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COMPETITIVE ENTERPRISE INSTITUTE
Advancing Liberty from the Economy to Ecology

PUBLIC COMMENT TO THE CONSUMER PRODUCT SAFETY COMMISSION

RE: Petition HP 15-1 Requesting Rulemaking on Products Containing Organohalogen Flame Retardants

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I offer these comments on behalf of the Competitive Enterprise Institute (CEI), a free-market public policy organization dedicated to the principles of free enterprise and limited government. As a senior fellow at CEI, I focus on chemical risk issues. I urge you to reject the petition asking the Consumer Product Safety Commission (CPSC) to ban all organohalogen flame retardant chemicals for uses in infant and toddler products (car seats excluded), upholstered furniture sold for home use, mattresses, mattress pads, and in the plastic casing of all electronic devices.[1]

My comments detail numerous reasons why CPSC should reject this petition, and key points include:

- Because not all organohalogens are the same, banning this entire class of chemicals makes no scientific sense.
- Evidence is scant that trace human exposures to organohalogens through consumer products pose a substantial public health risk, while fire risks are real, verifiable, and substantial.[2]
- Although there is on ongoing debate about the efficacy of flame retardants in certain applications, there is sufficient research and data to demonstrate that organohalogens provide benefits in many applications and have the potential for valuable new uses in the future.
- The U.S. Environmental Protection Agency (EPA) is already evaluating the safety of these products and other flame retardant chemicals under a number of initiatives.
- Banning even a limited number of uses of an entire category of flame retardant chemicals is not only unscientific and unwarranted, it will eliminate currently valuable uses and market development of future uses. The regrettable result could be unnecessary and preventable loss of life to fires that expand faster in the absence of these products.

A BIGGER PRESPECTIVE

Before launching into a discussion about particular products, it may be helpful for regulators to step back and consider a bigger perspective about this class of chemicals. The Encyclopedia

Britannica defines organohalogens simply as: "any of a class of organic compounds that contain at least one halogen (fluorine [F], chlorine [Cl], bromine [Br], or iodine [I]) bonded to carbon."[3]

A petition to ban such a large class of chemicals mistakenly assumes that all these chemicals are basically the same and that they all pose unacceptable dangers to humans and wildlife at any level of exposure. Neither claim is accurate. In fact, organohalogens belong to a large class of *both naturally occurring and synthetic* chemicals that have benefits and risks for humans and wildlife. Dartmouth University chemist Gordon Gribble provides some details about the benefits in a 2004 *American Scientist* article titled "Amazing Organohalogens." He provides a perspective that is worth quoting:

> Less well known—even to many scientists—is that nature produces an abundance of similar, and in some cases identical, halogenated compounds, some of which predate the beginning of life on Earth. … Many naturally occurring organohalogens exhibit biological activity that may offer unprecedented benefits to humankind. Vancomycin is a lifesaving antibiotic that is often the last line of defense against multi-drug-resistant bacteria. With respect to mosquito larvae, the chlorinated seaweed metabolite telfairine is as potent an insecticide as the compound lindane (benzene hexachloride), which consumer advocates have criticized because of its suspected toxicity to humans. A chlorinated fungal metabolite called maracen is active against mycobacteria, the cause of tuberculosis, and the chlorine-containing punaglandins, from a South Pacific soft coral, have potent antitumor activity and may soon find clinical use.[4]

Gribble does not claim that all effects are beneficial, and some may be harmful to people and nature at certain exposure levels. But the answer to organohalogen risks does not lie in the elimination of these chemicals (which is not even possible). Rather, we need a deliberative process to manage the risks so we can enjoy the benefits. This petition, on the other hand, attempts to apply a blunt instrument, using mere *hazard* as an excuse to eliminate a wide range of products that have beneficial applications and whose risks can be managed.

HEALTH AND SAFETY OF FLAME RETARDANTS

The primary concern that the Commission must examine when considering banning any product is whether the risks it poses outweigh any benefits it may provide. In this case, flame retardant chemicals are coming under scrutiny largely because of misleading news stories that focus on hazard alone. But hazard is not a good regulatory tool, because *everything* poses a hazard. Therefore, hazard-based standards make regulation arbitrary. Regulations based on risk demand that policymakers employ a scientific process before they remove technologies that have societal benefits. And as it stands now, the science related to trace chemicals in consumer products in general, including flame retardants, does not offer a significant enough case to ban them.

