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Flame Retardants Face Increasing Federal and State Scrutiny

Both the federal and state governments are closely studying and regulating the use of flame retardants and products containing flame retardants, due to a variety of concerns. This alert presents background on the use of flame retardants to meet flammability standards, and then reviews regulatory actions taken by the Environmental Protection Agency (EPA) and the Consumer Product Safety Commission (CPSC) in restricting the use of certain halogenated flame retardants. It also provides a [survey](#) of state restrictions on specific flame retardants.

BACKGROUND ON FLAME RETARDANTS

The use of flame retardants in the United States has increased significantly over the past few decades, with demand projected to expand six percent annually through 2016 to 1.1 billion pounds per year.¹ Flame retardants are chemicals intended to save human lives by delaying the combustion of products in a fire. They are used in a wide range of products, from furniture and children's cribs to electronics and building insulation. Their use is attributable to flammability standards for products. In 1975, California adopted the most stringent flammability standards in the country, which have become the *de facto* national standards. The standards require mattresses and upholstered furniture to meet an open-flame flammability test established in Technical Bulletin 117 (TB 117).² To comply with the standards, manufacturers often incorporate flame retardants into their products.

Since 1975, various health and environmental concerns have been raised about some flame retardants. EPA, CPSC, and a number of states have expressed concern about the use of certain flame retardants, particularly in children's products, and have taken regulatory actions to manage human exposure to these chemicals. In 2012, controversy about flame retardants flared with a series of articles published by the *Chicago Tribune* that alleged that flame retardants are not particularly effective and that the flame retardant industry had used deceptive tactics in promoting the use of flame retardants.³

In 2012, the Governor of California directed the Bureau of Electronics and Appliance Repair, Home Furnishings and Thermal Insulation (BEARHFTI) to revise the testing criteria that underlie TB 117.⁴ In 2013, the BEARHFTI issued new standards in Technical Bulletin 117-2013, which replaced the open-flame test with a smolder test.⁵ Under the new standards, it is expected that use of flame retardants will be reduced or, in some cases, eliminated. The new version of TB 117 will go into effect on January 1, 2015, and may impact the use of flame retardants in a wide range of products.

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ENVIRONMENTAL PROTECTION AGENCY

Over the past decade, EPA has focused attention on the following flame retardants: polybrominated diphenyl ethers (PBDEs), hexabromocyclododecane (HBCD), and chlorinated phosphate esters, which include tris(1,3-dichloro-2-propyl) phosphate (TDCPP), tris(2-chloroethyl) phosphate (TCEP), and tris(1-chloro-2-propyl) phosphate (TCPP). Beginning with PBDEs, EPA has taken measures under the Toxic Substances Control Act (TSCA) to regulate the manufacture and processing of these chemicals.

A. Polybrominated Diphenyl Ethers

In 2003, EPA began monitoring the use of pentaBDE and octaBDE, which were then commonly used as flame retardants in textiles, plastics, wire insulation, and automobiles. EPA's initiatives followed the decision by the sole U.S. manufacturer of pentaBDE and octaBDE to voluntarily phase-out the production of those flame retardants by the end of 2004.⁶ In 2006, EPA promulgated a significant new use rule (SNUR) under section 5 of TSCA to ensure that EPA would be informed of any new use of pentaBDE or octaBDE and have an opportunity to restrict that use if appropriate.⁷ Under section 5, after EPA makes a determination that a use of a chemical substance is a significant new use, no person may manufacture or process the substance unless the person provides a significant new use notice (SNUN) to EPA 90 days before the person manufactures or processes the substance for that significant new use.⁸ After reviewing the SNUN, EPA can regulate the substance if it finds that the substance may present an unreasonable risk of injury to health or the environment.

In 2009, the only two U.S. producers and the largest importer of decaBDE committed to end their production and importation of decaBDE by the end of 2013.⁹ In addition, EPA developed an action plan for PBDEs which called for adoption of a SNUR for decaBDE and a new assessment to discuss alternatives to decaBDE.¹⁰ In January 2014, EPA's Design for the Environment Program (DfE) issued the final alternatives assessment, which provides detailed information of the relative risks associated with 29 potential alternatives to decaBDE.¹¹

In 2012, EPA proposed to amend the 2006 SNUR and adopt a test rule for PBDEs under TSCA.¹² This proposed SNUR would subject imported articles containing pentaBDE and octaBDE to the SNUN submission requirement. It would also designate any manufacture, importation, or processing of decaBDE, including in an article, after December 31, 2012 (December 31, 2013 for military and transportation equipment) as a significant new use. The proposal includes a test rule on pentaBDE, octaBDE, and decaBDE in the event that the manufacturing, processing, and importing of these chemicals, and articles containing them, do not cease by the end of 2013. The proposed SNUR depends upon existing uses of PBDEs becoming "new," *i.e.*, it anticipates that uses ongoing at the time of proposal will cease by the time the final rule is issued. However, it is not clear if or when those uses will end and thus become "new." EPA has predicted that it will issue a final SNUR and final test rule in October 2014.

