

# **AFSL CONSUMER FIREWORKS SEMINAR**

**美标所消费品烟花研讨会**

**July 28, 2017**

**Liuyang, China**



# I. Introduction. 开幕辞

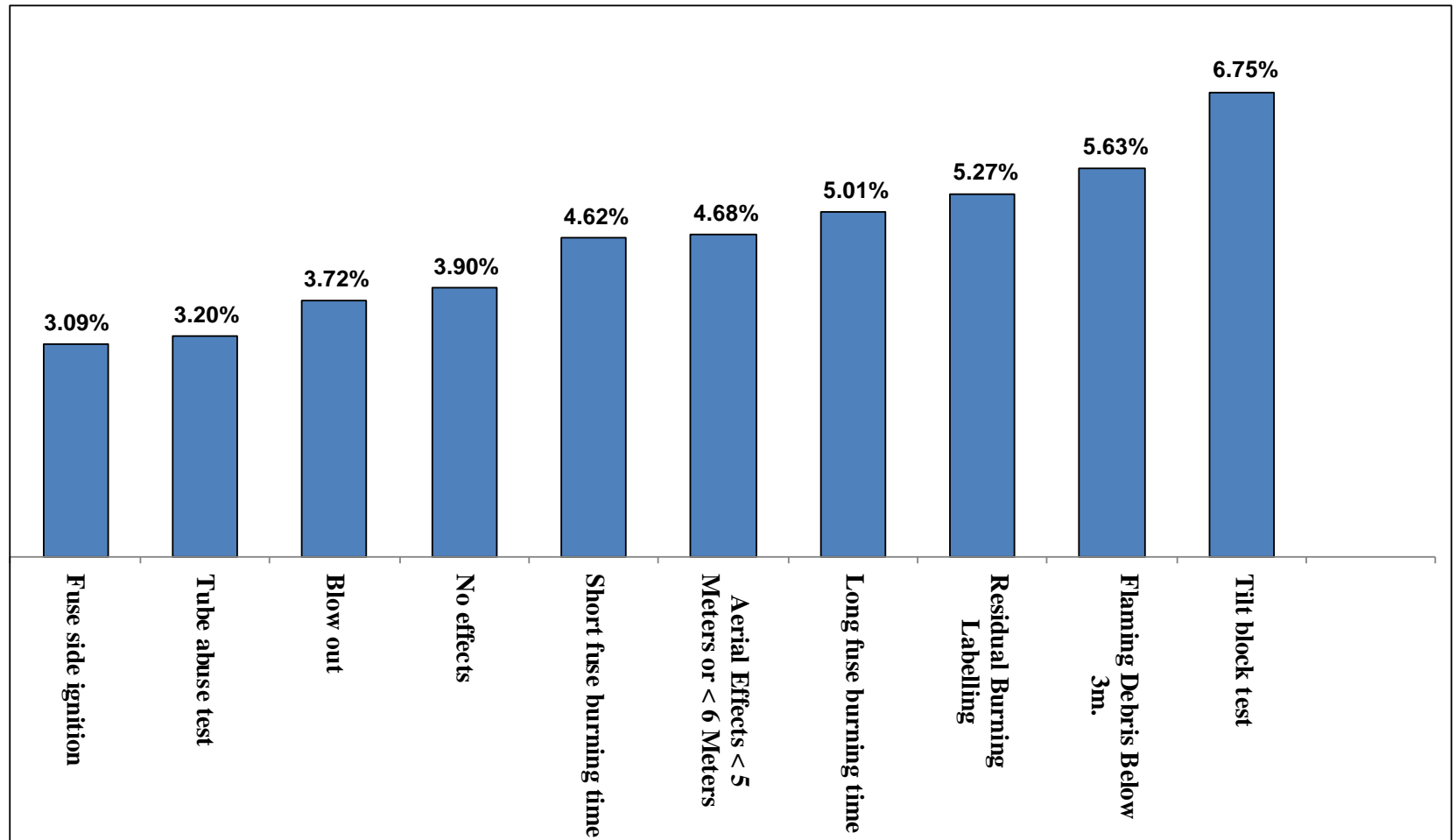
- John D. Rogers 罗杰士

# A. AFSL Testing Program Results. 测试项目概况

(Half of 2017)

