EPA Rulemaking on the Fire Retardant DecaBDE

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Vendor Town Hall Meeting

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U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Agenda

- DecaBDE & its uses, including by the Nuclear Industry
- Domestic Rulemaking & Impacts to the Nuclear Industry
- Nuclear Regulatory Commission's (NRC) Interactions with Environmental Protection Agency (EPA) & Department of Energy (DOE)
- Questions

DecaBDE

- Decabromodiphenyl ether (DecaBDE)
- One chemical in the family of Polybrominated Diphenyl Ethers (PBDEs)
- Commercialized in 1970s.
- Utilized for:
  - Fire Retardant Qualities
  - Chemical Stability
  - Low Cost and Availability
- Used In:
  - Foams, Plastics, Rubbers, & Resins
  - Textiles
  - Electronic Equipment
  - Building/Construction Materials
  - Aerospace and Motor Vehicle Parts
  - Electrical Cabling

Presence of compound and formulation within products may be treated as proprietary by processors and manufacturers.

Uses in the Nuclear Industry

Components:

- Cabling (Saytex 102E)
- Components containing cabling
- Other items with Fire Retardant Requirements

Qualification Criteria:

- IEEE 323 Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations
- IEE 383 Standard for Qualifying Electric Cables and Splices for Nuclear Facilities
- Environmental Qualification

Categories of Cabling:

- Low Voltage
- Medium Voltage
- Coaxial

EPA Rulemaking & Impacts

EPA Rulemaking:

- Toxic Substance Control Act (TSCA) (15 USC 2601 & 40 CFR 751)
- Initiated rulemaking in 2020
- Manufacture was banned in January 2021
- Processing and distribution for wire and cable insulation in nuclear power generation facilities was banned in January 2023
- Additional Import and Export restrictions exist in 40 CFR 751.
- EPA released an enforcement statement on May 2, 2023.
- Proposed updated rule planned for November 2023, with a final rule planned for September 2024.

Many states have adopted their own legislation regarding DecaBDE (21 of 50). Predominately, these regulations focus on consumer and children's products.

EPA Rulemaking & Impacts

Impacts to Nuclear Industry:

- Unable to “manufacture” the chemical DecaBDE.
- Unable to “process” (build) items containing DecaBDE.
- Unable to “distribute” (repair/replace) items containing DecaBDE.
  - Example items include cabling and components containing cabling (i.e. Motor Operated Valve, Motor Control Center, sensors)
  - End User Exemption applicable to Licensees
- RSCC received specific relief through a Consent Agreement and Final Order (CAFO) on May 1, 2023.
- EPA’s Enforcement Statement, release on May 2, 2023, give relief more broadly.

EPA Enforcement Statement

- Released on May 2, 2023
- "EPA does not intend to pursue enforcement actions for certain violations of the decaBDE rule and TSCA, where such violations allow for use in nuclear power generation facilities, as long as the entities involved are diligently seeking to qualify their alternative products in accordance with Nuclear Regulatory Commission (NRC) regulations and guidance and meet other conditions of this enforcement statement."
- EPA does not intend to pursue enforcement for:
  - Processing and distributing of DecaBDE-containing wire and cable insulation
  - Recordkeeping for items containing DecaBDE
  - Any related for using for commercial purposes a chemical manufactured, processed, or distributed in violation of TSCA.

NRC's Interactions

Date	Parties	Discussion
January 11, 2023	NRC/EPA	Initial meeting and discussion regarding EPA rulemaking and impact on RSCC.
January 30 – February 3, 2023	NRC/NUPIC	IQVB representative attended NUPIC meeting and received additional information and background regarding impacts to DecaBDE rulemaking.
February 1, 2023	NRC/EPA	Email requesting response to specific questions.
February 6, 2023	NRC/EPA	Meeting with EPA providing discussion and questions around rulemaking and maintenance impacts.
February 22, 2023	NRC/EPA	Meeting with EPA to seek additional clarification on EPA interpretation and possible rulemaking actions.
February 27, 2023	NRC/DOE	Initial meeting and discussion with DOE regarding EPA rulemaking and impacts to nuclear industry.
March 7, 2023	NRC/DOE	Meeting with DOE to discuss current understanding, extent of impact, and coordination efforts with EPA.
March 8, 2023	NRC/EPA	Meeting with EPA to seek additional clarification on EPA interpretation and possible rulemaking actions.
March 28, 2023	NRC/EPA	Meeting with EPA to provide status on responses and receive clarification on EPA interpretations.
March 30, 2023	NRC/DOE	Meeting with DOE to discuss current coordination efforts with EPA.
March 31, 2023	NRC/EPA	Letter from NRC answering specific EPA questions and discussing impact of rulemaking transmitted to EPA.
May 1, 2023	EPA/RSCC	EPA released a Consent Agreement and Final Order (CAFO) for RSCC and allowing continued production of cabling containing DecaBDE for the nuclear industry while suitable replacements are qualified.
May 2, 2023	EPA	EPA released an Enforcement Statement giving temporary relief for the use of cabling containing DecaBDE for the nuclear industry while suitable replacements are being qualified. This enforcement statement is a bridging measure to new rulemaking.
May 15, 2023	NRC/EPA	NRC staff held a short call with EPA to ask specific questions related to the CAFO and Enforcement Statement for clarification and understanding.

