

Dated: June 26, 1995.

Eugene A. Ludwig,

Comptroller of the Currency.

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CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Parts 1500 and 1507

Multiple Tube Mine and Shell Fireworks Devices

AGENCY: Consumer Product Safety Commission.

ACTION: Proposed rule.

SUMMARY: The Commission is proposing to amend its fireworks regulations to require that multiple tube mine and shell devices that have any tube with an inner diameter of 1.5 inches (3.8 cm) or greater pass a performance test for stability. Specifically, these devices would be required to have a minimum tip angle above 60 degrees. Requirements currently enforced by the Commission do not adequately address the risk of injury posed by the potential tipover of these fireworks devices, and labeling would not adequately reduce the risk. Although a voluntary standard exists, the Commission does not believe that it would adequately reduce the risk of tipover or that compliance would be adequate. The Commission is issuing this proposed rule under the authority of the Federal Hazardous Substances Act. The Commission is not proposing any action on multiple tube devices having an inner diameter of less than 1.5 inches.

DATES: Written comments in response to this notice must be received by the Commission no later than September 18, 1995.

ADDRESSES: Comments should be mailed, preferably in five (5) copies, to the Office of the Secretary, Consumer Product Safety Commission, Washington, DC 20207, or delivered to the Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East-West Highway, Bethesda, Maryland 20814; telephone (301) 504-6800.

FOR FURTHER INFORMATION CONTACT: Michael A. Babich, Ph.D, Project Manager, Directorate for Epidemiology and Health Sciences, Consumer Product Safety Commission, Washington, DC 20207-001; telephone (301) 504-0994, ext. 1383.

SUPPLEMENTARY INFORMATION:

A. Background

Multiple tube mine and shell fireworks devices (also called "display racks" and referred to in this notice as "multiple tube devices") are classified by the Department of Transportation ("DOT") as 1.4G explosive devices (formerly Class C common fireworks devices) which are suitable for use by consumers. Multiple tube devices are non-reloadable devices that fire multiple aerial shells and/or comets into the air while producing visual or audible effects. These devices consist of several vertical tubes with a common fuse, either with or without a horizontal base.

Because it is designed to fire sequentially, there is a danger that after the first shot or few shots, the device may become unstable and tip over. The other shots may then fire horizontally or at an angle and hit the operator or spectators. The Commission is aware of two deaths to spectators involving multiple tube devices that occurred in this manner. Both of these incidents involved devices with tubes larger than 1.5 inches in diameter.

The Commission regulates fireworks devices pursuant to the provisions of the Federal Hazardous Substances Act ("FHSA"). 15 U.S.C. 1261 *et seq.* Under current regulations, the Commission has declared certain specified fireworks devices to be "banned hazardous substances." 16 CFR 1500.17(a)(3), (8) and (9). Additional regulations prescribe the requirements that fireworks devices not specifically listed as banned must meet to avoid being classified as banned hazardous substances. 16 CFR part 1507. These include a requirement that fuses burn for 3 to 6 seconds, resist side ignition, and remain securely attached to the device; a requirement that the minimum horizontal dimension or diameter of the base of a device must be at least one third of the height of the device; and a requirement to prevent blowout of the tube. Finally, additional Commission regulations prescribe specific warnings required on various legal fireworks devices, 16 CFR 1500.14(b)(7), and designate the size and location of these warnings. 16 CFR 1500.121.

On July 1, 1994, the Commission issued an advance notice of proposed rulemaking ("ANPR") discussing the hazard presented by multiple tube devices of all sizes, but noted the more severe incidents with large devices. 59 FR 33928. The ANPR used 1 inch (2.54 cm) as the cutoff between small and large devices. The ANPR explained that the Commission was considering several

regulatory alternatives: (1) Ban all multiple tube devices; (2) ban multiple tube devices with an inside tube diameter of greater than 1 inch; (3) require additional labeling on all multiple tube devices; (4) establish performance or design criteria to modify these devices; (5) pursue individual product recalls; and (6) take no mandatory action, but encourage development of a voluntary standard.

The Commission is proposing a performance standard for multiple tube devices with any inner tube diameter of 1.5 inches or more. As explained below, the Commission believes that 1.5 inches is a more appropriate measure for distinguishing between large and small devices. The Commission is not proposing any further regulatory action on small devices.

B. Statutory Authority

This proceeding is conducted under provisions of the FHSA. 15 U.S.C. 1261 *et seq.* Fireworks are "hazardous substances" within the meaning of section 2(f)(1)(A) of the FHSA because they are flammable or combustible substances, or generate pressure through decomposition, heat, or other means, and "may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use * * *" 15 U.S.C. 1261(f)(1)(A).

Under section 2(q)(1)(B) of the FHSA, the Commission may classify as a "banned hazardous substance" any hazardous substance intended for household use which, notwithstanding the precautionary labeling required by the FHSA, presents such a hazard that keeping the substance out of interstate commerce is the only adequate means to protect the public health and safety. *Id.* 1261(q)(1)(B). A proceeding to classify a substance as a banned hazardous substance under section 2(q)(1) of the FHSA is governed by the requirements set forth in section 3(f) of the FHSA, and by section 701(e) of the Federal Food, Drug, and Cosmetic Act ("FDCA") (21 U.S.C. 371(e)). *See* 15 U.S.C. 1261(q)(2).

The July 1, 1994, ANPR was the first step necessary to declare the specified multiple tube devices banned hazardous substances under section 2(q)(1). *See* 15 U.S.C. 1262(f). This proposed regulation continues the regulatory process in accordance with the requirements of 15 U.S.C. 1262(h). Under the proposed rule, multiple tube devices with tubes measuring 1.5 inches or larger in diameter would be considered banned hazardous substances unless they comply with the tip angle test explained below.

If the Commission determines to issue a final rule, it must publish the text of the final rule and a final regulatory analysis that includes: (1) A description of the potential costs and benefits of the rule; (2) a description of alternatives considered by the Commission (including a description of their potential costs and benefits and an explanation of why they were not chosen); and (3) a summary of significant issues raised by comments on the preliminary regulatory analysis published with the proposed rule. *Id.* 1262(i)(1). The Commission also must make findings that: (1) Any relevant voluntary standard is unlikely to adequately reduce the risk of injury or substantial compliance with the voluntary standard is unlikely; (2) the expected benefits of the regulation bear a reasonable relationship to expected costs; and (3) the regulation imposes the least burdensome requirement that would adequately reduce the risk of injury. *Id.* 1262(i)(2).

If the Commission decides to finalize the rule, procedures established under section 701(e) of the FDCA would govern. 15 U.S.C. 1261(q)(2). These procedures provide that once the Commission issues a final rule, persons who would be adversely affected by the rule have a period of thirty (30) days in which to file objections stating reasonable grounds therefor, and to request a public hearing on those objections. 21 U.S.C. 371(e). Should valid objections be filed, a hearing to receive evidence concerning the objections would be held and the presiding officer would issue an order after the hearing, based upon substantial evidence. 21 U.S.C. 371(e); 16 CFR part 1502.

C. The Product: Large Devices

The ANPR broadly addressed multiple tube devices of all sizes. As discussed in section E below, the Commission is narrowing the focus of this proceeding to devices that have any tube equal to or greater than 1.5 inches in inner diameter (hereinafter referred to as "large devices"). The Commission believes that devices 1.5 inches or more are the most appropriate devices for the Commission's focus. The large devices involved in fatalities and tested by the Commission staff have had tube diameters that measured at least 1.5 inches. The staff believes that devices with tubes between 1.0 and less than 1.5 inches are rare. Moreover, the fireworks industry defines large devices as those with tube diameters greater than or equal to 1.5 inches. Thus, economic information from the industry is organized in this manner. Because there

are few, if any, devices with inner tube diameters between 1.0 and 1.5 inches, the Commission believes that this change will have little or no impact.

Large multiple tube devices are relatively new, first introduced by domestic manufacturers around 1986. Generally, they consist of three or more tubes grouped together, sometimes on a wooden base, fused in a series to fire sequentially. Where bases are used, they come in a variety of different dimensions. The devices fire aerial shells or comets from the tubes, producing visual and audible effects. These devices are among the largest fireworks available to consumers. They are sometimes referred to as display racks. (13)¹

The tubes may be individually labeled or have a single label surrounding them. In any case, Commission regulations require that multiple tube devices display the following conspicuous label:

Warning (or Caution) Emits Showers of Sparks (or Shoots Flaming Balls, if More Descriptive)
 Use only under [close] adult supervision.
 For outdoor use only.
 Place on a hard smooth surface (or place upright on level ground, if more descriptive).
 Do not hold in hand.
 Light fuse and get away.
 16 CFR 1500.14(b)(7)(ix).