Endocrine disrupters. A key claim of the petitioners is that organohalogens should be banned because they are so-called "endocrine disrupters." Yet there is little evidence that any trace chemicals found in consumer products have a significant impact on endocrine disruption. In reality, trace chemicals found in consumer products and in the environment do not have enough potency to produce any such effects.

Some anti-chemical groups point to the use of the drug diethylstilbestrol (DES) as evidence that chemicals pose endocrine disruption risks. It is true that DES was once associated with higher incidences of reproductive problems. Between 1940 and 1970, many women took DES as a drug to prevent miscarriages. Yet the relevance of these cases to low-level environmental exposures to synthetic chemicals is highly tenuous, as many researchers have pointed out. Toxicologist Stephen Safe notes: "DES is not only a potent estrogen, but it was administered at relatively high doses. … In contrast, synthetic environmental endocrine-disrupting compounds tend to be weakly active."[5]

If weakly active trace chemicals can impact our endocrine systems, then we should really fear Mother Nature, who produces a host of such "disrupters" far more potent than synthetic chemicals.[6] For example, soy and nuts naturally contain such substances that are far more potent and at levels that are tens of thousands of times higher than levels from man-made chemicals.[7] If such endocrine mimicking chemicals were a problem, these foods would be wreaking havoc on human health. But they are not. Instead, these healthy foods contribute to people today living longer, healthier lives than ever before. [8]

Cancer. There is no compelling body of evidence that anyone has ever had an elevated risk of cancer related to trace exposures of synthetic chemicals from consumer products, and that includes flame retardants. In fact, cancer is largely a disease related to aging. While environmental factors play a role, cancer results largely from long-term high levels exposures.

In their landmark 1981 study of the issue, epidemiologists Richard Doll and Richard Peto set out to determine the causes of preventable cancer in the United States. According to Doll and Peto, pollution accounts for 2 percent of all cancer cases, and geophysical factors account for another 3 percent. They note that 80 percent to 90 percent of cancers are caused by "environmental factors." Although activists often use this figure as evidence that industrial society is causing cancer, Doll and Peto explained that environmental factors are simply factors other than genetics—not pollution alone. Environmental factors include smoking, diet, occupational exposure to chemicals, and geophysical factors. Geophysical factors include naturally occurring radiation, man-made radiation, medical drugs, medical radiation, and pollution. Tobacco use accounts for about 30 percent and dietary choices for 35 percent of annual cancer deaths.[9]

Some flame retardants have been listed as "classified carcinogens" by some government agencies, but that does not mean they have ever *caused* cancer. Such classification systems do not tell us anything about *actual risks* because they are hazard-based. They simply indicate that *at some exposure level* and *under some circumstance* a substance *might* increase cancer risk, and even then maybe by an insignificant amount.

For example with the International Agency for Research on Cancer (IARC) classified processed meat as a carcinogen, it explained: "The classification indicates the weight of the evidence as to whether an agent is capable of causing cancer (technically called 'hazard'), but it does not measure the *likelihood* that cancer will occur (technically called 'risk') as a result of exposure to the agent."[10] [Emphasis added]

Classifying substances or activities as "hazardous" is not particularly helpful. For example, walking your dog, when you might slip and fall, and skydiving both present the hazard of bone breakage, but the risks are vastly different. Yet IARC's reasoning could place dog walking and skydiving in the same "hazardous" category. This explains why "smoking tobacco" is listed as a carcinogen along with wood dust, salted fish (Chinese style), and painting houses for a living.[11]

Regulators and consumers should not confuse such classifications with statements about risks, particularly for chemicals in consumer products where exposure appears at trace levels.

Neuro-Developmental Effects. Petitioners also claim that trace exposures to flame retardants from consumer products can produce adverse neurodevelopmental effects. But this area of research is largely inconclusive and plagued with numerous weak and barely "suggestive" studies that do not warrant a regulatory response. Still, petitioners mischaracterize the risk to push for unwarranted regulations.

