



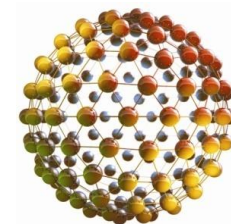
European Union (EU) Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

An Enterprise-wide Approach to Managing DoD Mission Impacts

October 24, 2016



Patricia Underwood, Ph.D., DABT, MBA
Patricia.m.underwood.civ@mail.mil
OASD(EI&E), ESOH Directorate





What is REACH?

Acquisition, Technology and Logistics

- Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
 - EU regulation (EC/1907/2006)
 - Came into force 1 June 2007
- Complex and evolving regulation that has yet to be fully implemented
- Shift in responsibility

Pre-REACH: Public authorities must prove a chemical is *unsafe*.



Post-REACH: Industry must prove a chemical is *safe* before it may enter the market.

- REACH applies to (almost) all chemicals and chemical products, and even certain articles containing or made from chemicals that are manufactured in or imported into the EU



Significance of REACH To DoD



Acquisition, Technology and Logistics

- REACH has the potential to impact availability or use of commercial products in Europe
- Most probable first impacts include:
 - Obsolescence or limited access to DoD mission-critical substances.
 - System performance and Environment, Safety & Occupational Health (ESOH) risks due to undisclosed substitutions by manufacturers.
 - Improperly classified, labeled, or packaged commercial shipments within Europe could be delayed or impounded.

2016 DoD REACH Strategic Plan



Acquisition, Technology and Logistics

Background

- July 2010, Under Secretary of Defense for Acquisition, Technology and Logistics (USD[AT&L]) issued a memorandum known as the “DoD REACH Strategic Plan”
- Chemical and Material Risk Management Program (CMRMP) 2014 assessment revealed varying degrees of implementation
- U.S. European Command (EUCOM) raised concerns in 2014 regarding the potential mission impacts of REACH
- REACH Working Group was re-established with membership from across the Services and Office of the Secretary of Defense (OSD) components
- REACH Working Group concluded that an update of the REACH Strategic Plan was needed

2016 DoD REACH Strategic Plan

- Finalization imminent
- USD(AT&L) memorandum issued with Plan will direct responsible components to take action as designated in the Plan