# TOP 10 VIOLATIONS HALF YEAR 2017

## Percentage of Total Violations

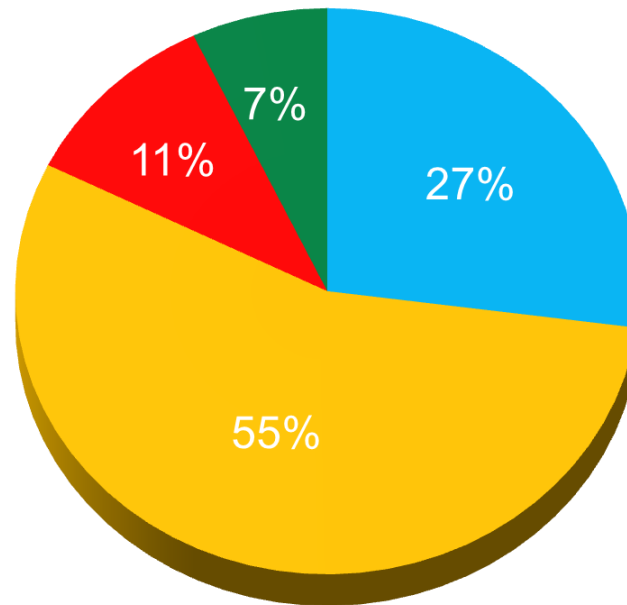




- B. CPSC Testing Results 消委会测试结果

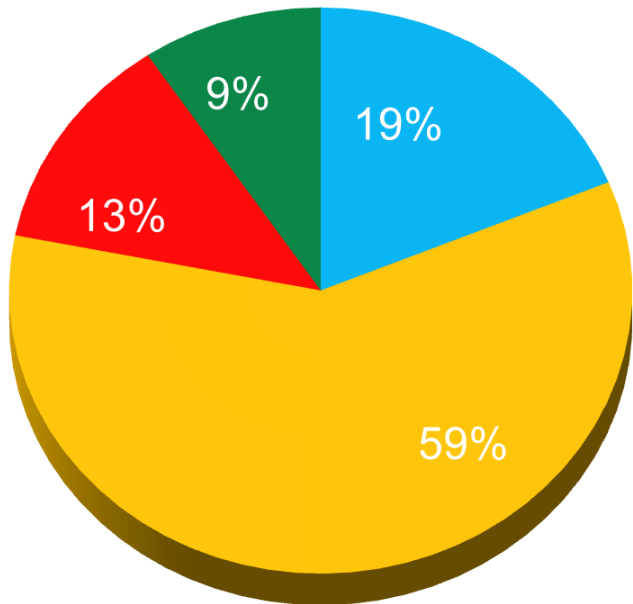
# Fireworks Violations FY15 年度违规

■ Other    ■ Fuse Violation    ■ Overloaded Report    ■ Labeling



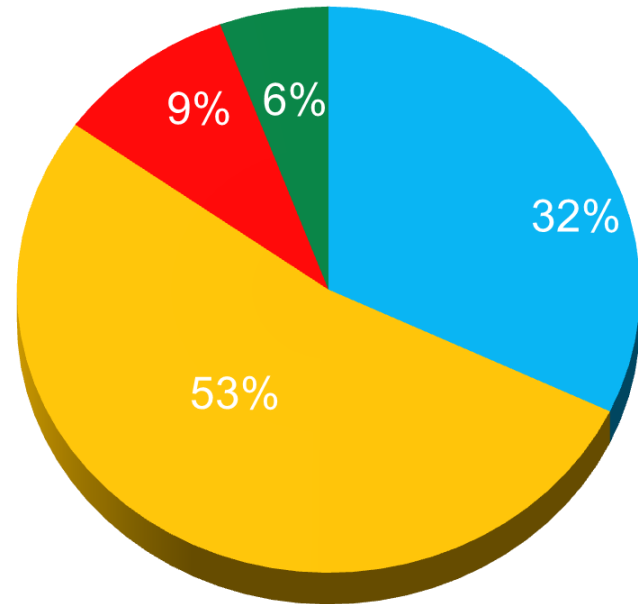
# Fireworks Violations FY15 年度违规

AFSL  
(38% of violations)



