at least when off the installation), the potential exists for REACH to indirectly affect DoD activities by its application to their actions; e.g., a host nation national driving a DoD transport vehicle carrying DoD materials that are not REACH-compliant is held personally liable for not being in compliance with REACH.

As a consumer protection regulation, REACH was not developed with the military in mind. Defense exemptions are possible, but must be sought by individual Member State (MS) Ministries of Defense (MODs) and are required to be narrowly focused on unique military products and applications.[10] To date, few EU nations have developed processes for such exemptions, and obtaining them appears to be difficult. DoD is aware of some discussions by EU allies to explore the creation of consistent processes for the submission and review of defense exemptions, but additional work is needed. For an expanded discussion of REACH and a list of REACH resources and references, refer to Appendix A.

[10] DoD cannot seek such exemptions itself because, by doing so, it would have to concede that REACH applies to its activities.

WHY PLAN FOR REACH?

European public sensitivity to health and environmental concerns varies by country but is high overall. This has made wide-ranging EU regulations such as REACH possible. Given this trend, prudent long-term planning requires the DoD initiatives outlined in this Strategic Plan. When fully implemented, this strategic framework will help to ensure that DoD activities in Europe will be consistent to the maximum extent practicable with the requirements established by REACH and other regulations, and should increase awareness of DoD's continuing efforts to protect health and the environment. It will also provide DoD with a basis from which to interact with its European allies and partners as the implementation of REACH evolves in the future.

Although REACH can now be considered to be in its advanced stages, many DoD suppliers—particularly those that supply "niche" substances or that do not operate extensively in the EU—may not be fully aware of REACH's registration requirements or willing or able to satisfy those requirements. Furthermore, REACH's applicability to military applications was not considered by the European Commission; ECHA personnel do not currently have security clearances, and websites that may be used for electronic reporting purposes may not be sufficiently secure for militarily important information. Finally, although exemptions for substances used for the purposes of defense can be sought from relevant authorities in individual MSs, there is no blanket defense exemption under REACH. Expected commercial results of REACH and the consequent potential effects on DoD are summarized in Table 1.

Although most of the points in Table 1 apply to weapons systems in current use, the performance, cost, and schedule of the acquisition of new weapons systems will also be affected by REACH-driven commercial availability of substances.

The gravity of the known potential impacts of REACH, coupled with the unknown risks associated with this regulation or, for that matter, new versions of REACH by other nations such as Korea, emphasize the need for DoD to take strategic steps now to understand and mitigate these risks. Doing so will have the added major benefit of preparing DoD for domestic legislative actions that could have similar repercussions for DoD's supply chains, such as state-promulgated green chemistry initiatives and the Frank R. Lautenberg Chemical Safety for the 21st Century Act amending and updating the Toxic Substances Control Act (TSCA).

Finally, preparing to respect REACH communication requirements will help DoD plan for other potential changes such as the recent change to the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard to align with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Table 1. Expected Outcomes and Potential Impacts of REACH on DoD

Expected Outcomes on Commerce	Potential Impacts on DoD
Limiting/eliminating availability and increased cost of certain substances	Negative effects on U.S. military operations and maintenance in the EU. Disruption to defense supply chains due to the global nature of supply.
Undisclosed substitution of substances in commercial off-the-shelf (COTS) items	Failure or marginal performance of substitute substances in weapons systems or components of weapons systems

Expected Outcomes on Commerce	Potential Impacts on DoD
Different interpretations of REACH by each of the EU participating states (31)	Disruption of United States and NATO interoperability (e.g., FMS)
Accidental release of proprietary information	Accidental disclosure of classified or controlled unclassified information (e.g., ITAR[11])
Accelerated need to test and evaluate alternative substances	Increased DoD RDT&E costs
Development of substitutes and new product formulations may result in reduction in toxic and hazardous materials used in manufacturing	Use of substitutes/reformulated products may result in improved worker protection, lower hazardous waste disposal costs, lower environmental liability, and reduced compliance burden
Serving as a model for similar chemical regulations in other international and U.S. markets (e.g., Korea-REACH)	Aids in advance planning for other REACH-like and domestic regulations (e.g., Korea-REACH)

Strategic Plan Vision

As an EU regulation, REACH poses risks to DoD's supply chain, its industrial base, and, consequently, the performance of DoD's mission. **Ultimately, the goal of this Strategic Plan is to protect national security by promoting military readiness, not only during this early stage of REACH's implementation, but as it evolves and is enforced in the future.** To do so, this Plan will need to be revisited periodically as REACH is implemented and its scope of influence becomes clearer.

Strategic Plan Purpose

The purpose of DoD's Strategic Plan for REACH is **to promote military readiness** by:

- Identifying the strategies and solutions that must be executed to minimize potentially negative, and promote potentially positive, impacts from the REACH regulation of substances; and
- Assigning these responsibilities to the appropriate DoD offices and personnel.

This Strategic Plan provides a roadmap to unify, coordinate, and communicate these activities across the DoD Components and functional (environment, installations, logistics) boundaries.

Top Strategic Goals and Objectives

Figure 1 illustrates the Department's path forward in response to REACH. This path is predicated on a policy framework, originating with the creation of the Emerging Contaminants Directorate in 2006, under the then-Deputy Under Secretary of Defense for Installations and Environment (DUSD(I&E)). It is now incorporated in the CMRM Program (CMRMP) managed by the Deputy Assistant Secretary of Defense (Environment, Safety, and Occupational Health) (DASD/ESOH) under the Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)). This framework stresses the management and communication of risks associated

[11] International Traffic in Arms Regulation (ITAR) under the auspices of the Department of State (DOS).

with the use of a chemical by DoD following a life-cycle assessment, from its selection to its disposal.

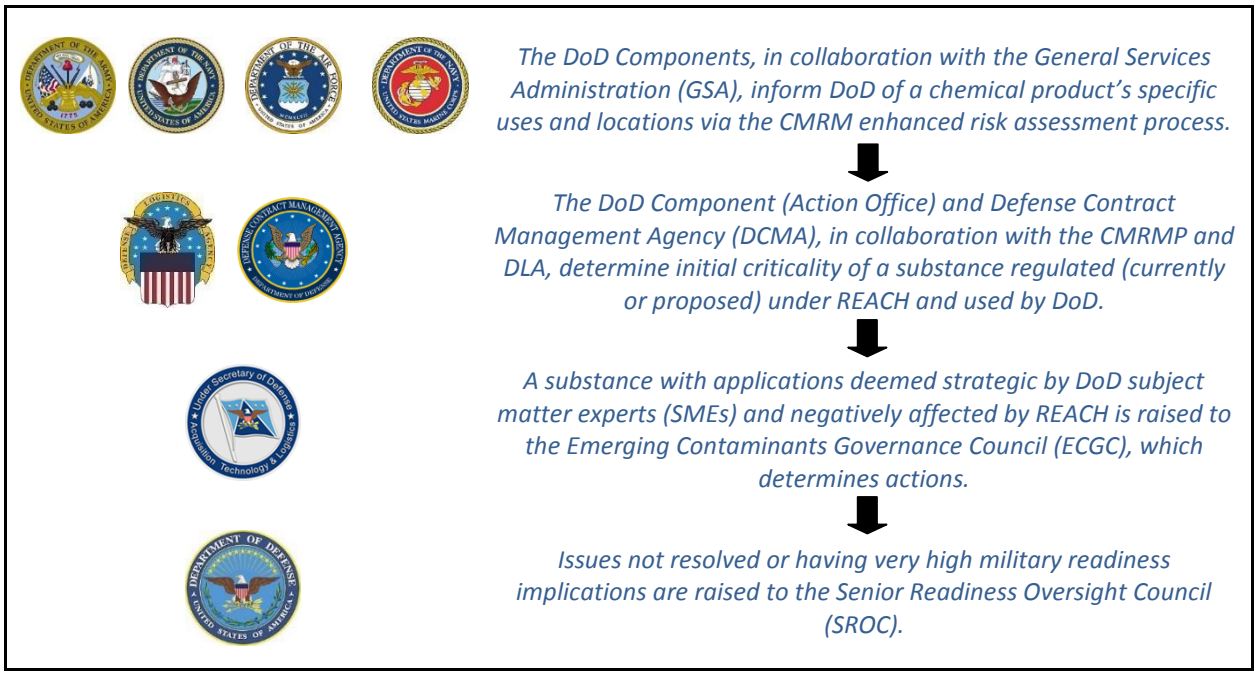


Figure 1. Anticipating Consequences of REACH for DoD

The five goals in the Strategic Plan and their associated objectives were developed to inform this decision-making process and key decision-makers.[12] Collectively, the decision-makers identify, assess, and mitigate risks to DoD from REACH and ensure a broad understanding across DoD regarding the implementation of the Strategic Plan. Figure 2 illustrates the interdependencies between the Goals and their objectives.

[12] Unless otherwise described, the term "Program Manager" or "PM" used throughout this document is meant to encompass those offices with management responsibility (e.g., the cognizant engineering authority) for fielded items, including rapidly fielded items for urgent warfighter needs.