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

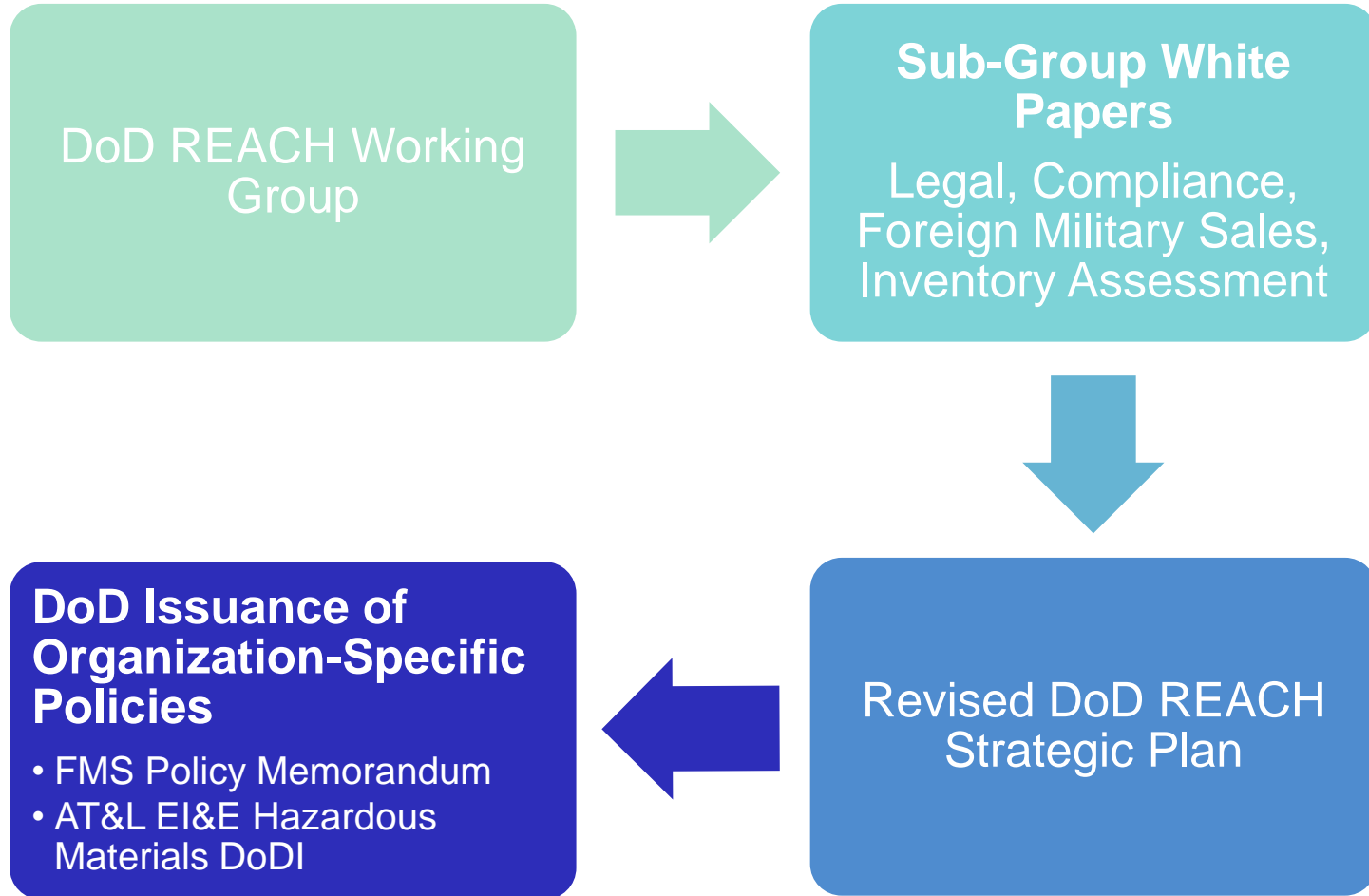
Disclaimer

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.

