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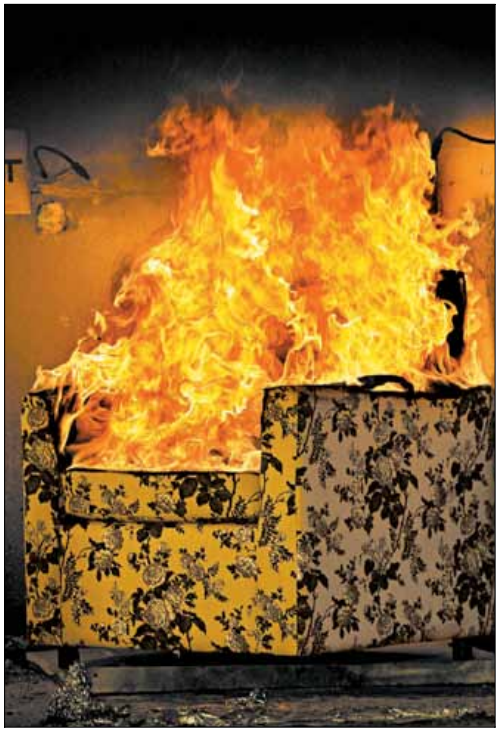
TRIBUNE WATCHDOG

Playing with fire

A deceptive campaign by industry brought toxic flame retardants into our homes and into our bodies. And the chemicals don't even work as promised.


CONSUMER PRODUCT SAFETY COMMISSION PHOTO

UP IN FLAMES: Government scientists found that chairs containing flame retardants, like the one being tested above, burned just as fast as identical chairs without them. **Story, Page 22**

BY PATRICIA CALLAHAN AND SAM ROE
Tribune reporters

Dr. David Heimbach knows how to tell a story.

Before California lawmakers last year, the noted burn surgeon drew gasps from the crowd as he described a 7-week-old baby girl who was burned in a fire started by a candle while she lay on a pillow that lacked flame retardant chemicals.

"Now this is a tiny little person, no bigger than my Italian greyhound at home," said Heimbach, gesturing to approximate the baby's size. "Half of her body was severely burned. She ultimately died after about three weeks of pain and misery in the hospital."

Heimbach's passionate testimony about the baby's death made the long-term health concerns about flame retardants voiced by doctors, environmentalists and even firefighters sound abstract and petty.

But there was a problem with his testimony: It wasn't true. Records show there was no dangerous pillow or candle fire. The baby he described didn't exist.

Neither did the 9-week-old patient who Heimbach told California legislators died in a candle fire in 2009. Nor did the 6-week-old patient who he told Alaska lawmakers was fatally burned in her crib in 2010.

Heimbach is not just a prominent burn doctor. He is a star witness for the manufacturers of flame retardants.

His testimony, the Tribune found, is part of a decades-long campaign of deception that has loaded the furniture and electronics in American homes with pounds of toxic chemicals linked to cancer, neurological deficits, developmental problems and impaired fertility.

The tactics started with Big Tobacco, which wanted to shift focus away from cigarettes as the cause of fire deaths, and continued as chemical companies worked to preserve a lucrative market for their products, according to a Tribune review of thousands of government, scientific and internal industry documents.

These powerful industries distorted science in ways that overstated the benefits of the chemicals, created a phony consumer watchdog group that stoked the public's fear of fire and helped organize and steer an association of top fire officials that spent more than a decade campaigning for their cause.

Today, scientists know that some flame retardants escape from household products and settle in dust. That's why toddlers, who play on the floor and put things in their mouths, generally have far higher levels of these chemicals in their bodies than their parents.

Blood levels of certain widely used flame retardants doubled in adults every two to five years between 1970 and 2004. More recent studies show levels haven't declined in the U.S. even though some of the chemicals have been pulled from the market. A typical American baby is born with the highest recorded concentrations of flame retardants among infants in the world.

People might be willing to accept the health risks if the flame retardants packed into sofas and easy chairs worked as promised. But they don't.

The chemical industry often

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Tribune findings

Four-part investigation

INDUSTRY DECEPTION
Makers of flame retardants wage a deceptive campaign to boost demand for the chemicals even though they don't work as billed and put our health at risk. **Sunday**

TOBACCO'S CLOUT
With cigarettes starting deadly fires, tobacco companies created a new scapegoat — the furniture going up in flames — and invested in a national group of fire officials that would deliver the message. **Tuesday**

DISTORTING SCIENCE
Chemical companies say science shows that flame retardants prevent fire deaths and are safe, but the research they often cite is either seriously flawed or grossly distorted. **Wednesday**

TOXIC ROULETTE
The U.S. government has allowed generations of flame retardants onto the market without thoroughly assessing the risks. One chemical touted as safe is now turning up in wildlife around the world. **Thursday**

NATO summit to be a hard road for motorists

Chicago officials are describing a long list of road closings, parking bans and mass-transit reroutes during the NATO summit weekend as "minor inconveniences," but independent transportation experts aren't so sure. Their best advice to drivers planning to head downtown on May 19-21? Don't do it. **Chicagoland, Page 4**

What do mothers want?

Mother's Day is just a week away. Faced with the annual task of divining what mothers want, the Tribune's Ellen Warren smartly turned to ... mothers. Each woman shared two ideas: one that money can buy, and one that money can't buy. And yes, sleep made the list. **Sunday section**

Plus: Fresh ideas for heartfelt gifts. **Money & Real Estate**

At 9/11 tribunal, sullen silence from suspects

The five accused co-conspirators in the 9/11 attacks, including alleged mastermind Khalid Sheikh Mohammed, right, staged a silent protest before a U.S. military tribunal at Guantanamo Bay, Cuba, on Saturday. **Nation & World, Page 35**

Airline credit cards up the perks

Good deals are flying. We help you choose. **Business**

Front group stokes fear of fire

Continued from Page 1

points to a government study from the 1980s as proof that flame retardants save lives. But the study's lead author, Vytenis Babrauskas, said in an interview that the industry has grossly distorted his findings and that the amount of retardants used in household furniture doesn't work.

"The fire just laughs at it," he said.

Other government scientists subsequently found that the flame retardants in household furniture don't protect consumers from fire in any meaningful way.

The U.S. Environmental Protection Agency, meanwhile, has allowed generation after generation of flame retardants onto the market and into American homes without thoroughly assessing the health risks. The EPA even promoted one chemical mixture as a safe, eco-friendly flame retardant despite grave concerns from its own scientists about potential hazards to humans and wildlife.

Since the 1970s manufacturers have repeatedly withdrawn flame retardants amid health concerns. Some have been banned by a United Nations treaty that seeks to eliminate the worst chemicals in the world.

Chemtura Corp. and Albemarle Corp., the two biggest U.S. manufacturers of flame retardants, say their products are safe and effective, arguing that they have been extensively evaluated by government agencies here and in Europe.

"Flame retardants provide an essential tool to enable manufacturers of products to meet the fire safety codes and standards necessary to protect life and property in a modern world," John Gustavsen, a Chemtura spokesman, said in a written statement.

His company, Gustavsen said, strongly disagrees with the main findings of the Tribune's investigation.

Heimbach, the burn doctor, has regularly supported the industry's position that flame retardants save lives. But he now acknowledges the stories he told lawmakers about victims were not always factual.