The National Fireworks Association ("NFA") reports retail sales of large multiple tube devices between \$24 and \$36 million annually, with an estimated 400,000 to 700,000 units sold per year. Prices range from \$30 to \$130 per unit. Most devices range in price from \$50 to \$60. The NFA reports that domestic devices account for about 75 percent of the market (by dollar volume) and somewhat less by unit sales. Imported devices are manufactured primarily in China, and go through several wholesalers before reaching the retail vendor. (13)

Because the devices fire sequentially, the force from one of the earlier shots can tip the device over, causing it to fall into a horizontal position. A subsequent shot can discharge as the device is falling or when it is in a horizontal position. When this occurs there is a risk that one of the projectiles may strike the operator of the device or spectators and cause serious injury or even death.

D. Risk of Injury

As reported in the ANPR, the Commission is aware of two deaths involving large multiple tube devices. In both incidents, the device tipped over

while functioning. The projectile fired horizontally from the device and struck the victim. In each case, the victim was a spectator.

The first fatality occurred in July of 1991. A 3-year-old boy was standing between his father's legs approximately 40 feet from an area where fireworks were being set off at a family reunion. The device had been placed on concrete blocks. The device tipped over after the third shot, and the fourth shell fired horizontally in the direction of the boy, striking him in the left ear. He died the next morning. (2, Tab A)

The second fatality occurred in July of 1992. The victim, a 65-year-old grandmother, was sitting at the end of a picnic table watching a family fireworks display approximately 40 feet away. Her son placed a large multiple tube device on a piece of wafer board that extended about one foot over the end of a boat dock. He placed a 2x4 block of wood under the end of the board so that the device would shoot out over the lake. After lighting the device, he walked toward the shore and noticed that the device had tipped over after the third shot. The fourth shell discharged horizontally and struck his mother in the temple and eye. She died the next morning. (2, Tab A)

E. Small Multiple Tube Devices

The Commission is not proposing any action concerning multiple tube devices with tube diameters less than 1.5 inches. As explained below, it does not appear that the tip angle proposed for large devices would be appropriate for small devices. Furthermore, the Commission's data indicate that no deaths and relatively few injuries have occurred with the small devices. (5) The Directorate for Economics estimates that with the large number of small devices on the market (many of which might have to be modified to meet a standard) and the relatively few number of reported incidents, the costs of regulatory action might substantially exceed anticipated benefits. (13)

F. Commission Tests To Develop a Standard

1. Testing Prior to the ANPR

As recounted in the ANPR, after the Commission learned about the first fatality, the staff informed the fireworks industry, including the American Pyrotechnics Association ("APA") and the American Fireworks Standards Laboratory ("AFSL"). Several domestic manufacturers of large multiple tube devices began developing a test for the potential of these devices to tip over while functioning. The test used a 2-

¹ Numbers in parentheses refer to documents listed at the end of this notice.

inch (5 cm) thick block of medium density (2 pounds per cubic foot or 0.032g/cm³) polyurethane upholstery foam to simulate grassy or other uneven surfaces.

AFSL then began work to revise its standard for these devices to incorporate such a dynamic stability test. AFSL issued an interim revised voluntary standard in January 1993 (which is the current version of the standard). The Commission also collected samples of large multiple tube devices and tested them for tipover using the industry's dynamic stability test.(1 and 14)

2. Dynamic Stability Testing

After issuing the ANPR, the Commission staff devised a plan to develop a dynamic stability test that could provide a reliable performance standard for multiple tube devices. The staff's objective was to develop a test that could reliably distinguish between large multiple tube devices that are dangerously unstable and those that do not present an unreasonable tipover risk. Like the industry, the staff attempted to identify a test surface that would simulate grass (the surface believed to be commonly used for fireworks displays), and that would produce consistent results in repeated tests.

In order to accomplish this goal, the staff had to identify a surface on which the devices would consistently tipover or remain upright at the same rate as on

grass. If the tipover rate was significantly greater on the test surface than on grass, the standard might be too stringent. If the tipover rate was significantly lower on the test surface than on grass, the standard might not adequately protect consumers. The staff's testing focused principally on large devices since these present the most serious hazard.

The staff tested large multiple tube devices in two phases. In phase I, three devices were tested on grass and on three types of foam. The type of foam that yielded tipover results closest to those on grass was to be used in phase II, where six additional devices were tested with grass and one type of foam.² All nine large multiple tube devices had inner tube diameters of at least 1.5 inches. Three devices (numbers 2, 3, and 4) were modified by trimming their bases, thereby increasing their tip-over rates. This was done to help assess the relationship between grass and foam by having a broad range of tipover rates among the devices.(6 and 8)

The staff took measurements of conditions during testing, such as wind-speed and temperature, and determined that these factors had little effect on the testing results. The staff also measured the level and topography of the ground used for testing on grass. This testing was conducted on typical field grass in the Leesburg, Virginia area. The grass area varied from mostly grass to a mixture of grass and weeds. Steps were

taken to assure that the locations for tests on the field were randomly selected and were relatively level.(6, 7 and 8)

The staff began testing in phase I with 2-inch thick foams of three different densities. This thickness was chosen, in part, because the AFSL standard specifies 2-inch thick medium density foam. However, in the initial tests, the tipover rates with all three densities of two-inch thick foam were significantly greater than with grass (39-50 tipovers out of 50 on foam compared with 4 out of 50 on grass). Therefore, the experimental design was changed to include high density foam of three smaller thicknesses (0.75, 1.0, and 1.5 inches) in the hope of achieving better agreement in the tipover rates.(6 and 8)

The results of phase I are summarized in Table 1. None of the three foams agreed consistently with grass for all three devices. With device 1, only 0.75 inch foam agreed adequately with grass. With device 2 (unmodified), only 1.0-inch foam agreed. With device 3, none of the foams agreed with grass, although 1.5-inch foam came the closest. (Specifically, the tipover rates with all three foams were significantly lower than the rate with grass.) One-inch foam was chosen for phase II testing because it appeared to be the best overall choice among the three foams, i.e., it did not consistently underestimate or overestimate the tipover rates on grass.(6 and 8)

TABLE 1.—PHASE I—INCIDENCE AND PERCENTAGE OF TIPOVER WITH LARGE MULTIPLE TUBE DEVICES ON GRASS OR HIGH DENSITY POLYURETHANE UPHOLSTERY FOAM

Device	Grass	Polyurethane foam		
		0.75 inch	1.0 inch	1.5 inch
1	4/50 8%	4/50 8%	14/50* 28%	40/50* 80%
2 ^a	32/50 64%	9/50* 18%	25/50 50%	43/50* 86%
3 ^a	27/50 54%	2/50* 4%	3/50* 6%	7/50* 14%

* Significantly different from grass, P<0.05.
^a Device modified to increase tipover rate.

In phase II, six additional devices were tested on grass and 1.0-inch thick high density foam. The results were then combined with the results from phase I (Table 2). Once again, there was not consistent agreement between the tipover rates on foam and on grass. Four devices (numbers 5, 7, 8, and 9) did not tip over in 50 tests each with grass and 1.0-inch thick foam. With device 2, the tipover rate with foam (25/50) did not

differ significantly from that with grass (32/50). However, with device 3, the tipover rate with foam (3/50) was significantly less than that with grass (27/50). With devices 1 and 6, the tipover rate with foam was significantly greater than that with grass.(6 and 8)

TABLE 2.—PHASE II—INCIDENCE AND PERCENTAGE OF TIPOVER WITH LARGE MULTIPLE TUBE DEVICES ON GRASS OR 1.0-INCH HIGH DENSITY POLYURETHANE UPHOLSTERY FOAM

Device	Grass	Foam
1 ^a	4/50 8%	14/50* 28%
2 ^b	32/50	25/50

² Testing of a seventh device originally included in phase II was discontinued because burning

material from the device started fires in the testing field.

TABLE 2.—PHASE II—INCIDENCE AND PERCENTAGE OF TIPOVER WITH LARGE MULTIPLE TUBE DEVICES ON GRASS OR 1.0-INCH HIGH DENSITY POLYURETHANE UPHOLSTERY FOAM—Continued

Device	Grass	Foam
3 ^b	64% 27/50 54%	50% 3/50* 6%
4 ^b	30/50 60%	36/50 72%
5	0/90 0%	0/50 0%
6 ^a	10/50 20%	25/50* 50%
7	0/50 0%	0/50 0%
8	0/90 0%	0/50 0%
9	0/50 0%	0/50 0%

* Significantly different from grass, P<0.05.

^a Device has no base.

^b Device modified to increase tipover rate.

The three modified devices (numbers 2, 3, and 4) were also tested on grass in unmodified form, and they rarely tipped over. Seven of the nine large devices that were tested have particleboard bases (all except 1 and 6). Unless they were modified, devices with bases tipped over only rarely (see table 2), once in 400 tests on grass. On the other hand, the two devices without bases (1 and 6) tipped over more frequently on grass, 14 times in 100 tests (see table 2). (6 and 8)

In addition to testing large devices, the staff tested two devices with tube diameters less than or equal to 1.0 inch on grass and on 1.0-inch high density foam. With one of these devices, the tipover rate was significantly greater with foam than with grass (99 tipovers out of 100 on foam compared with 62 out of 100 on grass). This limited testing of small devices did not support such a dynamic test for small multiple tube devices. (6 and 8)

The staff concluded that the dynamic stability test it studied could not reasonably form the basis for a standard addressing the tipover hazard with large multiple tube devices. Particularly problematic was the dynamic test's inconsistency. Among the large devices, there were two cases (devices 1 and 6) in which foam significantly *over-predicted* the tipover rate with grass. This means that a device could fail to comply with such a dynamic standard even though it is stable when tested on grass. In other words, such a standard would be excessively stringent. (6 and 8)

In another case (device 3) foam significantly *under-predicted* the

tipover rate with grass. This means that a device could be very unstable when operated on grass but could actually comply with such a dynamic standard based on the foam test. (6 and 8) Such a standard would not reliably protect consumers.

