From the
Chemical & Material Risk Management Program,
Office of the Under Secretary of Defense for Acquisition and Sustainment

Chemical & Material Emerging Risk Alert

Decabromodiphenyl Ether (DecaBDE)

The Toxic Substances Control Act (TSCA), amended on 22 June 2016, identified decaBDE as a persistent, bioaccumulative, and toxic (PBT) chemical that the U.S. Environmental Protection Agency (EPA) must expedite the elimination of.[1] The final rule prohibiting all manufacturing (including importing), processing, and distribution of decaBDE and decaBDE-containing products or articles was issued on 6 January 2021 and became effective on 5 February 2021.[2] This risk alert serves to notify DoD Program Managers of this prohibition and that EPA is adopting phase-out deadlines for certain uses.

What Is DecaBDE?

Decabromodiphenyl ether (decaBDE) is a persistent, bioaccumulative, and toxic (PBT) chemical and also a member of a class of polybrominated diphenyl ether (PBDE) flame retardants that are added to plastics, textiles, and other materials to retard combustibility. When fire occurs, these PBDEs utilize vapor-phase chemical reactions that interfere with the combustion process, thus delaying ignition and inhibiting the spread of fire.[3]

How Is DecaBDE Used in the United States?

Many historical uses have been, or are being, phased out. Current, verified domestic uses include textiles (curtains), rubber casings for wire and cable, and building and construction materials. DecaBDE is currently produced in the United States but U.S. manufacturers and importers have been voluntarily phasing out the domestic manufacture and import of decaBDE since December 31, 2013.[4] Preliminary data for the 2016 Chemical Data Reporting (CDR) period indicated that the total volume of domestic manufacture/import of decaBDE in 2015 was less than 25,000 lbs (down from between 500,000 to 100,000 lbs in 2013).[5] The Chemical Abstracts Service Registry Number (CASRN) for decaBDE is 1163-19-5.

How Is DecaBDE Used in the DoD?

The U.S. Department of Defense (DoD) does not have any confirmed ongoing mission critical uses of decaBDE; however, many aerospace vehicles[6] and automotive vehicles[7] have parts made with decaBDE, and in many cases decaBDE is used to meet various flame-retardant standards. Comments received in response to the proposed rule prohibiting PBTs issued in 2019 indicate that all production of new automotive vehicles with decaBDE-containing parts will have ceased prior to 2 February 2021 and all production of new aerospace vehicles with decaBDE-containing parts will cease within a three year timeframe.[8] However, decaBDE-containing replacement parts will be needed over the course of a vehicle's life span to meet flame-retardancy standards. The transition to alternatives for those replacement parts will require verification to meet those standards. The final rule includes targeted phase-out periods, described below, to accommodate these replacement parts.

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What Is Commerce?

Under TSCA Section 3(3), ‘‘commerce’’ is defined as “trade, traffic, transportation, or other commerce (a) between a place in a State and any place outside of such State, or (b) which affects trade, traffic, transportation, or commerce described in clause (a).”

What Is the Emerging Health Risk?

EPA’s 2014 update to the TSCA Work Plan for Chemical Assessments states that decaBDE has developmental toxicity and aquatic toxicity, high environmental persistence, high bioaccumulation potential, and high hazard potential.[9] EPA was directed to expedite risk management per Section 6(h) of TSCA and issue a final rule within four and a half years of TSCA’s amendments (by December 2020), and a risk evaluation was not required. Further, there were no existing risk assessments or determinations of risk. Therefore, the regulatory measures addressed in the final rule focus on reducing exposures ‘‘to the extent practicable’’ as opposed to reducing risk from any determined unreasonable risks to human health.

EPA’s Regulatory Authority under TSCA

EPA is using two of the risk management options available under Section 6 of TSCA, prohibition and recordkeeping. The final rule prohibits manufacturing and processing of decaBDE or decaBDE-containing products or articles after 8 March 2021, and prohibits distribution in commerce of decaBDE or decaBDE-containing or products or articles after 6 January 2022, with the exception of certain recycling processes and distribution, and requires recordkeeping from all persons who manufacture, process, or distribute in commerce decaBDE or decaBDE-containing products or articles. For the uses that are not immediately prohibited, EPA established the following phase-out schedules for potentially DoD-pertinent uses.[10]

1. After 6 January 2023, there will be a prohibition on all processing and distribution in commerce of decaBDE for use in wire and cable insulation in nuclear power generation facilities, and decaBDE-containing wire and cable insulation.

2. After 8 January 2024, there will be a all prohibition on all manufacturing, processing, and distribution in commerce of decaBDE for use in parts installed in and distributed as part of new aerospace vehicles, and the parts to which decaBDE was added for such vehicles.

3. After the end of all aerospace vehicles’ service lives, there will be a prohibition on all importing, processing, and distribution in commerce of:
   (a) Aerospace vehicles manufactured before 8 January 2024 that contain decaBDE in any part.
   (b) DecaBDE for use in replacement parts for aerospace vehicles, and the replacement parts to which decaBDE was added for such vehicles.

4. After the end of all motor vehicles’ service lives or 2036, whichever is earlier, there will be a prohibition on all manufacturing, processing, and distribution in commerce of decaBDE for use in replacement parts, and replacement parts that contain decaBDE.

5. After the end of all plastic shipping pallets’ service lives, there will be a prohibition on all distribution in commerce of these pallets that contain decaBDE and were manufactured prior to 8 March 2021.

What Should Be Done in Response to this Alert?

1. Program Managers utilizing decaBDE-containing parts or materials should prepare for the full phase-out of decaBDE throughout their supply chains within the time frames specified above.

2. Program Managers should, when possible, inventory all installed/past decaBDE-containing parts and materials on their systems.

3. Program Managers should, when possible, ensure that decaBDE-free alternative replacement parts are available and mandate the replacement of any decaBDE-containing parts whenever those parts are in need of replacement.

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[1] TSCA Section 6(b)(2)(A), 15 U.S.C. § 2605(b)(2)(A).

[2] Decabromodiphenyl Ether (DecaBDE); Regulation of Persistent, Bioaccumulative, and Toxic Chemicals Under TSCA Section 6(h) (6 Jan. 2021).

[3] EPA, Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal: Decabromodiphenyl Ether (2017).

[4] EPA, Exposure and Use Assessment of Five Persistent, Bioaccumulative, and Toxic Chemicals (Dec. 2020).

[5] *See* note 2.

[6] Neither TSCA nor any of the final PBT rules define "aerospace vehicle." Once EPA issues further guidance on the official definition under TSCA, DoD will update this risk alert as necessary.

[7] Neither TSCA nor any of the final PBT rules define "motor vehicle." Once EPA issues further guidance on the official definition under TSCA, DoD will update this risk alert as necessary.

[8] 86 Fed. Reg. 880, 888 (6 Jan. 2021).

[9] TSCA Work Plan for Chemical Assessments: 2014 Update (Oct. 2014).

[10] On 16 March 2021, EPA published in the *Federal Register* a request for comments on many aspects of the five PBT rules, including decaBDE (86 Fed. Reg. 14398). If EPA chooses to make any amendments after receiving comments, DoD will have the opportunity to review and comment through the interagency process. EPA may also choose to issue further guidance.