For example, during a December 9, 2015 CPSC hearing, Maureen Swanson of the Healthy Children Project for the Learning Disabilities Association of America made the following claims: "We are witnessing an alarming increase in neurodevelopmental disorders that cannot be fully explained by changes in awareness or diagnosis." Swanson continued: "In 2000, the National Academy of Sciences stated that environmental factors included exposures to toxic chemicals in combination with genetics contribute to at least a quarter of all neurodevelopmental disorders in the U.S."[12]

Swanson does not provide a source for this claim, but it appears that she is referring to a National Research Council (NRC) report published in 2000. In that report the, NRC notes that that the total frequency of developmental defects is only "vaguely known." NRC did not indicate that such disorders have increased at an alarming rate. And while the number of cases reported may have increased in recent years, there are some not-so-alarming explanations.

For example, in a review of the research on this topic, Eric Fombonne, M.D. of McGill University's Department of Psychiatry finds:

> Although it is clear that prevalence estimates have gone up over time, this increase most likely represents changes in the concepts, definitions, service availability, and awareness of autistic-spectrum disorders in both the lay and professional public.[13]

In regard to autism, Fombonne maintains:

> As it stands now, the recent upward trend in estimates of *prevalence* cannot be directly attributed to an increase in the *incidence* of the disorder. There is good evidence that changes in diagnostic criteria, diagnostic substitution, changes in the policies for special education, and the increasing availability of services are responsible for the higher prevalence figures.[14]

Other analyses of autism also do not report alarming increases. For example, in a review of the epidemiological data for the journal *Psychological Medicine,* researchers reported: "After

accounting for methodological variations, there was no clear evidence of a change in prevalence for autistic disorder or other ASDs between 1990 and 2010. Worldwide, there was little regional variation in the prevalence of ASDs."[15]

Moreover, the NRC report definitive statements about the causes of such developmental problems do not support Swanson's claims. The report states that about 3 percent of developmental problems result from "chemicals and physical agents, including environmental agents." It notes that "it is thought that" environmental factors in combination with genetic predispositions contribute to "*perhaps*"—rather than at least—25 percent of neurodevelopmental problems. Here is the report's statement:

> In all about 3 percent of developmental defects are attributable to an exposure of the mother to chemicals and physical agents, including environmental agents. A much larger faction, perhaps 25%, are thought to be due to multifactorial causes resulting from exposure of genetically predisposed individuals to environmental factors (e.g., infections, nutritional deficiencies and excesses, hyperthermia, ultraviolet radiation, X-rays, and manufactured and natural chemicals.)[16]

It is also worth underscoring that "environmental factors" span a wide range, and chemicals used in consumer products appear to be a very small part of that universe. Many of the items are well known, demonstrated risks to fetal development, such as pregnant women's exposure to infectious agents, nutritional deficiencies, smoking behavior, alcohol consumption, and use of both legal and illegal drugs.

Swanson claims that since the NRC report's release, even more data showing that chemicals and potentially flame retardants are among these serious and dangerous environmental factors. A keyword search and PubMed reveals a number of recent studies reporting associations between certain flame retardant chemicals and human neurodevelopmental health problems. But associations do not prove cause-and-effect relationships, findings are mixed and not all consistent, and sample sizes are often too small to be useful for drawing conclusions. Accordingly, it is misleading to suggest that the body of research is compelling or conclusive. For example, one analysis that reviewed key studies on the topic found that research on the health impacts from flame retardants used in consumer products is merely "suggestive" and that more research is needed before it is reasonable to draw any conclusions. It notes:

> In conclusion, limited epidemiological data, weak and inconsistent associations across studies, lack of comparative and large studies with appropriate exposure assessment in humans and incomplete understanding of biological mechanisms precludes the establishment of a causal relationship when assessing the evidence through conventional epidemiological approaches.[17]

The authors do say there are "biologically plausible associations" between brominated flame retardants and various health effects that *may* be worthy of study. Arguably, however, limited research resources are probably better spent researching more likely causes and potential cures to actual health problems.