In statistical terminology, the lack of agreement between foam and grass is due to a highly significant "interaction" between the device and test surface. That is, different devices behave differently on different foams, and one cannot predict which foam (if any) would be appropriate for which device. Thus, the staff determined that there was not sufficient agreement between tipover rates on 1.0-inch thick high density foam and on grass. (8)

Moreover, the sensitivity of the dynamic stability test is limited. In other words, unless a device is very unstable and tips over in frequent firings, the chances of discovering its tipover potential are low. It would require observing a very large number of samples to increase the chance of detecting a tipover. This is impractical for routine compliance testing. (8) Use of a sensitive test is important for these devices because a tipover can lead to a fatality.

3. The Tip Angle Test

Because the testing on foam did not provide a reliable dynamic test, the staff considered whether a static test based on the physical properties of large multiple tube devices could be developed. The staff measured the dimensions, mass and static tipover resistance ("tip angle") of all the devices tested. The angle at which a device will first tip over depends on its base-height ratio, mass and center of gravity. A device's dynamic stability—i.e., its ability to remain upright—depends on its tip angle as well as other factors such as its lift force, the firing order, and the time between firings. As explained below, the staff found that tip angle was one measure that could predict qualitatively whether a device would tip over while functioning and also be sufficiently sensitive for routine compliance testing. (9)

The staff measured the tip angle of devices by placing one edge of the device against a mechanical stop approximately 1/16-inch high (to prevent sliding) at the edge of a horizontal hinged platform. The platform was slowly raised from the horizontal until the device tipped over. The tip angle was considered to be the angle at which the device first tips over. The test was repeated for each edge of the device to determine the minimum tip angle. In this manner, the staff

measured the tip angle for the nine large devices that had been subjected to the dynamic tests, including the unmodified forms of devices 2, 3, and 4. (9)

The staff then compared these measurements and the results of the dynamic tests to determine whether there was a relationship between the minimum tip angle of a device and its dynamic stability on grass (see table 3). (9)

TABLE 3.—STATIC TIPOVER RESISTANCE AND DYNAMIC TIPOVER RATE OF LARGE MULTIPLE TUBE DEVICES

Minimum tip angle (degrees)	Tipover rate on grass		Device
	Percent	Incidence	
37	64	32/50	^a 2
37	20	10/50	6
37	8	4/50	1
35, 42 ^b	54	27/50	^a 3
40	60	30/50	^a 4
61	0	0/90	5
64	0	0/50	7
65	2.5	1/40	4
68	0	0/40	2
69	0	0/50	9
70	0	0/40	3
78, 80 ^b	0	0/90	8

^a Device modified to increase tipover rate.

^b Different samples of same device.

The staff conducted supplemental tests on large devices other than those it had examined when considering a dynamic test. One device was a modified form of device 1, that originally had no base. The staff glued a 12 inch (30.5 cm) square particleboard base to the device. With this modification, the tip angle increased from 37 degrees to 68 degrees. The tipover incidence on grass also decreased, from 4/50 to 0/50. The additional test with this device demonstrates that a device can be modified by adding a base, and the device's stability will improve. (9)

The second additional device that the staff tested, an imported one, had a square plastic base. The tip angle of this device ranged from 54 to 55 degrees (based on measurements of four individual samples) and it did not tip over in 50 tests on grass. (16)³

Because none of the seven devices originally tested had tip angles between 43 and 61 degrees, the staff modified the base of a device with a large

³ The staff previously tested this type of device (tip angle: 52–55 degrees and tipover rate: 2/40), but the bases of some of the devices were cracked. Therefore, the staff does not consider the earlier tests to be reliable and has not considered them in determining an appropriate tip angle. (10 and 11)

particleboard base to obtain a tip angle near 50 degrees. The staff trimmed 2 and 1/16 inches off of the two long edges of the base. The minimum tip

angle of the device ranged from 50 to 51 degrees (based on measurements of eight individual samples) and it tipped over in 33 out of 51 tests on grass.(16)

Table 4 shows the tip angle and tipover rate of the three additional devices that the staff tested.

TABLE 4.—STATIC TIPOVER RESISTANCE AND DYNAMIC TIPOVER RATE OF ADDITIONAL LARGE MULTIPLE TUBE DEVICES ^a

Minimum tip angle (degrees)	Tipover rate on grass		Description of device
	Percent	Incidence	
50–51 ^b	65	33/51	Four-tube device with base. Base trimmed to obtain 50 degree tip angle.
54–55 ^b	0	0/50	Seven-tube device with plastic base.
68	0	0/50	Seven-tube device. Same as device 1, but with added 12 inch base.

^a Does not include devices that the staff considered to present inconclusive results.
^b Range of values for replicate samples.

The Commission is proposing a standard requiring that large multiple tube devices must have a minimum tip angle above 60 degrees. The Commission's data indicate that substantially all of the devices measuring a tip angle above 60 degrees did not tip over while functioning on grass. Among such devices, there was only one tipover in 450 tests. On the other hand, devices with tip angles below 60 degrees had tipover rates as high as 65 percent.

The Commission believes that requiring devices to have minimum tip angles above 60 degrees offers an appropriate margin of safety. The fact that no tipovers were observed with a device that had a tip angle of 54–55 degrees might appear to suggest that a tip angle of 54 degrees would be sufficient to protect against the tipover hazard. However, a device that had a tip angle of 50–51 degrees had an unusually high incidence of tipovers (33/51), as compared with previous tests. Thus, it is likely that some devices with 55 degree tip angles would tip over when tested on grass. The Commission concludes that in order to adequately protect the public, it is appropriate to require that the minimum tip angle be above 60 degrees.

The staff also measured the tip angles of the two small devices tested in dynamic tests. The staff did not find a relationship between the tip angle of these devices and their performance on grass. (9) This preliminary testing indicates that additional work would be required to find a proper test for the small devices.

G. Comments Responding to the ANPR

The Commission received 131 comments in response to the ANPR published on July 1, 1994. While many commenters opposed banning multiple tube fireworks devices, several commenters supported more limited

action, such as a performance standard or additional labeling. The significant issues and the Commission's responses are summarized below.

1. A Possible Ban

a. Banning multiple tube fireworks. Many commenters opposed banning multiple tube fireworks for use by consumers. Most were consumers stating that a ban would deprive them of their enjoyment of this product, with its unique quality of repeating devices using one fuse and its resemblance to public display fireworks. Commenters opposing a ban also included professional fireworks display technicians, manufacturers, distributors, and retailers.

Some commenters took the opposite view, favoring the option of banning multiple tube devices. These commenters included the National Fire Protection Association ("NFPA"), the Fire Marshall's Association of North America and the U.S. Eye Injury Registry. They argued that the other alternatives mentioned in the ANPR would not be as effective in reducing injury.

The Commission in its ANPR stated that one possible outcome of the rulemaking was a ban of all multiple tube mine and shell devices. A range of other less severe alternatives also was discussed. As explained above, the Commission is proposing a performance standard for large devices that would improve the stability, and thus the safety, of these devices, but still leave them available for consumers to purchase and display.

b. Economic burden. Many commenters argued that a ban of multiple tube devices would place a severe economic burden on manufacturers, distributors, and retailers of consumer fireworks. Some of these commenters reported that product

modifications would result in per unit cost increases of 16-to-33 percent.

A ban might create a severe economic burden for some firms. However, the Commission is proposing a performance standard, rather than a ban, and it is expected that most products would comply with the standard without modification. The potential economic effect of the proposed standard is discussed in section H.

c. Illegal fireworks. Some commenters stated that a ban of multiple tube devices would encourage the spread of illegal fireworks and/or homemade devices.

As noted, however, the Commission is proposing a performance standard rather than a ban. In addition, it is expected that most products would not have to be modified to meet the standard and would continue to be available. The continued availability of these devices on the market, especially those that do not require modification to meet the standard, will be sufficient to avoid any increase in the use of illegal and/or homemade fireworks.

d. Reduction in injuries. Some commenters argued that there is no evidence that a ban or other regulation would reduce injuries.

Reports of deaths and injuries, as well as tests conducted by the staff, show that some multiple tube devices tip over during normal operation, resulting in the horizontal discharge of the device. Although the frequency of tipover during CPSC tests has declined in recent years, any tipover that occurs has the potential to cause injury or death. Therefore, it is reasonable to expect that a regulation designed to reduce the frequency of tipover will reduce the potential for injury and death.