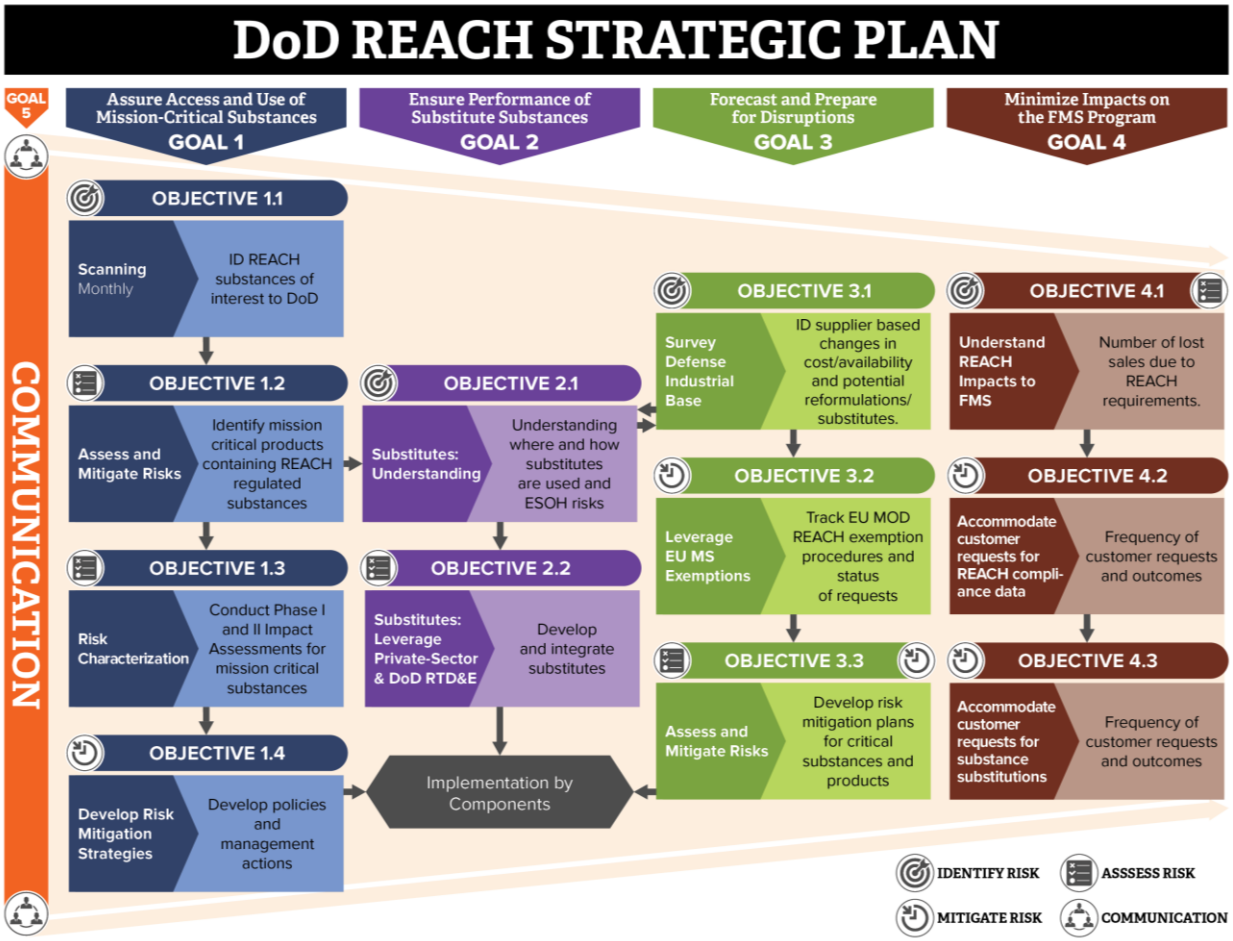


Figure 2. Strategic Plan Goals and Objectives Developed to Identify, Assess, and Mitigate Risks from REACH. Objectives 1.5 and 1.6, which are not shown on this graphic, are discussed on page 13.

Although the goals and objectives are mostly near-term, benefiting U.S. military readiness and the national security interests of U.S. allies, some are research-oriented, designed to meet DoD's future needs. Work on these objectives must be initiated now to ensure the timely availability of results.

For each objective, a metric is identified to gauge the success or failure in meeting the objective. Future versions of the Plan will require identification of additional metrics to improve the due diligence of the chemical selection process. All of the goals should be viewed as promoting military readiness by cultivating an organization that is nimble, agile, and successful in facing an ever-changing world.

The Strategic Plan will require annual reviews to monitor progress on the implementation of the Plan's objectives and metrics to ensure they remain aligned with the evolving regulatory landscape of REACH, and routine updates as appropriate to ensure the Plan's goals are aligned with DoD's interests. The CMRMP will conduct annual reviews, track progress toward meeting the goals and objectives, and propose updates to the Strategic Plan as needed. Within the DoD Components, the lead proponent for an objective will develop and issue the necessary directives, instructions, and policies and ensure their compliance within their own organizations.

1. Goal #1: Ensure Access to and the Ability to Use Mission-Critical and Mission-Essential Substances

DoD must ensure its access to those substances required to accomplish its mission. To achieve this, DoD needs current, accurate information about what substances it uses and where it uses them. DoD must also track REACH-imposed use restrictions and changes in product formulations to identify potential mission-impact risks to DoD rapidly. DoD will also need greater understanding of market trends to secure its needed supplies.

Objective 1.1: Maintain the Chemical and Material Risk Management Program (CMRMP) chemical "scanning" process to identify substances of interest to DoD that are regulated (currently or proposed) under REACH.

PROPONENTS	
Lead:	DASD(ESOH) CMRMP.
Support:	DoD Component environment, safety, and health (ESH) organizations and other Component action offices.
Metric:	Monthly scanning of REACH-regulated substances and initial investigation into current usages by DoD.
Other Partners (if any):	

The CMRMP scanning process (Appendix C) includes defense hazardous material management systems and allows DoD to determine the importance of the DoD's continued use of a substance proposed for regulation under REACH. These capabilities also help to satisfy existing mandates and new requirements under Executive Order (EO) 13693, "Planning for Federal Sustainability in the Next Decade," to reduce toxic and hazardous chemical usage.

Objective 1.2: Determine which substances identified in Objective 1.1 are mission critical/essential.

PROPONENTS	
Lead:	DoD Component (Action Office), DCMA.
Support:	DLA, OASD(ESOH) Directorate (Health and Safety), DASD(ESOH) CMRMP, Program Managers.
Metric:	Annual risk analysis that identifies mission-critical products or uses that are associated with REACH restricted or authorized substances as identified in Objective 1.1.
Other Partners (if any): GSA.	

A pilot methodology has been developed for the execution of this objective. DCMA will work with the DoD Component offices and other agency partners to refine the risk identification methodology and extend it across the Department. A cross-service and cross-sector view of mission criticality will be adopted to prioritize potential REACH impacts on mission assurance. Consideration will be given to substances used directly in acquisition products as well as those

used indirectly through production or sustainment processes. DCMA will elevate identified defense industrial base risks through the Defense Critical Infrastructure Program (DCIP).[13]

DLA has taken steps to support this objective by providing the DoD Components with information about consumable hazardous chemicals potentially affected by REACH. Continuing this objective will enable the Assistant Secretary of the Army for Acquisition, Logistics, and Technology; the Assistant Secretary of the Navy for Research, Development, and Acquisition; and the Assistant Secretary of the Air Force for Acquisition to focus their efforts on those military applications that are apt to be affected by REACH—in particular, legacy systems—and provide an early warning indicator of the need for risk management actions.

Relatively minor investments of resources by the DoD Components to identify uses of REACH-regulated substances will lead to informed, sustainable decisions based on more accurate estimates of substance use, future availability, and cost. Beneficiaries of this objective include: (1) the Department's research community; (2) the Department's acquisition community; and (3) Combatant Commands with respect to mission assurance, situational awareness, and risk management.

Many "greener" products available today are in ample supply, since this market is newer. As REACH is further regulated, demand for the "greener" products may increase to satisfy a growing need for substitutes for REACH-regulated substances. Consequently, this objective may need to expand beyond its focus on REACH-regulated substances to ensure the availability to DoD of substitutes for mission-critical REACH-regulated substances.

Objective 1.3: Characterize the risks associated with the use of the substances identified in Objective 1.2 to determine if risk management action is necessary.

PROPONENTS	
Lead:	DoD Component (Action Office).
Support:	DoD Component SMEs, USEUCOM, OASD(ESOH) Directorate (Health and Safety), DASD(ESOH) CMRM.
Metric:	Phase II Impact Assessment for substances identified in Objective 1.2 that are associated with mission-critical uses.
Other Partners (if any): GSA.	

Objectives 1.1, 1.2, and 1.3 work together to focus DoD on the substances of highest concern to the Department. The CMRMP, in collaboration with the Military Departments/Services, developed and manages a Scan-Watch-Action emerging contaminant (EC) tracking process to identify and evaluate ECs and their potential impact on DoD. The scan process consists of reviewing periodicals, scientific journals, and press and regulator communications to identify ECs. Those ECs that have the potential to affect DoD are nominated for inclusion on the Watch

[13] See DoD Directive (DoDD) 3020.40, DoD Policy and Responsibilities for Critical Infrastructure, September 21, 2012, and DoD Manual 3020.45, Defense Critical Infrastructure Program (DCIP), Volumes 1-5.

List, where a Phase I Impact Assessment—a nominal, semi-quantitative study—is conducted. If the Phase I Impact Assessment indicates a probable high risk to one or more functional areas, the EC may be nominated for the Action List and subject to a Phase II Impact Assessment. The Phase II Impact Assessment includes a more thorough, quantitative review of an EC's potential to affect DoD functional areas.

The DoD Component (Action Office) will work with DASD(ESOH) CMRMP to apply a modification of the existing Phased Impact Assessment to the REACH-regulated substances of highest concern to the DoD to characterize the relative risks (i.e., likelihood and severity) to five distinct DoD mission functional areas (Appendix B).

Risk management options are developed during the assessment for medium- and high-risk areas identified in the Phase II Impact Assessment and presented to the Emerging Contaminants Governing Council (ECGC) for approval.

Objective 1.4: Evaluate and manage the risks associated with use of REACH-regulated substances, including cost and availability.

PROPONENTS	
Lead:	DoD Component (Action Office).
Support:	USD(AT&L), DASD(ESOH) CMRMP.
Metric:	Annual report of policies and management actions developed and implemented to reduce risks based on risk management actions endorsed by the ECGC.
Other Partners (if any): GSA, Contractors	

Objectives 1.3 and 3.1 characterize the risks associated with (1) the continued use of a REACH-regulated substances and (2) the adoption of a substitute substance because of REACH, respectively. This objective (1.4) seeks to forecast and compare the ramifications of selecting a REACH-regulated or substitute substance. Developing selection criteria should ensure faster, easier, and more accurate results, keeping acquisition costs down.

The Phase II Impact Assessment process (Objective 1.3) provides the framework to develop management actions to address risks associated with use of REACH-regulated substances, including availability and cost. Risk management options (RMOs), developed in the Phase II Impact Assessment, are presented to the ECGC for approval and adopted by Program Executive Offices (PEOs) and Program Managers (PMs) for action/investment.

Objective 1.5: Establish and manage an Integrated Process/Product Team (IPT) for global chemical regulation and management that reports to the CMRM governance structure.

PROPONENTS	
Lead:	USD(AT&L).
Support:	ASD(EI&E); Deputy Assistant Secretary of Defense (Manufacturing and Industrial Base Policy) (DASD(MIBP)); Assistant Secretary of Defense (Logistics and Materiel Readiness) (ASD(L&MR)); Assistant Secretary of Defense for Research and Engineering (ASD(R&E)).
Metric:	DoD REACH Workgroup established as the IPT for global chemical regulation.
Other Partners (if any): GSA, U.S. Trade Representative.	

DoD's IPT structure is successful in the management and communication of ESOH issues to the acquisition community. By using the IPT format as a template, DoD can successfully assess, manage, and communicate issues pertaining to REACH and other global chemical regulations.

Objective 1.6: Determine what changes are required to the Business Enterprise Architecture (BEA) to address the capture and consolidation of data for substances identified as having significant mission impacts, and modify business systems accordingly.

PROPONENTS	
Lead:	DASD(ESOH).
Support:	Business Enterprise Integration (BEI), DoD Component process owners, DLA, OASD(ESOH) Directorate (Health and Safety), DASD(ESOH) CMRM, Combatant Commands (CCMDs).
Metric:	BEI study document that identifies required changes to the BEA to capture and consolidate data and resources to implement changes; and (2) an Implementation Plan for required changes to the BEA.
Other Partners (if any):	

The BEA provides a blueprint for DoD business transformation, helping to ensure the right capabilities, resources, and materiel are rapidly delivered to our warfighters. Expanding the BEA to guide the capture and consolidation of data on the use and location of the substances identified as priorities by DoD Components is a necessary first step. Doing so will help alleviate the lack of visibility into DoD's key questions about its use of substances: what, where, why, and how much. An enterprise-wide solution is needed to support and improve DoD's management of mission-critical substances subject to or proposed for regulation (e.g., REACH, Toxic Substances Control Act (TSCA), Korea REACH). The BEA guides and constrains the implementation of interoperable defense business systems in accordance with 10 U.S. Code (U.S.C.) § 2222.

