2014 Fireworks Annual Report

Fireworks-Related Deaths, Emergency Department-Treated Injuries, and Enforcement Activities During 2014

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Executive Summary

This report provides the results of the U.S. Consumer Product Safety Commission ("CPSC") staff's analysis of data on nonoccupational, fireworks-related deaths and injuries during calendar year 2014. The report also includes a summary of CPSC staff's enforcement activities during 2014.

Staff obtained information on fireworks-related deaths from news clippings and other sources in the CPSC's Injury and Potential Injury Incident file ("IPII") and the CPSC's Death Certificate File. Staff estimated fireworks-related injuries treated in hospital emergency departments from CPSC's National Electronic Injury Surveillance System ("NEISS"). CPSC staff conducted a special study of nonoccupational fireworks-related injuries occurring between June 20, 2014 and July 20, 2014. The special study included collection and analysis of more detailed incident information, such as the type of injury, the fireworks involved, and the characteristics of the victim and the incident scenario. About 67 percent of the estimated annual fireworks-related, emergency department-treated injuries for 2014 occurred during that period.

Highlights of the report:

Deaths and Injuries

- CPSC staff received reports of 11 nonoccupational fireworks-related deaths occurring in 10 incidents during 2014. Four victims died in house fires caused by fireworks, including several where the person(s) killed may not have been using fireworks. Seven victims died from direct impacts of fireworks. Reporting of fireworks-related deaths for 2014 is not complete, and the number of deaths in 2014 should be considered a minimum.

- Fireworks were involved in an estimated 10,500 injuries treated in U.S. hospital emergency departments during calendar year 2014 (95 percent confidence interval 7,700–13,300).

- There is not a statistically significant trend in estimated emergency department-treated, fireworks-related injuries from 1999 to 2014.

- An estimated 7,000 fireworks-related injuries (or 67 percent of the total estimated fireworks-related injuries in 2014) were treated in U.S. hospital emergency departments during the 1-month special study period between June 20, 2014 and July 20, 2014 (95 percent confidence interval 4,900–9,200).

Results from the 2014 special study

- Of the fireworks-related injuries sustained, 74 percent were to males, and 26 percent were to females.

- Children younger than 15 years of age accounted for 35 percent of the estimated 2014 injuries. Nearly half of the estimated emergency department-treated, fireworks-related injuries were to individuals younger than 20 years of age.

- Children 5 to 9 years of age had the highest estimated rate of emergency department-treated fireworks-related injuries (5.2 injuries per 100,000 people).

- There were an estimated 1,400 emergency department-treated injuries associated with sparklers and 100 with bottle rockets.

- There were an estimated 1,400 emergency department-treated injuries associated with firecrackers. Of these, an estimated 26 percent were associated with small firecrackers, an estimated 28 percent with illegal firecrackers, and an estimated 46 percent with firecrackers for which there was no specific information.

- The parts of the body most often injured were hands and fingers (an estimated 36 percent); head, face, and ears (an estimated 19 percent); eyes (an estimated 19 percent); legs (an estimated 10 percent); and arms (an estimated 5 percent).

- Fifty-four percent of the emergency department-treated injuries were burns. Burns were the most common injury to all parts of the body, except the eyes, where contusions, lacerations, and foreign bodies in the eyes occurred more frequently.

- Approximately 83 percent of the victims were treated at the hospital emergency department and then released. An estimated 14 percent of patients were treated and transferred to another hospital or admitted to the hospital.

CPSC staff conducted telephone follow-up investigations of fireworks-related injuries that were reported at NEISS hospital emergency departments during the 2014 special study period and that met certain criteria. Many of these cases were selected for follow-up interviews because they involved potentially serious injuries and/or hospital admissions. Cases were also selected to clarify information in the hospital record about the incident scenario or fireworks type. Thirty-one telephone interviews were completed.