He told the Tribune his testimony in California was "an anecdotal story rather than anything which I would say was absolutely true under oath, because I wasn't under oath."

Heimbach, a retired Seattle doctor and former president of the American Burn Association, also said his anecdotes were not about different children but about the same infant. But records and interviews show that the baby Heimbach said he had in mind when testifying didn't die as he described and that flame retardants were not a factor.

After the Tribune confronted chemical executives with Heimbach's questionable testimony, he offered, through his lawyer, another explanation for why his stories didn't add up: He intentionally changed the facts to protect patient privacy.

Yet the most crucial parts of his testimony — the cause of the fire and the lack of flame retardants — had nothing to do with privacy. Instead, they served to bolster the industry's argument that chemical retardants save lives.

In the last quarter-century, worldwide demand for flame retardants has skyrocketed to 3.4 billion pounds in 2009 from 526 million pounds in 1983, according to market research from The Freedonia Group, which projects demand will reach 4.4 billion pounds by 2014.

As evidence of the health risks associated with these chemicals piled up, the industry mounted a misleading campaign to fuel demand.

There is no better example of these deceptive tactics than the Citizens for Fire Safety Institute, the industry front group that sponsored Heimbach and his vivid testimony about burned babies.

Fear and deception

In the website photo, five grinning children stand in front of a red brick fire station that could be on any corner in America. They hold a hand-drawn banner that says "fire safety" with a heart dotting the letter "i."

Citizens for Fire Safety describes itself as a group of people with altruistic intentions: "a coalition of fire professionals, educators, community activists, burn centers, doctors, fire departments and industry leaders, united to ensure that our country is protected by the highest standards of fire safety."

Heimbach summoned that image when he told lawmakers that the organization was "made up of many people like me who have no particular interest in the chemical companies: numerous fire departments, numerous firefighters and many, many burn docs."

But public records demonstrate that Citizens for Fire Safety actually is a trade association for chemical companies. Its executive director, Grant Gillham, honed his political skills advising tobacco executives. And the group's efforts to influence fire-safety policies are guided by a mission to "promote common business interests of members involved with the chemical manufacturing industry," tax records show.

Its only sources of funding — about $17 million between 2008 and 2010 — are "membership dues and assessments" and the interest that money earns.

The group has only three members: Albemarle, ICL Industrial Products and Chemtura, according to records the organization filed with California lobbying regulators.

Those three companies are the largest manufacturers of flame retardants and together control 40 percent of the world market for these chemicals, according to The Freedonia Group, a Cleveland-based research firm.

Citizens for Fire Safety has spent its money primarily on lobbying and political expenses, tax records show. Since federal law makes it nearly impossible for the EPA to ban toxic chemicals and Congress rarely steps in, state legislatures from Alaska to Vermont have become the sites of intense battles over flame retardants.

Many of the witnesses supporting flame retardants at these hearings were either paid directly by Citizens for Fire Safety or were members of groups that benefited financially from Citizens for Fire Safety's donations, according to tax documents and other records.

At the same time, Citizens for Fire Safety has portrayed its opposition as misguided, wealthy environmentalists. But its opponents include a diverse group of public health advocates as well as firefighters who are alarmed by studies showing some flame retardants can make smoke from fires even more toxic.

Matt Vinci, president of the Professional Fire Fighters of Vermont, faced what he called "dirty tactics" when he successfully lobbied for his state to ban one flame retardant chemical in 2009.

Particularly offensive to Vinci were letters Citizens for Fire Safety sent to Vermont fire chiefs saying the ban would "present an additional hazard for those of us in the fire safety profession." But the letter's author wasn't a firefighter; he was a California public relations consultant.

"Citizens for Fire Safety did everything they could to portray themselves as firefighters, as Vermont citizens for fire safety, when it really wasn't Vermont citizens for fire safety at all," Vinci said.

The group also has misrepresented itself in other ways. On its website, Citizens for Fire Safety said it had joined with the international firefighters' association, the American Burn Association and a key federal agency "to conduct ongoing studies to ensure safe and effective fire prevention."

Both of those organizations and the federal agency, however, said that simply is not true.

"They are lying," said Jeff Zack, a spokesman for the International Association of Fire Fighters. "They aren't working with us on anything."

After inquiries from the Tribune, Citizens for Fire Safety deleted that passage from its website.

Gillham, the executive director, declined to comment. Albemarle, Chemtura and ICL Industrial Products also declined to answer specific questions about the group.

Albemarle Chief Sustainability Officer David Clary did say that his company has been transparent

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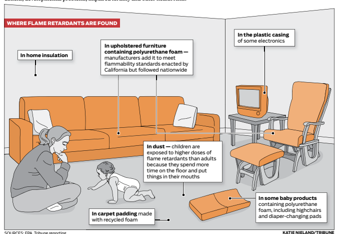
ROBERT DURELL/PHOTO FOR THE TRIBUNE

"When we're eating organic, we're avoiding very small amounts of pesticides. Then we sit on our couch that can contain a pound of chemicals that's from the same family as banned pesticides like DDT."

— Arlene Blum, a California chemist who is fighting to limit flame retardants in household products. Above, she waits to testify before the California state Senate in 2011.

Chemicals hard to avoid

Flame retardants are present in virtually every American home even though some of the compounds have been linked to neurological deficits, developmental problems, impaired fertility and other health risks.



SOURCES: EPA, Tribune reporting

KATIE NIELAND/TRIBUNE

Labels provide little help when picking products

By Michael Hawthorne
Tribune reporter

Most parents are forced to guess if toys, furniture and other household products are exposing their kids to toxic chemicals.

Heather Stapleton can figure it out in her laboratory.

Stapleton, an environmental chemist at Duke University, is one of the nation's leading experts on flame retardants. Her research shows that it is extremely difficult to avoid the chemicals, which she has found not only in furniture cushions, but also in such unlikely fire hazards as breast-feeding pillows and diaper-changing pads.

"We detect these chemicals in almost every home, particularly in dust," Stapleton said. "When people ask me how to prevent their kids from being exposed, I find it a difficult question to answer."

ALEX GARCIA/TRIBUNE PHOTO

A furniture tag indicates the foam has been treated with fire retardants. But even items lacking this tag may have been treated.

In her own home, Stapleton switched the living room from carpet to hardwood floors in an attempt to keep dust from accumulating.

She also bought mattresses made with organic materials for her 3-year-old son and year-old daughter to nap on at their day care center. Her tests showed the center's regular foam mattresses were treated with one of the flame retardant chemicals she studies.

Not everyone can afford those dramatic steps. Nor is it easy to figure out the specific chemical ingredients in products.

Furniture made with flame retardants often features a label that indicates it meets flammability standards in California's Technical Bulletin 117. Many manufacturers apply the standards to products sold nationwide, and Stapleton cautions that she has found flame retardants even in furniture that didn't have such a label.

To reduce exposure to contaminated dust, Stapleton advises frequent handwashing, noting that children typically are exposed to higher levels of flame retardants than adults because they spend so much time playing on the floor.

"Kids are always picking up toys and putting them in their mouths," she said. "You can't avoid it."

She also advises caution with clothing dryer lint, which she said can be concentrated not only with flame retardants, but also with other toxic chemicals that escape from household products.