2. A Possible Regulation Other Than a Ban

a. New standards. Many commenters, although they opposed a ban of multiple

tube mine and shell fireworks, stated that they were *not* opposed to less intrusive actions such as new standards, or additional labeling, and/or consumer education. Some commenters specifically stated that they favor a standard to reduce the potential for tipover.

As explained in this notice, the Commission is proposing a performance standard that would improve the stability, and thus the safety, of these devices but still leave them available for consumers to purchase and display.

b. *Labeling and education.* Some commenters stated that improved labeling and/or education are sufficient to address the tipover hazard.

In addressing a product hazard, it is most effective to remove the hazardous design features out of the product. The tipover hazard stems from the design of the product and could occur even if a user does read the warning label.

Although some users may read and follow the information on a warning label, fireworks are frequently used at night when it is too dark for someone to read a warning label. Their frequent use at parties or celebrations further reduces the likelihood that warnings will be read and followed.

c. *Multiple tube devices have improved.* Some commenters argued that the design and quality of multiple tube devices have improved in recent years and that regulation is no longer necessary.

Although manufacturers have made design and quality changes and reduced the dynamic stability hazard of some large multiple tube devices since the two deaths, additional domestic and imported large multiple tube mine and shell devices have been distributed which tipped over while functioning during official CPSC compliance testing. During fiscal year 1994, 32 official samples of large multiple tube mine and shell devices were tested for possible tipover while functioning. All 24 imported samples and one domestic sample tipped over while functioning. Since design and quality changes and development of the voluntary standard for multiple tube mine and shell devices have not yet corrected the dynamic stability hazard, the staff believes a regulation addressing it is necessary.

d. *Existing regulations are sufficient.* Some commenters stated that existing regulations are sufficient and that poor quality products should be addressed on an individual basis.

Existing fireworks regulations under the FHSA do not address the tipover hazard with multiple tube mine and shell devices. The continued manufacture and distribution to

consumers of devices which fail official compliance testing for this tipover hazard is evidence that the existing regulations and compliance actions on a case-by-case basis have not sufficiently eliminated the dynamic stability hazard.

3. General Regulatory Issues

a. *Innovations in fireworks design.* The NFPA commented that innovations in the industry make it difficult to develop adequate regulations. A standard that works for today's devices might be inadequate for new products.

The Commission agrees that it is not always possible to anticipate problems that may occur in the future. However, new fireworks products created by industry are still required to meet CPSC regulations that prescribe safety requirements for assorted fireworks devices. If new products have additional hazardous characteristics, CPSC can evaluate them and correct any hazards by working with industry or by promulgating a mandatory safety rule. Moreover, new products that pose a "substantial product hazard" can be addressed through the Commission's section 15 regulation. See 16 CFR part 1115. In short, manufacturers remain free to design new devices as long as their performance meets the CPSC safety requirements.

b. *Consumer responsibility.* Several commenters stated that the consumer should be responsible for using fireworks devices safely and that manufacturers should not have to guard against all conceivable misuses of their products.

Certainly, consumers must exercise caution when using fireworks. They should follow the use instructions provided and, particularly with multiple tube devices, set them on a level, smooth surface. The Commission's concern, however, is that even when set on a level patch of grass, these devices may tip over and cause injury or death. It is reasonably foreseeable that a consumer would set up these devices in an open field that is covered with grass and is relatively level. This is the kind of condition for which the staff designed its test procedures.

c. *Voluntary standards.* Many commenters stated that voluntary standards efforts are sufficient to address the tipover hazard. Some took the opposite view.

The AFSL has adopted a voluntary standard involving the use of polyurethane upholstery foam as a substitute test surface for grass. The AFSL standard specifies 1-inch foam for devices with any tube that has an inside diameter less than or equal to 1.0 inch

and 2-inch foam for devices with any tube that has an inside diameter greater than 1.0 inch. However, AFSL has not provided CPSC with any statistical evaluation of the use of polyurethane upholstery foam as a substitute test surface. As explained above, CPSC staff did not find sufficient agreement between grass and foam in the tests that it conducted of the tipover rates of large multiple tube devices.

The AFSL standard also requires a "tip angle" of at least 18 degrees, whereas CPSC tests show that devices with tip angles less than 60 degrees may tip over during operation. Finally, AFSL has stated that *no* domestic products are certified to the standard and has not stated how many imported devices have been tested and certified. Nor has AFSL provided information regarding the number of products that meet the standard.

d. *Large and small diameter devices should be treated separately.* Some commenters stated that large and small diameter multiple tube devices should be treated separately, arguing that deaths were associated only with large diameter devices, while only minor injuries were associated with small devices. Another commenter argued that all multiple tube devices should be banned because it would be more difficult to enforce a ban that applies only to large diameter devices.

As explained above, the Commission is proposing a performance standard that would apply only to devices with inside diameters of at least 1.5 inches. In tests conducted by the staff, a performance standard based on the tip angle test did not appear to be appropriate for smaller devices. Additional work would be needed to develop a standard for smaller devices.

e. *Comment period.* Two commenters complained that the comment period was too short and came at the busiest time of the year for people in the fireworks industry.

The Commission believes that the comment period was adequate. The Commission provided 60 days for comments, which is the maximum amount of time allowed under the FHSA for comments on an ANPR. Over 100 comments were received. Consistent with Commission policy, the staff has considered comments received after the close of the comment period. Finally, all interested persons will have an additional opportunity to comment on the proposed rule.

f. *Rulemaking process and data analysis.* One commenter asked how the CPSC rulemaking process works. The same commenter asked who at CPSC analyzed the injury and death data and

what experience they have with multiple tube devices or other fireworks. The commenter also stated that public servants should be required to sign their work.

The process for developing a rule under section 2(q)(1)(B) of the FHSA is explained in section B above. The CPSC staff has been involved with fireworks safety since the agency's inception. Data on injuries and deaths are collected and analyzed by statisticians in the Directorate for Epidemiology and Health Sciences. In some cases, investigators are assigned to obtain additional information about specific incidents. Individual staff with experience in fireworks safety include laboratory scientists, statisticians, and compliance officers. Prior to issuing the ANPR, the staff prepared a briefing package for the Commission that included a briefing memorandum, technical reports, and a draft ANPR. The memorandum and technical reports identified their respective authors and were available to the public when they were forwarded to the Commission. At a public meeting, the staff briefed the Commission on the hazards associated with multiple tube devices.

g. Unreasonable risk of injury. Some commenters asked about the statement in the ANPR that the Commission has reason to believe that an "unreasonable risk of injury" may be associated with these devices. These commenters asked what constitutes an unreasonable risk, whether costs are considered, and why a complete ban is being considered if the Commission only states that the devices "may" present an unreasonable risk. Some commenters stated that the Commission should not try to protect consumers against all risks.

For several types of rulemaking proceedings, the Commission's statutes require a finding that the product to be regulated poses an unreasonable risk of injury. In this proceeding under section 2(q)(1)(B) of the FHSA, however, it is not necessary for the Commission to make an unreasonable risk finding. Thus, discussion of unreasonable risk in the ANPR was unnecessary. Nevertheless, the unreasonable risk inquiry is similar to the kind of analysis that is required for this proceeding. 15 U.S.C. 1262(i)(2).

In this proceeding, before the Commission can issue a final rule, it must determine that the potential benefits of its action concerning certain multiple tube devices bears a reasonable relationship to the potential costs. In other words, the anticipated costs cannot be out of proportion to the expected benefits. Through this inquiry, the Commission considers the likely

consequences of its intended action. A similar cost-benefit inquiry is conducted when the Commission determines whether there is an unreasonable risk of injury.

The ANPR used the term "may" since the Commission makes only a preliminary determination at the time it issues an ANPR, which explains options the Commission is considering but does not itself impose any requirements. With regard to the question of the desirable level of protection from risk, the Commission's statutes do not direct it to seek a "zero risk level." Rather, for the most part, the proper standard is that of unreasonable risk, as explained above.

4. Incidents Involving Multiple Tube Devices

a. Number of incidents and relative risk. Many commenters said that the small number of injuries and deaths associated with multiple tube devices or Class C fireworks does not justify further regulation. Several commenters compared the risk of a fireworks incident with other consumer products or activities such as bicycling or other sports. They argued that because there are fewer injuries associated with fireworks, little benefit would result from any Commission action. Some commenters also argued that, compared with other fireworks devices, there were relatively few incidents with multiple tube devices.

Many factors are considered before the Commission determines whether to pursue action to address a risk posed by a consumer product. The number of injuries or deaths associated with a product is only one of those factors. For example, the Commission also considers the severity of the hazard. Here, the Commission has reports of two deaths associated with large multiple tube devices. Clearly this represents the most severe of possible harms. The Commission also considers the risk of injury, which depends on exposure. As compared to the other products and activities cited by the commenters, exposure to fireworks devices is infrequent and only for short periods of time. In addition, the Commission considers how susceptible the hazard is to a remedy. The number of incidents with other products may be greater, but their amenability to a regulatory remedy may not be as great.

