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CPSC Fireworks NPR; Oral Presentation
Written Statement of Spencer Elg
(Counsel for National Fireworks Association)

March 7, 2018

Madame Chair, Commissioners:

On behalf of the National Fireworks Association, thank you for the opportunity to address the Commission about the NPR, which proposes the broadest changes to fireworks regulations in decades. NFA is especially appreciative to staff for their efforts to replace the universally loathed “ear-test,” which is used now to evaluate the performance of the burst charges of consumer aerial devices.

As an organization whose mission it is to promote the widespread and safe use of fireworks, NFA supports many of the proposals in the NPR such as its limits on the pyrotechnic weight in certain fireworks, including in aerial devices, and restrictions on hazardous chemicals. These measures are a sensible approach to improving safety and are unlikely to create any significant burdens on the fireworks industry.

My comments today, which should not detract from the many positive aspects of the NPR, focus on one problematic proposal, the proposed Metals Ban.¹ I will focus on the safety aspects of the proposed Metals Ban as NFA’s Secretary, Steve Houser, will comment on its burden.

The proposed Metals Ban prohibits all aerial devices with burst charges of more than 2 grains (130 mg) of pyrotechnic composition if they contain any powdered metals. Because virtually all aerial devices have more than 2 grains, that limitation is practically irrelevant in assessing the benefits and burdens of the proposed Metals Ban.

The proposed Metals Ban bluntly applies to different types and sizes of devices. The result of this one-size-fits-all application is that the proposed Metals Ban permits devices with significantly more powerful burst charges than other devices that it bans. Let’s consider two different devices: a 200 g cake shot and a 500 g cake shot. With the two cakes having the same number of shots, it

¹ NFA provided its position on each proposal in the NPR on pages 18 and 19 of its Comments, and has nothing further to add at this time.

is likely the 500 g cake shots each contain more than twice the loading as the 200 g cake shots. And, by extension, the burst charge of a 500 g cake shot has more than twice the pyrotechnic composition as that of a 200 g cake shot. Now, assume that the only difference between the pyrotechnic compositions in those burst charges is that the 200 g cake shot has 1% powdered aluminum in its burst charge, and the 500 g cake shot does not. As described, the 500 g cake shot with no powdered aluminum is still more than twice as powerful as the 200 g cake shot with powdered aluminum. Yet even though the 500 g cake shot is twice as powerful as the 200 g cake shot, the proposed Metals Ban fails the 200 g cake shot as too dangerous, and bans it from the market, while passing the more than twice as powerful 500 g cake shot and allowing it to be sold. So that is one obvious flaw in the proposed Metals Ban: it arbitrarily bans aerial devices with less energetic burst charges than other devices that it allows.

But that is not the most serious flaw with the Proposed Metals Ban. The most serious flaw with the Proposed Metals Ban is that there appears to be no safety justification for it. It doesn't measure explosivity and, on top of that, there isn't any data to show that it would increase consumer safety.

The failure of the proposed Metals Ban to measure explosivity is of critical concern to NFA. Because the proposed Metals Ban only looks to the presence of powdered metal to pass or fail a device, it ignores the explosivity of what are sometimes referred to as "hybrid powders." (A whistle mix is an example of a hybrid powder.) Hybrid powder, just like metallic powder, can produce significantly greater explosive force than black powder, and for this reason they are commonly used in the burst charges to create effects that black powder cannot accomplish, like making a heart or other shape in the sky.

The NPR recognizes that "[t]he fireworks industry has moved away from using black powders in break charges, and instead, often uses hybrid powders."² There is also published literature recognizing the use of hybrid powders, and whistle mixes in particular, in the burst charges of aerial devices.³

While there are reasonably safe uses of both metallic and hybrid powders to produce certain visual effects, there is also the potential that these compositions might be used to make what is referred to in the industry as an "overloaded product." Overloaded products may have burst charges with up to about 30 percent powdered aluminum, and may be detected by the ear test.