In this process, existing and new information technology (IT) systems, including the multiple databases currently employed by the CMRMP, will be compared to a set of agreed-upon DoD business data and process requirements, such that the functional needs of the communities of interest are analyzed and used to identify optional courses of action. The role of CCMDs would be to ensure that the focus remains on substances of significance to the mission. USEUCOM is expected to rely heavily on DLA for information on the quantities of substances used by USEUCOM installations and organizations. Once the identification and tracking of regulated mission-critical items are included in the BEA, and implemented in all logistics systems supporting our European forces (e.g., Single Standard Army Logistics Enterprise, Navy's Enterprise Resource Planning (ERP) Program, Air Force Enterprise Solution-Supply (ESS), DLA's Enterprise Business System), the DoD Component process owners can populate the information, including the uses of each substance and its geographic locations within DoD, the geographic locations of suppliers, and eventually include information on alternatives. This information capability will ensure the necessary access to supplier and location data, and to alternative substances.

Some newer tools are available, such as the Weapon System Impact Tool, which could be utilized to gauge the impact that changes to specifications will have on future weapon systems readiness. Other IT solutions may involve accelerating synchronized ERP and capabilities that incorporate both logistics and ESH requirements, and provide better visibility into chemical and material usages.

Any IT solution must include analyses of both business and operational security requirements, and must comply with DoD Instruction (DoDI) 8500.01, "Cybersecurity" (March 14, 2014), and all other DoD information assurance policies. In addition, all IT system investments must be approved by their respective Investment Review Boards. Otherwise, the system may not meet the user communities' needs.

Until full BEA capability is achieved, it will be important to leverage existing hazardous materials management and tracking systems like the Enterprise Environmental, Safety, and Occupational Health Management Information System (EESOH-MIS). EESOH-MIS is used across Air Force and Army installations throughout Europe to associate product hazard data with mission/process requirements. The unique EESOH-MIS capability ensures the availability of data required to support Objective 1.2 (for consumable hazardous chemicals).

2. Goal #2: Ensure the Performance and Promote the Use of Substitute Substances to Preclude Significant Mission Impact Throughout DoD's Supply Chain

DoD has experienced unpredictable component malfunction as manufacturers substitute materials in response to regulatory actions. The adverse effects from use of lead solder substitutes to the reliability and performance of electronic components as a result of the Restriction of Hazardous Substances (RoHS) regulation is one example. REACH is expected to result in significantly more substitutions and formulation changes; already industries are reformulating and redesigning products. To continue to trust in the performance of its equipment, DoD must ensure that substitute products meet defense-unique requirements and that unqualified substitute substances are not introduced into the supply chain. DoD must also evaluate the performance of proposed substitutes and determine where their adoption is both feasible and advantageous in terms of life-cycle costs and protection of human health. Awareness of industry efforts to identify commercial substitutes or process improvements will help DoD identify potentially significant effects and safeguard the mission.

Adoption of substitutes and reformulated materials in order to meet REACH requirements may unintentionally pose different ESOH risks, leading to changes in processes, protective equipment, and the supply chain. DoD must identify and understand the ESOH impacts prior to use of a substitute/reformulated material to avoid significant and expensive unanticipated consequences.

Objective 2.1: Establish where and how reformulated/substitute substances (identified in Objective 3.1) are or may be used in place of critical substances identified in Objective 1.2 and assess the ESOH impacts from their use.

PROPONENTS	
Lead:	DoD Component (Action Office), DLA.
Support:	DoD Component Contract Managers, DoD Component Item Managers, USEUCOM, ASD(L&MR), OASD(ESOH) Directorate (Health and Safety), DASD(ESOH) CMRM, DASD(ESOH) SERDP/ESTCP, Defense Procurement Acquisition Policy (DPAP) through the DoD Sustainable Procurement Program Working Group, and ASD(R&E).
Metric:	Annual report of substances in use or planned for use as substitutes (or reformulations) for REACH-regulated substances identified in Objective 1.2 and their ESOH profiles.
Other Partners (if any): GSA, National Association for ESH Management (NAEM), National Defense Industry Association (NDIA).	

First, steps need to be taken to avoid the unacceptable situation in which an unknown and unqualified substance is used as a substitute for the substances identified in Objective 1.2, especially regarding COTS products. DoD must remain in a position to know the constituents of these products in order to continue to trust the performance of its equipment.

Achieving this objective will require a joint effort by the Lead and Supporting Organizations since no one DoD organization has the ability to engage in a continuing dialog with all defense

industries and suppliers. DoD Components, DCMA, and supporting agencies will provide a list (updated annually) of REACH-restricted or authorized substances and the relevant mission-critical products or uses (Objective 1.2). Under Objective 3.1, the Lead Organizations will survey the defense industrial base to identify reformulated or substitute substances for the substances identified in Objective 1.2. Under Objective 2.1, DLA will facilitate and support communication with industry and suppliers and the DoD Component Action Offices to identify how reformulated/substitute substances (identified in Objective 3.1) are or may be used in mission-critical products or uses. Improved communication between the DoD Components (Action Offices) and industry will foster the exchange of ESOH information and identification of gaps in understanding the ESOH impacts. As part of its charter, ASD(L&MR) prescribes policies and procedures for the conduct of logistics, maintenance, materiel readiness, strategic mobility, and sustainment support in the DoD and will do so in support of the activities conducted under this objective.

A key strategy to meet this objective is to enhance communication with industry to identify commercial substitutes or process improvements for significant mission-impact substances (whether on their own, in "mixtures," or in final "articles"). Improving communication regarding the availability and efficacy of qualified substitute substances and processes from industry will enhance their implementation. Likewise, earlier input from DoD Components via improved Capability Development Documents will inform and facilitate more coordinated research and development (R&D) efforts within DoD and industry to meet DoD's needs more effectively.

The DoD Sustainable Procurement Program Working Group is co-chaired by the ASD(EI&E) and DPAP. DPAP's role is a consultative one—to help ensure that specific actions proposed under this objective are consistent with fair treatment of all suppliers and do not inadvertently work to the advantage of some suppliers over others.

Industry forums provide opportunities to dialog and could include venues such as the NAEM (formerly known as the National Association for Environmental Management) Conference, Defense Manufacturing Conference, NDIA events, and meetings of professional engineers' societies.

Introducing new substances may result in indirect consequences that must be considered. Formal procedures must be followed to change and update Technical Orders. Substitute materials must be evaluated not only for performance, but for degradation, compatibility, long-term impacts, ESOH impacts, and required process changes. Preventative maintenance cycles may need to be changed, processes may require different steps (adhesives, tooling), maintenance procedures may need to be changed (draining, flushing, refilling), long-term impacts need to be assessed (moisture retention/intrusion, corrosion), and training requirements may need to be updated.

The introduction of new substances does not necessarily result in negative consequences. For instance, some substances will be very easy and inexpensive to replace, and some substitutes will actually work better. Technical manuals can be very out of date, and the introduction of substitutes will drive their update to reflect the state of the marketplace. Additionally, the introduction of new substances may result in a reduced compliance burden and reduced need for personal protective equipment or engineering controls.

After identifying where and how substitute substances are, or may be, used, their ESOH impacts must be determined to avoid significant and expensive unanticipated consequences. For example, substitute substances may meet performance requirements but require more stringent personal protective equipment or different engineering controls during use.

Objective 2.1 is intended to cover those substances (1) considered for use in the development of a new system and (2) used in systems that have been fielded for a number of years.

Following the ESOH assessments, information must be communicated to the user to inform decisions regarding adoption of substitutes. This requires identifying the substances, approving their use for a certain purpose, and their procurement. Only the PM can make the final determination whether to use or not to use a substance in a weapon system under the PM's authority based on the program's performance, cost, and schedule requirements. At a point in the development of a weapon system that enables the insertion of the best available technology, the PM needs to consider the life-cycle costs of the substances—including maintenance—used throughout the lifespan of the platform. However, not all items are managed and procured by the PM or the PEO, and other command and agency authorities with similar responsibilities will need to be likewise engaged. Also, this objective will require the proponents to advocate for the development and implementation of a streamlined process for testing substitute substances to meet military specifications in order to encourage adoption of alternatives.

Objective 2.2. Leverage the private sector and DoD's research, development, test, and evaluation (RDT&E) activities in regard to substitute substances to promote their use and mitigate significant mission or ESOH impacts.

PROPONENTS	
Lead:	ASD(R&E), DASD(ESOH) SERDP/ESTCP, DoD Component (Action Office).
Support:	DASD(ESOH) CMRM, DoD Component Laboratories.
Metric:	Annual report describing the substitute substances identified, developed, and integrated in significant mission-impact applications.
Other Partners (if any): NATO, Air and Space Interoperability Council (ASIC), America/Britain/Canada/ Australia/New Zealand (ABCANZ).	

In some cases, substitute substances eligible for use in significant mission-impact applications are already available and meet DoD performance requirements. In cases where adequate substitutes are not available for the mission-critical, REACH-regulated substances identified in Objective 1.2, RDT&E work must be done to develop them. This objective would have the added benefit of assisting the DoD Components in the execution of DoD Military Standard 882E, "Standard Practice for System Safety" (May 11, 2012).

ASD(R&E) has the lead for development of the annual report and will coordinate input from the Military Departments' R&D laboratories and SERDP/ESTCP on the identification, development, and integration of substitute substances.

Although this Strategic Plan is not the vehicle to impose requirements, arrangements with commercial industry to test and evaluate new substitute products with a shared cost and benefit

should be encouraged. These issues are not particular to DoD. NATO, ASIC, ABCANZ, and other international organizations should be engaged to reduce costs for any one nation, eliminate duplication of effort, and ensure interoperability of any and all alternative solutions.

Multiple substitutes could potentially be developed for a REACH-regulated substance, depending on its use or application. DoD will need to make a determination as to where to concentrate efforts. A great amount of uncertainty (e.g., lack of technical information and exposure/environmental data) is expected to accompany newly developed substances. Not completing this assessment could lead to the adoption of substitutes by DoD that are actually less green than the substances currently in use. Risk assessment for substitute/alternative substances should also include Total Ownership Cost required for life-cycle management of new products relative to current products.

3. Goal #3: Forecast and Prepare for Potential Disruptions in DoD's Supply Chain Due to the Unavailability of REACH-Regulated Substances in Mission-Critical/Essential Uses.

An efficient, effective supply chain is critical to mission success. DoD must develop strategies to ensure the continuity of DoD's supply chain despite implementation of REACH. It is likely that some suppliers will stop producing some substances and products important to the mission. Some supplies may not be available at all, due to limitations on manufacturing or transport.

Lack of product availability in the EU may be an issue for DoD operations globally. Additionally, manufacturers may reformulate products to eliminate use of a REACH-regulated substance. Such reformulations may not always be made known to DoD.

Objective 3.1: Proactively survey the Defense Industrial Base (DIB) to identify added cost, reformulations/substitutes, or unavailability for critical substances (identified in Objective 1.2).

