U.S. Consumer Product Safety Commission
MEETING LOG

PRODUCT: Not applicable

SUBJECT: Organohalogen Flame Retardants (OFRs)

DATE OF MEETING: 2/12/2020

LOCATION: CPSC, 5 Research Place and via internet

LOG ENTRY SOURCE: Michael A. Babich

DATE OF LOG ENTRY: 2/12/2020

CPSC ATTENDEE(S): Michael Babich, Charles Bevington, Xinrong Chen, Kristina Hatlelid, Barbara Little

NON-CPSC ATTENDEE(S): Ben Gann, American Chemistry Council (ACC); Judah Prero, ACC; Kimberly White, ACC; Joe Charbonnet (via web), Green Science Policy Institute (GSP); Seth Fernandez, GSP (via web); Kathryn Rogers, Silent Spring Institute (via web)

MEETING SUMMARY:

Dr. White (ACC) gave a brief presentation (slides are attached) on the CPSC staff's risk assessment of subclasses of OFRs and the recommendations of the National Academies of Science, Engineering, and Medicine's (NASEM) report on *A Class Approach to Hazard Assessment of Organohalogen Flame Retardants*. Dr. White's presentation included two possible approaches, based on either product class or chemical class. The presentation was followed by questions from the staff and a general discussion. Questions from the staff included whether ACC could provide assistance in obtaining information on uses of different types of OFRs.

PRESENTATION FOR THE U.S. CONSUMER PRODUCT SAFETY COMMISSION

CONSIDERATIONS FOR CPSC FLAME RETARDANT REVIEW

February 12, 2020

American Chemistry Council

Agenda

NAFRA: Resource for Flame Retardant Information

Ongoing Federal Agency Risk Evaluations of Flame Retardants

Notable Take-aways from NASEM Flame Retardant Report

Potential Considerations for CPSC Evaluation of Flame Retardants

NAFRA: Resource for Flame Retardant Information

NAFRA Overview

Leading producers of flame retardants used in wide variety of industrial & consumer applications

- Represents cutting edge fire-safety chemistry & technology
- Dedicated to improving fire safety performance in product applications
- Sponsors scientific research and evaluations to improve understanding of flame retardants

2019 NAFRA Sponsored Publications

- Blais, M. S., Carpenter, K., & Fernandez, K. (2019). Comparative Room Burn Study of Furnished Rooms from the United Kingdom, France and the United States. Fire Technology, 1-26.
- Hays, S. M., & Kirman, C. R. (2019). Biomonitoring Equivalents (BEs) for tetrabromobisphenol A. Regulatory Toxicology and Pharmacology, 102, 108-114.
- Kacew, S., & Hayes, A. W. (2019). Absence of neurotoxicity and lack of neurobehavioral consequences due to exposure to tetrabromobisphenol A (TBBPA) exposure in humans, animals and zebrafish. Archives of toxicology, 1-8.

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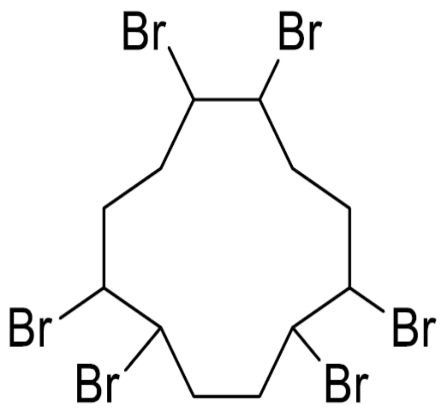
Ongoing Federal Agency Risk Evaluations of Flame Retardants

CONSIDERATIONS FOR CPSC FLAME RETARDANT REVIEW
FEBRUARY 12, 2020

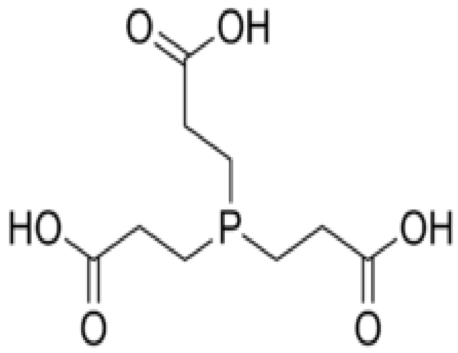
Ongoing and Recently Initiated EPA Risk Evaluations