"I definitely recommend that everyone washes their hands after touching dryer lint," Stapleton said.

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about its funding of Citizens for Fire Safety.

"We believe that this support for advocacy groups is critical to raise awareness of the importance of fire safety and give a voice to those who want to speak out on this important public issue," Clary said in a written statement.

Citizens for Fire Safety is the latest in a string of industry groups that have sprung up on different continents in the last 15 years — casting doubt on health concerns, shooting down restrictions and working to expand the market for flame retardants.

For example, the Bromine Science and Environmental Forum, based in Brussels, may sound like a neutral scientific body. But it was founded and funded by four chemical manufacturers, including Albemarle, to influence the debate about flame retardants made with bromine.

Albemarle's global director of product advocacy, Raymond Dawson, said in blunt testimony before Washington state lawmakers in 2007 that the forum is "a group dedicated to generating science in support of brominated flame retardants."

An official from Burson-Marsteller, the global public relations firm that helps run the organization, said the bromine group is not misleading anyone because regulators, scientists and other stakeholders are well-aware it represents industry.

The PR firm also helps run the Alliance for Consumer Fire Safety in Europe, which is funded by a trade association of flame retardant manufacturers. The alliance's director, Bob Graham, said the group's aim is to improve fire-safety standards for upholstered furniture sold in Europe.

The group's website taps into the public's fear of fire, touting an "interactive burn test tool" that allows visitors to choose a European country and watch a sofa from that nation being torched.

Next to a photo of an easy chair fully engulfed in flames, four words stand out in large capital letters: "ARE YOU SITTING COMFORTABLY?"

'A child crying'

The amount of flame retardants in a typical American home isn't measured in parts per billion or parts per million. It's measured in ounces and pounds.

A large couch can have up to 2 pounds in its foam cushions. The chemicals also are inside some highchairs, diaper-changing pads and breast-feeding pillows. Recyclers turn chemically treated foam into the padding underneath carpets.

"When we're eating organic, we're avoiding very small amounts of pesticides," said Arlene Blum, a California chemist who has fought to limit flame retardants in household products. "Then we sit on our couch that can contain a pound of chemicals that's from the same family as banned pesticides like DDT."

These chemicals are ubiquitous not because federal rules demand it. In fact, scientists at the U.S. Consumer Product Safety Commission have determined that the flame retardants in household furniture aren't effective, and some pose unnecessary health risks.

The chemicals are widely used because of an obscure rule adopted by California regulators in 1975. Back then, a state chemist devised an easy-to-replicate burn test that didn't require manufacturers to set furniture on fire, an expensive proposition.

The test calls for exposing raw foam to a candle-like flame for 12 seconds. The cheapest way to pass the test is to add flame retardants to the foam inside cushions.

But couches aren't made of foam alone. In a real fire, the upholstery fabric, typically not treated with flame retardants, burns first, and the flames grow big enough that they overwhelm even fire-retardant foam, scientists at two federal agencies have found.

Nevertheless, in the decades since that rule went into effect, lawyers have regularly argued that their burn-victim clients would have been spared if only their sofas had been made with California foam. Faced with the specter of these lawsuits — and the logistical challenge of producing separate products just for California — many manufacturers began using flame retardant foam across their product lines.

As a result, California has become the most critical battleground in recent years for advocates trying to reduce the prevalence of these chemicals in American homes.

Citizens for Fire Safety has successfully fought back with a powerful, and surprising, tactic: making flame retardants a racial issue.

The group and witnesses with ties to it have argued that impoverished, minority children would burn to death if flame retardants were removed from household products.

In 2009, for instance, members of the California State Assembly were considering a bill that would have made it unnecessary to add flame retardants to many baby products by excluding them from the state's flammability regulation.

Up to the microphone stepped Zyra McCloud, an African-American community activist from Inglewood, Calif.

McCloud was president of a community group that listed Citizens for Fire Safety as a sponsor on its website and included photos of McCloud with Gillham, the executive director. She did not disclose this connection to the assembly, nor was she asked.

In a news release, Citizens for Fire Safety already had quoted McCloud saying that minority children, who constitute a disproportionate share of fire deaths, would bear the brunt of the "ill-conceived and unsafe legislation."

At the hearing, the committee chairwoman told both sides they were out of time for testimony, but McCloud pleaded with her to allow two elementary school students from her district to address lawmakers.

"We have spent all weekend long with the kids that have had family members and friends who have died in fires, and we are praying and appealing to you that you would at least allow the two boys to speak," she said.

One of the boys, a 10-year-old, read from a statement.

"I just want you to imagine a child crying for help in a burning building, dying, when there was a person who only had to vote to save their life," he said.

Citizens for Fire Safety prevailed. The bill later went down to defeat.

McCloud told the Tribune, "I've always been a person that's fought against things that would hurt children." She then asked for questions in writing but never answered them.

Nearly two years after that bill failed, one of the nation's top burn surgeons would also invoke the image of a dead child before California lawmakers on behalf of

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ROBERT DURELL/PHOTO FOR THE TRIBUNE

"I'm a well-meaning guy. I'm not in the pocket of industry."

— Dr. David Heimbach, a burn expert. Above, Heimbach testifies in 2011 against a California state Senate bill that could have reduced the use of flame retardant chemicals in furniture. He told the Tribune that Citizens for Fire Safety has paid for his travel to testify and for some of his time.

This 2008 ad in the Los Angeles Times helped Citizens for Fire Safety, a front group for the makers of flame retardant chemicals, defeat a California bill that would have reduced the widespread use of flame retardants in products.

JORDAN SILVERMAN/PHOTO FOR THE TRIBUNE

"Citizens for Fire Safety did everything they could to portray themselves as firefighters, as Vermont citizens for fire safety, when it really wasn't Vermont citizens for fire safety at all."

— Matt Vinci, above, president of a Vermont firefighters union, who lobbied against a flame retardant

Types of flame retardants

Many flame retardants are made with bromine or chlorine, which slow fire's combustive reaction by taking the place of oxygen. However, tests have cast doubt on whether adding the chemicals to upholstered furniture is effective, and concerns over health risks have forced some products off the market.

	Penta and octa	**Deca**	**Chlorinated tris**	**Firemaster 550**
CHEMICALS	Polybrominated diphenyl ethers, or PBDEs	Also a PBDE	Also known as TDCCP	Brand name
HAZARDS	Build up rapidly in breast milk and human blood. Hormone disruption, developmental problems, neurological deficits, impaired fertility.	Persists in the environment and creates penta as it breaks down. Potential carcinogen, neurological deficits.	Probable carcinogen, neurological deficits.	Chemical's brominated components found in wildlife. Levels increasing in air around the Great Lakes. Developmental problems at high doses.
STATUS	**Not in use.** After the European Union voted in 2003 to ban the chemicals, U.S. makers pulled them from the market. Penta is still present in older furniture, other products containing foam and recycled carpet padding.	**Being phased out.** Manufacturers voluntarily agreed to end production by December 2013. It is still present in the casing of older electronics and in wire insulation, textiles, automobiles and airplanes.	**Still in use.** Voluntarily removed from children's sleepwear in late 1970s but still widely used in furniture foam. Also has been found in baby products containing polyurethane foam.	**Still in use.** Introduced in 2003 as a replacement for penta. Identified for "high priority" review by U.S. Environmental Protection Agency.