A review of data from the 31 completed telephone follow-up investigations showed that most injuries were associated with misuse or malfunctions of fireworks. Misuse included: lighting fireworks in one's hand; being too close to lit fireworks; setting off fireworks improperly; mischief; igniting fireworks too close to someone; and dismantling fireworks. Typical malfunctions included: errant flight paths; tip-over incidents; early ignitions; and blowouts. In addition, debris and smoke from fireworks were involved in some of the injuries as well. According to the injury investigation reports, most victims recovered from their injuries or were expected to recover completely. However, several victims reported that their injuries might be long term.

Enforcement Activities

During 2014, CPSC's Office of Compliance and Field Operations continued to work closely with other federal agencies to conduct surveillance on imported fireworks and to enforce the provisions of the Federal Hazardous Substances Act ("FHSA"). Examples of these activities include:

- CPSC has staff worked with the U.S. Department of Justice on cases involving companies and/or individuals that sold chemicals and components used to make illegal fireworks. It remains a priority for CPSC staff to investigate the sale of kits and components used to make illegal and dangerous explosive devices, such as M-80s and Quarter Sticks. CPSC staff continues to take an active role with industry to facilitate adequate understanding of the regulations and to maintain an open dialogue, if any issues should arise.

- Staff from CPSC's Office of Import Surveillance and Office of Compliance and Field Operations, in cooperation with U.S. Customs and Border Protection ("CBP"), continues to conduct surveillance on imported shipments of consumer fireworks. With assistance from CBP, CPSC staff selectively sampled and tested shipments of imported fireworks in fiscal year 2014, for compliance with the FHSA. Approximately 41 percent of the selected and tested shipments were found to contain fireworks that were banned hazardous substances because they were noncompliant with FHSA. The majority of violations centered on violations for fuse performance requirements and overloaded report composition. CPSC staff requested corrective action on these noncompliant fireworks; and in most cases, firms voluntarily destroyed the noncompliant fireworks. Because CPSC's port surveillance program stops noncompliant fireworks at import, fewer violative and dangerous imported fireworks are reaching retail stores and roadside stands.

1. Introduction

This report describes injuries and deaths during calendar year 2014, associated with fireworks devices, as well as kits and components used to manufacture illegal fireworks. The report also describes CPSC staff's enforcement activities for 2014. Reports for earlier years in this series can be found at: http://www.cpsc.gov/en/Research--Statistics/Fuel-Lighters-and-Fireworks1/Fuel-Lighters-and-Fireworks-Reports/.

This report is organized into seven sections. Section 1 contains a description of the data and statistical methods used in this analysis. Section 2 summarizes the 2014 fireworks-related incidents that resulted in deaths. Section 3 provides an annual estimate of fireworks-related, emergency department-treated injuries for the United States in 2014, and compares that estimate with the estimated injuries for previous years. Section 4 analyzes emergency department-treated, fireworks-related injuries occurring during the month around July 4, 2014. Section 5 summarizes the telephone in-depth investigations of a subsample of the injuries during that period. Section 6 describes enforcement activities of CPSC's Office of Compliance and Field Operations during 2014. The report concludes with a summary of the findings in Section 7. Appendix A presents a table on the relationship between fireworks-related injuries and fireworks imports between 1999 and 2014. Appendix B contains more detail on the completed telephone investigations.

Sources of Information

Information on nonoccupational fireworks-related deaths occurring during 2014 was obtained from the CPSC's IPII and the CPSC's Death Certificate File. Entries in IPII come from a variety of sources, such as newspaper articles, consumer complaints, lawyer referrals, medical examiners, and other government agencies. CPSC staff from the Office of Compliance and Field Operations conducted in-depth investigations of the deaths. The purpose of these investigations was to determine the types of fireworks involved in the incidents and the circumstances that led to the fatal injuries.

Because the data in IPII are based on voluntary reports, and because it can take more than 2 years to receive all death certificates from the various states to complete the Death Certificate File, neither data source can be considered complete for the number of 2013 or 2014 fireworks-related deaths at the time this report was prepared. As a result, the number of deaths should be considered a minimum. Staff updates the number of deaths for previous years when reports are received. Total deaths for previous years may not coincide with the numbers in reports for earlier years because of these updates.