PROPONENTS	
Lead:	DLA, DASD(MIBP), ASD(EI&E) ESOH Directorate.
Support:	ASD(L&MR), DCMA, DoD Components, Program Offices/Managers, PEO Ammo, DASD(ESOH) CMRM, ASD(R&E), OASD(ESOH) Directorate (Health and Safety), Assistant Secretary of Defense for Acquisition (ASD(A)).
Metric:	Engage with industry to obtain information regarding potential changes in cost, performance issues, availability, and formulation of critical products identified in Objective 1.2, and regarding substitute substances planned or in development; and provide annual tracking of anticipated industry actions for specific products.
Other Partners (if any): GSA, Contractors, AIA, ASD.	

Objective 3.1 will ensure that DoD exercises due diligence to avoid the costs associated with being the sole remaining user for all but the most significant mission-impact substances. The organizations identified as proponent leads are the primary support agencies for this objective under the following scenario. Because DoD policy encourages the use of commercial-off-the-shelf (COTS) products, DoD must be prepared for the influx of substitute ingredients in commercial products as a consequence of REACH. Following the identification of those products containing substances that are both significant to the mission *and* whose use is restricted by REACH, DoD needs to survey the DIB proactively to identify potential changes in cost, availability, and formulation of "pre-REACH" products. Identification of substitute substances, planned or in development/testing by the DIB, will feed into Objective 2.1.

Successful implementation of this objective will require leadership of more than one defense support organization, specifically:

- To gauge the continued availability of substances, DoD Components, Program Offices/Managers, and contractors are best suited to identify the manufacturers of the substances used in new weapons systems and munitions, and to assess the likelihood of

continued availability and impacts on the cost or performance of those substances. DLA, DCMA, GSA, and Program Executive Office Ammunition (PEO Ammo) will research and facilitate communication with the DIB for substances used in existing systems and munitions. DCMA, through its contract administration role, is uniquely positioned to support the analysis of potential REACH regulation effects on contract cost, schedule, and performance Department-wide. In support of this objective, DCMA will leverage its assets, including the DCMA Industrial Analysis Center (IAC) and its network of in-plant operations personnel, to facilitate communication with the DIB.

- To assess the effects of market trends on substance supplies, DLA and the DLA Strategic Materials are best suited to understand market trends and their consequences to product availability.[14] PEO Ammo would contribute the market trends and availability of munitions compounds (e.g., propellants, explosives). Nevertheless, gaps may exist in the current state-of-the-art for DoD market research. For instance, the focus of DLA Strategic Materials is on "minerals and metals" as opposed to substances that are the focus of REACH.[15] Additionally, issues of substance shelf-life may make it difficult for DoD to prepare for REACH by stockpiling.[16] As a result, DLA Strategic Materials will have some limitations in its ability to support securing substances.
- Major Defense Acquisition Programs still in development and production are overseen by the ASD(A). The ASD(A) should ensure that PMs consider REACH impacts as logistical support plans are developed.

MIBP becomes involved where the loss of or reduced availability of a substance affects multiple programs. Examples include the shortage of a substance used in solid rocket propellant, or a serious challenge in getting enough thin, armor steel for Mine Resistant Ambush Protected (MRAP) vehicles. MIBP would act in an advisory role, with support from others such as DCMA, which serves as the Defense Infrastructure Sector Lead Agent (DISLA) for the DIB under the DCIP.

Successful implementation also will require participation in industry forums to understand original equipment and parts manufacturers' concerns and their responses to REACH and to communicate DoD interest in continuity and sustainability. The Aerospace Industries Association of America (AIA) and AeroSpace and Defence Industries Association of Europe (ASD) have already begun collaborating on REACH. Their industrial members have the most to gain (or to lose) as their commercial products become subject to REACH, since this will affect their ability to market their products in Europe. The CMRMP is well positioned to engage with industrial supply chain forums to improve the robustness of DoD's response to REACH.

[14] Stockpiles other than those managed by DLA Strategic Materials exist and need to be considered (e.g., ozone-depleting substances (ODSs)).

[15] REACH provides an exemption from registration for substances occurring in nature (e.g., minerals, ores, and ore concentrates that are not chemically modified) where registration is deemed inappropriate or unnecessary. Annex V of REACH.

[16] Although Type II shelf-life items are extendable, Type I shelf-life items have an assigned finite shelf life and are not authorized for extension (except for some kits and specially designated medical pharmaceutical items). See DoD Manual 4140.27, Volume 2, DoD Shelf-Life Management Program: Materiel Quality Control Storage Standards (July 6, 2016) at http://www.dtic.mil/whs/directives/corres/pdf/414027_vol02.pdf.

Objective 3.2: Compile information on Member States' REACH exemption procedures, points of contact, and history of exemptions in order to reduce impacts to the supply chain.

PROPONENTS	
Lead:	USEUCOM.
Support:	Theater Components, DLA, OASD(ESOH) Directorate (Health and Safety), U.S. Mission to NATO (USNATO), U.S. Mission to the EU (USEU), DASD(ESOH).
Metric:	Annual report on MSs' exemption procedures, points of contact, and history of exemptions, including substances, uses, status of request, and relevancy to DoD supply chain interests.
Other Partners (if any): GSA, EU Missions (DOS).	

Article 2(3) of REACH stipulates that MSs may allow specific exemptions from REACH for substances used for the purposes of defense. Normally, requests for exemptions are submitted by manufacturers and importers to the MS; however, depending on a particular MS's REACH implementation, an MS's MOD may be in a position to submit such a request. DoD via USEUCOM, DLA, and NATO representatives should be in a position to support a manufacturer or importer in submitting an exemption to an MS in order to expedite the approval process to mitigate any supply or operational shortages.

USEUCOM and the supporting agencies will maintain a database of individual MS REACH exemption procedures and points of contact in order to support a manufacturer quickly if an operationally critical substance becomes banned within the EU or an MS. Implementation of the European Defence Agency (EDA) Code of Conduct on REACH Defence Exemptions must also be monitored and supported as harmonization of exemptions between EU MSs would be of great benefit to DoD.

The efforts, proposals, and events underway in the EU and in individual EU MSs regarding REACH implementation must also be tracked in order to assess and mitigate pending REACH disruptions. To do so will involve a "whole-of-government" approach with involvement by the Departments of State and Commerce and the Office of the U.S. Trade Representative in engaging EU MS MODs; assisting manufacturers in EU MS exemptions for U.S. Forces mission requirements for the defense of Europe; sharing information with the Defence Environmental Network (DEFNET), USNATO, and USEU; and monitoring developments in implementation and enforcement.

DoD must be aware that defense exemptions may have limited timeframes and do not ensure that the substance will remain available in the global marketplace. Additionally, passage of future REACH legislation amendments could further influence the availability of substances in the EU and may not guarantee that previous exemptions will continue in the future.

Objective 3.3 Address and manage impacts from the added cost, reformulations, or unavailability of mission-critical substances (identified in Objective 1.2).

PROPONENTS	
Lead:	DASD(MIBP).
Support:	DLA Strategic Materials, DLA, DCMA, DoD Component SMEs, ASD(A).
Metric:	Annual report of risk mitigation plans developed to address mission-critical substance/material risks identified in Objective 2.1.
Other Partners (if any): GSA.	

A risk mitigation approach is needed in the event that a substance with significant mission-impact to DoD suddenly becomes unavailable due to the consequences of REACH. The methodology to meet this objective is described by DoD 5000.60 Guidebook, "Assessing Defense Industrial Capabilities," November 2013. DoD 5000.60 Guidebook describes the process by which the risks and impacts associated with the loss of a capability are assessed, and discusses approaches and actions that can be taken to resolve the problem. Examples of risk mitigation approaches include the following:

- Engage the Manufacturing Technology Program when private sector investments and the free-enterprise system response to REACH are not sufficient for the *economical* as well as *timely* delivery of specific materials required by DoD. Under the direction of the Director, Defense Research and Engineering (DDR&E) (now the ASD(R&E)), DoDD 4200.15, "Manufacturing Technology (ManTech) Program," established ManTech (September 19, 2002) with the Joint Defense Manufacturing Technology Panel (JDMTP) composed of the Services, DLA, and the Missile Defense Agency (MDA) to implement DoD ManTech policy. JDMTP's core strategies are well-aligned to mitigate risk to the economical and timely delivery of mission-critical materials to DoD.
- Identify and flag high-risk and prohibited substances for appropriate handling in the DoD transportation system to mitigate potential disruptions in shipment. Although this is a potential task for USEUCOM Deployment & Distribution Operations Center, end-to-end distribution would be reliant on U.S. Transportation Command (USTRANSCOM) for coordination. Additionally, transportation tenders need to be examined and amended as necessary to avoid issues under REACH, when required, and in accordance with Defense Transportation Regulation, DoD 4500.9R.
- Ensure that PMs consider impacts from REACH-regulated substances on system cost, schedule, and performance (ASD(A)).

4. GOAL #4: MINIMIZE THE IMPACT TO THE FOREIGN MILITARY SALES (FMS) PROGRAM DUE TO THE UNAVAILABILITY OF REACH-REGULATED SUBSTANCES

Objective 4.1: Defense Security Cooperation Agency monitor FMS cases for customer requirements for REACH compliance.

PROPONENTS	
Lead:	Defense Security Cooperation Agency (DSCA).
Support:	USD(AT&L) (Action Offices), DoD Component (Action Offices), DLA.
Metric:	Annual report on the number of times REACH has affected FMS sales to include loss of sales or added costs.
Other Partners (if any): Department of State and Industry.	

DSCA will review potential FMS sales for possible REACH impacts, e.g., instances in which FMS customers might choose non-U.S. weapons systems because the U.S. systems are not REACH-compliant, or in which FMS customers begin to make REACH compliance a condition of sale. Where necessary, DSCA will amend FMS-related policies and regulations. DLA's Disposition Services will assist DSCA in its review of Disposition Service-managed Excess Defense Articles (EDA) cases for possible REACH impact.

Objective 4.2: DoD Components seek to accommodate FMS customer requests for "REACH compliance" data on a customer-funded basis.

PROPONENTS	
Lead:	DSCA.
Support:	USD(AT&L) (Action Offices), DoD Component (Action Offices), DLA.
Metric:	Annual report on how REACH has affected foreign customers' requests for REACH compliant systems and their successful delivery.
Other Partners (if any): DOS and Industry.	

Under the FMS program, the U.S. Government procures defense articles and services on behalf of the foreign customer, such as an EU MS. MSs participating in the FMS program must address REACH compliance issues regarding their importation of U.S. defense articles into the EU. Since the FMS program helps reduce the per-unit cost of U.S. acquisitions, DoD has a vested interest in reducing any potentially negative impacts from REACH on FMS.

FMS customers identifying a requirement for REACH-compliant defense articles may fund an analysis of whether the requested articles are compliant and, when they are not, whether compliant alternatives are available and at what cost, or request a defense exemption from their own MOD.

DLA is the secondary support agency to the Military Departments for most FMS case support. In this role, FMS support cases are written by the Military Departments, and DLA responds to requisitions that are submitted by the countries through the Military Departments' International Logistics Control Offices. The exception to this role involves requests for EDA. DLA's

Disposition Services writes and manages FMS cases for EDA items that are submitted to Disposition Services by the Military Departments.

Objective 4.3: DoD Components seek to accommodate FMS customer requests for substance substitution on a customer-funded basis.

PROPONENTS	
Lead:	DSCA and DoD Component (Action Offices).
Support:	USD(AT&L) (Action Offices) and RDT&E Community.
Metric:	Annual report on how REACH has affected foreign customers' requests for REACH-compliant substance substitutions and information regarding their funding.
Other Partners (if any): Industry.	