SOURCES: U.S. Environmental Protection Agency, Consumer Product Safety Commission, National Research Council, peer-reviewed research.

TRIBUNE

Stories about burned babies don't add up

Continued from Page 21

Citizens for Fire Safety.

When Dr. David Heimbach walked into the California Senate committee hearing last year, the stakes had never been higher for flame retardant manufacturers.

Once again, senators were considering an overhaul of the state's flammability regulation — one that advocates believed would dramatically reduce the amount of flame retardants in American homes.

The bill would allow manufacturers to choose the existing candle-like flame test or a new one based on a smoldering cigarette, a far more common source of fires than candles. Manufacturers could pass the new test by using resistant fabrics rather than adding toxic chemicals to the foam inside.

To maintain the status quo — and avoid a hit to the bottom line — chemical makers needed to stress that fires started by candles were a serious threat.

Heimbach, Citizens for Fire Safety's star witness, did just that.

With Citizens for Fire Safety's Gillham watching from the audience, Heimbach not only passionately described the fatal burns a 7-week-old Alaska patient received lying on a pillow that lacked flame retardants, he also blamed the 2010 blaze on a candle.

In fact, he specifically said the baby's mother had placed a candle in the girl's crib.

Heimbach had told similar stories before, the Tribune found. In 2009, he told a California State Assembly committee that he had treated a 9-week-old girl who died that spring after a candle beside her crib turned over. "We had to split open her fingers because they were so charred," he testified.

In 2010, he told Alaska lawmakers about a 6-week-old girl from Washington state who died that year after a dog knocked a candle onto her crib, which did not have a flame retardant mattress.

Heimbach's hospital in Seattle, Harborview Medical Center, declined to help the Tribune confirm his accounts. But records from the King County medical examiner's office show that no child matching Heimbach's descriptions has died in his hospital in the last 16 years.

The only infant who came close in terms of age and date of death was Nancy Garcia-Diaz, a 6-week-old who died in 2009 after a house fire in rural Washington.

In an interview, Heimbach said his anecdotes were all about the same baby — one who died at his hospital, though he didn't know the child's name. Contrary to his testimony, he said he had not taken care of the patient.

Told about Nancy, Heimbach said she was probably the baby he had in mind and emailed a Tribune reporter two photographs of a severely burned child, images that he said he had used in a presentation at a medical conference. Medical records and Nancy's mother confirmed those pictures were indeed of Nancy.

But Nancy didn't die in a fire caused by a candle, as Heimbach has repeatedly testified. Fire records obtained by the Tribune show the blaze was caused by an overloaded, overheated extension cord.

"There were no candles, no pets — just the misuse of extension cords," said Mike Makela, an investigator for the Snohomish County fire marshal's office.

In his testimony last year, Heimbach stated the baby was in a crib on a fire-retardant mattress and on a non-retardant pillow. The upper half of her body was burned, he said.

But public records show there was no crib — she was resting on a bed — and no pillow. And, Makela said, flame retardants played no role in the pattern of her burns.

Fire authorities, Heimbach said, "may know more about it than I do, but that was the information that I had."

Heimbach said he couldn't recall who gave him that information but that Citizens for Fire Safety did not help craft his statements. He said the group has paid for his travel to testify and for some of his time, though he would not give a dollar amount.

The details of his statements, he said, weren't as important as the principle. "The principle is that fire retardants will retard fires and will prevent burns," he said.

Later, Heimbach said through his attorney that federal rules prohibit him from disclosing information that would identify a patient. He said that when describing particular burn cases, he follows standard protocol under the rules by "de-identifying" patients — that is, changing or omitting identifying information to protect their privacy.

But in testimony at state hearings, Heimbach not only changed facts, he added new ones, such as candles starting deadly blazes and the lack of flame retardants — details that aided the chemical industry's position.

Nancy's mother, who asked that her name not be used, said she never granted Heimbach permission to use her daughter's photograph.

"Nancy's memory is sacred to us," she said. "My daughter deserves respect. She lived such a short time and she suffered a lot. This is horrible."

Heimbach was head of Harborview's burn center for 25 years; he also was a professor of surgery at the University of Washington until his retirement last year. He estimated he might have saved "hundreds if not thousands" of lives. In 2009, the Dalai Lama gave Heimbach an award for his care of burn victims around the world.

"I'm a well-meaning guy," Heimbach said. "I'm not in the pocket of industry."

When Heimbach testified last spring in California on the bill that could have significantly reduced flame retardant use, he didn't tell lawmakers he was altering facts about the burn victim. Only when asked by a senator did he reveal that Citizens for Fire Safety paid for his trip there.

When it came time to vote, the senators overwhelmingly sided with Heimbach and Citizens for Fire Safety, sticking with the furniture standard based on a candle-like flame.

Public health advocates had one last hope: Senators had seven days in which they could change their votes. As the advocates tried to persuade senators to reconsider, Citizens for Fire Safety put out a news alert that linked to a video called "Killer Couches!"

To the sounds of sinister music and crackling flames, a sofa made without flame retardants became an inferno. Then these words appeared: "Are You Sitting Comfortably?"

No senators changed their votes, and the bill was dead. The chemical companies had won again.

Tribune reporter Michael Hawthorne contributed to this report.

pcallahan@tribune.com
sroe@tribune.com

PHOTO PROVIDED BY FAMILY

"Nancy's memory is sacred to us. My daughter deserves respect. She lived such a short time and she suffered a lot. This is horrible."

— Mother of Nancy Garcia-Diaz, above, a 6-week-old girl who died in 2009 after a house fire in rural Washington

Babies most exposed

High levels of PBDE flame retardants in breast milk account for infants' large daily dose. For others, ingestion of contaminated dust is the chief source of exposure.

Total daily dose
Nanograms (billionths of a gram) of PBDE per kilogram of body weight, per day

Adults	7.1
Ages 12-19	8.3
Ages 6-11	13.0
Ages 1-5	47.2
Infants	141.0

SOURCE: EPA

TRIBUNE

Testing shows treated foam offers no real safety benefit

Fire-resistant barriers may be more effective, reduce chemical exposure

By Michael Hawthorne
Tribune reporter

The chemical industry's leading trade group says adding fire-snuffing chemicals to furniture foam "can be the difference between life and death."

But when scientists in a government lab touched a small flame to a pair of upholstered chairs — one with a flame retardant in the foam and one without — both were engulfed in flames within four minutes.

"We did not find flame retardants in foam to provide any significant protection," said Dale Ray, a top official with the Consumer Product Safety Commission who oversaw the 2009 tests at a laboratory outside Washington.

Moreover, the amount of smoke from both chair fires was similar, Ray said, noting that most fire victims die of smoke inhalation, not the flames.

The previously undisclosed test results call into question the widespread use of flame retardants in household furniture. Some of those chemicals have been linked to cancer, neurological disorders and developmental problems.

Meanwhile, research is finding there are more effective ways to prevent furniture fires — using specially designed upholstery that resists smoldering cigarettes or adding fire-resistant barriers underneath the fabric.