■ Other    ■ Fuse Violation

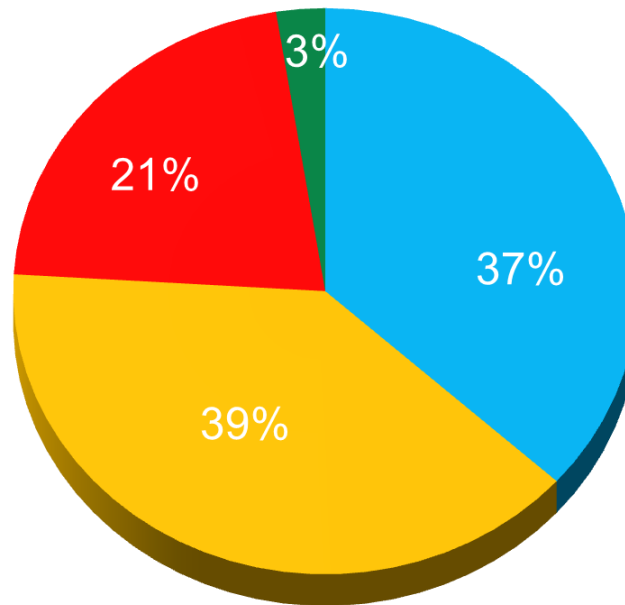
Non-AFSL  
(62% of violations)



■ Overloaded Report    ■ Labeling

# Fireworks Violations FY16 年度违规

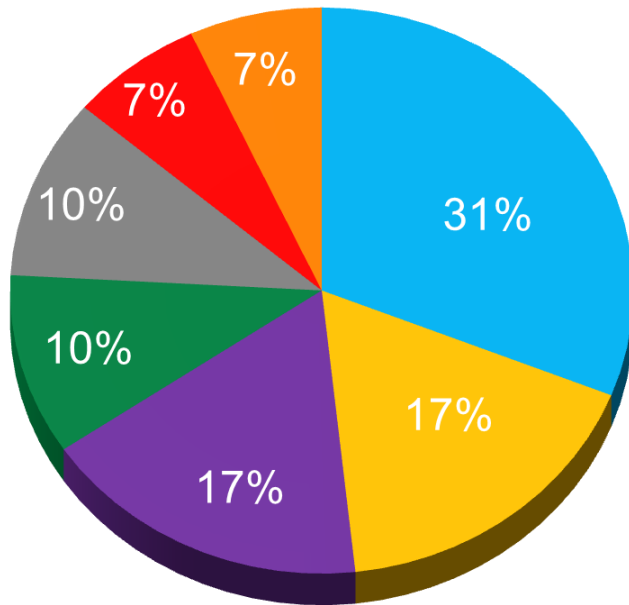
■ Other    ■ Fuse Violation    ■ Overloaded Report    ■ Labeling



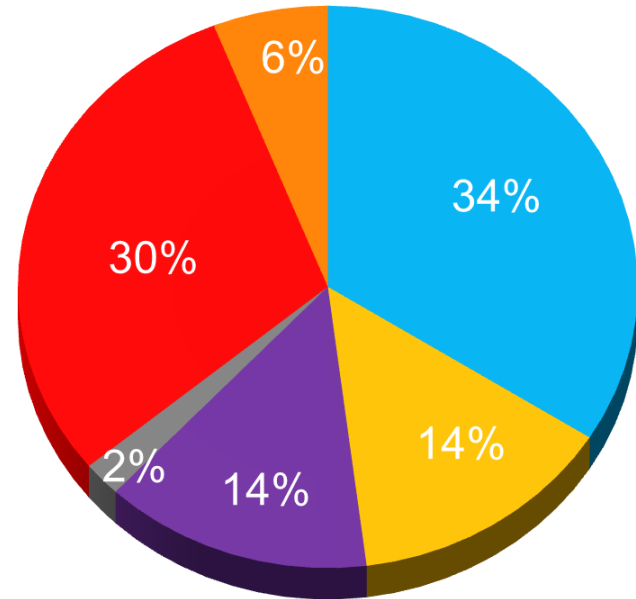


# Fireworks Violations FY16 年度违规

AFSL  
(37% of violations)



Non-AFSL  
(63% of violations)



- Other
- Fuse Attachment
- Labeling
- Long Fuse Burn Time
- Fuse Side Ignition
- Short Fuse Burn Time
- Overloaded Report

# REQUIREMENTS FOR FUSES

## 对引线的要求

***“Safety fuse: A fuse consisting of a thread-wrapped powder train that has been coated with lacquer sufficient to prevent side ignition when tested in according with the AFSL test procedure for side ignition resistance ~~a water-resistant material.~~”***

