AFSL Fireworks Seminar

Erie, PA
September 7, 2017

AGENDA FOR MEETING

I. Introduction – John D. Rogers, Executive Director

II. Update on CPSC Proposed Rulemaking
– John Rogers, Quin Dodd, AFSL
General Counsel, Chuck Rogers, BV

III. Consumer Fireworks Mid-Year Program Summary
– John D. Rogers, Exec. Director

IV. Election of Directors

BREAK

V. Domestic Audit Program– Jerry Wingard, Auditor

VI. New Standards/Program Changes – John Rogers

VII. Questions/Answers

I. Introduction

- John D. Rogers, Executive Director

II. Update on CPSC Proposed Rulemaking

- Quin D. Dodd

John D. Rogers

Chuck Rogers

1. Metal Composition in Break Charges.

- 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."

  -

1. Metal Composition in Break Charges.

Note:

-Drops all reference to “intended to produce audible effect”

-1 percent proposed “contamination” allowance of fine mesh metals. Other “prohibited chemicals” will still apply.

- CPSC will use x-ray fluorescence (XRF) to screen and ICP (wet chemistry) for final product evaluation.

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).

- This language is consistent 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.

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

2. New CPSC standards would also adopt other, current APA/AFSL limitations for aerial devices (§3.1.2.5 and 3.1.2.6):

- No fine mesh metals in lift charges

- Mine and shell: 60 g total per tube composition limit; 20 g lift charge limit; 200 g total limit for multiple tube devices.

- 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.

Other Provisions of CPSC NPR:

- Adoption of 87-1 (same as or similar to AFSL) composition limits on various fountain devices, torches, wheels, and chasers.

- Clarifies that firecrackers are subject to 50 mg limit, regardless of "whether intended to produce audible effects.

- Revises and expands CPSC "prohibited chemicals" list to specifically limit to no more than 0.25% (to allow for contamination).

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

Other Provisions of CPSC NPR, cont.:

- Formally adopts the CPSC side ignition test (similar to APA/AFSL) as a mandatory standard.
- Adds to CPSC base dimension requirements by requiring that bases remain attached during handling, storage and operation (similar to APA/AFSL).
- Adopts APA/AFSL general prohibition on “burnout” and “blowout” of fireworks.
- Adopts APA/AFSL prohibition of projection of “metal, glass or brittle plastic fragments”.

Other Provisions of CPSC NPR, cont.

- Clarifies that "aerial bombs" are banned ("a tube device that fires an explosive charge into the air without added visual effect".

- Adopts other APA definitions of: explosive; pyrotechnic composition; firecracker; burnout; blowout; and base.

All Other CPSC Requirements.

- 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.

Proposed Test for Fine Mesh Metal Powder Using XRF Scanner

- Equipment: Niton XL3t XRF Analyzer

Summary of AFSL Testing

Chuck Rogers

AFSL Program Manager

Bureau Veritas Consumer Product Services


Thermo


Thermo
MOBILE TEST STAND


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

XRF Screening Test for Fine Mesh Metal Power Video

Summary of AFSL XRF Scanner Tests

- 1000 in 2016, 600 in 2017.
- From both Reloadable Tube Aerial Shell Devices and Mine and Shell Devices.
- Samples were selected from normal AFSL testing lots.
- Break charges were removed from products without identifying the product name.
- Samples were numbered, secured and sent to BV office for analysis .

Summary of AFSL XRF Scanner Tests

- Test was conducted under the supervision of BV chemical expert and representative from the scanner manufacturer.
- The scanner model is identical to the one which CPSC is using.
- Test procedure followed were identical to those recommended by CPSC.