The American Chemistry Council, the industry trade group, declined to answer specific questions about the safety commission's research but in an email said flame retardants are "a key component in reducing the devastating impact of fires on people, property and the environment."

For decades, furniture manufacturers have been relying on the chemicals to meet a flammability standard that California adopted in 1975. Much of the upholstered furniture sold nationwide is built to comply with the standard.

Albemarle Corp., one of the world's largest manufacturers of flame retardants, said in a written statement that "the incidence of damage, injury and death caused by fires related to home furnishings has decreased significantly" since California adopted its furniture rule.

But Ray and other government experts say declining smoking rates and increased use of smoke detectors have played major roles in reducing fire deaths and damage.

Federal regulators have been wrestling with the issue of how to fireproof furniture for years. The safety commission now believes the best solution is to require upholstery to resist smoldering cigarettes, which federal statistics show are by far the chief cause of furniture fires.

That proposal, which has yet to be enacted, would make the California standard unnecessary. Most of the furniture sold today already is covered with fabrics that comply with the proposed smolder standard, Ray said. If furniture fabric stops a fire from starting in the first place, he said, there is no reason to keep adding flame retardant chemicals to the foam underneath.

"There wasn't a meaningful difference. There are other ways that are more effective and avoid the potential risks of those chemicals."

— Tom Fabian, manager of UL's fire hazards research

Testing by government and independent scientists suggests additional steps might be needed to ensure that furniture can resist flames from lighters and candles. But sharp differences remain about whether those types of fires are common enough to demand a standard that would address them.

In the safety commission's tests, researchers took two other chairs and added a barrier of acrylic, glass and polyester fibers between the upholstery and the foam. Four minutes after being lit, the fires went out without intervention from the researchers, charring only the yellow, floral-print fabric on the back of the chairs.

Similar research by Northbrook-based Underwriters Laboratories found that replacing the normal polyester wrapping around furniture foam with a fire-resistant layer was much more effective at slowing fire than adding flame retardants to the foam.

Mattress manufacturers already use flame-resistant barriers to meet national fire-safety standards. These barriers are typically made of chemical-free materials or safer chemicals than those commonly added to foam.

In the UL tests, chairs equipped with fire-resistant barriers burned much more slowly than chairs without them. The fires also didn't spread throughout a simulated living room until well after the time when firefighters typically arrive. Some test fires extinguished on their own.

The researchers also tested chairs with treated furniture foam and others with regular foam. The regular chairs burned slightly hotter than those with flame retardants, but all the fires quickly grew to engulf the room, according to a video and slide presentation at a March workshop at the National Institute of Standards and Technology.

"There wasn't a meaningful difference," Tom Fabian, manager of UL's fire hazards research, said later in an interview. "There are other ways that are more effective and avoid the potential risks of those (flame retardant) chemicals."

The trade group for foam manufacturers supports replacing the California standard with a federal smolder standard but opposes attempts to add a requirement for fire-resistant barriers, saying they would make furniture uncomfortable. Foam makers also contend that barriers are too expensive to be used in all furniture.

As for flame retardants, the Polyurethane Foam Association said its members don't like using them but do so to meet the California standard. "We know we have an environmental problem," said Bob Luedeka, the group's executive director. "It would be nice if we had a (flame retardant) product that didn't have so many question marks attached to it."

mhawthorne@tribune.com
Twitter @scribeguy

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VIDEO

Watch Tribune reporters Patricia Callahan, Sam Roe and Michael Hawthorne describe their investigation into the campaign of deception that has helped put flame retardants into our homes and into our bodies.

TRANSCRIPTS

Read side-by-side transcripts of inconsistent testimony on babies' deaths given by Dr. David Heimbach at three different government hearings — and compare them with documents on Nancy Garcia-Diaz, a 6-week-old girl who died in 2009 after a house fire in rural Washington.

TRIBUNE WATCHDOG

Playing with fire

A deceptive campaign by industry brought toxic flame retardants into our homes and into our bodies. And the chemicals don't even work as promised.

Sunday, May 6, 2012

By Patricia Callahan and Sam Roe

Dr. David Heimbach knows how to tell a story.

Before California lawmakers last year, the noted burn surgeon drew gasps from the crowd as he described a 7-week-old baby girl who was burned in a fire started by a candle while she lay on a pillow that lacked flame retardant chemicals.

"Now this is a tiny little person, no bigger than my Italian greyhound at home," said Heimbach, gesturing to approximate the baby's size. "Half of her body was severely burned. She ultimately died after about three weeks of pain and misery in the hospital."

Heimbach's passionate testimony about the baby's death made the long-term health concerns about flame retardants voiced by doctors, environmentalists and even firefighters sound abstract and petty.

But there was a problem with his testimony: It wasn't true. Records show there was no dangerous pillow or candle fire. The baby he described didn't exist.

Neither did the 9-week-old patient who Heimbach told California legislators died in a candle fire in 2009. Nor did the 6-week-old patient who he told Alaska lawmakers was fatally burned in her crib in 2010.

Heimbach is not just a prominent burn doctor. He is a star witness for the manufacturers of flame retardants.

His testimony, the Tribune found, is part of a decades-long campaign of deception that has loaded the furniture and electronics in American homes with pounds of toxic chemicals linked to cancer, neurological deficits, developmental problems and impaired fertility.

The tactics started with Big Tobacco, which wanted to shift focus away from cigarettes as the cause of fire deaths, and continued as chemical companies worked to preserve a lucrative market for their products, according to a Tribune review of thousands of government, scientific and internal industry documents.

These powerful industries distorted science in ways that overstated the benefits of the chemicals, created a phony consumer watchdog group that stoked the public's fear of fire and helped organize and steer an association of top fire officials that spent more than a decade campaigning for their cause.

Today, scientists know that some flame retardants escape from household products and settle in dust. That's why toddlers, who play on the floor and put things in their mouths, generally have far higher levels of these chemicals in their bodies than their parents.

Blood levels of certain widely used flame retardants doubled in adults every two to five years between 1970 and 2004. More recent studies show levels haven't declined in the U.S. even though some of the chemicals have been pulled from the market. A typical American baby is born with the highest recorded concentrations of flame retardants among infants in the world.

People might be willing to accept the health risks if the flame retardants packed into sofas and easy chairs worked as promised. But they don't.

The chemical industry often points to a government study from the 1980s as

proof that flame retardants save lives. But the study's lead author, Vytenis Babrauskas, said in an interview that the industry has grossly distorted his findings and that the amount of retardants used in household furniture doesn't work.

"The fire just laughs at it," he said.

Other government scientists subsequently found that the flame retardants in household furniture don't protect consumers from fire in any meaningful way.

The U.S. Environmental Protection Agency, meanwhile, has allowed generation after generation of flame retardants onto the market and into American homes without thoroughly assessing the health risks. The EPA even promoted one chemical mixture as a safe, eco-friendly flame retardant despite grave concerns from its own scientists about potential hazards to humans and wildlife.

Since the 1970s manufacturers have repeatedly withdrawn flame retardants amid health concerns. Some have been banned by a United Nations treaty that seeks to eliminate the worst chemicals in the world.

Chemtura Corp. and Albemarle Corp., the two biggest U.S. manufacturers of flame retardants, say their products are safe and effective, arguing that they have been extensively evaluated by government agencies here and in Europe.