安全引线：线网包裹的导火线，表面涂有足以抵抗美标旁燃的漆面涂层。

***Effective Date: April 1, 2017.***

**2017年4月1日生效**

# CPSC Proposed Rulemaking - Timeline

## 消委会修例提案-进程

- NPR published February 2, 2017 二月二日发布
- Initial Comments Due April 18, 2017 四月十八日结束首次意见征集
- NFA requested and received extension for 3 months 要求延迟三个月
- Final Comments Due July 17, 2017 七月十七日结束
- AFSL/APA submitted joint comments July 17, 2017 美标所/美国烟火协会于七月十七日联合提交了意见
- CPSC currently reviewing Comments 消委会正研究各方意见
- Commission will make final decision later this year 稍后做最后决定

# ACTIONS PROPOSED BY CPSC

## 消委会的具体提案

# 1. Metal Composition in Break Charges.

## 开爆药里的金属成分

- CPSC proposal (new 16 CFR §1500.17(a)(3)(i), declares as a “banned hazardous substance”:

*“Fireworks devices that contain a burst charge containing metallic powder less than 100 mesh in particle size . . . If the burst charge is produced by a charge of more than 2 grains (~130 mg) of pyrotechnic composition.”*

提案建议禁止烟花使用含有小于一百目金属粉的开爆药超过130毫克。

# 1. Metal Composition in Break Charges.

## 开爆药里的金属成分

### Note:注

- Drops all reference to “intended to produce audible effect” 取消声响限制
- 1 percent proposed “contamination” allowance of fine mesh metals 允许1%杂质污染
- Other “prohibited chemicals” will still apply 其它禁用化学品依旧
- CPSC will use x-ray fluorescence (XRF) to screen and ICP (wet chemistry) for final product evaluation 用X射线荧光色谱扫描和ICP化学分析来测定

Accompanied by indication that the agency will exercise “compliance discretion” to allow up to 1 percent, by weight, of fine mesh metal “contaminants” in burst charges). 将会允许1%重量的杂质污染。

- Replace the “intent to produce audible effect” language of 1500.17(a)(3) with the APA 87-1 and AFSL burst/break charge composition limit of 2 grains (130 milligrams) for compositions containing metallic particles (like magnalium or aluminum) less than 100 mesh (149 microns) in size.

取消法规1500.17(a)(3)条款中“意图产生听觉效果”的用语，采用APA 87-1和美标所以对开爆药成分的限制，如果含有颗粒尺寸小于100目的金属粉末（如铝镁合金或铝）则总量不能超过2格令（130毫克）。

- This composition standard would replace CPSC's current test for determining if a device is intended to produce an audible effect (“Ear Test”).

这一对成分的标准要求将取代消委会目前使用的听觉判断方法



## 2. New CPSC standards would also adopt other, current APA/AFSL limitations for aerial devices (§3.1.2.5 and 3.1.2.6): 还将采用美标标准中的下列条例限制

- No fine mesh metals in lift charges 发射药不含金属粉
- Mine and shell: 60 g total per tube composition limit; 20 g lift charge limit; 200 g total limit for multiple tube devices  
地礼：每管60克药；20克发射药；200克总药量
- Reloadable tube: 60 g limit per shell; 20 g lift charge limit; break charge may not exceed 25% of total composition; 400 g total composition limit per kit

重复装填小炮弹：每弹60克药；20克发射药；开爆药占比25%；每盒400克总药量

## Other Provisions of CPSC NPR:

### 其它修例

- Adoption of 87-1 (same as or similar to AFSL) composition limits on various fountain devices, torches, wheels, and chasers  
采用美标对各式花筒，火炬，转轮和地老鼠的药量限制
- Clarifies that firecrackers are subject to 50 mg limit, regardless of “whether intended to produce audible effects  
爆竹必须限制50毫克药量，无论声响
- Revises and expands CPSC “prohibited chemicals” list to specifically limit to no more than 0.25% (to allow for contamination)  
禁用化学物允许0.25%的杂质含量

# Other Provisions of CPSC NPR:

## 其它修例

- Adds HCB (0.01%) and lead (tetroxide and other lead compounds greater than 0.25%) to CPSC prohibited chemicals list

增加六氯代苯（0.01%）和铅（四氧化物和其它化合物不超过0.25%）为禁用物质

- Formally adopts the CPSC side ignition test (similar to APA/AFSL) as a mandatory standard.