Cyclic Aliphatic Bromide Cluster



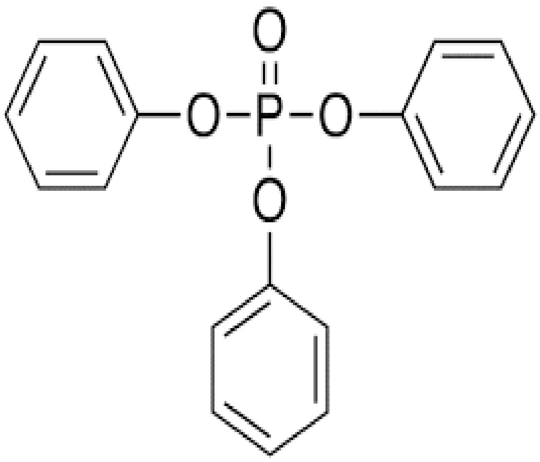
HBCD

Tris(2-chloroethyl) phosphate



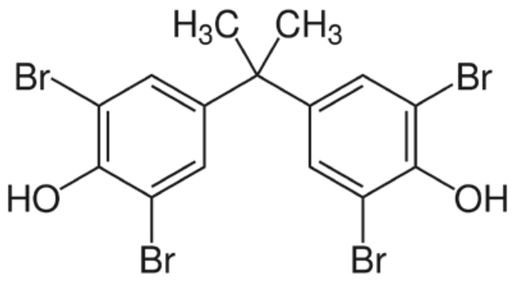
TCEP

Phosphoric acid, triphenyl ester



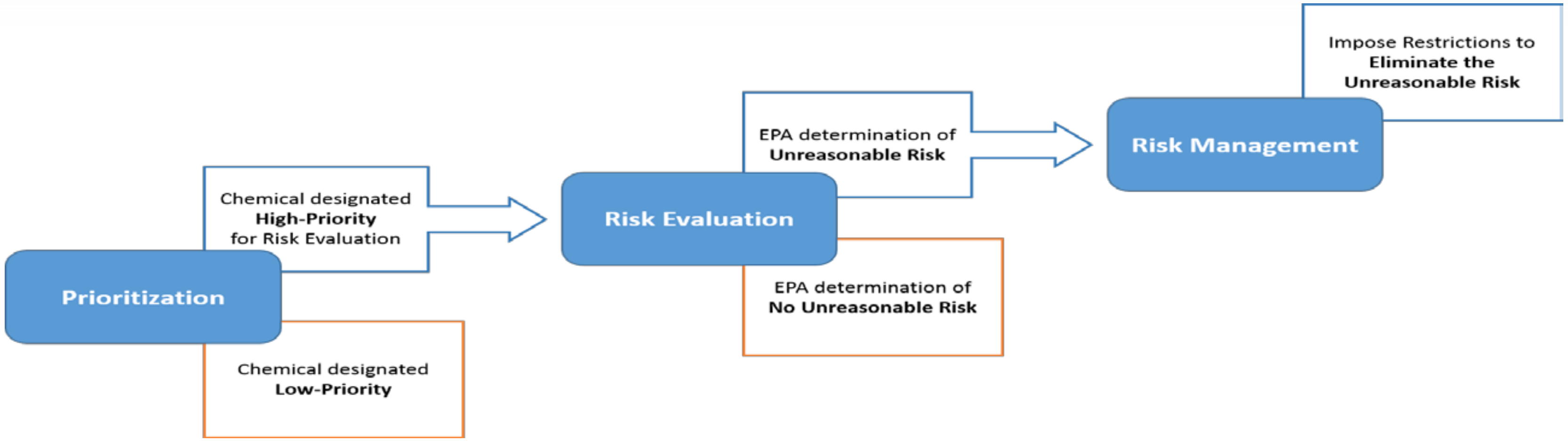
TPP

4,4'-(1-Methylethylidene)bis[2, 6-dibromophenol]



TBBPA

Components of EPA TSCA Risk Evaluations



Notable Take-aways from NASEM Flame Retardant Report

CONSIDERATIONS FOR CPSC FLAME RETARDANT REVIEW
FEBRUARY 12, 2020

Notable Take-Aways from NASEM Report

Can OrganoHalogen Flame Retardants (OFRs) Be Evaluated as a Single Class?