Developing DoD REACH Policy and Guidance



Acquisition, Technology and Logistics



DoD REACH Strategic Plan Goals



Acquisition, Technology and Logistics



DoD Enterprise-wide Process to Identify, Assess, and Mitigate Risks



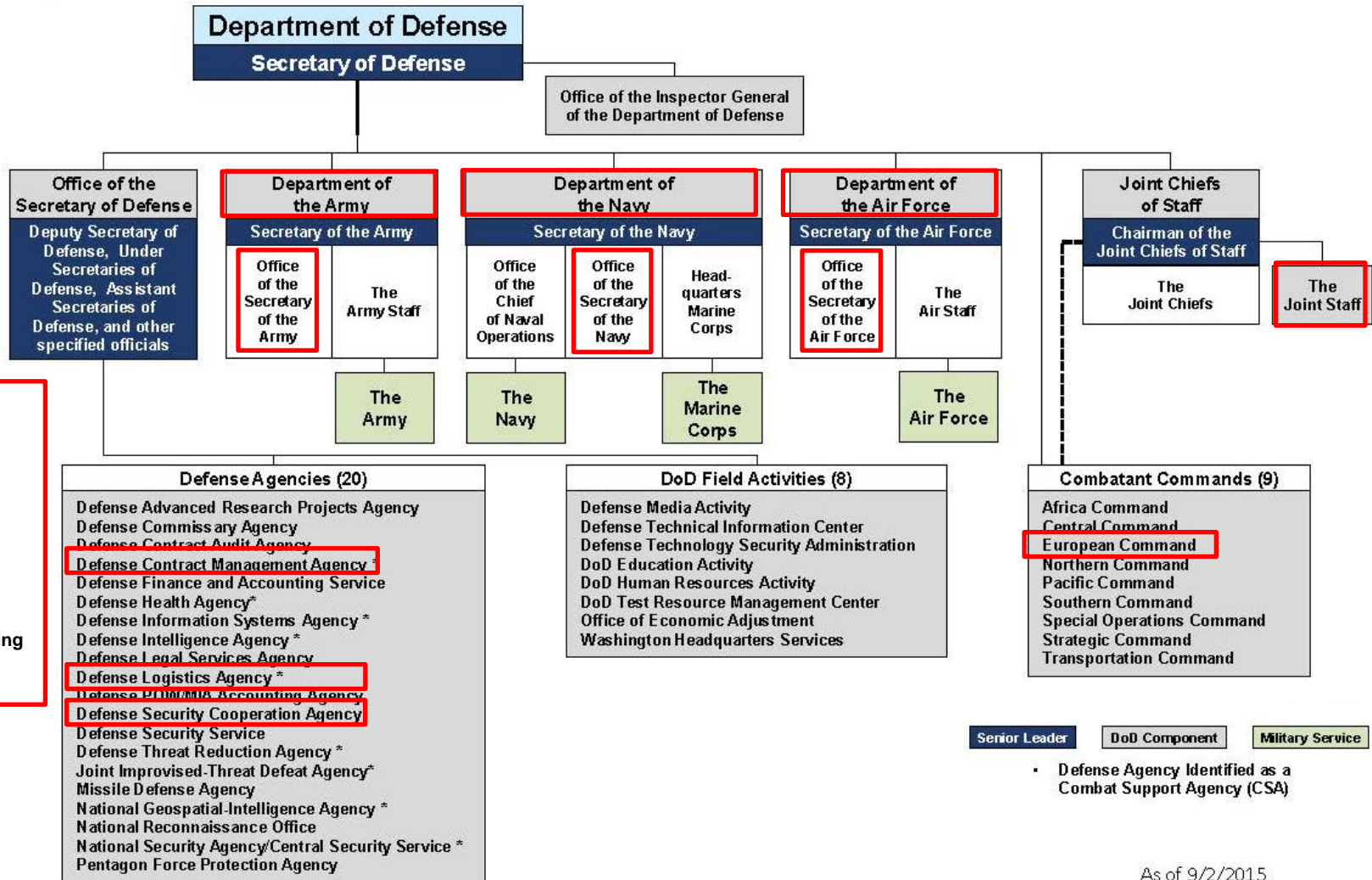
Acquisition, Technology and Logistics



DoD Organizations with REACH Strategic Plan Responsibilities



Acquisition, Technology and Logistics



As of 9/2/2015



DoD Actions Supporting Each Goal

Acquisition, Technology and Logistics

Maintain access to mission-critical materials

- Identify new chemicals under regulation
- Conduct annual risk assessment to ID mission-critical products or uses
- Develop and obtain DoD executive level endorsement of risk management actions
- Disseminate policies and supporting data through common business enterprise integration

Ensure performance and promote the use of substitutes

- Identify substitutes and status of use
- Manage the potential for system performance and ESOH impacts from use of substitute products

Prepare for supply chain disruptions when substitutes are not available

- Engage with defense industrial base to determine potential for obsolescence, increased costs, or decrements in performance
- Engage with European Ministries of Defense regarding potential for military exemptions
- Implement risk mitigation plans to address mission-critical substance/material risks

Reduce impacts to Foreign Military Sales (FMS)

- Identify impacts from REACH on FMS to include customers requests for REACH-compliant systems or REACH-compliant substance substitutions.

REACH Impact on Maintenance and Operations of Military Transport Systems



Acquisition, Technology and Logistics



Candidate List

- Orthoboric Acid
- Ethylene Glycol Dimethyl Ether
- Dibasic Lead(II) Phosphate
- Dimethelacetamide
- Borates, Tetra, Sodium Salts, Pentahydrate
- Lead Monoxide
- Phenol, Dimethyl-, Phosphate(3:1)
- Cobalt Chloride
- Phenolphthalein
- N-Methyl-2-Pyrrolidone

Authorisation List, Annex XIV

- Potassium Zinc Chromate Hydroxide
- Chromium(VI) Trioxide
- Chromic Acid, Chromium(3+) Salt(3:2)
- Chromic(VI) Acid
- Sodium Chromate(VI)
- Strontium Chromate
- Chromic Acid H2CR207
- Sodium Dichromate

*Specific Applications?
Annual Use Rate?*

List of Restricted Substances

- Paraisonylphenol (Nonylphenol $C_6H_4(OH)C_9H_{19}$)
- Benzene
- Cadmium
- Methylene Chloride
- 4,4'-Methylenediphenyl diisocyanate
- Toluene
- Cyclohexane
- Diethylene Glycol Monomethyl Ether

*Conditions of Restrictions?
Does the restriction apply
to industrial use?*

Managing REACH Risks: Air Force Mobility Aircraft

C-130, KC-135, C-20, etc.