2016 AFSL Testing Results

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

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%

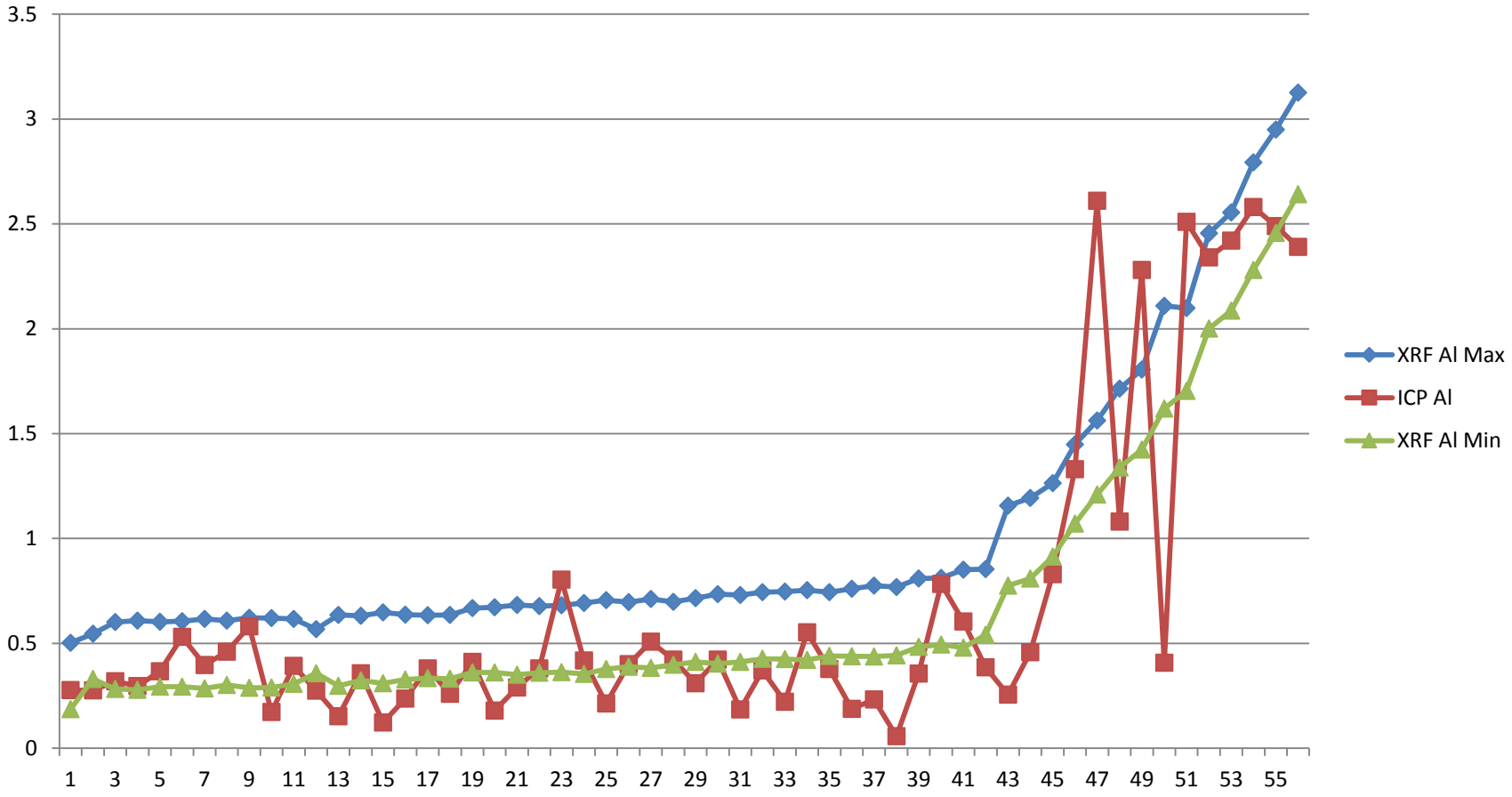
2017 AFSL Testing Results

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

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



Test Results for Four Companies

- FOA, TNT, Phantom, and Winco contracted with BV to conduct XRF Scanning on selected aerial devices.
- Purpose: To determine level of compliance with the proposed Metal Powder Limit.
- Costs were paid by individual companies, not AFSL.
- Results are as follows:

Results for Individual Companies

% of Metal	Number of Samples (Al)	% of Samples	Number of Samples (Mg)	% of Samples
<LOD	27	34.2%	76	96.2%
0-1%	44	55.7%	0	0.00%
1-2%	3	3.8%	0	0.00%
>2%	5	6.3%	3	3.8%

AFSL/APA Comments

- AFSL/APA strongly support the provision prohibiting fine mesh metal powders in aerial break charges.
  - It will enhance the safety of aerial devices by reducing the risk of catastrophic injuries from malfunctions and misuse;
  - The proposal would eliminate the “ear test” and minimize the risk of products failing in the US that have been certified by AFSL;
  - The proposal will make the CPSC requirements consistent with existing DOT requirements.

AFSL/APA Comments, cont.

- 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.
  - This reflects the realities of the fireworks manufacturing process;
  - represents a level at which both industry and CPSC testing data have proven not to pose any significant additional hazard to consumers.

AFSL/APA Comments, cont.

- AFSL/APA strongly support adoption by the CPSC of existing composition limits and ratios contained in the 87-1/DOT requirements.
  - Such limits are necessary and reasonable to help enhance the safety and enjoyment of these consumer fireworks;
  - 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.

AFSL/APA Comments, cont.

- AFSL/APA strongly support the adoption of the other regulatory provisions proposed by CPSC, including Tilt block test, fuse side ignition test, etc.
  - doing so will help establish an even regulatory playing field for the entire U.S. fireworks industry;
  - 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.

AFSL/APA Comments, cont.

- A copy of the complete AFSL/APA Comments is available on the AFSL website: www.afsl.org.

- The Comments are also available at the following: http://afsl.org/newsletters.

Concerns of Some Industry Members

1. The proposed ban on fine mesh metal proposal will eliminate 85% of reloadables and possibly all mine and shell devices.
2. There is no safety benefit to the CPSC Proposed actions.
3. The proposed contamination level of 1% is too low.
4. The XRF Scanner is not an accurate or reliable test method.

CPSC Findings

1. Re 84% failure rate:

"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.

CPSC Findings, Cont.

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."

Note: CPSC samples were "targeted" samples that were most likely to fail.

AFSL Findings: AFSL tests show 85-90 percent of mine and shell devices and 80-85 percent of reloadable tube devices submitted to AFSL for testing would pass a two percent fine mesh metals regulatory limit.

CPSC Findings, Cont.

2. No Safety Benefits --

"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…."

CPSC Findings, Cont.

3. 1% Contamination Level is too Low –

"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."

CPSC Findings, Cont.