"Flame retardants provide an essential tool to enable manufacturers of products to meet the fire safety codes and standards necessary to protect life and property in a modern world," John Gustavsen, a Chemtura spokesman, said in a written statement.

His company, Gustavsen said, strongly disagrees with the main findings of the Tribune's investigation.

CONSUMER PRODUCT SAFETY COMMISSION PHOTO

Up in flames: Government scientists found that chairs containing flame retardants, like the one being tested above, burned just as fast as identical chairs without them.

Heimbach, the burn doctor, has regularly supported the industry's position that flame retardants save lives. But he now acknowledges the stories he told lawmakers about victims were not always factual.

He told the Tribune his testimony in California was "an anecdotal story rather than anything which I would say was absolutely true under oath, because I wasn't under oath."

Heimbach, a retired Seattle doctor and former president of the American Burn Association, also said his anecdotes were not about different children but about the same infant. But records and interviews show that the baby Heimbach said he had in mind when testifying didn't die as he described and that flame retardants were not a factor.

After the Tribune confronted chemical executives with Heimbach's questionable testimony, he offered, through his lawyer, another explanation for why his stories didn't add up: He intentionally changed the facts to protect patient privacy.

Yet the most crucial parts of his testimony — the cause of the fire and the lack of flame retardants — had nothing to do with privacy. Instead, they served to bolster

the industry's argument that chemical retardants save lives.

In the last quarter-century, worldwide demand for flame retardants has skyrocketed to 3.4 billion pounds in 2009 from 526 million pounds in 1983, according to market research from The Freedonia Group, which projects demand will reach 4.4 billion pounds by 2014.

As evidence of the health risks associated with these chemicals piled up, the industry mounted a misleading campaign to fuel demand.

There is no better example of these deceptive tactics than the Citizens for Fire Safety Institute, the industry front group that sponsored Heimbach and his vivid testimony about burned babies.

Fear and deception

In the website photo, five grinning children stand in front of a red brick fire station that could be on any corner in America. They hold a hand-drawn banner that says "fire safety" with a heart dotting the letter "i."

Citizens for Fire Safety describes itself as a group of people with altruistic intentions: "a coalition of fire professionals, educators, community activists, burn centers, doctors, fire departments and industry leaders, united to ensure that our country is protected by the highest standards of fire safety."

Heimbach summoned that image when he told lawmakers that the organization was "made up of many people like me who have no particular interest in the chemical companies: numerous fire departments, numerous firefighters and many, many burn docs."

But public records demonstrate that Citizens for Fire Safety actually is a trade association for chemical companies. Its executive director, Grant Gillham, honed his political skills advising tobacco executives. And the group's efforts to influence fire-safety policies are guided by a mission to "promote common business interests of members involved with the chemical manufacturing industry," tax records show.

This 2008 ad in the Los Angeles Times helped Citizens for Fire Safety, a front group for the makers of flame retardant chemicals, defeat a California bill that would have reduced the widespread use of flame retardants in products.

Its only sources of funding — about $17 million between 2008 and 2010 — are "membership dues and assessments" and the interest that money earns.

The group has only three members: Albemarle, ICL Industrial Products and Chemtura, according to records the organization filed with California lobbying regulators.

Those three companies are the largest manufacturers of flame retardants and together control 40 percent of the world market for these chemicals, according to The Freedonia Group, a Cleveland-based research firm.

Citizens for Fire Safety has spent its money primarily on lobbying and political expenses, tax records show. Since federal law makes it nearly impossible for the EPA to ban toxic chemicals and Congress rarely steps in, state legislatures from Alaska to Vermont have become the sites of intense battles over flame retardants.

Many of the witnesses supporting flame retardants at these hearings were either paid directly by Citizens for Fire Safety or were members of groups that benefited financially from Citizens for Fire Safety's donations, according to tax documents and other records.

At the same time, Citizens for Fire Safety has portrayed its opposition as mis-

guided, wealthy environmentalists. But its opponents include a diverse group of public health advocates as well as firefighters who are alarmed by studies showing some flame retardants can make smoke from fires even more toxic.

Matt Vinci, president of the Professional Fire Fighters of Vermont, faced what he called "dirty tactics" when he successfully lobbied for his state to ban one flame retardant chemical in 2009.

Particularly offensive to Vinci were letters Citizens for Fire Safety sent to Vermont fire chiefs saying the ban would "present an additional hazard for those of us in the fire safety profession." But the letter's author wasn't a firefighter; he was a California public relations consultant.

"Citizens for Fire Safety did everything they could to portray themselves as firefighters, as Vermont citizens for fire safety, when it really wasn't Vermont citizens for fire safety at all," Vinci said.

The group also has misrepresented itself in other ways. On its website, Citizens for Fire Safety said it had joined with the international firefighters' association, the American Burn Association and a key federal agency "to conduct ongoing studies to ensure safe and effective fire prevention."

Both of those organizations and the federal agency, however, said that simply is not true.

"They are lying," said Jeff Zack, a spokesman for the International Association of Fire Fighters. "They aren't working with us on anything."

After inquiries from the Tribune, Citizens for Fire Safety deleted that passage from its website.

Gillham, the executive director, declined to comment. Albemarle, Chemtura and ICL Industrial Products also declined to answer specific questions about the group.

Albemarle Chief Sustainability Officer David Clary did say that his company has been transparent about its funding of Citizens for Fire Safety.

JORDAN SILVERMAN/PHOTO FOR THE TRIBUNE

"Citizens for Fire Safety did everything they could to portray themselves as firefighters, as Vermont citizens for fire safety, when it really wasn't Vermont citizens for fire safety at all."

— Matt Vinci, above, president of a Vermont firefighters union, who lobbied against a flame retardant.

"We believe that this support for advocacy groups is critical to raise awareness of the importance of fire safety and give a voice to those who want to speak out on this important public issue," Clary said in a written statement.

Citizens for Fire Safety is the latest in a string of industry groups that have sprung up on different continents in the last 15 years — casting doubt on health concerns, shooting down restrictions and working to expand the market for flame retardants.

For example, the Bromine Science and Environmental Forum, based in Brussels, may sound like a neutral scientific body. But it was founded and funded by four chemical manufacturers, including Albemarle, to influence the debate about flame retardants made with bromine.

Albemarle's global director of product advocacy, Raymond Dawson, said in blunt testimony before Washington state lawmakers in 2007 that the forum is "a group dedicated to generating science in support of brominated flame retardants."

An official from Burson-Marsteller, the global public relations firm that helps run the organization, said the bromine group is not misleading anyone because reg-

ulators, scientists and other stakeholders are well-aware it represents industry.

The PR firm also helps run the Alliance for Consumer Fire Safety in Europe, which is funded by a trade association of flame retardant manufacturers. The alliance's director, Bob Graham, said the group's aim is to improve fire-safety standards for upholstered furniture sold in Europe.

The group's website taps into the public's fear of fire, touting an "interactive burn test tool" that allows visitors to choose a European country and watch a sofa from that nation being torched.

Next to a photo of an easy chair fully engulfed in flames, four words stand out in large capital letters: "ARE YOU SITTING COMFORTABLY?"

'A child crying'

The amount of flame retardants in a typical American home isn't measured in parts per billion or parts per million. It's measured in ounces and pounds.