REGULATION MAY BE THE REAL PROBLEM

Despite concern expressed by the petitioners that these chemicals are unregulated, organohalogens are already facing regulatory scrutiny and their efficacy is tested in the marketplace. The market and use of these flame retardant products are affected by two broad areas of regulation: one that sets flammability standards that encourages the use of chemical flame retardants and one that regulates the chemicals themselves with the goal of ensuring public health and safety. In addition to federal and state governmental regulations, private certification entities also set flammability standards and safety guidelines.

As the commissioners are aware, two federal agencies have primary authority to regulate flame retardants and their use: The Environmental Protection Agency, which takes the lead on reviewing safety profiles under the Toxic Substances Control Act (TSCA), and the Consumer Product Safety Commission, which takes a lead with setting of certain flammability standards.

It is not necessary for CPSC to issue safety regulations or bans at this time. The EPA is already engaged in intense scrutiny of many flame retardant chemicals. As an agency focused on setting flammability standards, CPSC should be more concerned about overregulation that could undermine consumer safety by eliminating the most valuable, time-tested, and studied flame retardant chemicals on the market. Indeed, the EPA is using hazard-based programs that can push products off the market without sufficient risk assessment.

Consider the evolution of policy and markets related to three Polybrominated Diphenyl Ethers (PBDEs) flame retardants: penta-BDE (used for foam furniture) and octa-BDE (used in plastics for business equipment), and deca-BDE (used in electronics such as television sets). These chemicals are disappearing from the marketplace not because of studies showing actual verifiable risks. Instead, mere hazard-based concerns and the failure of industry to defend its products has enabled the EPA to essentially ban these flame retardant chemicals.

The EPA's first product removal resulted from its 2006 "significant new use rule" (SNUR) for two of the three PBDE flame retardants, penta-BDE and octa-BDE. While the SNUR for these two chemicals does not represent an all-out ban, it effectively keeps the chemicals off the market by eliminating the authorized uses under TSCA. Anyone seeking to use these products in the future is faced with a substantial regulatory hurdle to get new uses approved by the EPA.

The EPA did not take this action because there was some significant or imminent—or any for that matter—public health risk associated with these or other organohalogen chemicals. Rather, the Chemtura Corporation (then called Great Lakes Chemical Corporation) decided in 2004 to phase out these chemicals. According to the EPA, its SNUR is "built on"[18] Chemtura's phase out and does not mean that products using these chemicals pose any risk or concern. On its website, the agency explains:

> [T]he EPA does not believe that there is a need to remove or replace products that may contain these chemicals. EPA has not concluded that PBDEs pose an unreasonable risk to human health or the environment. However, due to growing concerns, EPA believes that

> the phase out and the regulatory action taken in this announcement are useful steps to minimize and ultimately help prevent further exposure to these chemicals.[19]

In 2009, following Chemtura's phase out of penta-BDE and octa-BDE, the EPA pressured two U.S. producers (Chemtura and Albemarle) and one importer (Israel's ICL Industrial Products) of deca-BDE to "voluntarily" phase it out too, ending production and importation by 2013. Having secured that deal, the agency released a proposed SNUR in 2012 to make both domestic manufacturing and imports of all PBDEs subject to new use rules.[20] All of this was done without the EPA examining the weight of evidence about these chemicals' risks versus benefits.

But perhaps the reason the EPA did not want to conduct risk assessments is because that would not give it sufficient power to ban these products. The fact sheet on these chemicals, published by the Agency for Toxic Substances Disease Registry (ATSDR) at the Centers for Disease Control and Prevention (CDC), reveals that none of the PBDEs have been shown to cause any health problems in humans exposed to trace amounts from furniture or other consumer products.[21] Instead, concerns stem from the fact that rodents suffer from health effects when exposed to very high levels, which is of limited relevance to humans exposed to very low levels.[22] There are some concerns about the presence of such chemicals in the human body. But as the CDC has noted, chemicals in the human body are not necessary a cause for alarm. CDC has explained:

