American Chemistry Council | North American Flame Retardant Alliance

October 11, 2022

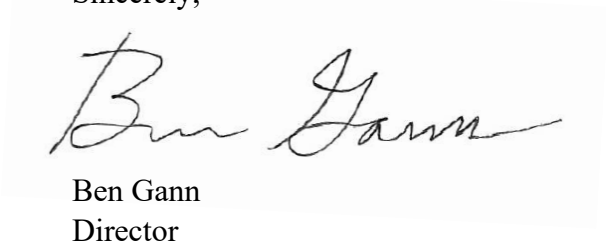
California Environmental Protection Agency
Office of Environmental Health Hazard Assessment
1001 I Street, 23rd Floor
Sacramento, California 95814

Re: Proposed regulatory amendment to adopt a Proposition 65 No Significant Risk Level for antimony trioxide by amending Title 27, California Code of Regulations, section 25705(b).

The American Chemistry Council's (ACC) North American Flame Retardant Alliance ("NAFRA")[1] submits the following comments regarding the California Office of Environmental Health Hazard Assessment (OEHHA) proposed regulatory amendment to adopt a Proposition 65 No Significant Risk Level (NSRL) for antimony trioxide (ATO) by amending Title 27, California Code of Regulations, section 25705(b).

NAFRA appreciates the opportunity to comment on the proposed NSRL for ATO. If you have questions or need clarification regarding NAFRA's comments, please contact me at ben_gann@americanchemistry.com or 202-249-7000.

Sincerely,



Ben Gann
Director
American Chemistry Council

[1] The American Chemistry Council's North American Flame Retardant Alliance represents the leading producers of flame retardants used in wide variety of industrial and consumer applications. NAFRA members represent cutting edge fire-safety chemistry and technology and are dedicated to improving fire safety performance in key product applications. NAFRA members are Albemarle Corporation, ICL Industrial Products, and Lanxess. For more information on NAFRA, visit https://www.americanchemistry.com/industry-groups/north-american-flame-retardant-alliance-nafra.

Contribution of ATO to product safety

ATO in combination with organohalogen flame retardants (OFRs) are used in polymer systems and textiles to help product manufacturers achieve fire safety and product performance. ATO is bound into polymer systems and acts as a flame retardant synergist. Use of ATO as a synergist with OFRs has the advantage of reducing the amount of OFR applied to the polymer.[2] The effectiveness of OFRs used in conjunction with ATO is due to their interference with the radical chain mechanism in the combustion process of the gas phase.[3] This retards gas phase chain reactions associated with combustion, which slows fire spread.[4]

In industrial settings, flame retardants and their components, which includes OFRs and ATO, are provided to manufacturers already dispersed into polymer matrix, allowing addition to be controlled and without producing dust. Controlling dust reduces the risk to inhalation exposure in industrial settings. Thus, exposure to flame retardants and their components – such as ATO – can be effectively managed in industrial settings.

Electronic and electrical equipment utilizing flame retardant systems is not a significant source of exposure

Flame retardants systems are commonly used in the plastics for electronic and electrical equipment in product design as they can stop small ignition events from turning into larger fires. Factors related to the availability and potential for migration of additives from plastics depend on the formulation process for specific products. In general, migration is influenced by the following factors:

- compatibility of the polymer and the additive;
- molecular geometry; and,
- partial vapor pressure.

In general practice, manufacturers give specific recommendations regarding what flame retardants are compatible with specific polymers, as a mismatch typically also leads to the deterioration of physical properties. Likewise, formulators tend to seek flame retardants with structures similar to the base resin where they will be used. Doing so aids in maintaining the physical characteristics of the base resin and minimizes the potential for migration. There is no advantage to seeking poor performing products, so it is in the best interest of both the manufacturer and the formulator to use highly
compatible materials.

[2] U.S. Environmental Protection Agency, "Flame Retardants in Printed Circuit Boards," August 2015, Chapter 3, page 9. https://www.epa.gov/sites/default/files/2015-08/documents/pcb_ch3.pdf.

[3] "Flame Retardants in Printed Circuit Boards," Chapter 3, page 2.

[4] Ibid.

The partial vapor pressure of non-polymeric OFRs is negligible. All of this indicates that the potential for migration of OFRs from electronic casings is quite low. Hence potential exposure is quite low.

Flame retardants systems are a critical tool for product safety and performance

Electrical and electronic equipment present unique fire safety risks because they have a potential ignition source generated by the actual components of the product – circuit boards, transformers, batteries, connectors, and more. Despite fire safety standards for products that are sold in the United States, in the last year alone there were over 6.2 million units that were recalled for a variety of electrical and electronic products due to fire and shock hazards.[5]

Flame retardant systems are an essential tool for overall electronics safety and performance. One of the most important benefits of flame retardants in product design is they can help stop small ignition events from turning into larger fires. Batteries can overheat, and circuit boards and other device components carry electric currents; therefore, electronic products present a higher risk of flammability than non-electronic products. Flame retardant systems help to reduce the risk of fire and are a critical part of overall product safety.

Electronics manufacturers must balance the need to meet consumer demand for smaller, lighter, and more powerful electronics with the need to ensure that those devices meet performance and safety standards. Plastics have revolutionized electronic product designs. Manufacturers use plastics to meet device performance goals, and plastic casings serve as an enclosure that protects from fire and shock risk. If left untreated, these plastics are flammable, so flame retardant systems serve as a critical line of defense against fire.

Flame retardants systems utilizing OFRs and ATO provide specific fire safety and performance benefits in a variety of electronic and electrical equipment. These substances also help provide other important performance factors for end-use performance like durability, weight, fire resistance, and sustainability.

Fire safety standards should be viewed as minimum requirements for flammability and products can go beyond those standards. OEMs may use enclosures that meet or exceed minimum flammability requirements based on their own needs for safety and performance. For instance, OEMs may conclude that an external fire threat is a risk for their product (from a candle or other flame source) and want their product to exceed minimum requirements for horizontal burning or may determine that an internal risk may warrant a higher than the minimum flame rating provided in a standard.

[5] Based on U.S. Consumer Product Safety Commission (CPSC) recall data. https://www.cpsc.gov/Recalls

Conclusion

Since the introduction of strict fire safety standards in the United States, which includes the use of flame retardants, fires have been reduced by over 50 percent, from 734,000 in 1980 to 338,000 in 2021.[6] More protective fire standards – which product manufacturers can meet by using flame retardant systems – can dramatically affect overall fire conditions, including ignition development, smoke generation, escape time, and time available for emergency personnel response.[7]

Any NSRL for ATO developed by OEHHA should be based on the weight of scientific evidence. Moreover, OEHHA should not reach conclusions regarding the potential for exposure to ATO that relies on overly broad assumptions. NAFRA and its member companies remain committed to the use of flame retardant systems that utilize ATO to ensure the safety of products when used as intended.

[6] NFPA, Fire Loss in the United States During 2021, September 2022. https://www.nfpa.org/~/media/Files/News%20and%20Research/Fire%20statistics%20and%20reports/US%20Fire%20Problem/osFireLoss.ashx

[7] Blais, Matthew S., Karen Carpenter, and Kyle Fernandez. "Comparative Room Burn Study of Furnished Rooms from the United Kingdom, France and the United States." Fire Technology (2019): 1-26. https://link.springer.com/article/10.1007/s10694-019-00888-8.