Even though the documented number of fatalities and estimated number of hospital emergency room-treated injuries is relatively low, CPSC field tests have found that large multiple tube devices have the potential for serious injury or death due to tipover during

use. Moreover, the number of incidents reported to CPSC is not the limit on the number that may have occurred. Except for a 1992 special study, fireworks incidents have not been routinely assigned for investigation. Therefore, the cases identified represent only the minimum number that may have injured consumers.

b. Nature of incidents. Some commenters said that the fatalities were "freak" occurrences or were the result of misuse.

The circumstances documented in the two fatalities should not be considered as "freak" occurrences or outside CPSC's regulatory authority, because they involved normal and foreseeable use of the product. The incidents are described in detail in section D above. Both incidents occurred during family gatherings a day or two after the July 4th holiday. The large devices were purchased and ignited for aerial sequence, the multiple tube devices tipped over and a projectile load struck a bystander resulting in death. The bystanders thought that they were a safe distance away. Circumstances, such as those indicated above, commonly occur at gatherings of families or friends.

c. Severity of injuries. Three commenters claimed that the injuries were not severe.

Two documented burn injuries associated with the tipover of small multiple tube mine and shell fireworks devices were investigated by Commission staff in 1992. The CPSC staff does not consider these burn injuries to be minor in nature. In the first report, the victim received a second degree thermal burn on her right lower leg while watching a fireworks display in the back yard of a friend's home. She has permanent scars on her leg as a result of the incident. In the second report, a 3-year-old boy received a burn to his left inner forearm and left thigh when a multiple tube tipped over after firing three shots and fired the fourth shot horizontally along the ground and into the boy's lap. The child was given first aid and later taken to the hospital emergency room for additional treatment for second degree burns. At any rate, the severity of injuries with small devices is immaterial here because the Commission's proposed regulation addresses only large devices, with which there have been at least two deaths.

d. Personal experience. Many commenters, including both consumers and technicians, said that in their personal experience, multiple tube devices and/or Class C fireworks have not tipped over or caused few or no injuries.

However, the cases show that there have been at least two deaths with these devices and the potential for tipover is high under certain conditions of foreseeable use. It is foreseeable that the tipover hazard may result in serious injury or death.

e. *Whether device associated with a fatality was illegal.* Some commenters said that one of the devices that was associated with a fatality was illegal.

Only one of the large multiple tube mine and shell devices involved in the two deaths was definitely identified by brand name. Tests of additional units of that device indicated it complied with the fireworks regulations of the FHSA, which are enforced by CPSC. Some devices, although legal under the FHSA fireworks regulations, may be illegal under state, local or other federal laws. Available information indicates that in the states where the deaths occurred, the purchase, possession and/or use of large multiple tube mine and shell devices are restricted or prohibited. However, the devices involved in both deaths are legal under the FHSA fireworks regulations as long as they conform to the applicable labeling and performance requirements. Regardless of whether a particular device violated the law of a state or locality, it may still be appropriate to provide federal regulation.

f. *Lack of perception of danger.* One commenter stated that consumers and spectators do not perceive the danger of fireworks.

The Commission agrees that victims of fireworks injuries may not perceive the potential danger of watching a private fireworks exhibition featuring multiple tube fireworks devices. Two people have died after being hit by a mine from a multiple tube device that tipped over during use. It is possible that neither victim perceived that they were in danger for the following reasons:

- The fireworks device was not pointing towards them when ignited.
- Each victim was approximately 40 feet from the device.

5. Technical Issues

a. *Proposed precautions.* Several commenters proposed various precautions to prevent tipover, such as using bricks to hold the device down. Some suggested safety equipment such as goggles and a minimum distance for spectators.

Staff believes that there are several valid safety precautions for small multiple tube devices. These include the use of bricks to hold a functioning device down, the use of bricks or cinder blocks as a hard flat firing surface (if of

sufficient size to prevent the device from bouncing off during its functioning), the use of goggles for eye protection, and a minimum distance of 70-to-100 feet for spectators.

However, using bricks or cinder blocks as a hard flat firing surface could create an extremely dangerous situation if the firing area is too small to prevent the devices from falling or bouncing off and tipping over. With large devices, normal safety goggles would be unlikely to prevent impact injuries to the eye.

Requiring a minimum distance of 70-to-100 feet would not be effective with the majority of the large multiple tube devices, since these devices shoot their shells 200-to-600 feet into the air. For other than professional fireworks displays, it is impractical to suggest that spectators stand this distance from fireworks while they are being fired.

b. *Proposed technical fixes.*

Commenters proposed various technical fixes to reduce tipover such as:

- Increasing the base-to-height ratio by increasing the base size;
- Lowering the center of gravity by increasing the base weight;
- Reducing the lift force;
- Requiring hold down spikes driven into the ground;
- Attaching support wires to the device which can then be staked into the ground.

All of these ideas are valid methods to reduce tipover. The last two, however, require the consumer to take steps to render the device safe that may not be feasible in certain circumstances. For instance, spikes cannot easily be driven into concrete or asphalt surfaces, nor can support wires. Moreover, consumers firing a variety of fireworks devices at night may not remember or be able to read specific instructions accompanying the different devices.

c. *Relative safety of multiple tube fireworks.* Two commenters stated that multiple tube devices are safer than other fireworks devices because they have a larger base.

Not all multiple tube mine and shell devices have a large base. In fact, some have no base. Others have bases that vary in size from a few inches in diameter to sizes greater than a foot in diameter. The safety of a device is not dependent only on the size of the base. Other factors, such as the firing sequence, internal fuse burn times, projectile launching force, shell weight, device shape, center of gravity, quality of materials and construction, and how the consumer uses the device, all enter into the safety of a device. However, several of these factors are addressed by the tip angle. As explained above, devices with bases were not as likely to

tip in the staff's testing as those without bases.

6. General Issues

a. *Uses and benefits of fireworks.* The Commission received many comments concerning the general use and benefits of fireworks. Many commenters noted the importance of fireworks to their celebration of the nation's birthday, stressing the beauty and patriotism of these occasions. Some commenters noted the use of fireworks for various purposes, including agriculture, religious celebrations, and fostering an interest in science.

The Commission understands the important role that fireworks can play and the enjoyment that people receive from watching these displays. Narrowly tailored action to improve the safety of the devices will not prevent consumers from continuing to enjoy fireworks, and will increase safety.

b. *Over-regulation.* One commenter stated that the Commission's proceeding conflicts with efforts to reduce the size and cost of the federal government and that the agency is over-regulating. Another commenter stated that the Commission was over-regulating because this type of regulation is really a "states' rights" issue.

The Commission is a major participant in efforts to "re-invent" government by making it more efficient and less costly. This means that the Commission must find efficient ways to achieve its mission of protecting consumers from unreasonable risks of injury associated with consumer products. Consistent with the detailed statutory findings the Commission must make to issue a rule, the Commission uses its regulatory authority sparingly. However, it does not mean that the Commission should abandon its mission. The Commission believes that a performance standard will reduce the risk of injury and death associated with multiple tube fireworks devices with the least burden possible.

With regard to states' rights, the FHSA specifically recognizes fireworks as products that the Commission may regulate. 15 U.S.C. 1261(q)(1)(B). Of course, states can issue some regulations that the Commission cannot: The Commission does not have the authority to regulate the use of a product. For example, states or local governments may pass legislation requiring that bicycle riders wear helmets. The Commission cannot issue such requirements. Many states do in fact have requirements for fireworks that are more stringent than CPSC's. The Commission's fireworks regulations do not preempt more restrictive state or

local requirements. See 15 U.S.C. 1261n(b)(4).

c. *Support of regulation.* One commenter asked who supports further regulation of fireworks and what their relationship is to CPSC.