> The presence of an environmental chemical in people's blood or urine does not mean that it will cause effects or disease. The toxicity of a chemical is related to its dose or concentration, in addition to a person's individual susceptibility. Small amounts may be of no health consequence, whereas larger amounts may cause adverse health effects. The toxicity of a chemical is related to its dose or concentration in addition to a person's susceptibility.[23]

The EPA is also leveraging its position regarding flame retardant chemicals under the auspices of its hazard-based program now called "Smart Choice," which was originally launched as Design for the Environment DfE.[24] This program has long focused on "voluntary" substitution of "hazardous" chemicals without risk assessment. The agency conducts hazard assessment, demonizes products, and essentially gets industry to voluntarily remove them. That allows the EPA to remove allowed uses under TSCA without having to undergo risk assessment.

In August 2015, DfE released a hazard based "alternatives analysis" for flame retardant chemicals used in flexible foam padding for furniture. It provides hazard information on 19 products (16 chemicals and three mixtures). The alternatives "assessment" does not "assess" risk, but instead complies hazard data for these chemicals.[25] It may allow some of these alternative flame retardants to enter the market. Ironically, after industry conducts its research, gains approvals and incorporates these chemicals into products, the EPA may eventually use the hazard information to pressure for their removal. It is a vicious regulatory cycle.

The EPA's efforts are not limited to regulating PDBEs. It also has initiatives on hexabromocyclododecane (used in insulation, textiles, and fabrics) and is examining a number of

other chemicals as part of its TSCA Work Plan.[26] There is no shortage of federal regulation, although there appears to be a shortage of common sense.

Flammability standards. The Flammable Fabrics Act directs CPSC to set flammability standards for clothing, carpets, and upholstery fabrics for cushions. Such standards strive to impact product design to make consumer products both less prone to ignite and to burn slowly when they do. Ideally, regulators set a standard and then manufacturers can respond with appropriate technologies, but the standards themselves can limit options—including encourage less than ideal product selections. That is the petitioners' legitimate concern in that certain types of standards may have encourage the use of flame retardant chemicals when other, perhaps better options, exist. However, their "solution" of banning an entire category of chemicals is not the answer.

To understand this debate, one needs to understand how fires start and spread. A paper produced by the America Council on Science and Health (ACSH) explains this process:

> Solid materials don't burn directly. In a process known as pyrolysis, heat must first decompose the materials, releasing flammable gases. When these gases burn with oxygen in the ambient air, visible flames appear.[27]

Hence, a fire can spread faster than movement of the initial flames by heating up items inside an enclosed space, which releases the flammable gases and causes items to all ignite simultaneously, a phenomenon known as "flashover." Flame retardants are designed both to prevent a fire from starting, and to prevent or delay flashover so that people have more time to escape.

Flammability standards focus on "open flame" and/or "smoldering" tests and fire experts are debating which one is most appropriate. The "open flame" test first requires that a product not burn when exposed to a small open flame (such as from a candle or a lighter) for a number of seconds, and the second requires that it not ignite when exposed to a smoldering heat source, such as a cigarette, for a number of seconds.

Unfortunately, one's position on chemical flame retardants may cloud this debate because chemicals are more valuable in the "open flame" test than in the smoldering test. As a result, the flammability standard debate is muddied by politics related to both anti-chemical activism and industry advocacy for chemicals.

Under the authority of the Flammable Fabrics Act, CPSC is empowered to set flammability standards for clothing, carpets, and upholstery fabrics. CPSC has set both the open flame standard[28] and a smoldering cigarette standard for mattresses.[29] The Commission should not change its position based on any bias—either against chemicals by activists or in favor of them by industry.

However, if data eventually show that flammability standards should change, regulations should change as well. In an ideal world, such standards would come from a private market of standard-setting organizations that would allow for dynamic responses to improving information and

technology. Until them, CPSC commissioners should strive to make prompt and rational decisions based on science, not special interest pressures.

Recent changes to some of California's flammability standards may have been prompted by anti-chemical activists and resulting "reforms" may not have been based on science. Originally, California passed this standard as Technical Bulletin 117 (TB 117) in 1975, setting a flammability standard for foam padding used for upholstered furniture and mattresses used in homes. Given the size of the California market, this standard had become de facto national standards for many furniture manufactures.