正式采用旁燃测试

# Other Provisions of CPSC NPR, cont.

## 其它修例

- Adds to CPSC base dimension requirements by requiring that bases remain attached during handling, storage and operation (similar to APA/AFSL)  
增加底座牢固要求
- Adopts APA/AFSL general prohibition on “burnout” and “blowout” of fireworks  
采用美标“烧筒”和“炸筒”两个违规项
- Adopts APA/AFSL prohibition of projection of “metal, glass or brittle plastic fragments”  
禁止发射金属，玻璃和脆利塑料碎片

# Other Provisions of CPSC NPR, cont.

## 其它修例

- Clarifies that “aerial bombs” are banned (“a tube device that fires an explosive charge into the air without added visual effect”)  
禁止太雷（空中开炸没有任何视觉效果）
- Adopts other APA definitions of: explosive; pyrotechnic composition; firecracker; burnout; blowout; and base.  
采用APA对炸药；火药；爆竹；烧筒；炸筒和底座的定义。

## All Other CPSC Requirements. 其它条例

- Note: All other provisions of the CPSC regulations will remain in effect and unchanged. Including: Fuse Burn Time; Pyrotechnic Leakage; Tilt Block Requirements; Base/Height Ratio etc.

其它条例保持不变，例如：引线时间；火药泄露；斜板测试；高底比例等等。

# Proposed Test for Fine Mesh Metal Powder Using XRF Scanner 提议用XRF扫描测试金属粉末

- Equipment: 仪器名称  
Niton XL3t XRF Analyzer

# Summary of AFSL Testing

## 美标所测试结果总结

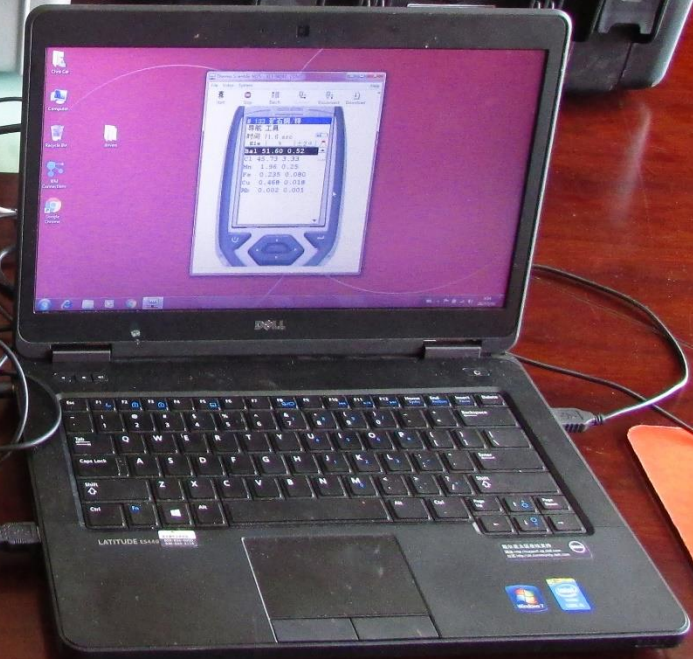
Chuck Rogers 罗杰恰

Americas Director – Supply Chain Solutions and  
Technical Consulting

Bureau Veritas Consumer Product Services











Thermo SCIENTIFIC MOBILE TEST STAND  
N2001 100g Analyzer



# 133 矿石铜/锌

导航 工具

时间 71.6 sec

Ele 8 +2σ

Bal 51.60 0.52

Cl 45.73 3.33

Mn 1.96 0.25

Fe 0.235 0.080

Cu 0.468 0.018

Rb 0.002 0.001



CAUTION  
HIGH INTENSITY X-RAY BEAM

# Summary of AFSL XRF Scanner Tests

## 扫描结果总结

- 1000 in 2016, 600 in 2017. 去年做了一千个，今年做了六百个
- From both Reloadable Tube Aerial Shell Devices and Mine and Shell Devices 样品涵盖小炮弹和盆花
- Samples were selected from normal AFSL testing lots. 在验货批次中抽样
- Break charges were removed from products without identifying the product name. 不记录品名
- Samples were numbered, secured and sent to BV office for analysis 样品编号，封固后发往必维
- Test was conducted under the supervision of BV chemical expert and representative from the scanner manufacturer. 测试由必维化学专家和扫描仪供应商指导。

# Summary of AFSL XRF Scanner Tests

## 扫描结果总结

- The scanner model is identical to the one which CPSC is using. 所用仪器与消委会同款
- Test procedure followed were identical to those recommended by CPSC. 测试程序遵照消委会指示

# 2016 AFSL Testing Results 去年数据

MSDV				
% of Specified Metal	Number of Samples (Al)	% of Samples	Number of Samples (Mg)	% of Samples
<LOD	203	34.00%	560	93.80%
0-1%	186	31.16%	0	0.00%
1-2%	58	9.72%	13	2.18%
2-3%	74	12.40%	21	3.52%
3-4%	47	7.87%	3	0.50%
4-5%	17	2.85%	0	0.00%
5-10%	12	2.01%	0	0.00%
Total	597	100.00%	597	100.00%