4. XRF Scanner is inaccurate or inconsistent –

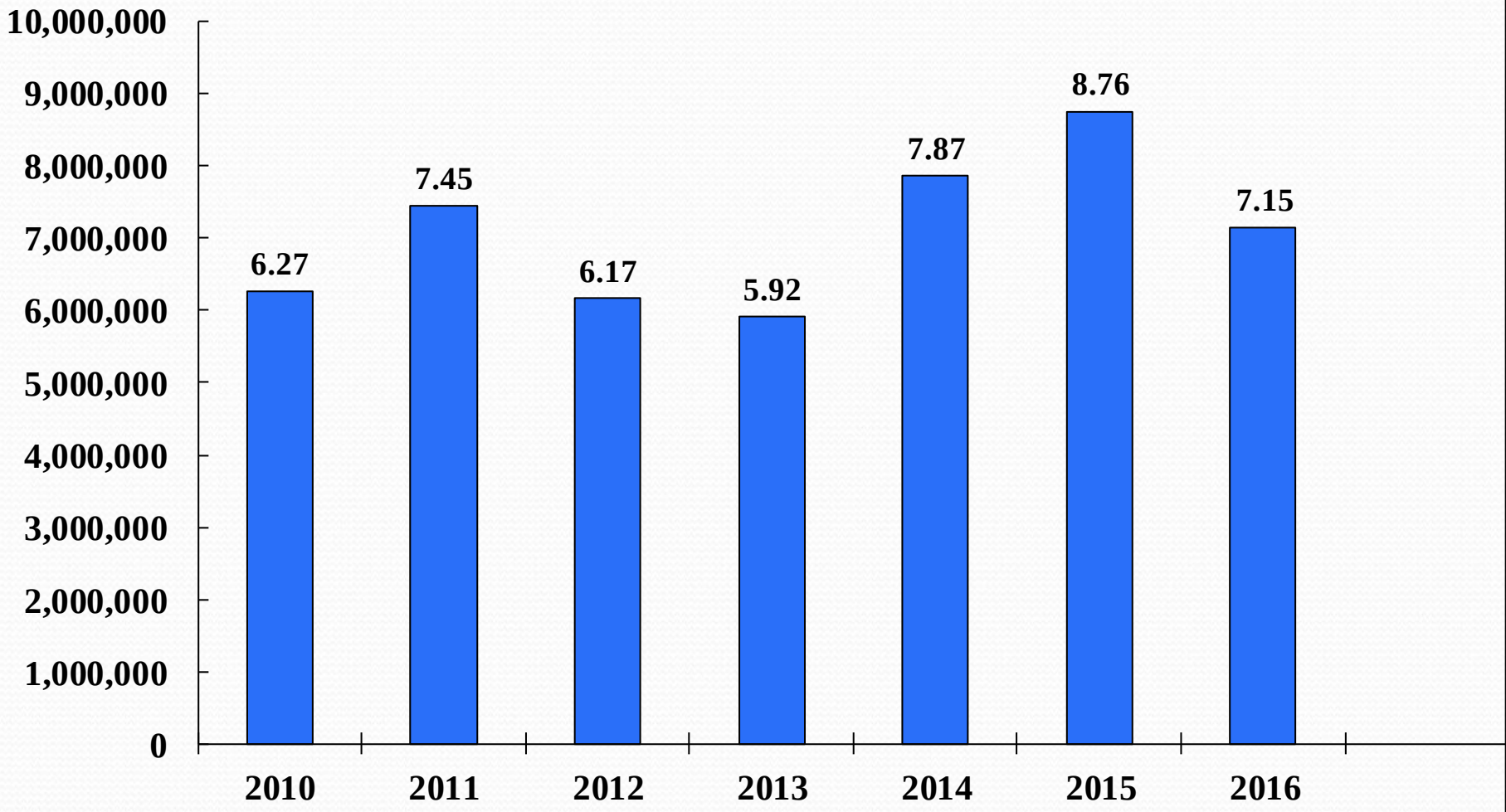
"Staff evaluated the detection levels of Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP–

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)."

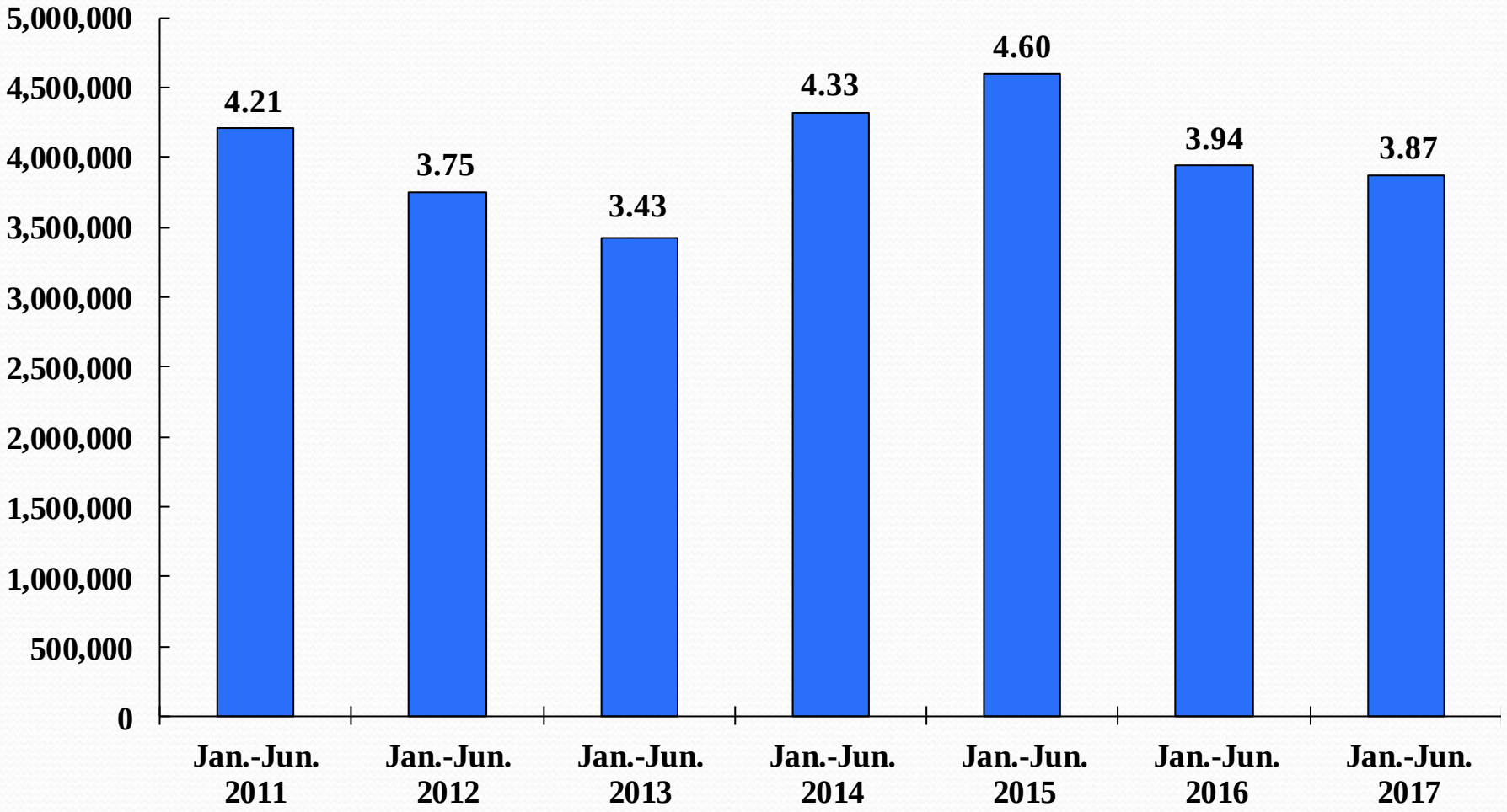
III. Consumer Fireworks Mid-year Program Summary