The California Bureau of Electronics and Appliance Repair, Home Furnishings and Thermal Insulation (BEARHFTI) recently revised TB117, in a direct response to controversy about the safety of flame retardant chemicals. Originally, the standard included both open flame and smoldering standards, but was revised in 2013 to eliminate the open flame standard. Without the open flame test, manufacturers could meet the new standard without using chemicals (although chemical flame retardants are still permitted). With a smolder-only test, fabrics and cover fabrics can pass a smolder test without the use of chemical flame retardants.

According to the BEARHFTI, the bureau made these changes to improve the standard. It explains that the original open flame standard focused on exposing the foam or fill materials rather than the fabric covering those materials. But when fire breaks out, it starts burning the overlying fabric and by the time it reaches the foam, the flames are large and, "[o]nce the upholstery cover fabric burns, the foam quickly ignites."[30] The new standard took effect for furniture constructed starting January 2015.

However, not everyone agreed with this change in California's flame retardant law. Fire experts at the National Fire Protection Association disagreed. As *NFRA Journal* reports:

> NFPA's position on the revision is that testing that focuses primarily on smoldering cigarette ignitions misses important aspects of the role upholstered furniture can play in real-world fire scenarios. ….as part of the public comment period for TB 117, NFPA President James Shannon cited a recent NFPA analysis of national statistics on home fire losses related to upholstered furniture. The analysis, conducted by Dr. John Hall, division director of Fire Analysis & Research at NFPA, found that upholstered furniture is the leading item involved in home fire deaths, accounting for 24 percent of all home fire deaths in recent years. (This percentage includes both fires beginning with upholstered furniture and fires that grow and spread primarily through involvement of upholstered furniture.) Of those deaths, 45 percent can be attributed to cigarette ignition. An additional 21 percent can be attributed to flaming ignition from another burning item—typically a larger open flame source—and 10 percent can be attributed to small open flame ignition. Hall's findings are included in the "Upholstered Furniture Flammability" white paper.[31]

There is considerable debate among qualified individuals with expertise in fire engineering about what standards make the most sense. Because CPSC is required by law to set certain

flammability standards, it is reasonable for commissioners to focus on this debate rather than follow activist advice to blindly band an entire category of useful and potentially useful products.

Efficacy Issues. The petitioners are quick to dismiss any benefits associated with flame retardant chemicals used in the consumer products covered by their petition. Yet, there is some debate among industry and fire safety experts as to the extent of benefits. Not surprisingly, industry groups maintain that chemical flame retardants are highly effective at reducing fire risks while anti-chemical activists portray them as useless. The reality probably lies somewhere in the middle, but is clouded by special interest politics.

There is also a legitimate and ongoing debate among individuals within the fire engineering field, two of whom presented at the December CPSC hearing. Vytenis Babrauskas, Ph.D. of Fire Science and Technology, Inc., maintained that while flame retardant chemicals work in laboratory tests, they fail in real life scenarios for several reasons, such as the fact that applications are different in laboratories. He maintains that small flame tests do not reflect how fires actually start. He argued that by the time the fabric is burned off, the fire is already too large and hot for the chemicals on the foam to make any difference.

Babrauskas's claims may be legitimate for some flame retardant chemical applications, but he makes questionable claims about these chemicals' risks. It is also a stretch to suggest that because certain flame retardants may have not worked well in certain circumstances, then no existing or soon-to-be-developed chemicals provide any benefits.

On the other hand, Matthew S. Blais, Ph.D. offered a compelling testimony and video demonstrating the evolution of an open flame fire on a chair. Of course, this was not an "accidental" fire, but despite Babrauskas claim that such tests are not helpful, it demonstrated empirically how flame retardants can slow and even help extinguish a fire.