Under the FMS program, the U.S. Government procures defense articles and services on behalf of the foreign customer, such as an EU MS. MSs participating in the FMS program must address REACH compliance issues regarding their importation of U.S. defense articles into the EU. To address REACH compliance concerns regarding defense articles, FMS customers may request substance substitutions (on a customer-funded basis). Compared to a data request (as discussed in Objective 4.2), a chemical/material substitution request has potential for higher costs.

5. GOAL #5: ENSURE BROAD UNDERSTANDING ACROSS DOD REGARDING THE IMPLEMENTATION OF THE REACH STRATEGIC PLAN.

The objectives outlined under Goals #1 through #4 will enable DoD to identify and mitigate risks associated with REACH and guard against impacts on the DoD supply chain only if those DoD personnel potentially affected by REACH understand and support those activities. Therefore, DoD must communicate to these personnel DoD's strategy and their roles and responsibilities in executing this strategy in a consistent and effective manner. A critical part of this communication effort will identify and mitigate risks that can result if DoD personnel misinterpret DoD organization roles and responsibilities or misapply the REACH regulation to DoD's EU operations.

Objective 5.1: Develop, communicate, and implement communication strategies that identify risks associated with REACH, guard against impacts to the DoD supply chain, and reduce impacts on the DoD mission and ESOH.

PROPONENTS	
Lead:	All Organizations having lead responsibility for a REACH Strategic Plan objective.
Support:	
Metric:	Each Lead Organization (or co-leads) develop a communications plan aligned to each of their assigned objectives. The plan should be reviewed and updated, if needed, annually.
Other Partners (if any):	

The Communication Plans should provide a communications framework that aligns with and amplifies DoD policy and obligations for implementing the objectives as well as addressing potential issues such as:

- Communicating REACH risk mitigation policy and guidance.
- Communicating roles and responsibilities for coordinated and consistent responses to REACH-related risks to the DoD supply chain.
- Engaging inter-governmental communication processes to assess global risk management for mission-critical and mission-essential REACH-regulated substances affecting interoperability.
- Communicating potential technical solutions for mission-critical and mission-essential uses of REACH-regulated substances.

A critical part of this communication effort will require identifying and mitigating risks of DoD personnel misinterpreting DoD organization roles and responsibilities or misapplying the REACH regulation to DoD's EU operations.

For example, a risk to DoD operations in the EU relates to the commercial transportation of DoD materiel. For decades, DoD has struggled with the challenge of complying with the myriad of EU commercial transportation regulations governing the manifesting, disclosure, packaging, inspection of "dangerous goods," munitions, weapons, weapon system

components, etc. DoD transportation experts have suggested that DoD may experience a delay or disruption resulting from an attempt to ship into, through, or between DoD installations in Europe a substance that is banned in the EU under REACH. Seizures of DoD shipments of prohibited substances have occurred in Europe under non-REACH regulations (e.g., halons and R-22). As specific substances are phased-out in the EU under REACH, the risk of similar disruptions will increase. The substance inventory assessment objectives under Goal 1 will increase visibility within DoD of REACH-regulated substances and help to flag high-risk and prohibited items for appropriate handling in the DoD transportation system. Initiatives implemented under this Communication Goal will ensure that the guidance developed to address such transportation risks is disseminated within DoD.

Another potential risk example involves delays or disruptions in shipments within Europe resulting from improper certification and routing of shipment, placarding of vehicles, labelling and marking of packages, or packaging. Delays and disruptions of DoD dangerous goods shipments in Europe occur with some frequency. Service Component Dangerous Goods Advisors (DGA) and USEUCOM movement control agencies often must work with military National Movement Control Centers (NMCCs), MOD DGA authorities, or military ADR/RID/ADN[17] competent authorities to achieve relief from civilian enforcement activities or to obtain individual exemptions from hazardous material regulations to accomplish movement within the USEUCOM area of responsibility. One of the primary source documents for information on transportation requirements is the Safety Data Sheet (SDS). However, products in the DoD supply chain – especially those that originate from vendors in the United States – will not always have an SDS that conforms to EU requirements.

Ongoing full implementation in the United States of the GHS should help to reduce these risks. Therefore, DoD Components must enforce compliance with GHS for all substances bought by DoD. Even this will not eliminate the risk of transportation delays in the European Union because differences will remain between U.S. and EU GHS implementation. Using communication plan strategies developed under this Goal, USEUCOM and DoD Components will ensure that Service component supply activities and DGAs have the guidance, tools, capability, authority, and information needed to supplement U.S. SDS information and adjust labeling to meet EU requirements, when necessary.

[17] ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road; RID - Regulations Concerning the International Carriage of Dangerous Goods by Rail; ADN – European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.

APPENDIX A. REACH – BACKGROUND INFORMATION AND RESOURCES

REACH Details

REACH establishes criteria for data demonstrating the safety of substances. Without this data, they cannot be sold on the EU market, whether on their own, in "mixtures," or in certain final "articles." REACH makes industry responsible for assessing and managing substance risks, and for providing appropriate safety information to their users. REACH requires (1) public disclosure of chemical substances in, or released by, products and disclosure of toxicological information; and (2) greater visibility into and accountability of chemical substances across the supply chain from original equipment manufacturers (OEMs) to the makers of individual parts. REACH also restricts use of highly dangerous substances.

A new EU agency, the ECHA, was created to oversee the implementation of REACH. The first phase involved the pre-registration of all "phase-in" substances (typically those listed on the European Inventory of Existing Commercial Chemical Substances (EINECS)) imported to, or produced in, the EU in excess of one metric ton/year by December 1, 2008. Pre-registration allowed companies to keep their existing products on the EU market using a derogation from the requirement to register until formal registration occurred or the relevant "phase-in" deadline passed. Using information gathered from the pre-registered substances, ECHA provided a software platform to allow pre-registrants of the same substance to identify one another or (in certain cases) their formal representative to facilitate the formation of a Substance Information Exchange Forum (SIEF) for each substance. These SIEFs act in much the same way as industry consortia, albeit with mandatory participation by all those who would seek to register that substance, for the purposes of sharing the cost and burden of developing the toxicological and other relevant data necessary to support the registration.

Since REACH went into effect in 2007, ECHA has initially focused on high-volume substances and the identification and prioritization of Substances of Very High Concern (SVHCs), which ECHA defines as toxic to reproduction, carcinogenic, or

REACH Mandatory Substance Information Exchange Forums

The EU established the ECHA to manage the chemical information compiled for REACH. Some of this information will have previously been considered proprietary; other information will be unknown, and testing will be required.

Mandatory Substance Information Exchange Forums (SIEFs), as required by Article 29 of REACH, have been created within industry in order to gather this information, which must then be summarized in the form of a registration dossier for each substance. Although certain information can indeed be claimed as confidential, ECHA disseminates certain information contained within these dossiers, which creates the potential for the release of sensitive/classified information if the proper procedures are not in place, followed, and enforced.

Although DoD has neither standing nor need to participate in SIEFs, defense OEM participation is expected. The cost of SIEF participation, the registration procedure, and other associated tasks will be passed on to customers, including DoD.

mutagenic; persistent, bioaccumulative, and toxic (PBT); very persistent and very bioaccumulative (vPvB); or substances of equivalent concern (such as substances with endocrine disruptive effects) with a focus on reducing consumer exposures. These substances may pose serious effects on human health or the environment that the EU deems unacceptable. ECHA updates and modifies the Candidate List of SVHCs for authorization biannually, typically in June and December. As of February 2016, ECHA has identified 168 SVHCs for the Candidate List for Authorization. To date, 31 SVHCs have been placed on the Authorization List, which requires authorization for continued use or placement on the market after a specified date. ECHA also controls substance risks by restricting the manufacture, use, or placement on the market of substances for specific uses. Currently, 105 substance entries are on the List of Restrictions. Each year, additional substances are proposed by ECHA or the MSs for authorization or restriction, increasing the potential for adverse impacts on the DoD supply chain.

Industry concerns from enhanced consumer awareness over substances in products, as well as the cost of supplying sufficient toxicological information to prove their safety, have resulted in product reformulations and the discontinuance of manufacture, importation, or use of certain substances. The number of substances registered under REACH may grow from the current inventory of more than 13,000 to an estimated 38,000 by June 2018, the final phase-in registration deadline. Therefore, the regulatory fate of some substances and the possible impacts on DoD will continually evolve as ECHA's list of SVHCs, authorizations, and restrictions matures. Perhaps most significant to DoD is that REACH requires a system to ensure that SVHCs are properly controlled and progressively replaced by suitable alternative substances or technologies where economically and technically viable. Where this is not possible, the use of substances may only be authorized where there is an overall benefit for society; that is, where the risk of using the substance is warranted.

As a consumer protection regulation, REACH was not developed with the military in mind. The MS authorities are responsible for enforcing REACH through inspections, and for assessing penalties for non-compliance. Defense exemptions are possible, but they must be sought by individual MS Defense MODs and are required to be narrowly focused on unique military products and applications. To date, few EU nations have developed processes for generating such exemptions, and obtaining them appears to be difficult. Nor is it apparent that each MS views the process needed for an exemption in the same light; some require virtually the same effort as for any other substance. DoD is aware of some discussions by EU nations exploring the creation of consistent processes for the submission and review of defense exemptions, but additional work is needed.

WHY PLAN FOR REACH?

The intent of REACH is to provide a robust regulatory framework that continuously monitors the use of substances, and reduces or controls the use of those substances considered to be the most toxic and hazardous throughout the EU. With its roots in consumer protection, a major goal of REACH is to expand the transparency of exposure information to consumers. Because of the nature of the global marketplace, such restrictive regulations are likely to drive changes in chemical and material practices, sometimes in ways that are unforeseen.

REACH can be considered to apply in some way or another to almost all substances placed on the EU market. With its entry into force in 2007, REACH mandated a complete overhaul of the way in which the manufacture and use of substances is regulated in the EU, with a systematic review of nearly all those substances that are in commerce in the EU (termed "phase-in" substances) currently taking place. In the time since its introduction and leading up to June 1, 2018, this systematic and tiered review is expected to result in the registration of approximately 38,000 substances that have been on the market for many years, with several thousand (approximately 6,700) "phase-in" substances already having been registered.

The majority of information required to support a substance through registration under REACH relates to the intrinsic properties of that substance (such as its physicochemical parameters, its toxicological properties, or its effects on the environment) along with comprehensive details of its use pattern. This information is then typically used not only to prepare a consolidated dossier on the properties of the substance, but also to prepare a risk assessment that is used to ensure that the substance is used under acceptable levels of risk throughout its life cycle.

Those substances considered to have the potential to pose the greatest danger (identified as SVHCs) can be subject to additional regulatory burdens—the most severe of which requires a substance to be "Authorised" before it can be used.

REACH can also require information not only on substances but, in certain cases, the products that contain them, known as "articles." Examples of possible articles can include materiel from vehicles, weapons systems, laptops, or other electronic devices. Should such articles contain significant quantities of SVHCs (with regard both to the overall supply level of the substance in question and also its concentration/content in the article), then additional reporting obligations exist under REACH. A recent court judgment in the interpretation of how "complex" articles such as vehicles/electronics are considered under REACH has had major impacts on reporting obligations.[18] (See "Important Considerations" below.)