Acquisition, Technology and Logistics



Authorisation List, Annex XIV

Strontium Chromate (2019 sunset) – 306 lbs, mostly primer

Sodium Dichromate (2017 sunset) – 4 lbs, windshield sealant

Sodium Chromate (2017 sunset) – 1 lb, paint stripper

REACH Restricted List, Annex XVII

None of the current restrictions apply to Mobility Aircraft uses

Candidate List

1-bromopropane (n-propyl bromide)

N,N-dimethylacetamide

Boric acid (Orthoboric acid)

1-Methyl-2-pyrrolidone (NMP)

Phenolphthalein

Sodium tetraborate pentahydrate, Cobalt dichloride, Lead

monoxide (lead oxide), 2-(2H-benzotriazol-2-yl)-4,6-

ditertpentylphenol (UV-328), Disodium tetraborate, anhydrous, 2-

Ethoxyethanol

Inventory Assessment is Crucial to Managing Risk

- **Plan A:** Implement substitutes for authorized/restricted chemicals where possible
 - Implementing non-chromate primer
 - Evaluating commercially available non-chromate windshield sealant
 - Exploring non-chromate “Stripper 7”
- **Plan B:** If substitution is impossible, avoid commercial shipments and LN workplaces
 - Actively monitor “candidate” chemicals for regulatory and market developments

Example: 1-Methyl-2-Pyrrolidone (NMP)



Acquisition, Technology and Logistics

- REACH-proposed restriction for NMP would impact manufacturing, and all industrial and professional uses of the substance where workers' exposure exceeds a level specified in the restriction. Status – pending decision.
- DoD uses of NMP
 - Substitute for methylene chloride
 - Heated immersion paint stripping of mission-critical parts prior to non-destructive inspection (e.g., aircraft landing gear)
 - Solvent in hexavalent chromium-free aircraft conversion coatings
 - Minor—but critical—constituents in bonding primers, sealants, and adhesives



Immersion Paint Stripping Tank (Photo: M. Huber, DoDREC9 PM, brief to Cal EPA & DTSC, 27 Oct 2014.)