- John D. Rogers, Executive Director

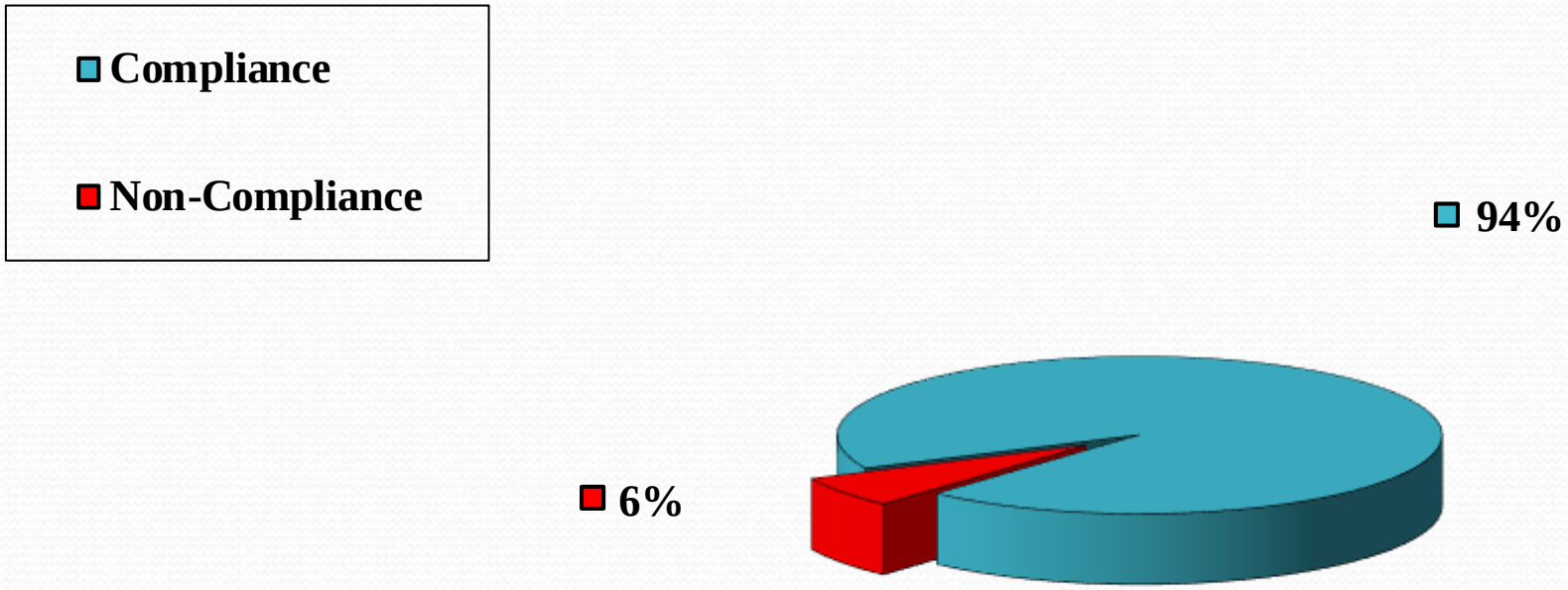
CASES TESTED BY YEAR 2010 -2016
Quality Improvement Program