[18] Judgment in *FCD* and *FMB* v *Ministre de l'Écologie, du Développement durable et de l'Énergie*, C-106/14, ECLI:EU:C:2015:576. Available at http://curia.europa.eu/jcms/jcms/j_6/, accessed March 15, 2016.

Important Considerations

An "**article**" is defined by the EU to mean "any object that has been given a specific shape, surface or design which determines its function to a greater degree than does its chemical composition." Examples of articles include manufactured goods or products ranging from textiles and toys to electronic chips and furniture. Although only substances* (not preparations or articles) must be registered under REACH, a substance in an article must be registered if the substance is released from that article as part of its function by design (e.g., a printer cartridge). A substance in an article may also be REACH-regulated if it is an SVHC, whether or not its release from the article is intentional, that is, by design.

A "**complex article**" such as a weapons system, electronic device, or vehicle had initially been considered as an "article" in itself by the majority or EU MSs. Several EU MSs dissented from this viewpoint and regarded a complex article (such as a vehicle) as being made up of many components (e.g., wheels, chassis, bearings, electronic components), with each of these individual components being considered as an article in its own right. This dissenting viewpoint was recently upheld to be the "correct" interpretation of the legislation in a recent EU court judgment. As such, the SVHC content of the individual components of a complex article may need to be re-evaluated.

Helpful Analogies (foodstuffs are not regulated under REACH)
Substances = Flour, Sugar, Water
Preparation = Dough
Article = Cake

To continue the analogy above, if a cake is decorated with sweets, then each individual sweet is considered an article in its own right and must be assessed separately with regard to REACH obligations.

* Substances, mixtures, and articles can be contained inside of packaging, such as a carton, a plastic wrapping, or a tin can. The packaging does not belong to the substance, mixture, or article being packaged and is therefore to be considered as a separate article under REACH. (See ECHA Guidance on Requirements for Substances in Articles, version 3.0, December 2015.)

REACH Resources

DoD REACH Workgroup Team Site	http://www.denix.osd.mil/ You must have a DENIX account to request access to the group.[19]
DEFNET	http://www.eudefnet.com
ECHA Home Page	http://echa.europa.eu/web/guest
ECHA Publications	http://echa.europa.eu/publications
Legal Text of REACH	http://echa.europa.eu/web/guest/regulations/reach/legislation
REACH	http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm
REACH Q&A	http://echa.europa.eu/support/qas-support/qas
UK MOD	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/348162/20140714MOD_REACH_Exemption_Process_Guide.pdf 42-page report, The REACH Regulation - A Guide to REACH Process and Exemption in the Ministry of Defence, Version 1.1, May 2014
	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/348163/20140721MOD_REACH_Chemical_Assessment.pdf 42-page report, The REACH Regulation - The Chemical Assessment & Reporting Process in the Ministry of Defence, Version 1.2, May 2014
Other Relevant Chemical Lists:	
RoHS	http://ec.europa.eu/environment/waste/rohs_eee/index_en.htm
SIN List	Substitute It Now List http://chemsec.org/what-we-do/sin-list

[19] To request access to the DoD REACH Workgroup Team Site: (1) You must be logged into your DENIX account. You will see a link called "My Workgroups" in the top navigation menu. (2) Go to the "Manage My Workgroups" page under the "My Workgroups" tab. Within the form on the "Manage My Workgroup" page, there is a dropdown menu for available groups. Select the "DoD REACH Workgroup (reachwg)" and click the "Request to Join" button. (3) For help setting requesting access to the workgroup, contact denixhelp@deltaresources.com.

APPENDIX B. ISSUES OF EVOLVING CONCERN FOR REACH - NANOMATERIALS

DoD is a significant investor in the development of nanomaterials. This is because of the unique properties that these materials exhibit for both warfighter protection and armament. In 2006, DoD established the Nanomaterials Environment, Safety, and Occupational Health (ESOH) Work Group, co-chaired by the DASD(ESOH) CMRM and Defense Research and Engineering (DDR&E) (now the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)), as the coordinating body for nanomaterial-related ESOH technical and policy information. The Work Group helps promote risk management measures to ensure well-reasoned, evidence-based DoD initiatives and positions. The Work Group was instrumental in issuing memoranda for the safe handling of nanomaterials, and is well-suited to address upcoming issues concerning REACH and DoD's research and use of nanomaterials worldwide.

The understanding of ESH risks from nanomaterials continues as an emerging area of science, so it is not surprising that the EU intends to regulate these products under REACH. The ECHA continues to implement the opinion shared by the European Commission that although there are no explicit regulations, the ECHA still regulates these products under REACH and still recognizes nanomaterials as a strategically important issue (http://echa.europa.eu/documents/10162/21844190/mb_41_2015_workplan_nanomaterials_incl_annexes_en.pdf). The application of REACH to nanomaterials as described in the document is without prejudice to any future amendments to REACH.

There have been several policy developments in the form of guidance and evaluation decisions under the Community Rolling Action Plan (CoRAP). ECHA has set a 2018 registration deadline for anyone manufacturing or importing substances in the EU above one tonne per year, which will also apply to nanomaterials (http://echa.europa.eu/reach-2018). ECHA has released a number of guidance and recommendations specific to nanomaterials. In the ECHA, *Guidance on Information Requirements and Chemical Safety Assessment*, (http://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment), which provides in-depth scientific and technical advice to support the processes for registration and safety assessment, nanomaterial-specific recommendations are given for:

- Endpoint specific guidance (Chapters R.7a-c)
- Characterization of dose (concentration) – response for human health (Chapter R.8)
- Characterization of dose (concentration) – response for environment (Chapter R.10)
- Occupational exposure estimation (Chapter R.14)

Since all new REACH registrations must be done electronically through the International Uniform Chemical Information Database (IUCLID), a nanomaterial-specific manual on reporting has been made available (http://iuclid.eu/index.php?fuseaction=home.documentation&type=public#reachmanual).

ECHA has increased its nanomaterial-related activities since 2011. It established a nanomaterials working group (ECHA-NMWG) in 2012 to give recommendations for REACH and Classification Labelling and Packaging (CLP) processes

(http://echa.europa.eu/regulations/nanomaterials). ECHA is attempting to issue revised guidance for REACH registrations on the provision of information for nanoforms of substances before its guidance moratorium takes effect in mid-2016 so that companies can be prepared for the REACH changes in 2018. The Work Group may soon release guidance on:

- Clarification on how to use read-across between nanoforms;
- How to distinguish one nanoform from another;
- How to address nanomaterials under the existing information requirements; and
- How to cover exposure estimation and worker protection.

Classification and Labeling Provisions

The scope of nanomaterials under REACH includes both agglomerates and aggregates below and at the micron size, since safety has to be ensured for the substance in whatever size and form and for manufacturing and all identified uses. A REACH registrant has to include all relevant information on the nanomaterial, such as specific properties of nanomaterials not addressed in the REACH Annexes, in order to demonstrate that risks are controlled. This may include different classification and labeling of the nanoform (as compared to the bulk form) and additional risk management measures. These risk management measures and operational conditions (i.e., exposure scenarios) will have to be communicated to the supply chain. This will likely require changes to SDSs, the current OSHA GHS, such that either a separate SDS will be required for a nanomaterial, or, if a nanomaterial also exists in bulk form, the existing SDS must include information on the nanoform's (1) composition and properties, (2) handling and storage, and (3) exposure controls.

Although the CLP legislation[20] does not specifically address nanomaterials, there is guidance to this effect from the International Standards Organization (ISO) in the form of a Technical Report (TR 13329:2012 Nanomaterials -- Preparation of material safety data sheet (MSDS)) to address nano-specific aspects of hazard communication about substances. There will be a white paper from the nanomaterials Working Group of the UN Committee on the Globally Harmonized System regarding nanomaterials, but no guidance is forthcoming for the time being. DoD may wish to implement "best practices" guidance for nanomaterials hazard communication. Although not a substance issue for REACH, as of 2013, any cosmetic products sold in the EU containing a nanomaterial must contain word "nano" in brackets after the ingredient name.[21]

Appeals Against ECHA's Nanomaterials-Related Decisions

In the past few years, cases against the ECHA have been increasing. ECHA has received five appeals against ECHA's evaluation decision on nanomaterials, challenging ECHA's legal grounds for requesting information (1 case in 2014, 4 in 2015).

Several nanomaterials of concern have been included on the CoRAP – where Member States evaluate the substances. Silicon dioxide evaluation was completed by the Netherlands in 2015 (http://echa.europa.eu/documents/10162/a94c8df7-81c5-4946-80ae-dfa9275897e1), and as a

[20] EC No 1272/2008.
[21] Regulation on Cosmetic Products 1223/2009.

result ECHA requested additional information on physicochemical properties (size, specific surface area, hydroxylation state, water solubility, density, dustiness, and point of zero charge for each form of SAS), and toxicological information (OECD 413 90-day toxicity study, and further toxicological information on surface treated SAS). Earlier this year, 35 companies filed an appeal to contest the decision.

Other nanomaterials included on the CoRAP are (http://echa.europa.eu/information-on-chemicals/evaluation/community-rolling-action-plan/corap-table):

- Silver 2014 – The Netherlands
- Titanium Dioxide 2015 – France
- Zinc Oxide 2016 – Germany
- Cerium Oxide 2017 – Germany
- MWCNT 2017 – Germany

Although the actions under the CoRAP are controversial, DoD may wish to develop guidance about preparing data packages that would meet such requirements for current and planned nanoscale substances.

EU Definition of a Nanomaterial

On the definition of nanomaterial, no changes to REACH have been proposed. However, a revision to the 2011 EU definition (2011/696/EU) of an engineered nanomaterial has been updated in the context of the Novel Foods regulation, so it may be anticipated that this change in definition may soon apply to substances.