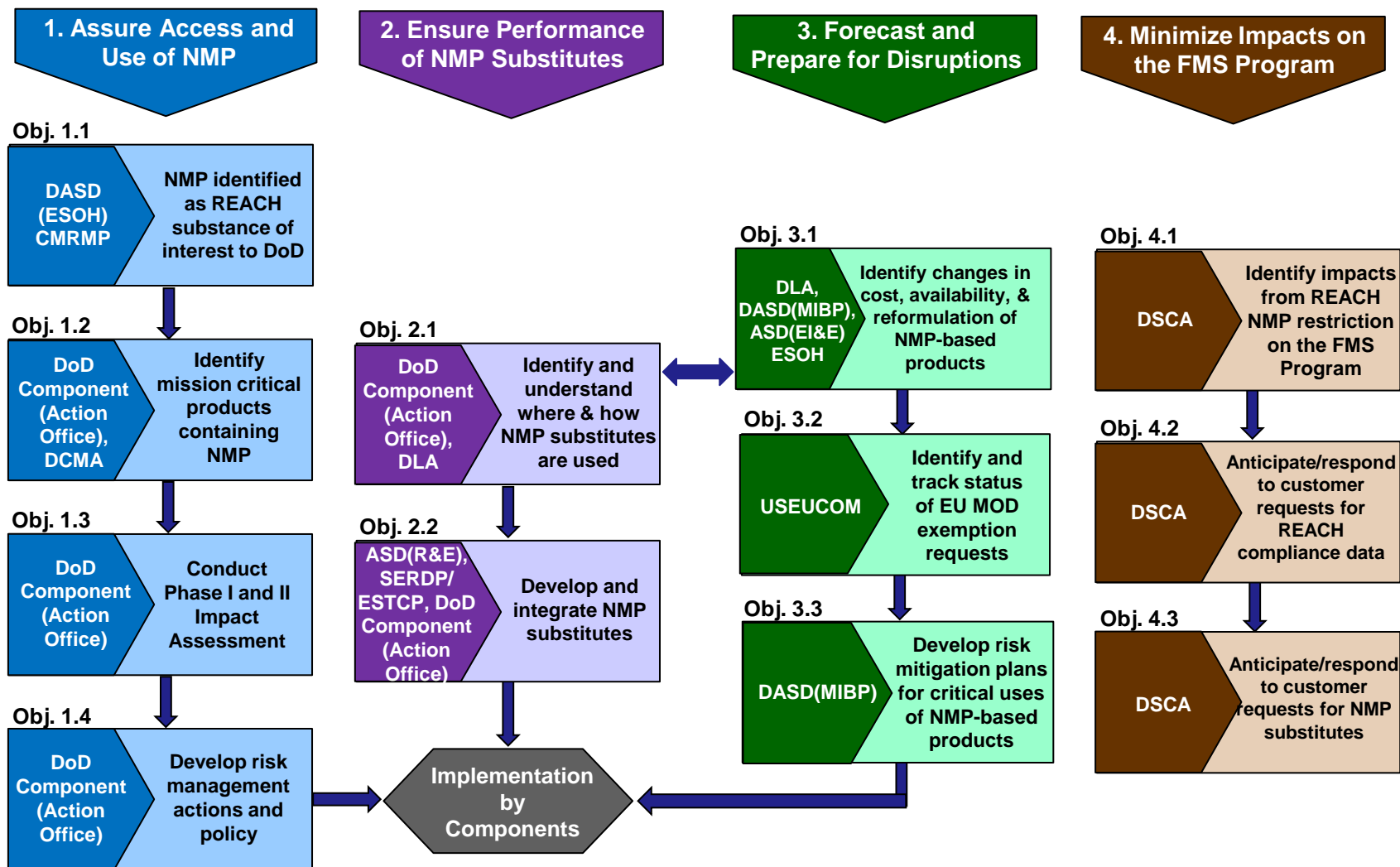
Example: Identify, Assess, and Mitigate Risks



Acquisition, Technology and Logistics

Goal 5

COMMUNICATION



Next Steps



Acquisition, Technology and Logistics

- Formal coordination complete with full concurrence
- Staff memorandum and Strategic Plan for review and signature by USD(AT&L) Mr. Frank Kendall
- Request review and sign-off of staffing package by ASD(EI&E)
- Final issuance will trigger implementation kick-off meeting with REACH Steering Committee
- CMRMP will conduct annual reviews to evaluate implementation, determine effectiveness of objectives, and update/revise the plan accordingly