CASES TESTED BY YEAR
January – June 2011-2017

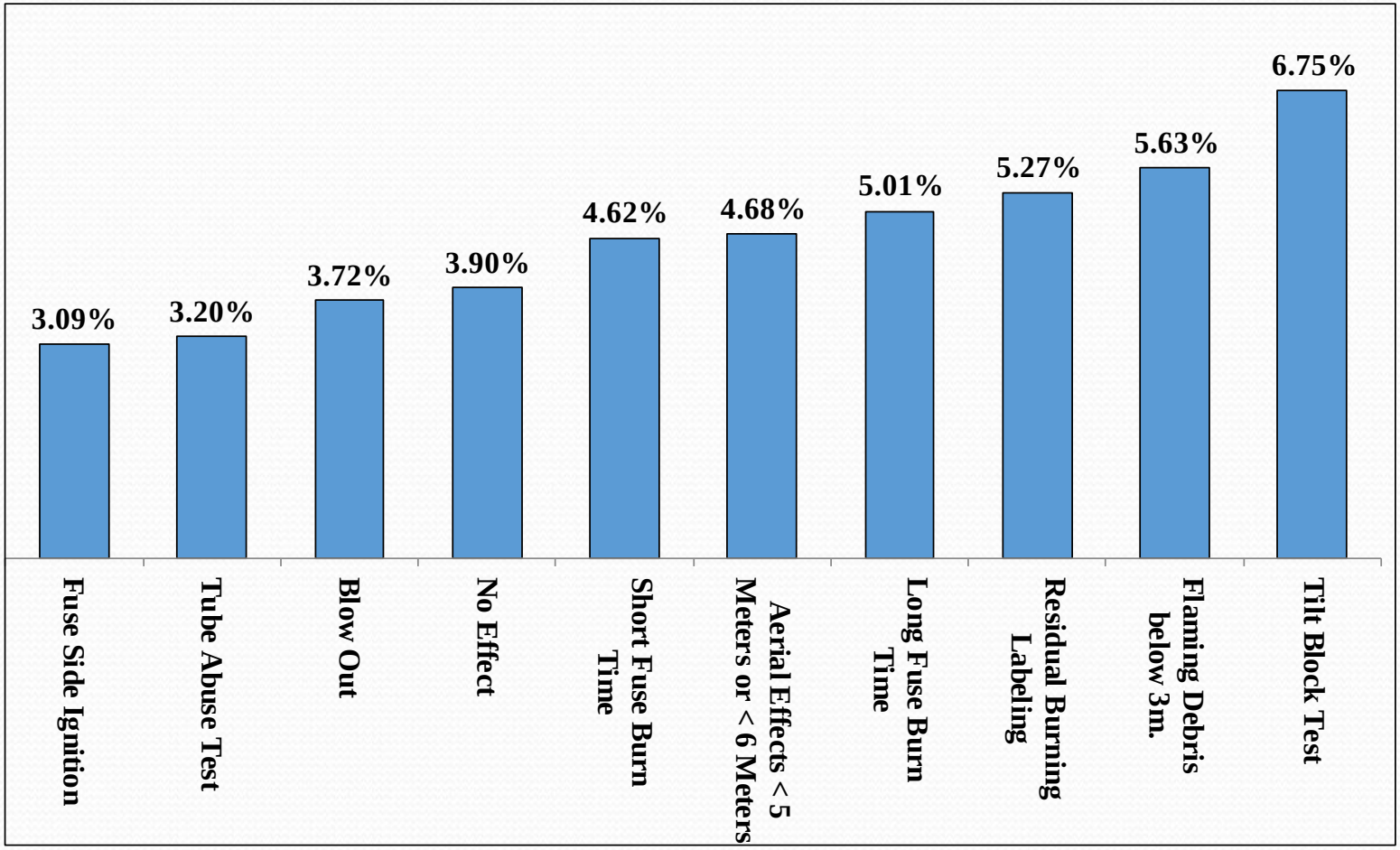


COMPLIANCE RATE HALF YEAR 2017
QUALITY IMPROVEMENT PROGRAM



Complying Cases: 3.63 million cases (include 109,737 component cases).
Non-Complying Cases: 247,880.
Total Cases: 3.87 million cases (include 111,487 component cases).

TOP 10 VIOLATIONS HALF YEAR 2017
Percentage of Total Violations



IV. Election of Directors

Election Candidates

a. Consumer Importer/Distributor/Retailer Category:
Glenn Davis – Ches-Lee Enterprises

Tad Trout – American Promotional Events, Inc. – West

Alan Zoldan – Phantom Importing & Distributing, LLC

b. Consumer Shipper Category:
Joe Wan – Shogun Pyrotechnics

c. Display Company Category:
Michael Cartolano – Melrose Pyrotechnics, Inc.

BREAK

V. Domestic Audit Program for U.S. Importers

- Jerry Wingard, Project Manager

Domestic Audit Phase III

- Phase III started on March 12, 2015 with follow-up audits of companies that were not fully in compliance during Phase I and II. 91 companies are slated for re-audits.

Domestic Audits Phase III

- 39 companies have been re-audited.
  - 11 Companies had corrected all of their previous violations and had no issues.
  - 14 Companies had issues with imported fireworks.
    - (6 of these also had issues with domestic fireworks).
  - 11 Companies had issues with domestic fireworks.

- 2 Companies have been suspended.
- 1 Company did not provide all the information to complete the audit and is pending suspension.
- 5 Did not respond to audit request and are pending suspension.
- 2 Companies are no longer in business.

Corrective Actions for Companies with Continuing Violations.

- Thirteen companies recommended for corrective action for issues with imported or domestic fireworks.
- Five companies recommended for corrective actions related to issues with domestic products Only.
- These letters are pending issuance.