Based on the comments received in response to the ANPR, the NFPA, Fire Marshals Association of North America (FMANA), and United States Eye Injury Registry (USEIR) favor a ban of multiple tube devices. The NFPA and FMANA maintain that only licensed professionals should be permitted to use fireworks. Other commenters, such as AFSL and the family of one of the victims, favor additional regulation of multiple tube devices. Many consumers stated that they oppose a ban of these devices, but most of them also stated that they do not oppose a mandatory performance standard or improved

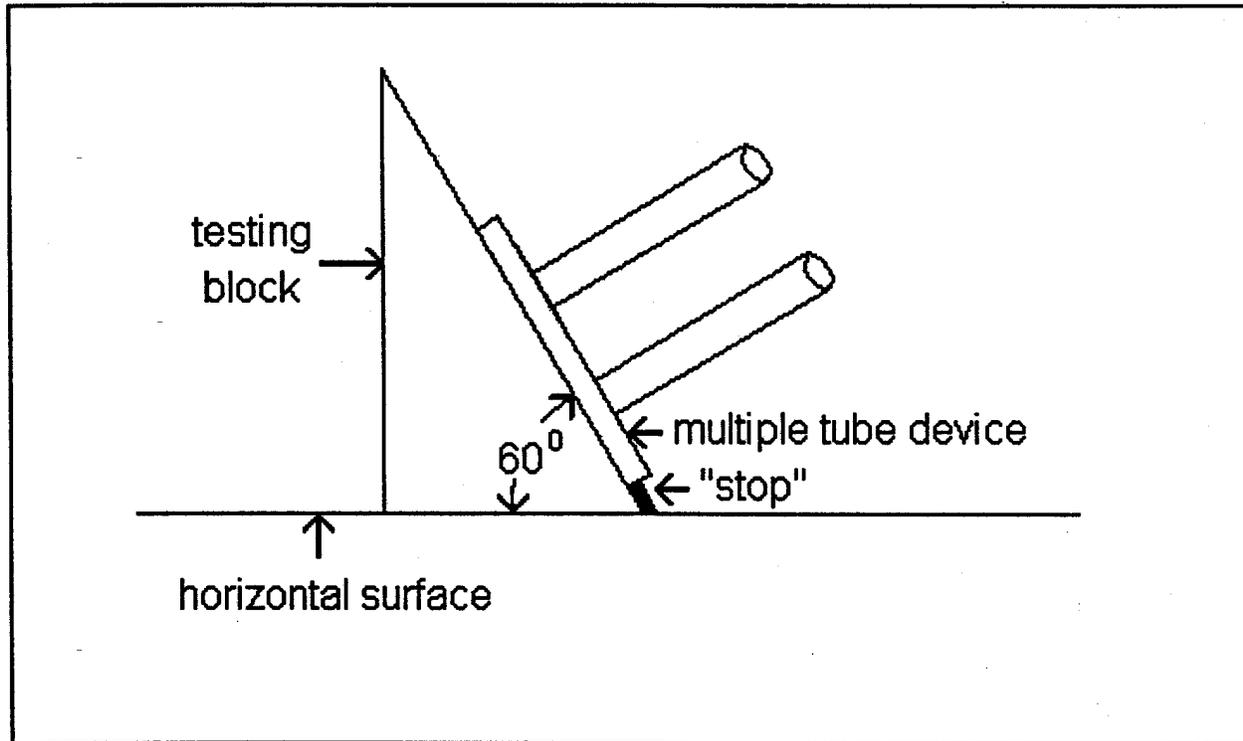
labeling. None of these groups or individuals has any special relationship to CPSC other than as parties interested in the Commission's activities.

H. The Proposed Standard

The Commission is proposing a standard requiring that multiple tube devices that have any tube measuring 1.5 inches (3.8 cm) or more in inner diameter must have a minimum tip angle greater than 60 degrees. Large multiple tube devices that do not meet the tip angle requirement would be banned. The tip angle may be measured by placing the device on an inclined plane, that is, a smooth surface inclined at an angle 60 degrees from the horizontal. The tip angle of each edge of the device must be measured. The device must not tip over from the 60 degree angle when measured at any edge of the device.

An apparatus or "testing block" for testing multiple tube devices is illustrated in the figure below. The height and width of the inclined plane (not including the portion of the plane below the mechanical stop) must be at least 1 inch (2.54 cm) greater than the largest dimension of the base of the device(s) to be tested. The test apparatus must be placed on a smooth, hard surface that is shown to be horizontal with a spirit level or equivalent instrument. The mechanical stop must be 1/16 inches (1.6 mm) in height and perpendicular to the inclined plane. The stop must be positioned parallel to the bottom edge of the inclined plane and in such a way that no portion of the device to be tested or its base touches the horizontal surface.

BILLING CODE 6355-01-P



Side view of an apparatus or testing block for testing compliance with the proposed 60 degree tilt angle standard.

BILLING CODE 6355-01-C

Any device that cannot be tested using the apparatus described above or that presents a tipover hazard while functioning even though it complies with the static test, may be examined to determine whether it presents a "substantial product hazard" under section 15 of the Consumer Product Safety Act, 15 U.S.C. 2064. If the Commission determines that a substantial product hazard exists, then

appropriate enforcement action may be taken.

The Commission notes that all of the devices tested complied with the voluntary standard's limitation of 12 grams of lift powder per tube. The Commission encourages manufacturers to continue to follow this aspect of the voluntary standard since the amount of lift charge may affect tipover. If the Commission observes large devices with

more than 12 grams of lift powder, the Commission could revisit this issue.

1. Potential Effect on Reduction of Injuries

The Commission is aware of two deaths involving the tipover of multiple tube devices with tubes that have an inside diameter of 1.5 inches or more. The Commission is proposing a performance standard that would require these devices to have a

minimum tip angle greater than 60 degrees. According to the Commission's tests, devices that do not tip over below this angle are not likely to tip while functioning. Thus, the Commission believes that devices meeting this requirement are not likely to fall over while firing and injure operators and spectators.

2. Potential Effect on Consumer Choice and Cost

The proposed standard would only affect large multiple tube devices. Because most large multiple tube devices currently available already meet the proposed standard, the proposed standard would likely have little effect on consumer choice. Devices that do not have a base would have to add one, but consumers are not likely to perceive any significant loss of enjoyment as a result. While some devices may be discontinued, loss of consumer choice would be minimized by the availability of devices that do comply with the standard. Smaller multiple tube devices would continue to be available without any change.

Some number of large devices may have to be modified to add bases. But, current information indicates that about 25 percent of the large devices would have to be modified. The price of these devices could increase by 25 to 30 percent per unit to comply with the standard. (13)

3. Potential Effect on Industry

Although some changes in production may be made if the proposed amendment were issued on a final basis, the effect on overall production costs is not expected to be large. As explained above, most devices already comply with the standard. Modifying those that do not would add approximately 25 to 30 percent to retail costs, according to trade and industry sources. This modification would generally consist of adding a base to devices that do not currently have one. (13)

I. Alternatives

1. Ban

In the ANPR, the Commission stated that two possible alternatives in this rulemaking were to ban all sizes of multiple tube mine and shell devices or to ban large devices. The Commission has decided not to propose either of these alternatives. Although a ban would reduce the risk of injury and death associated with these devices, the costs would be much greater than for a standard. As explained above, the Commission is not proposing any action concerning multiple tube devices with

tubes less than 1.5 inches in diameter. Even a ban of only the large devices could be very costly since such a prohibition would eliminate all such devices, which have sales of approximately \$24 to \$36 million annually. (13) The Commission believes that a ban of all large multiple tube devices is not necessary because a standard will achieve similar benefits with lower costs.

2. Additional Labeling

The current product has extensive labeling. The text of the labels is quoted in section C above. One alternative available to the Commission is to add further warning or instructional labeling to large multiple tube devices or to modify the existing warning. Although this may have less impact on manufacturers and importers than a performance standard, the Commission believes that any additional or altered labeling is unlikely to be effective in reducing the risk of injury.

Some users may read and follow warning labels. However, fireworks are frequently used at night, reducing the likelihood that warning labels will be read. Additionally, the fact that fireworks often are used at a party or celebration further reduces the likelihood that the user will take the time to read and follow a warning label. Moreover, tipover may occur even if the user reads and follows the warning label. (1, Tab E)

In both incidents involving large multiple tube devices, the victims were spectators who were approximately 40 feet (12 meters) away from the device. Both victims probably perceived that they were a safe distance from the device. The devices were placed on smooth, hard surfaces, although one was angled to shoot over a lake. In light of these facts, it is unlikely that a warning label would have prevented these deaths. (1, Tab E)

3. Voluntary Standard

A final alternative is for the Commission to take no mandatory action, but to encourage the development of a voluntary standard. The AFSL has developed a voluntary standard applicable to large multiple tube devices. AFSL's Interim Revised Voluntary Standard for Mines and Shells—Single or Multiple Shot (January 28, 1993) requires that large multiple tube devices not tip over (except as the result of the last shot) when shot on a 2-inch thick medium density foam pad. An AFSL representative anticipates that the standard will be finalized and approved by AFSL's Standards Committee and

Board of Directors in the Fall of 1995. (14)

The Commission does not believe that AFSL's existing voluntary standard adequately reduces the risk of injury due to large devices tipping over while functioning. The Commission's tests using polyurethane foam did not find sufficient agreement between performance on foam and on grass. AFSL has not made available to the Commission any data supporting its dynamic test.

In addition, even if the AFSL standard were effective, the Commission does not believe that compliance with the standard would be adequate. According to AFSL, not a single domestically manufactured device has been certified as complying with the AFSL standard. The majority of large multiple tube devices are domestic. An AFSL representative recently stated that AFSL is working to implement a certification program and hopes to certify some domestic devices by mid-June 1995. Although AFSL reports that some shipments of imported large devices have been tested and certified in China this year, AFSL has not stated the number of devices. Thus, the Commission has little evidence that compliance with AFSL's voluntary program would be adequate. (14)

J. Comment Period

In accordance with section 4 of Executive Order 12889 implementing the North America Free Trade Act, the Commission is providing 75 days for public comment on the proposed rule. The Commission is particularly interested in acquiring additional data on the effect the proposed standard would have on the price to the consumer, the costs to the manufacturer, and the benefits to be derived from fireworks that comply with the proposed standard.