# 2016 AFSL Testing Results 去年数据

RTAS				
% of Specified Metal	Number of Samples (Al)	% of Samples	Number of Samples (Mg)	% of Samples
<LOD	250	49.02%	470	92.16%
0-1%	166	32.55%	0	0.00%
1-2%	26	5.10%	7	1.37%
2-3%	28	5.49%	26	5.10%
3-4%	15	2.94%	6	1.18%
4-5%	10	1.96%	1	0.20%
5-10%	15	2.94%	0	0.00%
Total	510	100.00%	510	100.00%



# 2017 AFSL Testing Results 今年数据

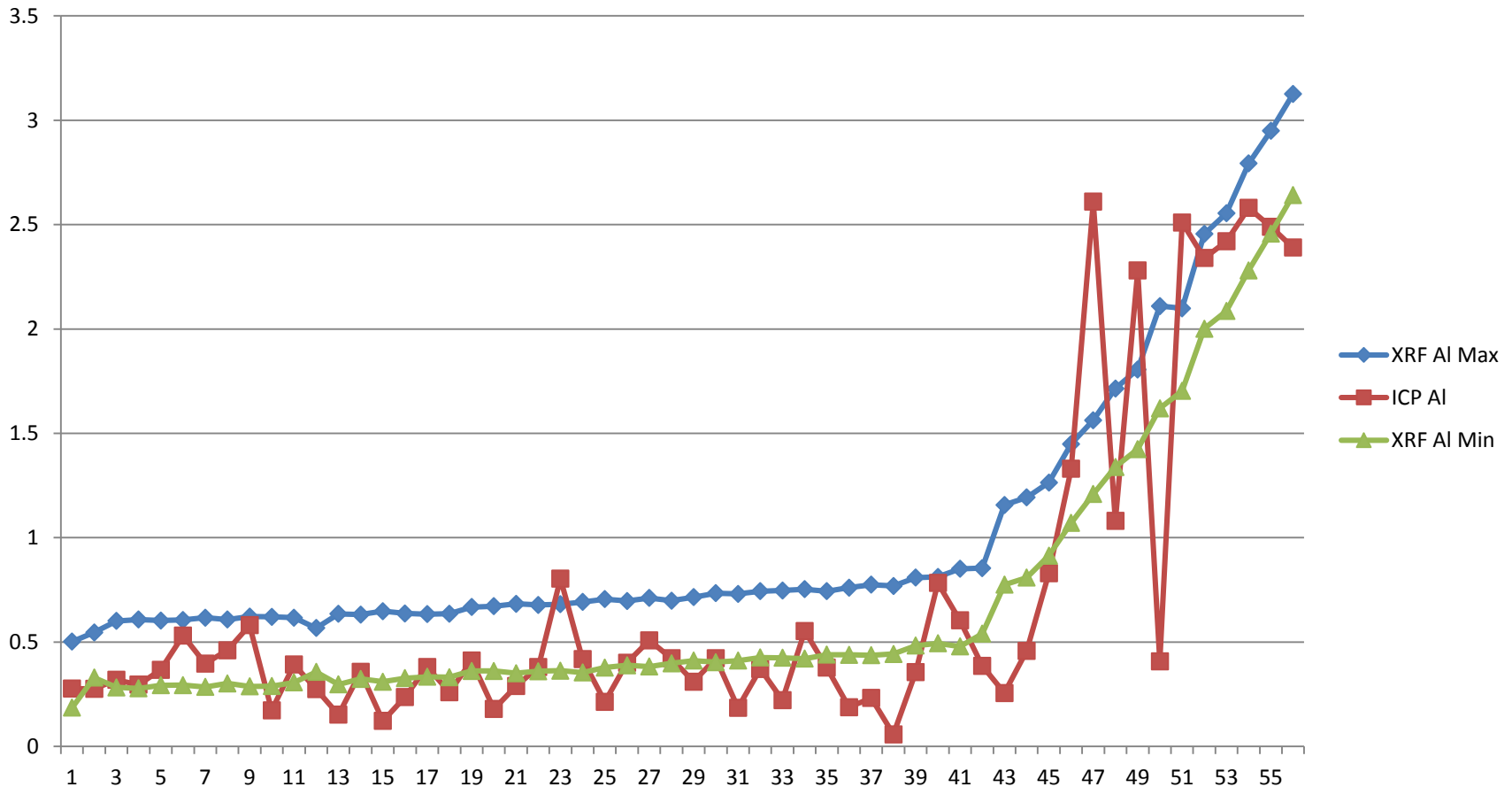
MSDV				
% of Metal	Number of Samples (Al)	% of Samples	Number of Samples (Mg)	% of Samples
<LOD	227	72.07%	313	99.37%
0-0.5%	55	17.46%	0	0.00%
0.5-1%	9	2.86%	0	0.00%
1-1.5%	3	0.95%	2	0.63%
1.5-2%	2	0.63%	0	0.00%
2-3%	0	0.00%	0	0.00%
3-10%	10	3.17%	0	0.00%
>10%	9	2.86%		