The source of information on nonoccupational, emergency department-treated fireworks-related injuries is NEISS. NEISS is a probability sample of U.S. hospitals with emergency departments.[1] Injury information is taken from the emergency department

[1] For a description of NEISS, including the revised sampling frame, see Schroeder and Ault (2001). Procedures used for variance and confidence interval calculations and adjustments for the sampling frame change that occurred in 1997 are found in Marker, Lo, Brick, and Davis (1999). SAS® statistical software for trend and confidence interval estimation is documented in Schroeder (2000). SAS® is a product of the SAS Institute, Inc., Cary, NC.

record. This information includes the victim's age and sex, the place where the injury occurred, the emergency department diagnosis, the body part injured, and the consumer product(s) associated with the injury. The information is supplemented by a 160-character narrative that often contains a brief description of how the injury occurred.

To supplement the information available in the NEISS record, every year, during the month around July 4, CPSC staff conducts a special study of fireworks-related injuries. Staff focuses its efforts on fireworks incidents during this period because in most years, about two-thirds to three-quarters of the annual injuries occur then. During this period, hospital emergency department staffs show patients pictures of different types of fireworks to help them identify the type of fireworks device associated with their injuries. The type of fireworks involved in the incident is written into the NEISS narrative. In 2014, the special study period lasted from June 20 to July 20.

After reading the incident case records, including the narrative description of the fireworks device and the incident scenario, CPSC staff may assign a case for telephone investigation. Cases are usually selected because they involve the most serious injuries and/or hospital admissions. Serious injuries include: eye injuries, finger and hand amputations, and head injuries. Cases also may be assigned to obtain more information about the incident than what is reported in the NEISS narrative. In most years, phone interviewers are able to collect information for one-third to one-half of the cases assigned. Information on the final status of the telephone interviews conducted during the 2014 special study is found in Section 5 and Appendix B of this report.

In the telephone investigations, information is requested directly from the victim (or the victim's parent, if the victim is a minor) about the type of fireworks involved, where the fireworks were obtained, how the injury occurred, and the medical treatment and prognosis. When the fireworks device reported in the telephone investigation is different from what is reported in the NEISS emergency department record, the device reported in the telephone investigation is used in the data for this report.

As a result of this investigative process, there are three different levels of information that may be available about a fireworks-related injury case. For the cases that occur before or after the July 4 special study period, the NEISS record is almost always the only source of information. Many NEISS records collected outside the special study period do not specify the type of fireworks involved in the incident. During the special study period, more information is available for analysis because the NEISS record collected by the emergency department usually contains the type of fireworks and additional details on the incident scenario. Finally, the most information is available for the subset of the special study cases where staff conducted telephone investigations. These different levels of information about injuries correspond to different analyses in the report, as follows:

- Estimated national number of fireworks-related, emergency department-treated injuries. This estimate is made using NEISS cases for the entire year, from records where fireworks were specified as one of the consumer products involved.

For cases outside the special study period, as noted above, there is usually no information on the fireworks type, and limited information on the incident scenario is available. Consequently, there is not enough information to determine the role played by the fireworks in the incident. This means that the annual injury estimate may include a small number of cases in which the fireworks device was not lit, or no attempt was made to light the device. Calculating the annual estimates without removing these cases makes the estimates comparable to previous years.[2]

- Detailed analyses of injury patterns. The tables in this report that describe fireworks type, body part injured, diagnosis, age and sex of injured people, and other such information, are based on the special study period only. Fireworks-type information is taken from the telephone investigation or the NEISS comment field when there was no telephone investigation. When computing estimates for the special study period, staff does not include cases in which the fireworks device was not lit or no attempt was made to light the device.

- Information from telephone investigations. Individual case injury descriptions and medical prognosis information from the telephone investigations are listed in Appendix B. These listings also exclude cases in which the fireworks device was not lit or no attempt was made to light the device. These cases represent a sample of some of the most serious fireworks-related injuries and may not be representative of typical emergency department-treated, fireworks-related injuries.