There are many other documented benefits. In a study on the topic, the American Council on Science and Health maintains that there is plenty of evidence that flame retardants work in many applications:

> A study of the safety benefits of decaBDE and other brominated flame retardants (BFRs) in the U.S. found that an estimated 190 lives are saved annually because of the use of these flame retardants in television cabinets alone. Their use in electrical wire/cable insulation is estimated to save an additional 80 lives per year, and their application to draperies likely saves 10 more lives a year. All told, decaBDE and other flame inhibitors save an estimated 280 lives in the U.S. each year. (BFRIP 2002). ... Cumulatively, from 1988 to 2002, it is estimated the 1988 UK furniture regulations alone saved 1,150 lives and prevented 13,442 injuries.... Smoke alarms in Britain and the upholstered furniture regulations combined prevented an estimated 44,314 residential fires, saved 4,287 lives, and prevented 39,257 non-fatal injuries. As for property damage, the savings from 1988 to 2000 is calculated at £182 million per year (or around $300 million) or a 12-year total of about £2.2 billion (or about $3.6 billion). (Surrey 2005).[32]

Apparently, the National Fire Protection Association (NFPA) disagrees with Dr. Babruauskas and its working to develop a new open flame standard.[33] Hopefully, continued research and debate will eventually resolve at least some of these issues. In contrast, a ban on an entire category of potentially valuable chemical products won't resolve a thing, but it might result in higher loss of life to fires.

Truly Regrettable Substitutions

The petitioners for this action have claimed that we need to ban all organohalogens for specified uses because if we ban one, it may be replaced by something more dangerous, a phenomenon known as a "regrettable substitution." But such regrettable substitutions are the result of misguided regulations, and cannot be prevented by banning whole categories of chemicals. Rather than allowing the market to find the best products, banning chemicals will produce fewer options and potentially increase fire risks.

Consider the real life example related to government bans on asbestos. Like organohalogens, not all asbestos pose the same risks. Asbestos health risks are related to the length, shape, and diameter of asbestos fibers. A study produced by the American Council on Science and Health details the research findings on asbestos, particularly risk differences between the various fibers.[34] It points out that amphibole fibers are associated with the greatest risks because they are long and thin and easily embed in human tissue. When inhaled, amphibole fibers remain in tissue for a long duration. High exposures over a long period of time increase the propensity for cancer, mesothelioma (cancerous or benign tumors), and asbestosis (scarring of lung tissue that can impede breathing) late in life. Long-term relatively high occupational exposures to asbestos have resulted in cancer and mesothelioma. Fortunately, as ACSH points out, improved safety measures in the workplace greatly reduces this risk.

The asbestos most commonly used in the United States are chrysotile asbestos fibers. These fibers are short and wide structures that do not easily embed into human tissue and pose a far lower risk. They comprise more than 99 percent of asbestos uses in United States.[35] Numerous studies on workers exposed to chrysotile asbestos in friction control industries—such as workers for brake manufacturers and automotive break repair workers—do not find a significant cancer risks. ACSH concluded:

> Ambient asbestos exposure does not appear to be a significant risk factor for asbestosis, lung cancer, or mesothelioma for the general population. These diseases have historically been largely confined to occupational settings in which asbestos exposures were not adequately controlled, or as a result of significant overexposure, often involving years of occupational exposure. Despite some divergence from earlier thinking, more recent analyses of certain occupational settings (e.g., brake industry workers, automechanics) suggest that asbestos exposures in these industrial settings were not causally related to respiratory disease or lung cancer.

History also shows that the politically forced substitution of asbestos that did not differentiate between the dangerous fibers and the relatively benign chrysotile fibers has had serious

consequences. Fires at theaters and other public places, such as schools, regularly took human lives until asbestos insulation for tiles, curtains, and the like was introduced, as detailed in several case studies by CEI Senior Fellow John Berlau.[36]

But eventually the EPA and environmental activists led a campaign against asbestos, which lumped all asbestos products in one category rather than differentiate based on the risks of each type. As a result, many useful and low risk applications were abandoned. For example, the activist campaign against all kinds of asbestos prompted the Port Authority of New York and New Jersey to halt the use of the largely benign chrysotile asbestos when building the World Trade Center's Twin Towers. As a result, builders did not apply any asbestos-based products to the top floors of the first tower and none were used in the second tower.[37]