# 2017 AFSL Testing Results 今年数据

RTAS				
% of Metal	Number of Samples (Al)	% of Samples	Number of Samples (Mg)	% of Samples
<LOD	138	45.85%	299	99.34%
0-0.5%	82	27.24%	0	0.00%
0.5-1%	16	5.32%	0	0.00%
1-1.5%	1	0.33%	0	0.00%
1.5-2%	2	0.66%	1	0.33%
2-3%	6	1.99%	0	0.00%
3-10%	51	16.94%	1	0.33%
>10%	5	1.67%	0	0.00%

# Summary of AFSL ICP Test Results

## ICP测试结果总结



# AFSL/APA Comments 我们的意见

- AFSL/APA strongly support the provision prohibiting fine mesh metal powders in aerial break charges.

美标所/美国烟火协会坚决支持在升空开爆药中禁用金属细粉。

- It will enhance the safety of aerial devices by reducing the risk of catastrophic injuries from malfunctions and misuse.  
降低因性能不良和使用不当造成严重伤害的风险，提升安全

## AFSL/APA Comments, cont. 我们的意见，续

- The proposal would eliminate the “ear test” and minimize the risk of products failing in the US that have been certified by AFSL. 消灭“人耳测试”，避免美标产品在美国被判违规的风险。
- The proposal will make the CPSC requirements consistent with existing DOT requirements.  
使得消委会条例与交通部一致。

## AFSL/APA Comments, cont. 我们的意见, 续

- AFSL/APA strongly recommend a formal, regulatory contamination allowance of two percent fine mesh metal powder, in addition to formal allowance for instrument testing variability. 强烈要求允许百分之二的杂质含量。
  - This reflects the realities of the fireworks manufacturing process; 这是烟花制造过程的实际工艺水平
  - represents a level at which both industry and CPSC testing data have proven not to pose any significant additional hazard to consumers; 我们和消委会的测试均证实这样不会显著增加对消费者的危害

## AFSL/APA Comments, cont. 我们的意见，续

- AFSL/APA strongly support adoption by the CPSC of existing composition limits and ratios contained in the 87-1/DOT requirements. 支持采用交通部条例中的药量限制
  - Such limits are necessary and reasonable to help enhance the safety and enjoyment of these consumer fireworks. 对于提高安全和娱乐性能，这些限制是合理和必须的。
  - They would impose a minimal compliance burden since they are already mandated by the Department of Transportation and are currently tested and certified to by the large majority of U.S. fireworks importers. 不会增加太大困难，因为交通部早就强制执行了多年。

## AFSL/APA Comments, cont. 我们的意见，续

- AFSL/APA strongly support the adoption of the other regulatory provisions proposed by CPSC, including Tilt block test, fuse side ignition test, etc. 支持采用其它法规条例，包括斜板，引线旁燃等。
  - doing so will help establish an even regulatory playing field for the entire U.S. fireworks industry. 使得整个行业公平竞争。
  - These provisions have been in place in both APA 87-1 and the AFSL Standards and have been certified to by AFSL for the past 20 years. Should not result in any additional burden or cost to industry. 这些条例在美标所和交通部实行了20年，不会造成行业的额外负担。



## AFSL/APA Comments, cont. 我们的意见，续

- A copy of the complete AFSL/APA Comments is available on the AFSL website: [www.afsl.org](http://www.afsl.org).  
我们提交意见的全文可登录美标所网站查阅
- The Comments are also available at the following:  
<http://afsl.org/newsletters>.  
上述链接也可查阅