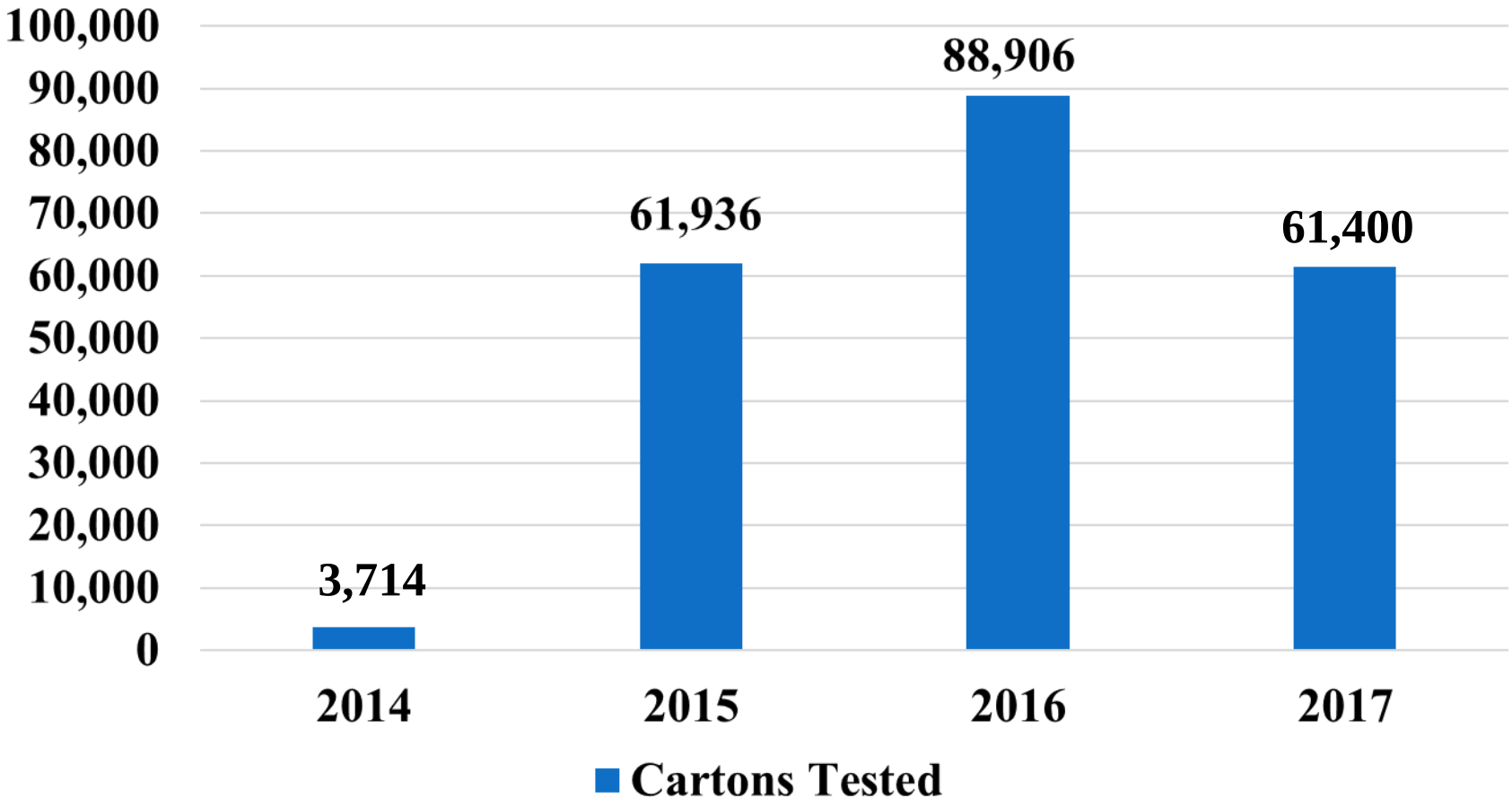
- Fifteen companies have received Corrective Action Letters.
  - Eleven have responded to these letters.
  - Two have not responded.
  - One company did not receive a letter because untested items found during Phase III were identified in phase II.
  - One had mail issues.

Actions and Recommendation for Corrective Actions for Shippers with Continuing Violations.

During the audits issues found with Shippers have been addressed.

- One shipper has received a letter of suspension.
- Twenty-five shippers are being recommended for action.

Number of Cartons Tested thru the Domestic Testing Program



VI. Changes to AFSL Consumer Fireworks Standards

- John D. Rogers, Executive Director

Standard for Fuseless Firecrackers

"Section 1-1.4 This standard applies only to devices that have been approved and assigned a transportation classification of fireworks UN0337, 1.4S by the U.S. Department of Transportation."

"Section 2-1.6 The explosive composition for a single fuseless firecracker must not exceed 50 milligrams."

"Section 2-1.10 Individual fuseless firecrackers must not ignite when dropped onto concrete or equivalent non-yielding surface or asphalt from a height of two (2.0) feet ."

Standard for Fuseless Firecrackers

"Section 2-1.13 The maximum number of fuseless firecrackers per individual retail sales package shall be 20 units, packed with an equal or greater volume of sawdust or similar impact-absorbing material."

"Section 2-1.14 No more than one (1) fuseless firecracker shall ignite inside a sealed retail package when the package is dropped onto a concrete or asphalt surface from a height of 5 (5.0) feet."

Standard for Fuseless Firecrackers

"Section 3-2.3 Individual fuseless firecrackers with outside diameter greater than 1/4" must bear the following identification.