Most recently, in June 2014, DfE issued a draft update of a 2005 alternatives assessment on flame retardants used in flexible polyurethane foam.¹³ The update provides new information on the health and environmental profiles of various flame retardants and addresses new data on pentaBDE alternatives.

B. Hexabromocyclododecane

HBCD is a flame retardant that is commonly used in the construction industry as insulation for buildings and in textiles for upholstery and military fabrics. In 2010, EPA issued an action plan for HBCD that called for a proposed SNUR and an alternatives assessment to encourage industry to use alternative flame retardants with less health and environmental risk.¹⁴ The action plan identified several prospective actions, including the adoption of a SNUR.

In 2012, EPA proposed a SNUR for HBCD that would require any person intending to manufacture or process HBCD to submit a SNUN before using HBCD in consumer textiles.¹⁵ The SNUR would exempt uses for consumer textiles in motor vehicles but would include imported articles that contain HBCD. EPA expects to issue the final rule by October 2014.

In June 2014, DfE issued a final report on flame retardant alternatives to HBCD.¹⁶

C. Chlorinated Phosphate Esters and Other Flame Retardants

EPA has also sought to gather more information on other flame retardants through its chemical safety program under TSCA. In 2012, as part of the TSCA Work Plan, EPA identified 83 chemicals, with only a few of them being flame retardants, for further testing and assessment.¹⁷ These chemicals, among which was antimony trioxide, were chosen based on their toxicity, bioaccumulation, persistency, potential health risks, uses in children's products, and

neurotoxicity. Since then, EPA has added a number of flame retardants to the list: TCEP, 2-ethylhexyl ester 2,3,4,5-tetrabromobenzoate (TBB), HBCD, and (2-ethylhexyl)-3,4,5,6 tetrabromophthalate (TBPH).¹⁸ In December 2012, EPA issued a draft risk assessment of antimony trioxide, which is used as a synergist to reduce the amount of flame retardants needed to meet safety standards.¹⁹ Antimony trioxide is used in a wide variety of consumer products, from wires to mattress covers. The draft assessment preliminarily concluded that the risks posed by antimony trioxide were negligible for water- or sediment-dwelling organisms.

EPA is now in the process of conducting risk assessments that focus on TCEP, TBB, and TBPH, each of which represents a different category of chemicals.²⁰ The results from the assessments on each of those chemicals will provide a basis for understanding the group of chemicals and inform the agency on whether further testing is necessary. For example, TCEP is the representative of the chlorinated phosphate esters, which include TDCPP and TCPP.

EPA is also collecting data, specifically environmental fate information, on eight other flame retardants because it believes it has insufficient data to conduct risk assessments: tetradecabromo-1,4-diphenoxybenzene; 1,2 bis(penetabromophenyl) ethane (DBDPE); 1,2-bis(2,3,4,5,6-pentabromophenoxy) ethane; 1,2-bis (2,4,6-tribromophenoxy) ethane (TBE); 2,4,6-tris-(2,4,6-tribromophenoxy)-1,3,5-triazine; benzene,1,3,5-tribromo-2-(2,3-dibromopropoxy) (DPTE); and two confidential chemicals.²¹ EPA indicated that in addition to those chemicals, another flame retardant, tetrabromobisphenol A (TBBPA), may be chosen in the future if it ranks sufficiently high enough to warrant further analysis.

CONSUMER PRODUCT SAFETY COMMISSION

Under the Flammable Fabrics Act (FFA), CPSC is tasked with developing and implementing flammability standards that will protect the public against unreasonable risk.²²

CPSC has adopted or proposed flammability standards for many products, including mattresses, mattress pads, and furniture. In recent years, it has increasingly discussed the risks and benefits of using flame retardants to meet those flammability standards. In 1977, pursuant to the Federal Hazardous Substances Act,²³ CPSC banned tris-treated children's garments, specifically the sale of any children's clothing containing the flame-retardant chemical tris (2,3-dibromopropyl) phosphate, due to a study by the National Cancer Institute showing carcinogenic risks of the chemical in animals.²⁴