Backup Slides



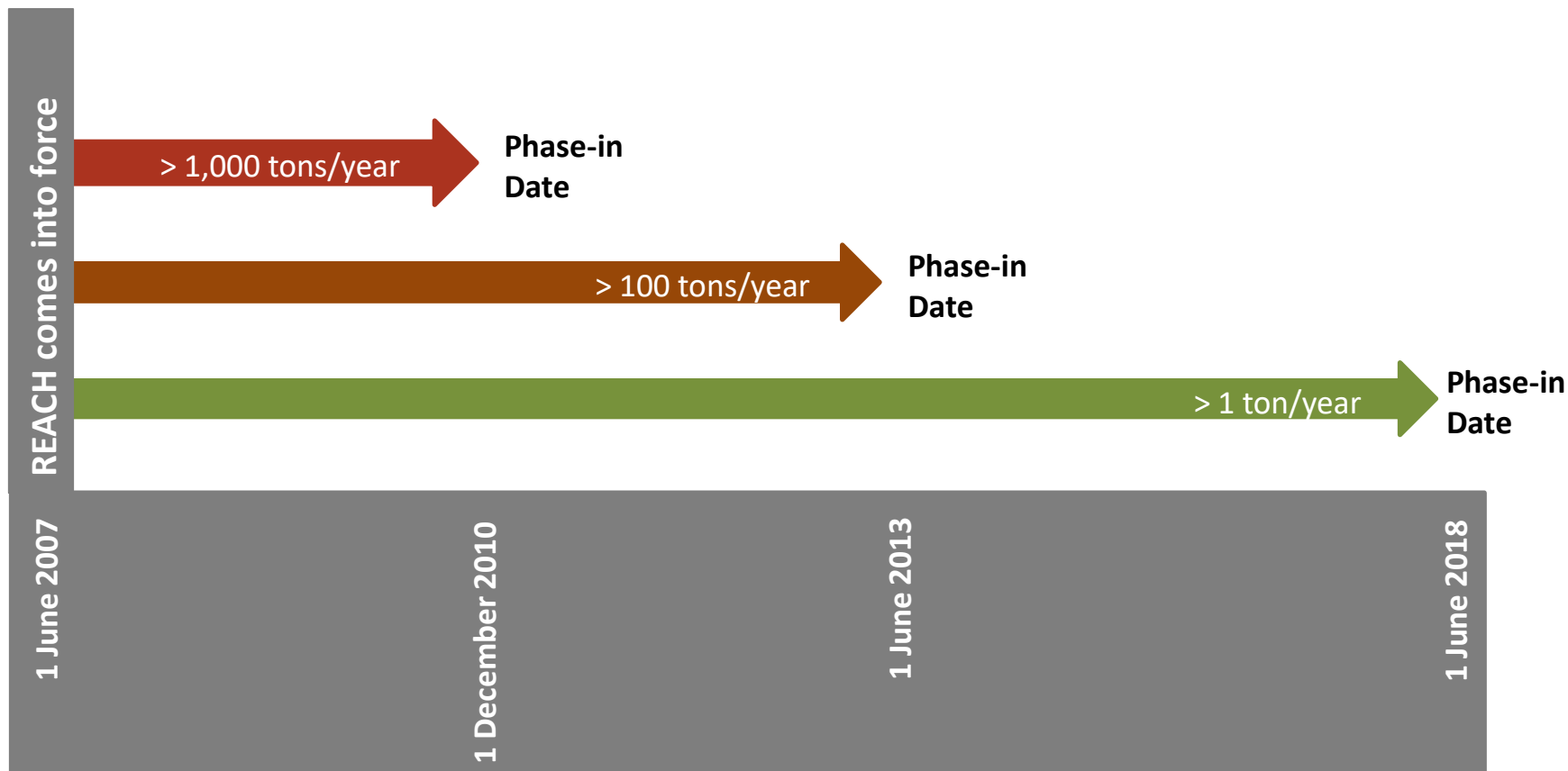
Acquisition, Technology and Logistics



Implementation Timeline

Acquisition, Technology and Logistics

- Substances are “phased in” based on tonnage
- REACH registration requirements are not mandatory until the phase-in date occurs



REACH Annex XIV Authorisation List



Acquisition, Technology and Logistics

Substance Name	CAS Number	Sunset Date
5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene)	81-15-2	08/21/2014
4,4'-Diaminodiphenylmethane (MDA)	101-77-9	08/21/2014
Benzyl butyl phthalate (BBP)	85-68-7	02/21/2015
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	02/21/2015
Dibutyl phthalate (DBP)	84-74-2	02/21/2015
Diisobutyl phthalate (DIBP)	84-69-5	02/21/2015
Diarsenic pentaoxide	1303-28-2	05/21/2015
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2	05/21/2015
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8	05/21/2015
Diarsenic trioxide	1327-53-3	05/21/2015
Lead chromate	7758-97-6	05/21/2015
Hexabromocyclododecane (HBCDD), alpha-hexabromocyclododecane, beta-hexabromocyclododecane, gamma-hexabromocyclododecane	3194-55-6, 25637-99-4, 134237-50-6, 134237-51-7, 134237-52-8	08/21/2015
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	08/21/2015
Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	08/21/2015
Trichloroethylene	79-01-6	04/21/2016
Acids generated from chromium trioxide and their oligomers, including: Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid.	7738-94-5, 13530-68-2	09/21/2017
Ammonium dichromate	7789-09-05	09/21/2017
Chromium trioxide	1333-82-0	09/21/2017
Potassium chromate	7789-00-6	09/21/2017
Potassium dichromate	7778-50-9	09/21/2017
Sodium chromate	7775-11-03	09/21/2017
Sodium dichromate	7789-12-0, 10588-01-9	09/21/2017