Questions

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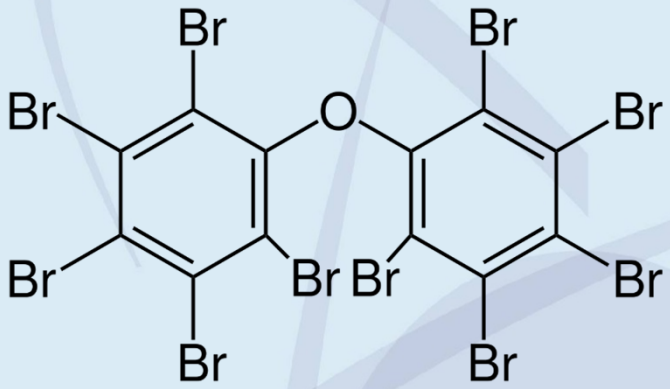
DecaBDE

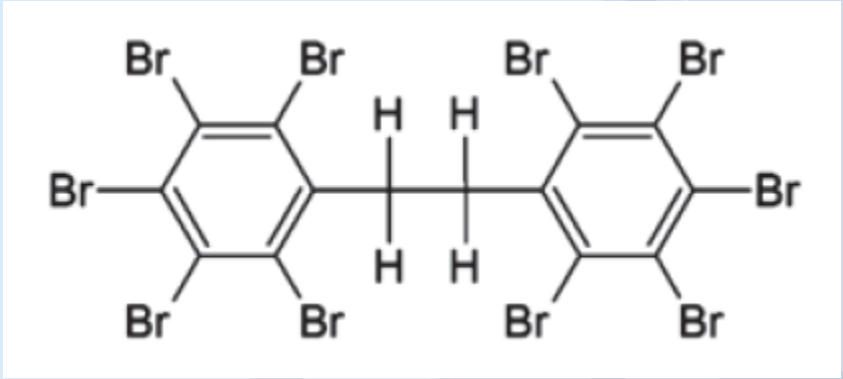
- Chemical Name: Decabromodiphenyl ether (DecaBDE)
- Chemical Formula: $C_{12}Br_{10}O$
- Belongs to a group of Polybrominated Diphenyl Ethers (PBDEs)
- Commercialized in 1970s.
- Present in Saytex102E
- Used in products for:
  - Fire Retardant Qualities
  - Chemical Stability
  - Low Cost and Availability



- Presence of compound and formulation within products may be treated a proprietary by processors and manufacturers.
- Alternative substances with similar performance have been identified since 1990. Their use has increased due to industry led voluntary emission controls & phase-outs, state laws, and international standards.

Replacement for DecaBDE

- Chemical Name: Pentabromophenyl
- Chemical Formula: $H_4C_{14}Br_{10}$
- SAYTEX® 8010 flame retardant has very good thermal stability and high bromine content, which makes it a prime candidate for high temperature applications. It exhibits good UV resistance and is therefore suitable for use in many applications requiring color stability. SAYTEX® 8010 flame retardant is not acutely toxic, teratogenic or harmful to fish. SAYTEX® 8010 flame retardant can be used in the formulation of products meeting European dioxin ordinances.



Hazards related to DecaBDE

- All PBDEs have the concern of persistence, bio-accumulation, and potential for long-range environmental drift.
- Hazards presented from this compound include carcinogenicity, developmental toxicity, repeated dose toxicity, and aquatic toxicity.
- Exposures may come from airborne dust, direct skin contact with contaminated dust, or ingestion of contaminated food or drinking water. This exposure are complicated by bio-accumulation and persistence.
- The benefit of fire retardant qualities of this substance are mitigated by the availability of related substances with similar performance characteristics and costs.

EPA Direction regarding DecaBDE

40 CFR 751.405 DecaBDE

(c) ***Recordkeeping.***

(1) After March 8, 2021, all persons who manufacture, process, or distribute in commerce decaBDE or decaBDE-containing products or articles must maintain ordinary business records, such as invoices and bills-of-lading related to compliance with the prohibitions, restrictions, and other provisions of this section.

Purchase Orders

- Must be maintained for a period of three years.
- Must include a statement that the Deca-BDE containing products or articles are in compliance with 40 CFR 751.405(a).
- Must be available to EPA within 30 calendar days upon requests.
- These requirements have a direct implication on the required contents for nuclear purchase orders.