K. Preliminary Regulatory Analysis

a. Statutory Requirement

The Commission has preliminarily determined to issue a performance standard that would require that multiple tube devices with any tube measuring 1.5 inches in inner diameter or larger must have a minimum tip angle greater than 60 degrees. Accordingly, as explained earlier in this notice, the Commission is preparing to take action under the FHSA to prohibit large multiple tube devices that do not meet the tip angle requirement. Section 3(h) of the FHSA requires the Commission to prepare a preliminary regulatory analysis. 15 U.S.C. 1261(h).

The following discussion addresses these requirements.

b. Introduction

The Commission is considering amending the FHSA fireworks regulations to establish new dynamic stability requirements for large multiple tube devices. Large devices are defined as having an inside tube diameter of 1.5 inches or greater. These devices present a tipover hazard when firing. In June 1994, the Commission voted to proceed with an ANPR to develop a mandatory standard to address the tipover hazard. Although the ANPR addressed both large and small multiple tube mine and shell fireworks devices, the Commission proposes that only large tubes be addressed in a standard to reduce the risk of injury from tipovers. The proposed standard will require that devices that do not remain stable at a 60 degree angle in prescribed tests would be banned hazardous substances. It is expected that devices not passing these tests will be able to comply with the standard by adding a base of adequate size.

c. Background

Large multiple tube devices, which are relatively new products, became popular in the mid 1980's. These devices typically consist of three or more tubes fused in a series to fire sequentially and grouped together, sometimes on top of a wooden base. These devices are designed to fire aerial shells, comets, or mines producing visual and audible effects from non-reloadable tubes. They are among the largest Class C fireworks available for direct consumer use.

The National Fireworks Association (NFA) reports that retail sales of these devices are between \$24-\$36 million annually, with an estimated 400,000 to 700,000 units sold per year. Prices range from \$30 to \$130 per unit, with most devices in the \$50-\$60 price range. The NFA reports that domestic devices account for about 75 percent of the market (by dollar volume) and somewhat less by unit sales. There may be hundreds of firms engaged in the manufacturing, importing, and distribution of these fireworks. Imported devices are primarily manufactured in China, and go through several wholesalers before reaching the retail vendor.

d. Requirements of the Rule

To amend regulations under the FHSA, the Commission is required to publish a preliminary and final regulatory analysis containing a discussion of various factors. These

factors include a description of the potential benefits and potential costs of the rule, including any benefits and costs that cannot be quantified in monetary terms, and an identification of those most likely to receive the benefits and bear the costs. The regulations also require a description of any reasonable alternatives to the rule, together with a summary description of their costs and benefits, and a brief explanation of why such alternatives were not chosen. In addition, the Commission must address the requirements of Section 603 of the Regulatory Flexibility Act, which considers the effects on small firms, and the requirement for review pursuant to the National Environmental Policy Act.

e. Analysis of Proposed Standard

1. *Potential benefits.* One of the potential risks of injury associated with large multiple tube devices is the tipover hazard. The Directorate for Epidemiology and Health Science reports two deaths associated with the tip-over hazard from January 1, 1988 through December 1993. This averages to about 1 death every 3 years. The potential benefits of eliminating fatalities are about \$5 million over a three year period based on the statistical value of life suggested in recent economic literature.⁴ In addition, if there have been any unreported injuries or deaths, the potential benefits would be somewhat higher.

2. *Potential costs.* Most devices that already have bases will not have to be modified to meet the standard. The devices that will not have to be modified are generally domestically manufactured, and according to the NFA, account for at least 75 percent of the retail dollar volume of the market. The price of the remaining devices (mainly imports), representing \$6 to \$9 million in retail sales value, are expected to increase by 25 to 30 percent per unit in order to meet the standard.⁵ Thus, the total annual cost to consumers of modifying the affected devices would be between 25-30 percent of retail sales, or between \$1.5 million and \$2.7 million. While the standard may result in certain devices being discontinued, the loss of consumer choice would be minimized by the availability of close substitutes that comply with the standard. If the changes eliminate one

⁴ See Viscusi, W.K., "The Value of Risks to Life and Health," *Journal of Economic Literature*, December 1993.

⁵ Trade and industry sources report that modifying the devices would add about 25 to 30 percent to production costs. Additionally, anecdotal evidence from sales catalogues indicates that comparable devices without bases are significantly less expensive.

death every three years, the cost per life saved will be between \$4.5 and \$8 million.

f. Alternatives to the Rule

The Commission could consider several other alternatives, including: A product ban; modifying large and small tubes; and deferral to the voluntary standard.

1. *Product ban.* The expected benefits to society of banning all large multiple tube mine and shell devices would be one life saved every three years, the same as the potential benefits of the standard.⁶ However, costs to society of a ban (as opposed to a standard) would be much greater, because under a ban consumers would not be able to use large tube devices. While these costs cannot be measured precisely, the fact that consumers are willing to spend \$24-\$36 million annually to buy the large tube devices suggests that the costs could be substantial.

2. *Modify large and small tubes.* Small multiple tube mine and shell devices are defined as having tubes with an inside diameter of less than 1.5 inches. Trade sources report that annual retail sales range from \$600 million to \$1 billion, with an estimated 50 million to 110 million units sold per year. There are an estimated 150 injuries per year with small devices and no reported fatalities. The total injury costs from these incidents are an estimated \$750,000 per year. It is not certain what percentage of the market for small devices would be affected by a dynamic stability standard. However, observations from sales catalogues indicates that the majority of the small devices would have to be modified.

Given that annual retail sales are as high as \$1 billion and that injury costs are less than \$1 million per year, it is likely that the costs of applying the mandatory standard to small devices would be substantially greater than the benefits. For example, if 50 percent of the market for small devices had to be modified, then the total annual cost to consumers could be as high as \$150 million.

3. *Defer to the voluntary standard.* The American Fireworks Standards Laboratory (AFSL) revised its standard for mines and shells on January 28, 1993, in order to address the potential tipover hazard associated with multiple tube mine and shell devices. The AFSL's revisions included a dynamic stability test for all multiple tube

⁶ The benefits might be somewhat higher if there are other hazards in addition to the tip-over hazard that are associated with multiple tube mine and shell fireworks devices. However, other hazards have not been identified.

devices. However, the Commission has concerns over the effectiveness of and conformance to the AFSL standard. Although AFSL has stated that some imported large devices have been tested and certified to its standard, the Commission does not know how many or which devices. Consequently, deferring to the voluntary standard might not address any of the fatalities.

L. Regulatory Flexibility Certification

Under the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, agencies are generally required to prepare proposed and final regulatory flexibility analyses describing the impact of the rule on small businesses and other small entities, unless the head of the agency certifies that the rule will not, if promulgated, have a significant effect on a substantial number of small entities. The Commission staff has analyzed the potential effect of the proposed amendment on industry. Available information suggests that the proposed standard will not have a significant impact on a substantial number of small businesses. While there are probably hundreds of small businesses engaged in the manufacturing, importing, and distribution of fireworks, the standard will only affect those firms involved in the production and distribution of large multiple tube devices that will need to be modified. As described above, the devices that will need to be modified account for only about 25 percent of the large multiple tube mine and shell devices that are sold in the U.S. Moreover, the standard will not affect the small multiple tube mine and shell devices which make up the bulk of the market. The devices subject to the standard constitute only a small segment of the overall fireworks market.

Thus, the Commission certifies that no significant adverse impact on a substantial number of small firms or entities would result from the proposed amendment.

M. Environmental Considerations

The Commission's regulations governing environmental review procedures provide that the amendment of rules or safety standards establishing design or performance requirements for products normally have little or no potential for affecting the human environment. See 16 CFR 1021.6(c)(1). The Commission does not foresee that this proposed amendment to the existing fireworks regulations would

involve any special or unusual circumstances that might alter this conclusion.

The proposed standard is not expected to affect existing packaging, or materials in construction now in manufacturers' inventories. Existing inventories of finished products would not be rendered unusable through the implementation of the rules. Any remaining inventory not imported or manufactured after the effective date can probably be modified to meet the new standard.

The requirements of the standard are not expected to have a significant effect on the overall materials used in the production or packaging or in the amount of materials discarded after the standard goes into effect. Therefore, no significant environmental effects will result from the proposed standard.

Thus, the Commission concludes that no environmental assessment or environmental impact statement is required in this proceeding.

N. Effective Date

The rule will take into account the ordering season for fireworks and is proposed to take effect not earlier than 6 months from publication of the final rule in the **Federal Register**. It will apply to multiple tube fireworks devices with any tube measuring 1.5 inches or more in inner diameter that enter commerce or are imported on or after that date.

List of Subjects in 16 CFR Part 1500

Consumer protection, Hazardous materials, Hazardous substances, Imports, Infants and children, Labeling, Law enforcement, and Toys.