In 2006, CPSC promulgated a rule imposing flammability standards for mattress sets.²⁵ In the preamble to the rule, CPSC addressed the potential health risks associated with flame retardants. It concluded that there are flame retardants that manufacturers are free to choose that would not pose any risks to consumers, workers, or the environment. The preamble also mentioned the work CPSC had done in conjunction with EPA to study and evaluate the potential risks. In responding to comments specifically concerned about PBDEs, CPSC stated that the rule would not pose risks associated with hazardous flame retardants because (1) octaBDE was never used on mattresses, (2) pentaBDE was being phased out and virtually no longer in use, and (3) "[decaBDE] used in barriers for mattresses is not expected to pose any appreciable risk of health effects to consumers."²⁶

In 2008, CPSC proposed a flammability standard for residential upholstered furniture that would require manufacturers and importers to certify that the article of upholstered furniture complies with the standard.²⁷ Responding to comments expressing concerns about the health risks of using flame retardants, CPSC concluded that the rule would not require the use of flame retardants. It stated that while the use of flame retardants on fabrics would not be prohibited, it anticipated that flame retardant fabrics would be the least likely means of compliance with the proposed rule, since many fabric suppliers had indicated that they would either use inherently flame retardant fabric or flame retardant barriers. The rule has not been finalized.

Most recently, CPSC held a meeting on April 25, 2013 to discuss the impacts of flame retardants and other flammability standards and technologies, such as fire retardant barriers.²⁸

STATE REGULATION

Over the past decade, several states have imposed their own restrictions on various flame retardants to eliminate PBDEs and chlorinated phosphate esters from products, with some focusing exclusively on children's products. A [chart](#) of state regulation accompanies the alert.

A recent study by the Department of Ecology of Washington concluded that the use of PBDEs has decreased

dramatically in various products.²⁹ The report found a significant presence of chlorinated phosphate esters, HBCD, and TBBPA in many product samples and recommended further testing on children's foam furniture and other chemicals such as triphenyl phosphate (TPP), Firemaster 550, and other brominated flame retardant alternatives.

A. Polybrominated Diphenyl Ethers

Since 2003, twelve states and the District of Columbia have imposed various bans on pentaBDE, octaBDE, and/or decaBDE. California began this trend by banning the manufacture, processing, or distribution of any product containing more than 0.1 percent of pentaBDE or octaBDE. Subsequently, a number of other states imposed the same restrictions. Specifically, from 2004 to 2012, the District of Columbia,³⁰ Hawaii,³¹ Illinois,³² Maine,³³ Maryland,³⁴ Michigan,³⁵ Minnesota,³⁶ New York,³⁷ Oregon,³⁸ Rhode Island,³⁹ Vermont,⁴⁰ and Washington⁴¹ enacted legislation that banned products containing a certain concentration of pentaBDE or octaBDE. The District of Columbia,⁴² Maine,⁴³ Maryland,⁴⁴ Oregon,⁴⁵ Vermont,⁴⁶ and Washington⁴⁷ also ban the sale, distribution for sale, or retail sale of mattresses, upholstered furniture, electronics, and/or transportation equipment that contains more than 0.1 percent of decaBDE. Those laws have some exemptions, such as for used products. Other states that have considered but not yet enacted similar legislation concerning PBDEs include Missouri, New Jersey, and North Carolina.

B. Chlorinated Phosphate Esters

Some states have also restricted the quantities of chlorinated phosphate esters in children's products. Those chemicals include TCEP and TDCPP. Since 2011, Maryland,⁴⁸ New York,⁴⁹ and Vermont⁵⁰ have banned any children's product that contains more than 0.1 percent of TCEP. Maryland and Vermont also have banned children's products containing more than 0.1 percent of TDCPP. In 2014, New York's State Assembly passed legislation that would ban TDCPP in children's products, but the legislative session ended before it was signed into law. Vermont enacted legislation in 2014 that lists TDCPP, TCEP, HBCD, and decaBDE as chemicals of high concern to children.⁵¹ This listing creates disclosure requirements for manufacturers of children's products that use those chemicals at concentrations equal or greater than 100 parts per million in Vermont. Alaska, Connecticut, Illinois, Maine, Nevada, and Washington have considered but not enacted similar legislation.

CONCLUSION

With governmental interest in flame retardants showing no signs of abating, federal and state governments are likely to increasingly scrutinize the use of flame retardants in products. EPA has already taken steps to regulate new uses for commercial pentaBDE and octaBDE, and it expects to finalize the proposed SNURS for some flame retardants by the end of this year. The risk assessments conducted by EPA and the increased discussion of flame retardants by CPSC in the establishment of flammability standards evince a focused effort by the federal government in gathering more data and better understanding the use of flame retardants in products. At the state level, as several states have considered bills this year dealing with restrictions on flame retardants, more states are expected to do so in the 2015 legislative session.