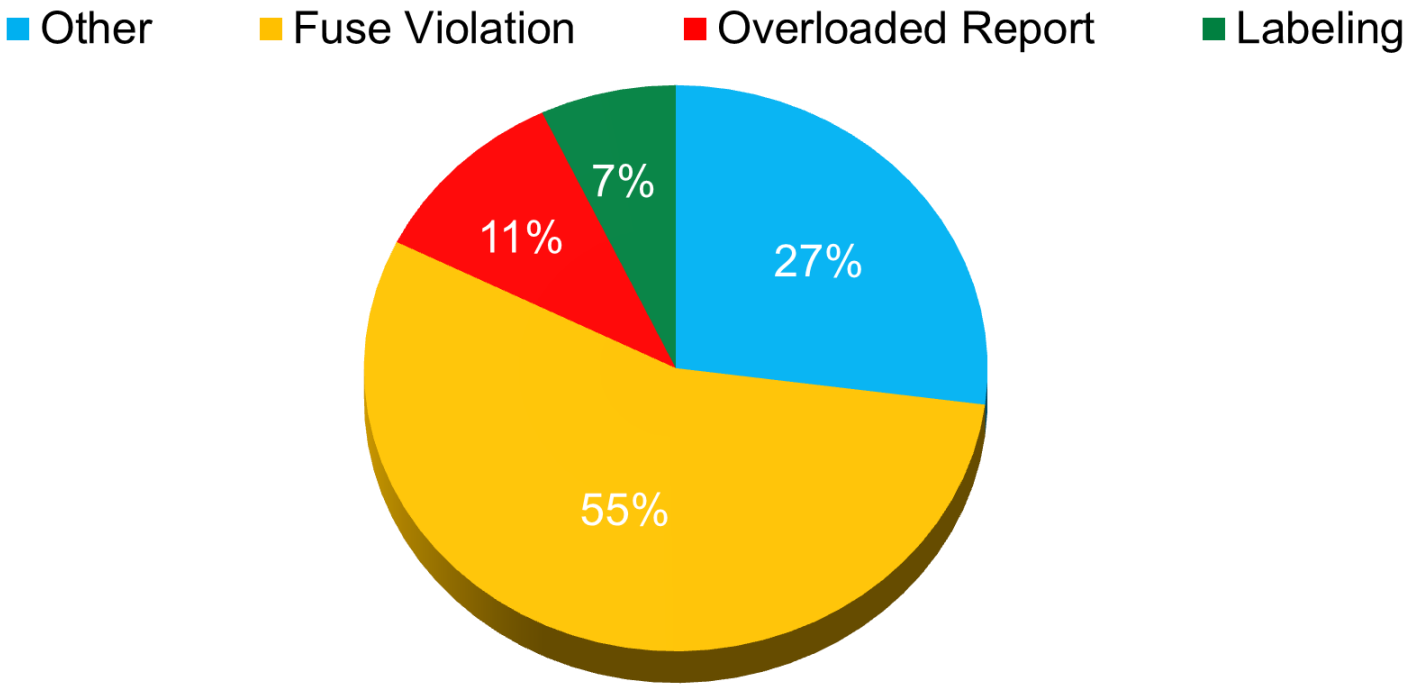
Consumer Fireworks 1.4S

"

"Section 4-1.2 Product design, packaging, and case packing must produce a finished shipping case in which simultaneous explosion of most or all of the items does not result from ignition of one item in the shipping case."

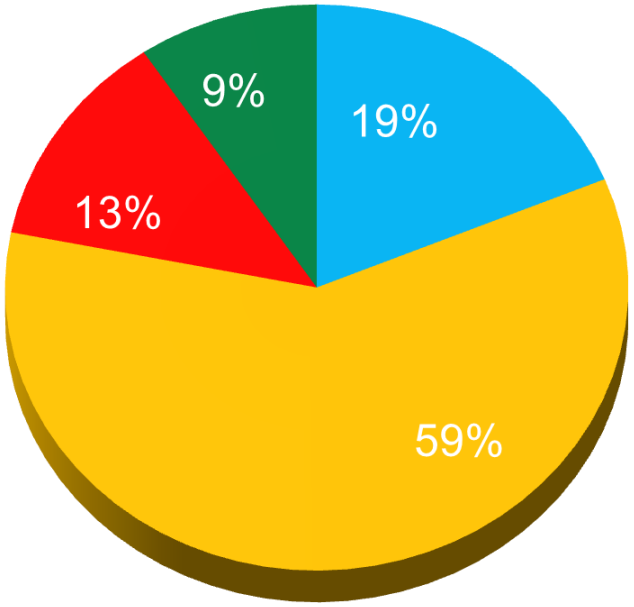
Effective Date: April 1, 2017.

CPSC Fireworks Violations FY15

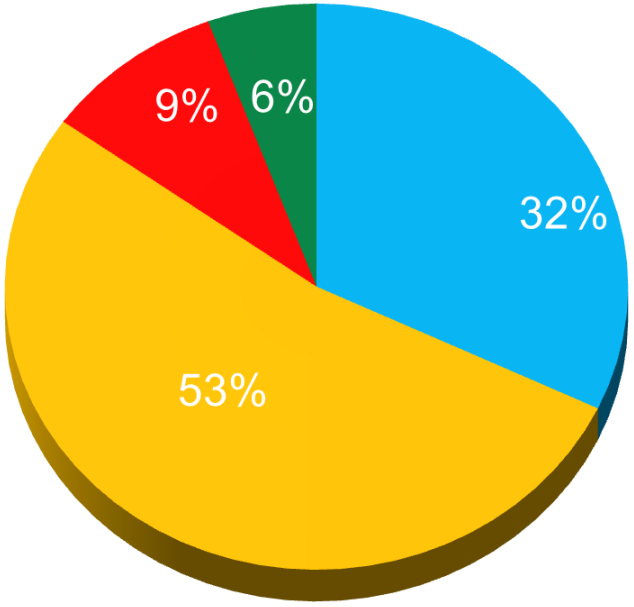


CPSC Fireworks Violations FY15

AFSL
(38% of violations)