A large couch can have up to 2 pounds in its foam cushions. The chemicals also are inside some highchairs, diaper-changing pads and breast-feeding pillows. Recyclers turn chemically treated foam into the padding underneath carpets.

"When we're eating organic, we're avoiding very small amounts of pesticides," said Arlene Blum, a California chemist who has fought to limit flame retardants in household products. "Then we sit on our couch that can contain a pound of chemicals that's from the same family as banned pesticides like DDT."

ROBERT DURELL/PHOTO FOR THE TRIBUNE

"When we're eating organic, we're avoiding very small amounts of pesticides. Then we sit on our couch that can contain a pound of chemicals that's from the same family as banned pesticides like DDT."

— Arlene Blum, a California chemist who is fighting to limit flame retardants in household products. Above, she waits to testify before the California state Senate in 2011.

These chemicals are ubiquitous not because federal rules demand it. In fact, scientists at the U.S. Consumer Product Safety Commission have determined that the flame retardants in household furniture aren't effective, and some pose unnecessary health risks.

The chemicals are widely used because of an obscure rule adopted by California regulators in 1975. Back then, a state chemist devised an easy-to-replicate burn test that didn't require manufacturers to set furniture on fire, an expensive proposition.

The test calls for exposing raw foam to a candle-like flame for 12 seconds. The cheapest way to pass the test is to add flame retardants to the foam inside cushions.

But couches aren't made of foam alone. In a real fire, the upholstery fabric, typically not treated with flame retardants, burns first, and the flames grow big enough that they overwhelm even fire-retardant foam, scientists at two federal agencies have found.

Nevertheless, in the decades since that rule went into effect, lawyers have regularly argued that their burn-victim clients would have been spared if only their sofas had been made with California foam. Faced with the specter of these lawsuits — and the logistical challenge of producing separate products just for California — many manufacturers began using flame retardant foam across their product lines.

As a result, California has become the most critical battleground in recent years for advocates trying to reduce the prevalence of these chemicals in American homes.

Citizens for Fire Safety has successfully fought back with a powerful, and surprising, tactic: making flame retardants a racial issue.

The group and witnesses with ties to it have argued that impoverished, minority children would burn to death if flame retardants were removed from household products.

In 2009, for instance, members of the California State Assembly were considering a bill that would have made it unnecessary to add flame retardants to many baby products by excluding them from the state's flammability regulation.

Up to the microphone stepped Zyra McCloud, an African-American community activist from Inglewood, Calif.

McCloud was president of a community group that listed Citizens for Fire Safety as a sponsor on its website and included photos of McCloud with Gillham, the executive director. She did not disclose this connection to the assembly, nor was she asked.

In a news release, Citizens for Fire Safety already had quoted McCloud saying that minority children, who constitute a disproportionate share of fire deaths, would bear the brunt of the "ill-conceived and unsafe legislation."

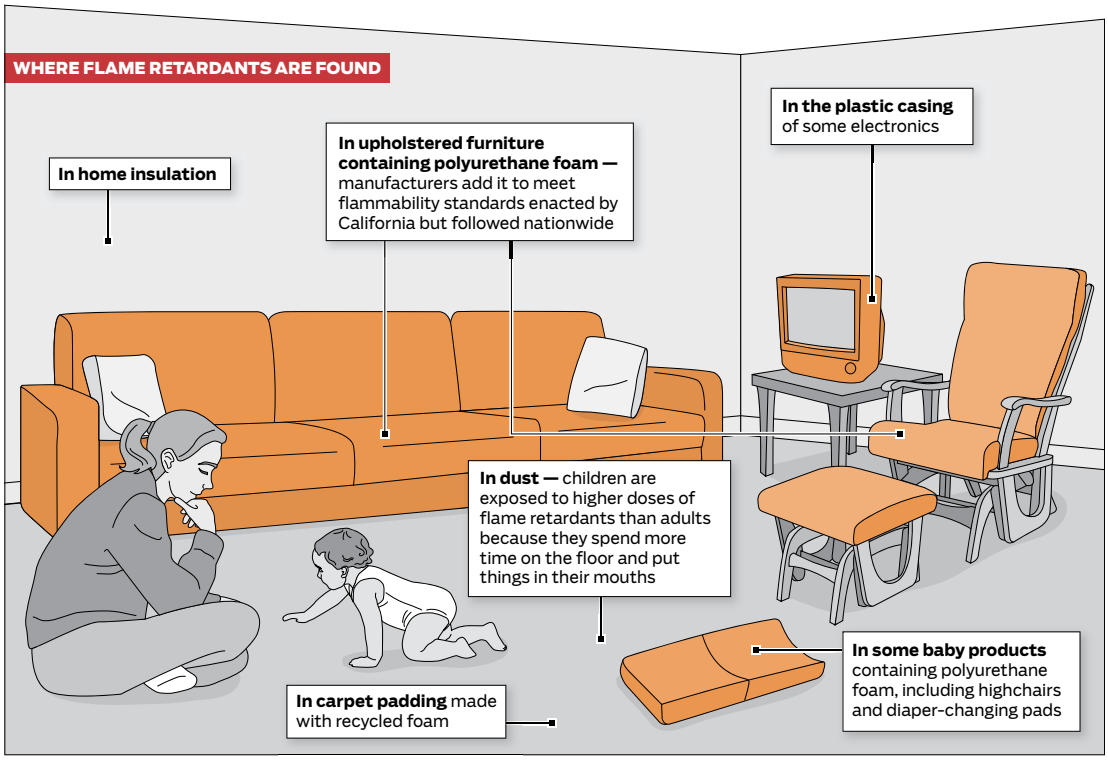
At the hearing, the committee chairwoman told both sides they were out of time for testimony, but McCloud pleaded with her to allow two elementary school students from her district to address lawmakers.

"We have spent all weekend long with the kids that have had family members and friends who have died in fires, and we are praying and appealing to you that you would at least allow the two boys to speak," she said.

One of the boys, a 10-year-old, read from a statement.

Chemicals hard to avoid

Flame retardants are present in virtually every American home even though some of the compounds have been linked to neurological deficits, developmental problems, impaired fertility and other health risks.



SOURCES: EPA, Tribune reporting

KATIE NIELAND/TRIBUNE

"I just want you to imagine a child crying for help in a burning building, dying, when there was a person who only had to vote to save their life," he said.

Citizens for Fire Safety prevailed. The bill later went down to defeat.

McCloud told the Tribune, "I've always been a person that's fought against things that would hurt children." She then asked for questions in writing but never answered them.

Nearly two years after that bill failed, one of the nation's top burn surgeons would also invoke the image of a dead child before California lawmakers on behalf of Citizens for Fire Safety.

When Dr. David Heimbach walked into the California Senate committee hearing last year, the stakes had never been higher for flame retardant manufacturers.

Once again, senators were considering an overhaul of the state's flammability regulation — one that advocates believed would dramatically reduce the amount of flame retardants in American homes.

The bill would allow manufacturers to choose the existing candle-like flame test or a new one based on a smoldering cigarette, a far more common source of fires than candles. Manufacturers could pass the new test by using resistant fabrics rather than adding toxic chemicals to the foam inside.

To maintain the status quo — and avoid a hit to the bottom line — chemical makers needed to stress that fires started by candles were a serious threat.