Although grossly over-inclusive in a number of ways, the proposed Metals Ban does manage to catch, in its massive trawling net, products that were overloaded using compositions with unreasonable amounts of powdered metals. But it would be incapable of catching products with

² NPR at 9015. Although the text of the new rule as published in the NPR would continue to permit the use of hybrid powders (as it should), and the recognition that hybrid powders are commonly used in the industry, the findings later inexplicably state that "the Commission expects fireworks products to replace metallic *and hybrid* powders with black powder formulations." *Id.* at 9027. Mandating that burst charge use only black powder would have a catastrophic effect on the U.S. consumer fireworks as consumer demand would likely tank.

³ A.P. Hardt, *Pyrotechnics*, Pyrotechnica Publications, 2001 p. 137.

burst charges containing any type of compound or formulation that does not contain powdered metals.

There are also other factors that can impact the explosivity of a burst charge, including the shell thickness and materials, amount of glue-tape applied, and tightness of the wrappings.⁴ The proposed Metals Ban also fails to account for how these factors may impact the explosivity of the burst charge of an aerial device.

Pyrotechnic compositions without powdered metals, shell designs, and other factors thus can be tweaked and adjusted to maximize explosivity and devices would go undetected by the proposed Metals Ban. Given the lack of any performance test to see what those devices actually do, there would be no way to know their actual explosivity. And by failing to measure explosivity, it is difficult to see how the proposed Metals Ban will reduce the likelihood and severity of injuries.

Another reason that it is difficult to see safety benefits from the proposed Metals Ban is that we have seen no data that shows that it would increase consumer safety. While the CPSC does not need to sit back and wait to see whether injuries will arise related to a product, aerial devices have been sold on the market for years and data about related injuries is already available in the CPSC's annual injury reports. Despite the availability of this data, we have seen nothing correlating the metallic content of devices with the injury reports that are referenced in the NPR and briefing materials. Likewise, we have seen no data comparing the severity or frequency of incidents involving devices that have powdered metals in their burst charges to those that do not. NFA is not aware of data even correlating injuries to break charges, and observes that injuries involving aerial devices appear to frequently be associated primarily with impact from the lift charge of a device, not its burst charge.

There also appears to be no data correlating injury potential with the power of break charges. And CPSC staff recently acknowledged that despite its investigations with "whole shell testing," it "could not find a correlation between a specific pressure released and injury potential."⁵ Without a correlation between injury potential and the energetics of a burst charge, it is unclear what the rationale basis is for a zero percent tolerance for powdered metals. If the assumption is simply that less power will reduce the risk of injury, what is to stop CPSC from continuing to dial back energetics until the devices no longer perform?

Finally, CPSC staff in a 2013 status report on fireworks, recognized that despite the significant expansion since 1996 in the market for large aerial devices, "the annual fireworks injury report does not find a statistically significant trend in injuries in that period."⁶ These conclusions are supported by CPSC's injury data from the 1999 to 2016 Fireworks Safety Reports, which show no increasing trend in emergency department-treated injuries, relative to consumer fireworks imports. In fact, CPSC's compiled injury data actually indicate a decrease in the rate of injury and deaths

⁴ Fireworks Safety Standards Development Project FY 2013 Report at 12.

⁵ Howe, J., Memo re: APA 87-1 Harmonization Investigation (April 17, 2015) at p. 51 (citing Christopher Musto & Andrew Lock, Consumer Product Safety Commission, FY 2012 Fireworks Safety Standards Development Status Report (2013)).

⁶ October 2013, Fireworks Safety Standards Development Project FY 2013 Status Report at 20-21.

relative to consumer fireworks imports during this time.⁷ With injuries and fatalities decreasing relative to imports, during a time of increasing popularity of aerial devices, it still appears worthwhile to “consider the appropriateness of an approach to assume that the current market norms for the level of pressure released upon explosion of shells typical to the marketplace is reasonable, and could be used to set guidelines on future pressure maximums.”⁸

Thank you for your time, and I look forward to responding to any question that you may have.

⁷ See NFA Comments pp. 10-11.

⁸ October 2013, Fireworks Safety Standards Development Project FY 2013 Status Report at 20-21 (emphasis added).