

April 7, 2020

The Honorable John Barrasso
Chairman, Senate Environment and Public Works Committee
U.S. Senate
410 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Thomas R. Carper
Ranking Member, Senate Environment and Public Works Committee
U.S. Senate
410 Dirksen Senate Office Building
Washington, DC 20510

Re: S. 2754, American Innovation and Manufacturing Act of 2019 Senate Testimony

Dear Chairman Barrasso and Ranking Member Carper,

This letter is in reference to S.2754, the American Innovation and Manufacturing Act of 2019, which addresses the phasedown of the use of hydrofluorocarbons (HFC). Safariland has been producing aerosol defense sprays for the law enforcement, military, and public markets for over 25 years, and has developed numerous formulations and products to meet specific customer needs, including various sizes and delivery methods. Certain variants utilize the non-flammable liquified propellant HFC-134a to produce the unique characteristics of a foam or fog delivery system, which are important options for defense sprays.

Law enforcement and military operators deploy aerosol defense sprays in situations where their safety and the public safety is at risk. This is also true for public use of defense sprays and bear sprays. Unlike aerosol products in the cosmetic and consumer markets, aerosol defense sprays must perform across a wide range of scenarios and environments, and there are specific critical performance parameters that must be met, including spray distance, spray volume, aerosol characteristics, and flammability.

As a result of the SNAP Ruling in 2015, Safariland initiated a project to replace HFC-134a with approved alternative propellants. Safariland conducted extensive formulation work independently, as well as working with Honeywell, the manufacturer of one of the primary replacement propellants, HFO-1234ze. Testing and evaluation of the formulations incorporating HFO-1234ze fell far short of meeting the goal of replacing HFC-134a while still maintaining acceptable defense spray performance in all operational environments. In April 2017, Safariland briefed the EPA on its reformulation efforts, conclusions, and concerns, and, based on safety

concerns, submitted a petition to add personal defense sprays to the list of “specific uses” approved for HFC-134a as of July 20, 2016.

There are several technical concerns with the proposed replacement propellants for HFC-134a, which make them a poor propellant choice for defense sprays.

- Lower Vapor Pressure. HFO-1234ze propellants have significantly lower vapor pressure than HFC-134a, which results in lower internal can pressure, especially at lower temperature ranges. The lower internal pressure results in decreased spray distance and spray volume. Operationally, this translates to decreased stand-off distance. Maximizing the standoff distance is critical for law enforcement and personal defense scenarios to prevent physical contact and reduce the risk of injury to both the operator and assailant. For the special case of defense against a charging bear, it is absolutely critical to have a maximum standoff distance where the spray can take effect before the animal can close the distance to the user. Products using the new propellants will have decreased range and standoff distance, and exceptionally poor performance at lower temperatures.
- Flammability. Initial formulations developed using the alternate propellants failed flame extension tests. It was proposed by Honeywell, that HFC-134a provided some flame suppressing properties that HFO-1234ze does not. Further testing demonstrated the flammability of the neat HFO-1234ze, which is an area of concern for law enforcement operators, who must deploy defense sprays in all conditions and in the presence of Electrical Discharge Weapons. Flammability is unacceptable for use in hazardous environments where law enforcement or military defense sprays could be deployed.
- Formulation stability. One of the most important factors in forming an effective fog, foam, or vapor discharge is the solubility of the liquid formulation with the liquid propellant used in the aerosol canister. Formation of a stable solution or emulsion ensures that a consistent amount of active ingredient (OC) is discharged during deployment, and that an excessive amount of shaking is not required to maintain consistent properties. The proposed replacement propellants did not have good solubility with formulation ingredients, resulting in ineffective discharge characteristics that affected the content, pattern, and discharge characteristics of the spray.

Safariland has conducted formulation work to incorporate alternative propellants in place of HFC-134a in its aerosol defense spray products, at significant expense and burden to the company. Performance of the resulting products was degraded, which would significantly increase the risk to both officers and the public when these products are used in law enforcement or military engagements, or for personal defense against assailants or aggressive animals.

Officer Safety and Mission Effectiveness: Defense sprays are an important tool used by law enforcement, corrections, and military personnel to exert nonlethal force in many engagement scenarios. Use of defense sprays as a nonlethal force option can de-escalate a situation before it progresses to physical contact, preventing injuries both to officers and subjects. Operators train

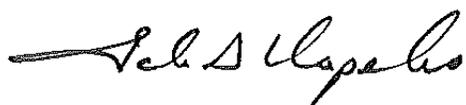
on the use of defense sprays and depend on consistent performance in all environmental conditions. Any failure in discharge characteristics, discharge rate, or distance can compromise the effectiveness of the spray in a conflict and put the officer's safety or the public safety at risk. Discontinued use of HFC-134a propellant will negatively affect the spray performance. Unlike consumer aerosol products, a failure in one of the defense spray performance parameters is more than an inconvenience – it can have a direct impact on officer safety and mission effectiveness.

Public Safety: The safety concerns are not limited to law enforcement use; the public also depends on defense spray products to provide a means of defending against an assailant or attacking animal. As with law enforcement applications, personal defense sprays must perform when deployed in time-critical situations and in all types of environments. Failure of any critical performance parameters will result in significantly increased risk of injury or death. A dramatic example of this is the use of bear spray to stop and deter an attacking bear. The use of a pepper-based spray has been proven as an effective deterrent in a bear attack and has resolved numerous encounters without injury to the user or the animal. However, effectiveness depends on performance, and discontinued use of HFC-134a will negatively affect the spray volume and standoff distance, significantly increasing the risk to the user.

Safariland respectfully requests that additional discussion occur on the use of replacement propellants for HFC-134a, and that exemptions should be considered for HFC's used in certain critical applications such as defense sprays. The AIMA Bill should be revised to permit these critical uses of HFC's and to ensure that states are preempted from overriding the federal government.

Thank you for your consideration, and please let me know if additional information is needed.

Sincerely,



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