Had the Port Authority used asbestos instead of switching to a substitute product, explains Berlau, heat from the fire may have been controlled at least long enough for thousands of more people to escape before the buildings collapsed on 9/11. The replacement product, fiberglass, breaks down at 1,100º Fahrenheit, whereas asbestos hold up to 2,100º Fahrenheit.[38] A report produced after 9/11 by the National Institute of Standards and Technology concluded that the temperatures during the fires in the World Trade Center never rose beyond 1,800 º Fahrenheit.[39] "Even with the airplane impact and jet-fuel ignited multi-floor fires, which are not normal building fires, the buildings would likely not have collapsed had it not been for the fireproofing," noted the lead investigator on the report.[40]

Sadly, the unwarranted elimination of all kinds of asbestos in many places continues to pose a threat. In February 2003, highly flammable foam soundproofing tiles at a nightclub in West Warwick, Rhode Island, caught fire, killing about 100 people. Before the political crusade against them, asbestos were also the product of choice for soundproofing tiles.[41] Had they been used in the nightclub rather than the substitute, the fire likely would not have spread, or even started. Unfortunately, there are many other, recorded and unrecorded, examples of fire-related injuries and deaths that could have been prevented or significantly mitigated with asbestos-related products.

Rational Policy Solutions. You do not need to be a fire engineer to understand that whether a product is suitable for reducing fire risks depends on a wide range of factors, such as the source of a fire (from an open flame candle, cigarette, electrical source, cooking related grease fire, etc.), the materials being burned, and the kinds and amounts of flame retardants involved. The approaches to reducing fires will change as understanding and technologies evolve. For example, changes in personal habits (such as increased smoking cessation), new electronics, and different furniture finishes all have impacts that government regulations cannot adequately address. These are issues that fire experts and flame retardant producers need the freedom and flexibility to sort out.

Given that the probability that flame retardant chemicals represent a significant health threat is remote, the policy focus should be on how to ensure that we use them most efficaciously. It may well be true that these products do not always deliver as much as we would like in all applications, as their critics note, but that does not warrant and extreme approach that tosses the baby out with the bathwater. There is some good evidence that these products do in fact have

some important value that cannot simply be dismissed. In addition, researchers may fine new applications for certain organohalogens that provide even greater benefits, but those innovations will never come to pass if regulators blindly ban this or any other category of flame retardant chemicals.

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[1] Petition HP 15-1 Requesting Rulemaking on Products Containing Organohalogen Flame Retardants, July 1, 2015, https://www.cpsc.gov/Global/Regulations-Laws-and-Standards/Petitions/PetitionHP151RequestingRulemakingProductsContainingOrganohalogenFlameRetardentsJuly12015.pdf

[2] See APPENDIX A.

[3] "organohalogen compounds," Encyclopedia Britannica (online), accessed January 15, 2016, http://www.britannica.com/science/aryl-halide.

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APPENDIX A: EXCERPT FROM NATIONAL FIRE PROTECTION ASSOCIATION*

FIRES IN THE U.S.

In 2014, there were 1,298,000 fires reported in the United States. These fires caused 3,275 civilian deaths, 15,775 civilian injuries, and $11.6 billion in property damage.

- 494,000 were structure fires, causing 2,860 civilian deaths, 13,425 civilian injuries, and $9.8 billion in property damage.
- 193,500 were vehicle fires, causing 345 civilian fire deaths, 1,450 civilian fire injuries, and $1.5 billion in property damage.
- 610,500 were outside and other fires, causing 70 civilian fire deaths, 900 civilian fire injuries, and $237 million in property damage.

The 2014 U.S. fire loss clock a fire department responded to a fire every 24 seconds. One structure fire was reported every 64 seconds.

- One home structure fire was reported every 86 seconds.
- One civilian fire injury was reported every 33 minutes.
- One civilian fire death occurred every 2 hours and 41 minutes.
- One outside and other fire was reported every 52 seconds.
- One highway vehicle fire was reported every 3 minutes 8 seconds.

* This entire passage is a quote from the National Fire Protection Association website: http://www.nfpa.org/research/reports-and-statistics/fires-in-the-us, accessed January 15, 2016.