The new, recently approved Novel Food regulation (November 2015), (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE_38_2015_REV_1&rid=3) uses a different definition:

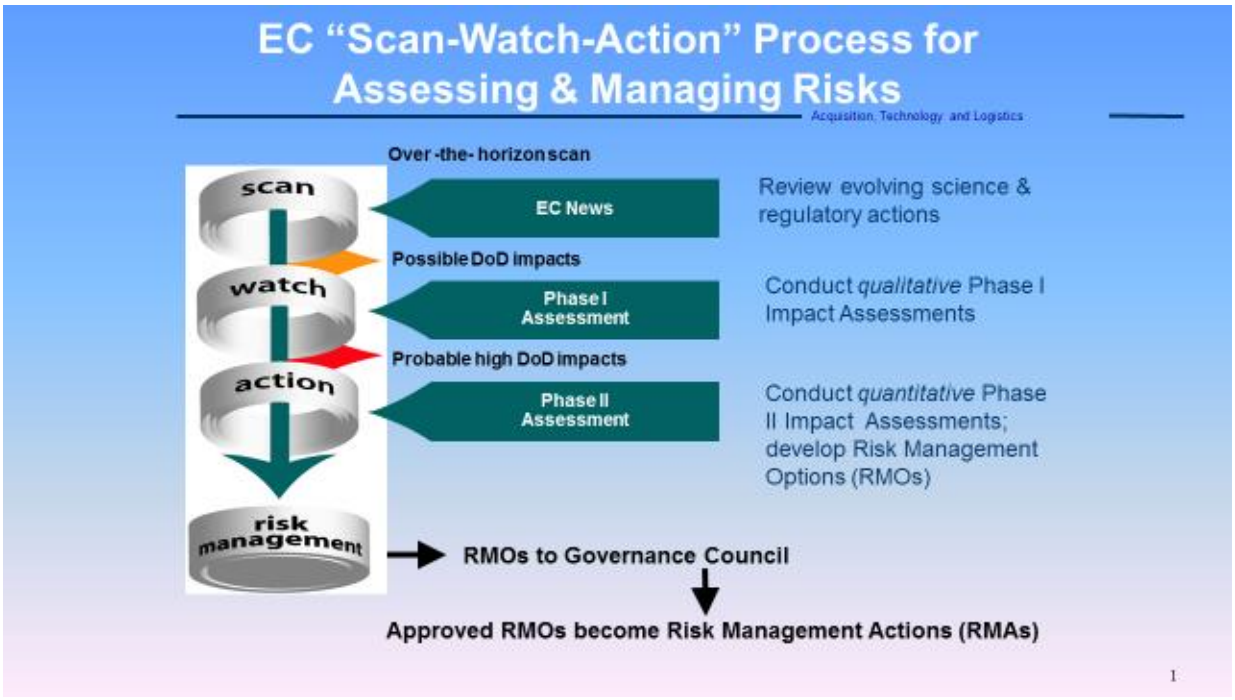
> "*Engineered nanomaterial means any intentionally produced material that has one or more dimensions of the order of 100 [nanometers] nm or less or that is composed of discrete functional parts, either internally or at the surface, many of which have one or more dimensions of the order of 100 nm or less, including structures, agglomerates or aggregates, which may have a size above the order of 100 nm but retain properties that are characteristic of the nanoscale. Properties that are characteristic of the nanoscale include: (i) those related to the large specific surface area of the materials considered; and/or (ii) specific physico-chemical properties that are different from those of the non-nanoform of the same material*."

For reference, the 2011 EU definition:

> *"Nanomaterial' means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm.*
>
> *In specific cases and where warranted by concerns for the environment, health, safety or competitiveness the number size distribution threshold of 50% may be replaced by a threshold between 1 and 50%." And "By derogation from point 2, fullerenes, graphene*

flakes and single wall carbon nanotubes with one or more external dimensions below 1 nm should be considered as nanomaterials."

APPENDIX C. SCAN/WATCH/ACTION PROCESS AND RISK MANAGEMENT OPTIONS[22]



[22] DoDI 4715.18, Emerging Contaminants (ECs), June 11, 2009.

Key EC Risks to DoD

Acquisition, Technology and Logistics

- **To people**
  - New science on human health effects of ECs
  - Example: evolving science on lead blood levels
- **To readiness, acquisitions & sustainment**
  - Increased acquisition and O&M costs
  - Loss of chemicals/materials needed for performance
  - Examples: flame retardants; phthalates; chlorinated paraffins
- **To cleanup program[1]**
- New ECs or new toxicological standards
  - Increases "cost to complete" for site cleanups
  - Example: PFOS[2]-based fire-fighting foam releases

[1] Officially called the Defense Environmental Restoration Program (DERP) [2] A manufactured fluorosurfactant

3

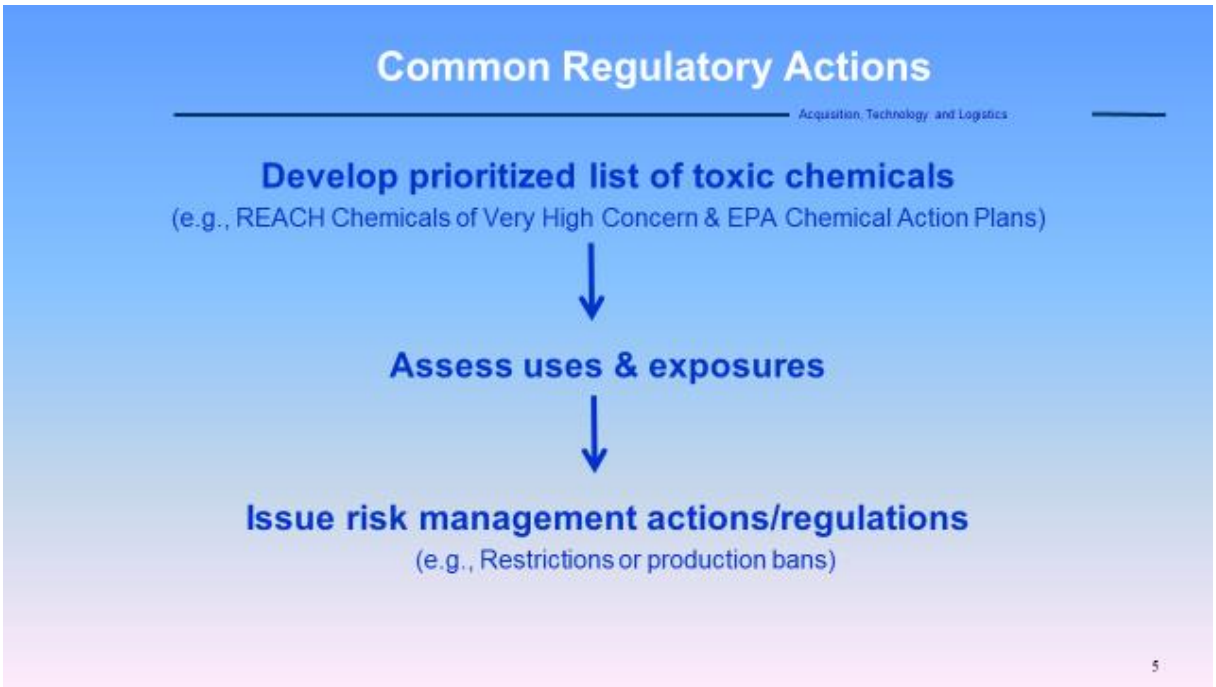
Key Risk Drivers

Acquisition, Technology and Logistics

- **EPA Chemical Hazard Assessments**
  - Toxicological data leads to new standards & regulations
  - Data resides in EPA Integrated Risk Information System (IRIS)
- **EPA Chemical Action Plans**
  - First 90 "priority" chemicals identified by EPA
  - Use/exposure assessments lead to risk management actions (e.g., manufacturing/use bans)
- **European REACH[1] regulation**
  - Restrictions are affecting global supply chain
  - Market pressures can limit chemical availability

[1] Registration, Evaluation, Authorisation & Restriction of Chemicals

4


Common Regulatory Actions
Acquisition, Technology and Logistics
Develop prioritized list of toxic chemicals
(e.g., REACH Chemicals of Very High Concern & EPA Chemical Action Plans)
Assess uses & exposures
Issue risk management actions/regulations
(e.g., Restrictions or production bans)
5

APPENDIX D. SUMMARY TABLE OF DOD REACH STRATEGIC PLAN GOALS AND OBJECTIVES

Table D-1. Summary of DoD REACH Strategic Plan – Goals, Objectives, Metrics, and Lead Proponents

Objectives	Metrics	Lead Proponents
Goal #1: Ensure Access to and the Ability to Use Mission-Critical and Mission-Essential Substances		
1.1 Maintain the Chemical and Material Risk Management Program (CMRMP) chemical "scanning" process to identify substances of interest to the DoD that are regulated (currently or proposed) under REACH.	1.1 Monthly scanning of REACH-regulated substances and initial investigation into current usages by DoD.	• USD(AT&L) • DASD(ESOH) • DASD(ESOH) CMRMP • DCMA • DoD Component (Action Office)
1.2 Determine which substances identified in Objective 1.1 are mission critical/essential.	1.2 Annual risk analysis that identifies mission-critical products or uses that are associated with REACH restricted or authorized substances as identified in Objective 1.1.	
1.3 Characterize the risks associated with the use of the substances identified in Objective 1.2 to determine if risk management action is necessary.	1.3 Phase II Impact Assessment for substances identified in Objective 1.2 that are associated with mission-critical uses.	
1.4 Evaluate and manage the risks associated with use of REACH-regulated substances, including cost and availability.	1.4 Annual report of policies and management actions developed and implemented to reduce risks based on risk management actions endorsed by the ECGC.	
1.5 Establish and manage an Integrated Process/Product Team (IPT) for global chemical regulation and management that reports to the CMRM governance structure.	1.5 DoD REACH Workgroup established as the IPT for global chemical regulation.	
1.6 Determine what changes are required to the Business Enterprise Architecture (BEA) to address the capture and consolidation of data for substances identified as having significant mission impacts, and modify business systems accordingly.	1.6 BEI study document that identifies required changes to the BEA to capture and consolidate data and resources to implement changes; and (2) an Implementation Plan for required changes to the BEA.	

Objectives	Metrics	Lead Proponents
Goal #2: Ensure the Performance and Promote the Use of Substitute Substances to Preclude Significant Mission Impact Throughout DoD's Supply Chain		
2.1 Establish where and how reformulated/substitute substances (identified in Objective 3.1) are or may be used in place of critical substances identified in Objective 1.2 and assess the ESOH impacts from their use.	2.1 Annual report of substances in use or planned for use as substitutes (or reformulations) for REACH-regulated substances identified in Objective 1.2 and their ESOH profiles.	• ASD(R&E) • DLA • DASD(ESOH) SERDP/ESTCP • DoD Component (Action Office)
2.2 Leverage the private sector and DoD's RDT&E activities with regard to substitute substances to promote their use and mitigate significant mission or ESOH impacts.	2.2 Annual report describing the substitute substances identified, developed, and integrated in significant mission-impact applications.	
Goal #3: Forecast and Prepare for Potential Disruptions in DoD's Supply Chain Due to the Unavailability of REACH-Regulated Substances in Mission-Critical/Essential Uses.		
3.1 Proactively survey the Defense Industrial Base (DIB) to identify added cost, reformulations/ substitutes, or unavailability for critical substances (identified in Objective 1.2).	3.1 Engage with industry to obtain information regarding potential changes in cost, performance issues, availability and formulation of critical products identified in Objective 1.2, and regarding substitute substances planned or in development; and provide annual tracking of anticipated industry actions for specific products.	• ASD(EI&E) ESOH Directorate • DASD(MIBP) • USEUCOM • DLA
3.2 Compile information on Member States' REACH exemption procedures, points of contact, and history of exemptions in order to reduce impacts on the supply chain.	3.2 Annual report on MSs' exemption procedures, points of contact, and history of exemptions, including substances, uses, status of request, and relevancy to DoD supply chain interests.	
3.3 Address and manage impacts from the added cost, reformulations, or unavailability of mission-critical substances (identified in Objective 1.2).	3.3 Annual report of risk mitigation plans developed to address mission-critical substance risks identified in Objective 2.1.	