Conclusion

For the reasons given above, the Commission preliminarily finds that cautionary labeling required by the FHSA is not adequate for multiple tube devices with any tube 1.5 inches (3.8 cm) or larger in inner diameter and that, due to the degree and nature of the tipover hazard presented by these devices, in order to protect the public health and safety it is necessary to keep these devices out of commerce unless they have a minimum tip angle of at least 55 degrees. Thus, the Commission proposes to amend Title 16 of the Code of Federal Regulations to read as follows:

PART 1500—[AMENDED]

1. The authority for Part 1500 continues to read as follows:

Authority: 15 U.S.C. 1261–1278.

2. Section 1500.17 is amended to add a new paragraph (a) (12) to read as follows:

(a) * * *

(12) Multiple tube mine and shell fireworks devices that have any tube measuring 1.5 inches (3.8 cm) or more in inner diameter and have a minimum tip angle greater than 60 degrees in accordance with the requirements of § 1507.12.

* * * * *

PART 1507—[AMENDED]

1. The authority for Part 1507 continues to read as follows:

Authority: Sec. 2(q)(1)(B), (2), 74 Stat. 374 as amended 80 Stat. 1304–1305; (15 U.S.C. 1261); sec. 701(e), 52 Stat. 1055 as amended; 21 U.S.C. 371(e); sec. 30(a), 86 Stat. 1231; 15 U.S.C. 2079(a).

2. Part 1507 is amended to add a new § 1507.12 to read as follows:

§ 1507.12 Multiple tube mine and shell devices.

(a) *Application.* Multiple tube mine and shell devices with any tube measuring 1.5 inches (3.8 cm) or more in inside diameter shall be subject to the tip angle test described in this section.

(b) *Testing procedure.* The device shall be placed on a smooth surface which can be inclined at an angle greater than 60 degrees from the horizontal as shown in figure 1 below. The height and width of the inclined plane (not including the portion of the plane below the mechanical stop) shall be at least 1 inch (2.54 cm) greater than the largest dimension of the base of the device to be tested. The test shall be conducted on a smooth, hard surface that is horizontal as measured by a spirit level or equivalent instrument. The mechanical stop shall be 1/16 inches (1.6 cm) in height and perpendicular to the inclined plane. The stop shall be positioned parallel to the bottom edge of the inclined plane and in such a way that no portion of the device to be tested or its base touches the horizontal surface. The device shall not tip over from the 60 degree incline. The procedure shall be repeated for each edge of the device.

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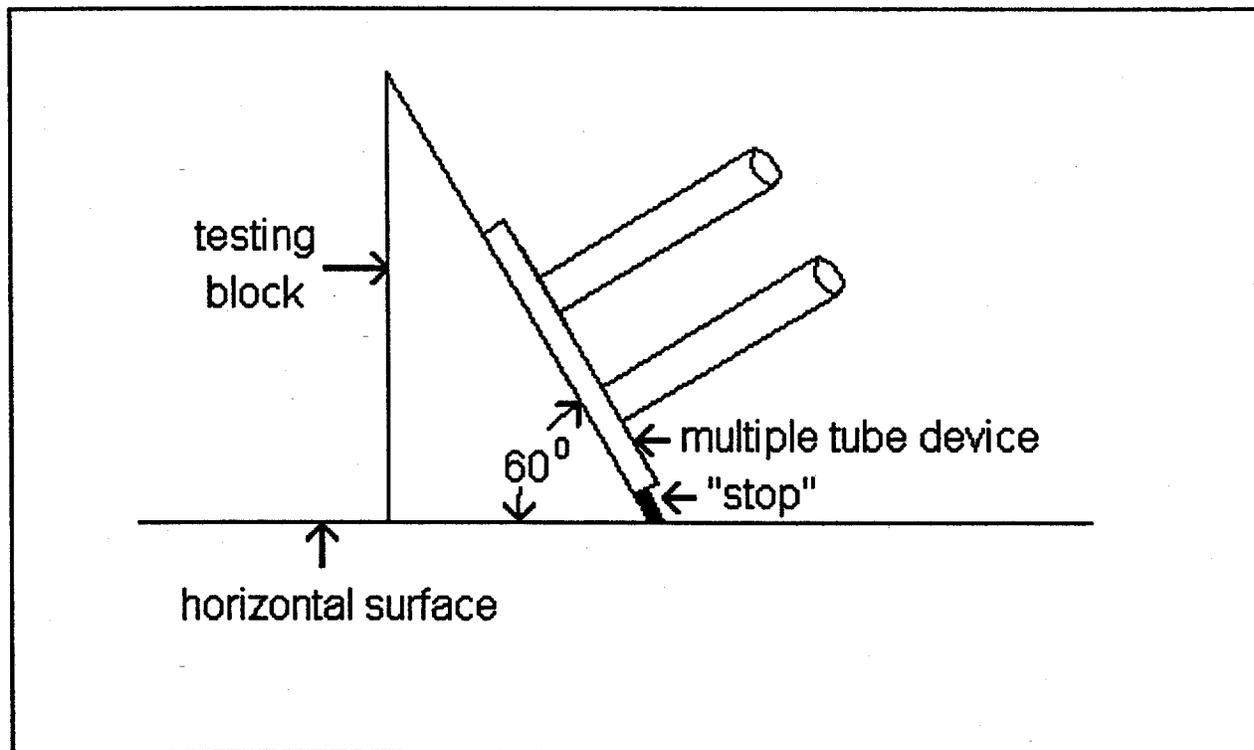


Figure 1

Side view of an apparatus or testing block for testing compliance with the proposed 60 degree tilt angle standard.

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Dated: June 27, 1995.

Sadye E. Dunn,

Secretary, Consumer Product Safety Commission.

Reference Documents

The following documents contain information relevant to this rulemaking proceeding and are available for inspection at the Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East-West Highway, Bethesda, Maryland 20814:

1. Multiple Tube Mine and Shell Fireworks Devices: Advance Notice of Proposed Rulemaking; Request for Comments and Information, 59 Fed. Reg. 33928 (July 1, 1994).
2. Briefing Package: Multiple Tube Mine and Shell Fireworks Devices, Consumer Product Safety Commission, May 31, 1994.
3. Briefing Memorandum on Multiple Tube Mine and Shell Fireworks Devices, from Ronald L. Medford, HIR to the Commission, June 8, 1995.
4. Memorandum from Michael Babich, Project Manager, HSHE, "Responses to Public Comments on Multiple Tube Mine and Shell Devices," May 22, 1995.
5. Memorandum from Leonard Schacter, EPA, to Michael Babich, HSHE, "Annual Estimated Injuries Associated with Multiple tube Mine and Shell Fireworks Devices," June 1, 1995.
6. Memorandum from James Carleton and Jay Sonenthal, LSHS, to Michael Babich, HSHE, "Results for Dynamic Stability Testing of Large Multiple Tube Mine and Shell Devices, May 18, 1995.
7. Memorandum from Thomas Caton, ESME, to Michael Babich, HSHE, "Fireworks Testing: Test Surface Roughness," May 22, 1995.
8. Report from Terry Kissinger, EPA, to Michael Babich, HSHE, "A Comparison of the Tipover Performances of Multiple Tube Mine and Shell Devices on Grass and Foam," January 1995.
9. Memorandum from George F. Sushinsky, LSEL, to Michael Babich, HSHE, "Dimensional and Stability Measurements of Fireworks," March 10, 1995.
10. Memorandum from George F. Sushinsky, LSEL, to Michael Babich, HSHE, "Tip Angle Measurements of a Device with a Plastic Base," April 13, 1995.
11. Memorandum from Jay Sonenthal, LSHL, to Michael Babich, HSHE, "Test of a Device with a Plastic Base," May 22, 1995.
12. Memorandum from Sam Hall, CERM, to Michael Babich, HSHE, "Acceptable Tipover Rate for Multiple Tube Devices," November 21, 1994.
13. Memorandum from Anthony Homan, ECPA, to Michael Babich, HSHE, "Multiple Tube Mine and Shell Fireworks Devices—Regulatory Analysis," May 18, 1995.
14. Memorandum from Sam Hall, CERM, to Michael Babich, HSHE, "AFSL's Interim Voluntary Standard for Large Multiple Tube Mine and Shell Devices and Staff's Proposed Mandatory Static Performance Standard, May 25, 1995.
15. Product and Performance Standard for Mines and Shells—Single or Multiple Shot," Version 1.1, American Fireworks Standards Laboratory, Bethesda, Maryland, January 28, 1993.
16. Memorandum from Neil Gasser, LSHL, to Michael Babich, HSHE, "Additional Tests of Multiple Tube Mine and Shell Devices," June 8, 1995.

[FR Doc. 95-16313 Filed 7-3-95; 8:45 am]

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DEPARTMENT OF THE INTERIOR**Office of Surface Mining Reclamation and Enforcement****30 CFR Part 948****West Virginia Program Amendment**

AGENCY: Office of Surface Mining Reclamation and Enforcement (OSM), Interior.

ACTION: Proposed rule; reopening and extension of public comment period.

SUMMARY: OSM is announcing the receipt of additional revisions to the West Virginia permanent regulatory