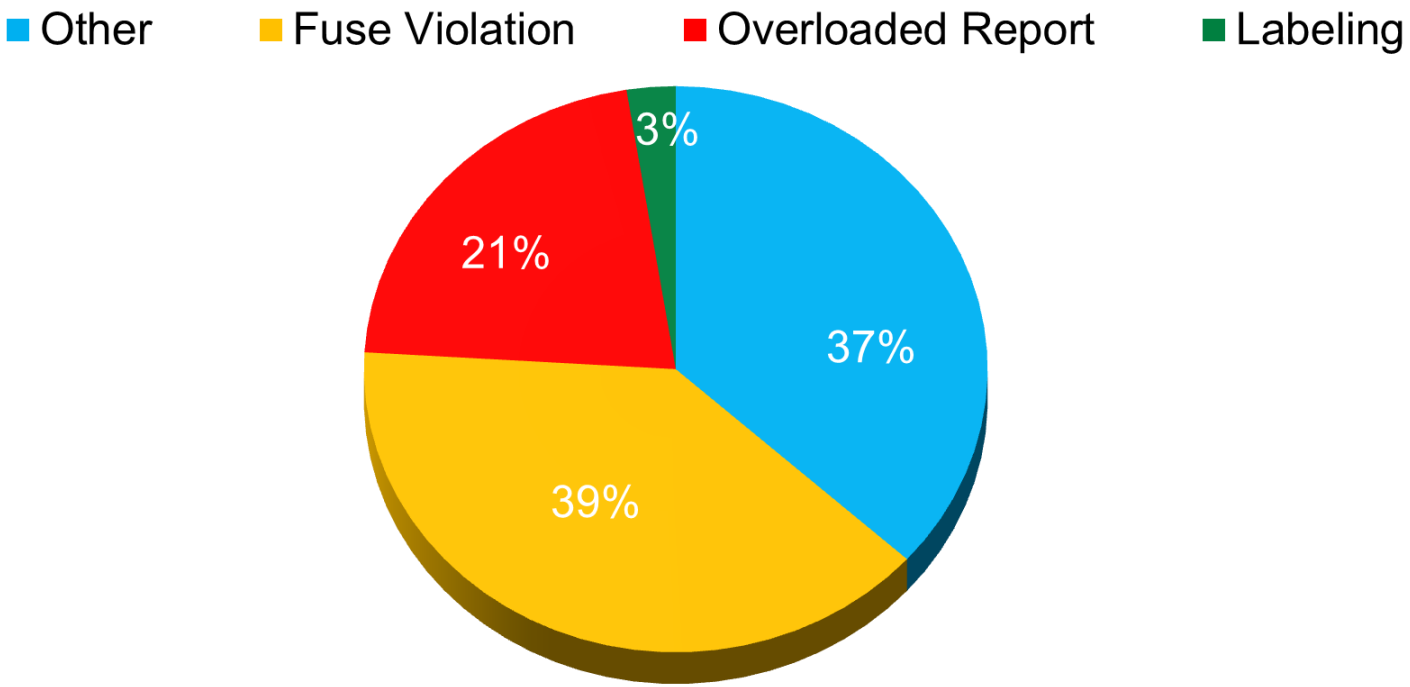


Non-AFSL
(62% of violations)



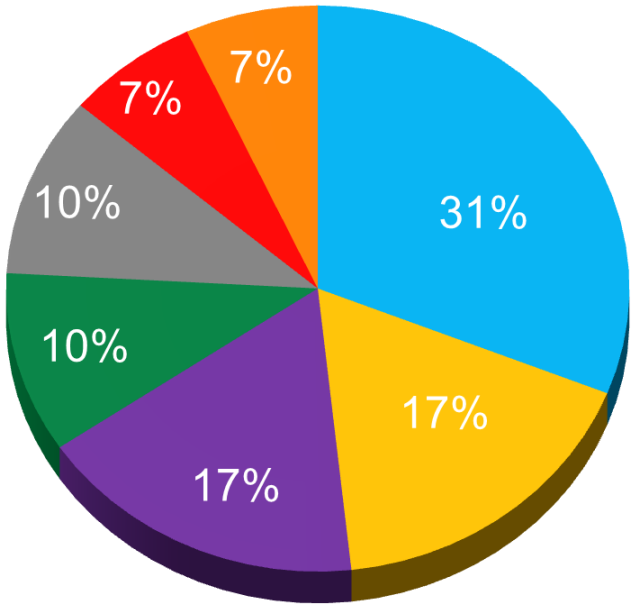
Other Fuse Violation Overloaded Report Labeling

CPSC Fireworks Violations FY16

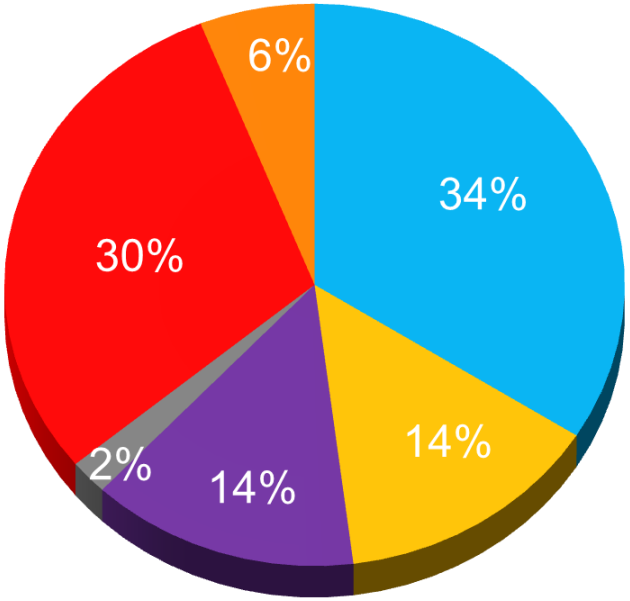


CPSC Fireworks Violations FY16

AFSL
(37% of violations)



Non-AFSL
(63% of violations)



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

Requirements for Fuses

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

Effective Date: April 1, 2017.

AFSL Monitoring of Fuse Tests

- AFSL has requested that BV begin recording all tests related to fuses, including fuse burn time, fuse side ignition, and fuse attachment.
- AFSL is working with a fuse manufacturer in China to develop design/performance specifications for fuses.

VII. Questions & Answers

www.afsl.org

THANK YOU!