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¹ [THE FREEDONIA GROUP, FLAME RETARDANTS: US INDUSTRY STUDY WITH FORECASTS FOR 2016 & 2021, at 4 \(2012\).](#)

² [CAL. BUS. & PROF. CODE § 19161; Cal. Department of Consumer Affairs, Technical Bulletin 117 \(2000\).](#)

³ [Patricia Callahan, Sam Roe, & Michael Hawthorne, *Playing with Fire*, CHI. TRIB. \(2012\).](#)

⁴ [BUREAU OF ELEC. & APPLIANCE REPAIR, HOME FURNISHINGS & THERMAL INSULATION, TECHNICAL BULLETIN 117-2013: FREQUENTLY ASKED QUESTIONS \(FAQs\) 1 \(2014\).](#)

⁵ [CAL. CODE REGS. TIT. 4, § 1374; BUREAU OF ELEC. & APPLIANCE REPAIR, HOME FURNISHINGS & THERMAL INSULATION, TECHNICAL BULLETIN 117-2013: REQUIREMENTS, TEST PROCEDURES & APPARATUS FOR TESTING THE SMOLDER RESISTANCE OF MATERIALS USED IN UPHOLSTERED FURNITURE \(2013\).](#)

⁶ [EPA, FURNITURE FLAME RETARDANCY PARTNERSHIP: ENVIRONMENTAL PROFILES OF CHEMICAL FLAME-RETARDANT ALTERNATIVES FOR LOW-DENSITY POLYURETHANE FOAM, at i \(2005\).](#)

⁷ Certain Polybrominated Diphenylethers; Significant New Use Rule, 71 Fed. Reg. 34,015 (Jun. 13, 2006).

- 8 Toxic Substances Control Act § 5(a), 15 U.S.C. § 2604(a).
 9 [DecaBDE Phase-out Initiative, EPA.](#)
 10 [EPA, POLYBROMINATED DIPHENYL ETHERS \(PBDEs\) ACTION PLAN, at 1 \(2009\).](#)
 11 [EPA, AN ALTERNATIVES ASSESSMENT FOR THE FLAME RETARDANT DECABROMODIPHENYL ETHER \(DECABDE\) \(2014\).](#)
 12 Certain Polybrominated Diphenylethers; Significant New Use Rule and Test Rule, 77 Fed. Reg. 19,862 (Apr. 2, 2012).
 13 [EPA DESIGN FOR THE ENVIRONMENT, FLAME RETARDANTS USED IN FLEXIBLE POLYURETHANE FOAM: AN ALTERNATIVES ASSESSMENT UPDATE \(2014\).](#)
 14 [EPA, HEXABROMOCYCLODODECANE \(HBCD\) ACTION PLAN 1 \(2010\).](#)
 15 Significant New Use Rule for Hexabromocyclododecane and 1,2,5,6,9,10-Hexabromocyclododecane, 77 Fed. Reg. 17,386 (Mar. 26, 2012).
 16 [EPA DESIGN FOR THE ENVIRONMENT, FLAME RETARDANT ALTERNATIVES FOR HEXABROMOCYCLODODECANE \(HBCD\) \(2014\).](#)
 17 [TSCA Work Plan Chemicals, EPA.](#)
 18 [EPA, TSCA WORK PLAN CHEMICALS 1, 3 \(2012\).](#)
 19 [EPA, TSCA WORKPLAN CHEMICAL RISK ASSESSMENT: ANTIMONY TRIOXIDE 9 \(2012\).](#)
 20 [List of Chemicals for Assessment, EPA.](#)
 21 [2013 EPA TSCA Work Plan & Action Plan Risk Assessments & Data Collection Activities, EPA.](#)
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 23 15 U.S.C. § 1261 *et seq.*
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 25 Standard for the Flammability (Open Flame) of Mattress Sets, 71 Fed. Reg. 13,472 (Mar. 15, 2006).
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 27 16 C.F.R. pt. 1633; Standard for the Flammability of Residential Upholstered Furniture, 73 Fed. Reg. 11,702 (Mar. 4, 2008).
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 37 N.Y. ENVTL. CONSERV. LAW § 37-0111 (2004).
 38 OR. REV. STAT. § 453.085(16) (2009).
 39 R.I. GEN. LAWS § 23-13.4-3 (2008).
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 46 VT. STAT. ANN. TIT. 9, § 2973 (2009).
 47 WASH. REV. CODE § 70.76.020 (2007).
 48 MD. CODE ANN., HEALTH-GEN. § 24-306 (2014).
 49 N.Y. ENVTL. CONSERV. LAW § 37-0705 (2011).
 50 VT. STAT. ANN. TIT. 9, § 2974 (2013).
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