# Concerns of Some Industry Members

## 某些行家的担心

1. The proposed ban on fine mesh metal proposal will eliminate 85% of reloadables and possibly all mine and shell devices. 禁用金属粉会导致八成小炮弹和绝大多数盆花违规
2. There is no safety benefit to the CPSC Proposed actions.  
消委会修订条例对安全没有好处
3. The proposed contamination level of 1% is too low.  
百分之一的杂质水平太低
4. The XRF Scanner is not an accurate or reliable test method. 扫描仪不够可靠精确

# CPSC Findings 消委会的结论

“Commission staff randomly tested fireworks samples collected from the Office of Compliance from fiscal years 2014, 2015, and 2016. Using the CPSC Testing Manual method, staff found that 17 percent of the samples were “intended to produce audible effects” and exceeded the 2-grain limit. In contrast, while using the APA Standard 87–1 method, staff found that 84 percent of the samples (54 of 64 devices analyzed) were “intended to produce audible effects” and exceeded the 2-grain limit.

执法处记录过去三年中，用消委会测试方法判定百分之十七的样品开爆违规。相对而言，用交通部的测试方法判定百分之八十四的样品（64个中的54个）开爆违规。

## CPSC Findings , Cont. 消委会的结论 续

Although the sample size is too small to be conclusive, these results show a notable difference between the number of devices that qualify as “intended to produce audible effects” using the CPSC Testing Manual method and the APA Standard 87-1 method.” 虽然取样不多不足以下定论，但的确显示两种测试方法的判定差异

NOTE: Testing done by AFSL shows approximately 85-90 percent of mine and shell devices and approximately 80-85 percent of reloadable tube devices currently on the market would be expected to pass a two percent fine mesh metals regulatory limit. 美标所的测试结果显示目前市场上八九成的盆花和八成的小炮弹可以符合百分之二金属粉的限制。

# CPSC Findings , Cont. 消委会的结论 续

“Serious injuries and deaths still occur that are associated with devices commonly subject to this limit, including injuries to young children. In addition, as staff’s testing indicates, the current test method identifies fewer devices as being subject to the 2-grain limit than the APA Standard 87–1 method. Therefore, the Commission believes that the proposed method is necessary to protect consumer safety....” 与开爆相关的严重伤亡事故仍然存在，包括对儿童的伤害。而且发现消委会现行测试方法判定的违规开爆比使用交通部方法判定的少，所以认为需要该项修例提案的方法保护消费者的安全。

## CPSC Findings , Cont. 消委会的结论 续

The CPSC “staff’s preliminary testing revealed that metallic content used in visual effects may inadvertently contaminate break charge content at very low levels. Staff found that when contamination occurred, the contamination level in the break charge was generally less than 1 percent.”

初步发现用于视觉效果金属元素渗入开爆药的成分是极低的，一般非故意渗入的杂质水平均低于百分之一。

## CPSC Findings , Cont. 消委会的结论 续

“Staff evaluated the detection levels of Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) and X-Ray Fluorescence (XRF) and found that they produced largely similar results but can identify metallic content at slightly different levels. Commission staff believes that both ICP-OES and XRF are viable instruments for assessing compliance with proposed 1500.17(a)(3).”

对比了X射线荧光扫描和耦合等离子光谱分析两种测试方法的结果，发现探测金属含量的结果大致相近，差别微小。认为两种方法都可采用。

## **VII. Questions and Answers. 问与答**

- Seminar Participants



# Contact: 联系方式

**John D. Rogers, *Executive Director***

**Jieli Tan, *Office Manager***

**Jerry Wingard, *Project Manager***

***American Fireworks Standards Laboratory***

7316 Wisconsin Ave, Suite 214

Bethesda, MD 20814

Phone: (301) 907-9115

Fax: (301) 907-9117

Email: [afslhq@afsl.org](mailto:afslhq@afsl.org)

[www.AFSL.org](http://www.AFSL.org)

# Contact: 联系方式

**John D. Rogers, *Executive Director***  
**William Zhou, *China Operations Manager***  
**Tony Gong, *Program Auditor***  
**Emily Peng, *Administrative Assistant***  
**American Fireworks Standards Laboratory**  
**China Audit Control Office**

98-1, Venice Garden  
Liuyang, Hunan, China  
Phone: +86 731 83667669  
Fax: +86 731 83667669  
Email: [william.zhou@afsl.org](mailto:william.zhou@afsl.org)  
[tonygongafsl@sina.cn](mailto:tonygongafsl@sina.cn)  
[emilyafsl@sina.com](mailto:emilyafsl@sina.com)  
[www.AFSL.org](http://www.AFSL.org)

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THANK YOU!