Objectives	Metrics	Lead Proponents
Goal #4: Minimize the Impact on the Foreign Military Sales (FMS) Program Due to the Unavailability of REACH-Regulated Substances		
4.1 DSCA monitor FMS cases for customer requirements for REACH compliance.	4.1 Annual report on the number of times REACH has affected FMS sales including loss of sales or added costs.	• DSCA • DoD Component (Action Offices)
4.2 DoD Components seek to accommodate FMS customer requests for "REACH compliance" data on a customer-funded basis.	4.2 Annual report on how REACH has affected foreign customers' requests for REACH compliant systems and their successful delivery.	
4.3 DoD Components seek to accommodate FMS customer requests for substance substitution on a customer-funded basis.	4.3 Annual report on how REACH has affected foreign customers' requests for REACH-compliant substance substitutions and information regarding their funding.	
Goal #5: Ensure Broad Understanding Across DoD Regarding the Implementation of the REACH Strategic Plan		
5.1 Develop, communicate, and implement communication strategies that identify risks associated with REACH, guard against impacts on the DoD supply chain, and reduce impacts on the DoD mission and ESOH.	5.1 Each Lead Organization (or co-leads) develop a communications plan aligned to each of their assigned objectives. The plan should be reviewed and updated, if needed, annually.	• All Organizations having lead responsibility for REACH Strategic Plan objectives

APPENDIX E. DOD DEPARTMENTAL DESCRIPTIONS AND RESPONSIBILITIES

Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))
The USD(AT&L) is the principal staff assistant and advisor to the Secretary of Defense and Deputy Secretary of Defense for all matters concerning acquisition, technology, and logistics. USD(AT&L) responsibilities include establishment of (1) policy for all elements of DoD for acquisition; research and development; developmental testing; contract administration; and logistics, maintenance, and sustainment support; and (2) DoD policy for maintenance of the defense industrial base of the United States.

- **Assistant Secretary of Defense for Research and Engineering (ASD(R&E))**

  The Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) provides science and technology (S&T) leadership throughout DoD, shaping strategic direction and strengthening the research and engineering coordination efforts to meet tomorrow's challenges.

- **Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E))**
  - **Deputy Assistant Secretary of Defense for Environment, Safety, and Occupational Health (ESOH)**
    Responsibilities include DoD policies and programs related to compliance with environmental laws; safety and occupational health; international environmental compliance and cleanup efforts; strategic sustainability planning; planning to address emerging contaminants; and international defense environmental cooperation.
  - **DASD(ESOH) Chemical and Material Risk Management (CMRM) Program**
    The mission of the CMRM Program is to protect readiness, people, and the environment by identifying and managing risks associated with the chemicals and materials DoD uses.
  - **DASD(ESOH) Strategic Environmental Research and Development Program (SERDP)/ Environmental Security Technology Certification Program (ESTCP)**

    The Strategic Environmental Research and Development Program is DoD's environmental science and technology program, executed in partnership with the U.S. Department of Energy and Environmental Protection Agency. The Environmental Security Technology Certification Program is DoD's environmental technology demonstration and validation program.

- **Assistant Secretary of Defense for Logistics and Materiel Readiness (ASD(L&MR))**

  The Assistant Secretary of Defense for Logistics and Materiel Readiness (ASD(L&MR)) serves as the principal staff assistant on logistics and materiel readiness in DoD. In this capacity, the ASD(L&MR) prescribes policies and procedures for the conduct of logistics, maintenance, materiel readiness, strategic mobility, and sustainment support in DoD, including supply, maintenance, and transportation. Additionally, the ASD(L&MR) exercises authority, direction, and control over the Director of the Defense Logistics Agency.

- **Defense Logistics Agency (DLA)**

  DLA Logistics Operations (J3) is responsible for the end-to-end supply chain management of DLA's eight supply chains, providing logistics policy and guidance, and monitoring supply chain performance. DLA J3 serves as the principal strategic, operational, and tactical planner for DLA business operations, championing best business practices, business systems modernization, and value-added logistics solutions for the warfighter.

- **Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy (MIBP)**
  MIBP supports the Office of the Secretary of Defense and Service Acquisition Executives by providing detailed analyses and in-depth understanding of the increasingly global, commercial, and financially complex industrial supply chain essential to our national defense, and recommending or taking appropriate actions to maintain the health, integrity, and technical superiority of that supply chain.

- **Defense Contract Management Agency (DCMA)**
  DCMA works directly with defense suppliers to help ensure that DoD, Federal, and foreign partner government supplies and services are delivered on time and at projected cost, and meet all performance requirements. DCMA professionals serve as "information brokers" and in-plant representatives for military, Federal, and foreign partner government buying agencies—both during the initial stages of the acquisition cycle and throughout the life of the resulting contracts.

    - The mission of the Industrial Analysis Center (IAC), located in Philadelphia, Pennsylvania, is to analyze industrial capabilities continually and identify risks with recommended solutions in support of DoD sustainment of a reliable, technologically superior, cost-effective, sufficient, and resilient defense industrial base. The IAC executes DCMA's Lead Agent responsibility for the Defense Industrial Base (DIB) Sector within the Defense Critical Infrastructure Program (DCIP).

Defense Security Cooperation Agency (DSCA)
DSCA directs, administers, and provides guidance to the DoD Components and DoD representatives to U.S. missions, for the execution of DoD Security Cooperation (SC) programs for which DSCA has responsibility (e.g., Foreign Military Sales Program).

U.S. European Command (USEUCOM)

USEUCOM prepares ready forces, ensures strategic access, deters conflict, supports the North Atlantic Treaty Organization (NATO), strengthens partnerships, and counters transnational threats in order to protect and defend the United States.

- **USEUCOM J4 Directorate of Logistics (ECJ4)**
  Coordinates and synchronizes logistics, health readiness, engineering, and humanitarian support throughout the USEUCOM Area of Responsibility (AOR) in order to optimize Joint and Multinational Forces' ability to accomplish assigned missions successfully.

- **USEUCOM J9 Directorate of Interagency Partnering Directorate (ECJ9)**
  Leads the USEUCOM effort to integrate interagency, academia, NGOs, IOs, and private sector partners to execute the USEUCOM mission more effectively through a "Whole-of-Society" Approach.

APPENDIX F. DOD REACH STEERING COMMITTEE

Chair: ASD(EI&E) ESOH CMRM

Organizations Represented on the Steering Committee:

- Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))
- Assistant Secretary of Defense, Energy, Installations, and the Environment (ASD(EI&E)) Environment, Safety, and Occupational Health (ESOH)
- ASD(EI&E) ESOH Strategic Environmental Research and Development Program (SERDP) / Environmental Security Technology Certification Program (ESTCP)
- ASD for Logistics and Materiel Readiness (L&MR)
- ASD for Research and Engineering (R&E)
- Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy (DASD(MIBP))
- Defense Contract Management Agency (DCMA)
- Defense Logistics Agency (DLA)
- DoD Office of General Counsel (DoDGC)
- Defense Procurement Acquisition Policy (DPAP)
- Defense Security Cooperation Agency (DSCA)
- U.S. European Command (USEUCOM)
- DoD Component (Action Office) (Army, Navy, Air Force, and Marine Corps)

For additional copies, please contact Dr. Patricia Underwood (patricia.m.underwood.civ@mail.mil).

APPENDIX G. ACRONYMS

A&T	Acquisition and Technology
ABCANZ	America/Britain/Canada/Australia/New Zealand
AIA	Aerospace Industries Association of America
ASD	AeroSpace and Defence Industries Association of Europe
ASD	Assistant Secretary of Defense
ASD(A)	Assistant Secretary of Defense for Acquisition
ASD(EI&E)	Assistant Secretary of Defense, Energy, Installations, and the Environment
ASD(L&MR)	Assistant Secretary of Defense for Logistics & Materiel Readiness
ASD(R&E)	Assistant Secretary of Defense for Research and Engineering
ASIC	Air and Space Interoperability Council
AT&L	Acquisition, Technology and Logistics
BEA	Business Enterprise Architecture
BEI	Business Enterprise Integration
CCMD	Combatant Command
CLP	Classification, Labelling, and Packaging
CMRM	Chemical and Material Risk Management
CMRMP	Chemical and Material Risk Management Program
CoRAP	Community Rolling Action Plan
COTS	Commercial Off-The-Shelf
DASD	Deputy Assistant Secretary of Defense
DASD(ESOH)	Deputy Assistant Secretary of Defense for Environment, Safety, and Occupational Health
DASD(MIBP)	Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy
DCIP	Defense Critical Infrastructure Program
DCMA	Defense Contract Management Agency
DDR&E	Director, Defense Research and Engineering
DEFNET	Defense Environmental Network
DGA	Dangerous Goods Advisors
DIB	Defense Industrial Base
DISLA	Defense Infrastructure Sector Lead Agent
DLA	Defense Logistics Agency
DoD	U.S. Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOS	Department of State
DPAP	Defense Procurement Acquisition Policy
DSCA	Defense Security Cooperation Agency
DUSD	Deputy Under Secretary of Defense
DUSD(I&E)	Deputy Under Secretary of Defense for Installations and Environment
EC	Emerging Contaminant
ECGC	Emerging Contaminants Governance Council
ECHA	European Chemicals Agency
EDA	European Defence Agency

EDA	Excess Defense Articles
EESOH-MIS	Enterprise Environmental, Safety, and Occupational Health Management Information System
EINECS	European Inventory of Existing Commercial Chemical Substances
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Enterprise Resource Planning
ESH	Environment, Safety, and Health
ESOH	Environment, Safety, and Occupational Health
ESS	Enterprise Solution-Supply
ESTCP	Environmental Security Technology Certification Program
EU	European Union
FEPP	Foreign Excess Personal Property
FMS	Foreign Military Sales
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GSA	General Services Administration
IAC	Industrial Analysis Center
IPT	Integrated Process/Product Team
ISO	International Standards Organization
IT	Information Technology
ITAR	International Traffic in Arms Regulation
IUCLED	International Uniform Chemical Information Database
JDMTP	Joint Defense Manufacturing Technology Panel
L&MR	Logistics and Materiel Readiness
ManTech	Manufacturing Technology Program
MDA	Missile Defense Agency
MIBP	Manufacturing and Industrial Base Policy
MILDEP	Military Department
MOD	Ministry of Defense
MSDS	Material Safety Data Sheet
MS	Member State
NAEM	National Association for ESH Management
NATO	North Atlantic Treaty Organization
NDIA	National Defense Industry Association
nm	Nanometer(s)
NMCC	National Movement Control Center
NMWG	Nanomaterials Working Group
OEM	Original Equipment Manufacturer
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
PBT	Persistent, Bioaccumulative, and Toxic
PEO	Program Executive Office
PEO Ammo	Program Executive Office Ammunition
PM	Program Manager
R&D	Research and Development
R&E	Research and Engineering

RDT&E	Research, Development, Test, and Evaluation
REACH	Registration, Evaluation, Authorisation and Restriction of Chemical Substances
RMO	Risk Management Option
RoHS	Restriction of Hazardous Substances
SDS	Safety Data Sheet
SERDP	Strategic Environmental Research and Development Program
SIEF	Substance Information Exchange Forum
SME	Subject Matter Expert
SROC	Senior Readiness Oversight Council
SVHC	Substance of Very High Concern
TSCA	Toxic Substances Control Act
UN	United Nations
U.S.	United States
USD	Under Secretary of Defense
USEU	U.S. Mission to the EU
USEUCOM	U.S. European Command
USNATO	U.S. Mission to NATO
USTRANSCOM	U.S. Transportation Command
vPvB	Very Persistent and Very Bioaccumulative