Heimbach, Citizens for Fire Safety's star witness, did just that.

ROBERT DURELL/PHOTO FOR THE TRIBUNE

"I'm a well-meaning guy. I'm not in the pocket of industry."

— Dr. David Heimbach, a burn expert. Above, Heimbach testifies in 2011 against a California state Senate bill that could have reduced the use of flame retardant chemicals in furniture. He told the Tribune that Citizens for Fire Safety has paid for his travel to testify and for some of his time.

With Citizens for Fire Safety's Gillham watching from the audience, Heimbach not only passionately described the fatal burns a 7-week-old Alaska patient received lying on a pillow that lacked flame retardants, he also blamed the 2010 blaze on a candle.

In fact, he specifically said the baby's mother had placed a candle in the girl's crib.

Heimbach had told similar stories before, the Tribune found. In 2009, he told a California State Assembly committee that he had treated a 9-week-old girl who died that spring after a candle beside her crib turned over. "We had to split open her fingers because they were so charred," he testified.

In 2010, he told Alaska lawmakers about a 6-week-old girl from Washington state who died that year after a dog knocked a candle onto her crib, which did not have a flame retardant mattress.

Heimbach's hospital in Seattle, Harborview Medical Center, declined to help the Tribune confirm his accounts. But records from the King County medical examiner's office show that no child matching Heimbach's descriptions has died in his hospital in the last 16 years.

The only infant who came close in terms of age and date of death was Nancy Garcia-Diaz, a 6-week-old who died in 2009 after a house fire in rural Washington.

In an interview, Heimbach said his anecdotes were all about the same baby — one who died at his hospital, though he didn't know the child's name. Contrary to his testimony, he said he had not taken care of the patient.

Told about Nancy, Heimbach said she was probably the baby he had in mind and emailed a Tribune reporter two photographs of a severely burned child, images that he said he had used in a presentation at a medical conference. Medical records and Nancy's mother confirmed those pictures were indeed of Nancy.

But Nancy didn't die in a fire caused by a candle, as Heimbach has repeatedly testified. Fire records obtained by the Tribune show the blaze was caused by an overloaded, overheated extension cord.

"There were no candles, no pets — just the misuse of extension cords," said Mike Makela, an investigator for the Snohomish County fire marshal's office.

PHOTO PROVIDED BY FAMILY

"Nancy's memory is sacred to us. My daughter deserves respect. She lived such a short time and she suffered a lot. This is horrible."

— Mother of Nancy Garcia-Diaz, above, a 6-week-old girl who died in 2009 after a house fire in rural Washington.

In his testimony last year, Heimbach stated the baby was in a crib on a fire-retardant mattress and on a non-retardant pillow. The upper half of her body was burned, he said.

But public records show there was no crib — she was resting on a bed — and no pillow. And, Makela said, flame retardants played no role in the pattern of her burns.

Fire authorities, Heimbach said, "may know more about it than I do, but that was the information that I had."

Heimbach said he couldn't recall who gave him that information but that Citizens for Fire Safety did not help craft his statements. He said the group has paid for his travel to testify and for some of his time, though he would not give a dollar amount.

The details of his statements, he said, weren't as important as the principle. "The principle is that fire retardants will retard fires and will prevent burns," he said.

Later, Heimbach said through his attorney that federal rules prohibit him from disclosing information that would identify a patient. He said that when describing particular burn cases, he follows standard protocol under the rules by "de-identifying" patients — that is, changing or omitting identifying information to protect their privacy.

But in testimony at state hearings, Heimbach not only changed facts, he added new ones, such as candles starting deadly blazes and the lack of flame retardants — details that aided the chemical industry's position.

Nancy's mother, who asked that her name not be used, said she never granted Heimbach permission to use her daughter's photograph.

"Nancy's memory is sacred to us," she said. "My daughter deserves respect. She lived such a short time and she suffered a lot. This is horrible."

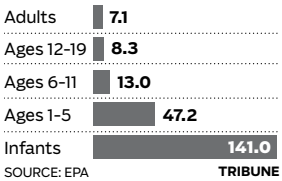
Heimbach was head of Harborview's burn center for 25 years; he also was a professor of surgery at the University of Washington until his retirement last year. He estimated he might have saved "hundreds if not thousands" of lives. In 2009, the Dalai Lama gave

Babies most exposed

High levels of PBDE flame retardants in breast milk account for infants' large daily dose. For others, ingestion of contaminated dust is the chief source of exposure.

Total daily dose

Nanograms (billionths of a gram) of PBDE per kilogram of body weight, per day



SOURCE: EPA

TRIBUNE

Heimbach an award for his care of burn victims around the world.

"I'm a well-meaning guy," Heimbach said. "I'm not in the pocket of industry."

When Heimbach testified last spring in California on the bill that could have significantly reduced flame retardant use, he didn't tell lawmakers he was altering facts about the burn victim. Only when asked by a senator did he reveal that Citizens for Fire Safety paid for his trip there.

When it came time to vote, the senators overwhelmingly sided with Heimbach and Citizens for Fire Safety, sticking with the furniture standard based on a candle-like flame.

Public health advocates had one last hope: Senators had seven days in which they could change their votes. As the advocates tried to persuade senators to reconsider, Citizens for Fire Safety put out a news alert that linked to a video called "Killer Couches!"

To the sounds of sinister music and crackling flames, a sofa made without flame retardants became an inferno. Then these words appeared: "Are You Sitting Comfortably?"

No senators changed their votes, and the bill was dead. The chemical companies had won again.

Tribune reporter Michael Hawthorne contributed to this report.

More watchdog reports at chicagotribune.com

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Types of flame retardants

Many flame retardants are made with bromine or chlorine, which slow fire's combustive reaction by taking the place of oxygen. However, tests have cast doubt on whether adding the chemicals to upholstered furniture is effective, and concerns over health risks have forced some products off the market.

CHEMICALS			
Penta and octa Polybrominated diphenyl ethers, or PBDEs	**Deca** Also a PBDE	**Chlorinated tris** Also known as TDCCP	**Firemaster 550** Brand name
HAZARDS			
Build up rapidly in breast milk and human blood. Hormone disruption, developmental problems, neurological deficits, impaired fertility.	Persists in the environment and creates penta as it breaks down. Potential carcinogen, neurological deficits.	Probable carcinogen, neurological deficits.	Chemical's brominated components found in wildlife. Levels increasing in air around the Great Lakes. Developmental problems at high doses.
STATUS			
Not in use. After the European Union voted in 2003 to ban the chemicals, U.S. makers pulled them from the market. Penta is still present in older furniture, other products containing foam and recycled carpet padding.	**Being phased out.** Manufacturers voluntarily agreed to end production by December 2013. It is still present in the casing of older electronics and in wire insulation, textiles, automobiles and airplanes.	**Still in use.** Voluntarily removed from children's sleepwear in late 1970s but still widely used in furniture foam. Also has been found in baby products containing polyurethane foam.	**Still in use.** Introduced in 2003 as a replacement for penta. Identified for "high priority" review by U.S. Environmental Protection Agency.

SOURCES: U.S. Environmental Protection Agency, Consumer Product Safety Commission, National Research Council, peer-reviewed research.

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