- The NASEM committee determined that they cannot
- Determination was made by creating an inventory of 161 OFRs and then identifying analogues on the basis of chemical structure, physical and chemical properties, toxicology data and predicted bioactivity information to facilitated hazard characterization

Notable Take-Aways from NASEM Report

Proposed Subclass Approach

- ❑ Identified commonly occurring core features of OFRS
- ❑ Grouped the OFR inventory into eight structural classes on the basis of predicted biologic activity; then used additional information to identify 14 OFR categories
- ❑ Focused on conducting a hazard assessment for OFRs

Potential Limitations of the NASEM Approach

- Criteria and selection of "anchor" chemical in relation to other chemicals grouped in a particular subclass
- Differences in toxicity and environmental impacts of chemicals grouped into a particular subclass
- Understanding of In Vitro Data (i.e. ToxCast) demonstrating activation but not necessarily indicative of adverse effects

Potential Limitations of the NASEM Approach

- Incorporation/Consideration of exposure Information
- Understanding and differentiation between OFR uses and applications (i.e. non-polymeric vs. additive vs. reactive)
  - Different level of exposure patterns
  - Different compounding and component specifications

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Key Considerations in CPSC Evaluation of Flame Retardants

FHSA Designation of A Hazardous Substance

Identifying a Substance as Hazardous Under the FHSA:

- ❑ Product must have potential to cause substantial personal injury or substantial illness during or as a result of any customary or reasonable foreseeable handling or use, including reasonably foreseeable ingestion by children

EXPOSURE \ TOXICITY	Low Toxicity	Mild Toxicity	High Toxicity
Low Exposure	MINIMAL RISK	MILD RISK	MODERATE RISK
Medium Exposure	MILD RISK	MODERATE RISK	SUBSTANTIAL RISK
High Exposure	MODERATE RISK	SUBSTANTIAL RISK	HIGH RISK

Potential Approaches/Considerations for CPSC

APPLICATION BASED APPROACH

- Focus on a specific product application based on:
  - Fire safety risk
  - Highest potential for human health exposure
  - Available and relevant toxicology data
- Identify relevant subclasses of substances applicable to the product category
  - Exclude polymeric substances
  - Exclude reacted substances
  - Closely consider/evaluate the relevance of “anchor” chemical to other chemicals in subclass and anticipated risk

Potential Approaches/Considerations for CPSC

APPLICATION BASED APPROACH

- Calculate a Safe Reference Dose based on available data
- Determine confidence in reference dose and applicability to other chemicals in subclass
- Generate a Margin of Exposure/Margin of Safety Estimate to determine if increased risk exist
- Identify risk management recommendations if warranted by available data

Potential Approaches/Considerations for CPSC

TOXICOLOGY BASED APPROACH

- Focus on specific NASEM Subclasses based on:
  - Increased fire safety risk
  - Most data rich
  - Highest potential for human health risk
  - Exclude polymeric substances or reacted substances that are in the subclasses
  - Closely consider/evaluate the relevance of "anchor" chemical to other chemicals in subclass and anticipated risk

Potential Approaches/Considerations for CPSC

TOXICOLOGY BASED APPROACH

- ❑ Calculate a Safe Reference Dose Based on Available Data
- ❑ Determine confidence in reference dose and applicability to other chemicals in subclass
- ❑ Generate a Margin of Exposure/Margin of Safety Estimate to determine if increased risk exist
- ❑ Identify risk management recommendations if warranted by available data

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North American Flame Retardant Alliance