Statistical Methods

Injuries reported by hospitals in the NEISS sample were weighted by the NEISS probability-based sampling weights to develop an estimate of total U.S. emergency department-treated, fireworks-related injuries for the year and for the special study month around July 4. Confidence intervals were estimated, and other statistics were calculated using computer programs that were written to take into account the sampling design.[3] Estimated injuries are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are shown with an asterisk (*). Percentages are calculated from the actual estimates. Percentages may not add to subtotals or to the total in the tables or figures, due to rounding.

This report also contains a number of detailed tables about fireworks-related injuries during the special study period. National estimates in these tables were also made using the sampling weights. To avoid cluttering the tables, confidence intervals are not included. Because the estimates are based on subsets of the data, they have larger relative sampling errors (*i.e.*, larger coefficients of variation) than the annual injury estimate or the special study injury estimate. As a result, interpretation and comparison of these

[2] The only exception to the practice of including all of the cases occurred in 2003, when nine cases representing an estimated 150 emergency department-treated injuries were excluded from the annual injury estimates. These cases resulted from a nightclub fire in West Warwick, RI, which also caused 100 deaths. For details see Greene and Joholske (2004).
[3] See Schroeder (2000).

estimates with each other or with estimates from prior years should be made with caution. For example, when comparing subsets of the data—such as between injuries associated with two different types of fireworks, or between two different age groups—it is difficult to determine how much of the difference between estimates is associated with sampling variability and how much is attributed to real differences in national injury totals.

2. Fireworks-Related Deaths for 2014

CPSC has reports of 11 nonoccupational, fireworks-related deaths that occurred during 2014. Reporting of fireworks-related deaths for 2014 is not complete, and the number of deaths in 2014 should be considered a minimum. Brief descriptions of the incidents, using wording taken from the incident reports, follow:

- On June 22, a 19-year-old female from Connecticut died from smoke inhalation in an apartment fire. The fire started when a friend of the victim's brother, an 18-year-old male, threw a sparkler through a second floor window to get the victim's brother's attention. The victim's brother was actually sleeping downstairs at the time.

- On July 4, a 49-year-old female from Florida sustained 95 percent total body burns and inhalation injury in a house fire and died next day. It was reported that the victim was in her bedroom preparing mortar type fireworks to be launched for a party with some family members and friends. According to the report, while in the bedroom, an accident occurred and an ashtray was knocked over by a puppy. That sparked a fire and caused the fireworks to start exploding in the bedroom. The victim was pulled out from a window by her son and others, and she was airlifted to a medical center. The victim was pronounced deceased on July 5.

- On July 4, a 44-year-old male from Michigan was killed when a mortar shell firework exploded. According to witnesses, the victim and his friends had a barbecue and set off fireworks during the evening. The victim initially set the launching tube on the cement ground and launched three shells successfully. Then the victim decided to launch the fourth shell while holding the launch tube with his arms extended and the tube pointed in an upward angle. The tube blew up from the back and hit the victim directly in the chest. The victim was knocked backwards about 8 to 10 feet and flew into the fence, and he died shortly after the explosion. The medical examiner's office found the base plug from the tube deep inside the victim's chest. The plug appeared to be made of clay and measured 1-7/8" in diameter and was 2-1/8" tall. The officials were unable to determine if a consumer mortar shell or a display shell was used.

- On June 4, a 52-year-old male from Missouri lost both legs and an arm when his home exploded. The victim was transported to a hospital where he was placed in the intensive care unit. The victim died of multiple blast injuries on June 10,

2014. It was suspected that the victim was making illegal fireworks when the house exploded. The medical examiner's report listed the explosion reportedly due to novice firework manufacturing activities. It was also reported that the victim had a history of making illegal fireworks, which included M-80's and cherry bombs, for at least two years. ATF agents continued to collect evidence and this case remained open at the time this report was prepared.

- A 51-year-old male from Missouri died as a result of injuries sustained when a fireworks device exploded in his hand. The victim made an abbreviated statement to a police officer who responded to the incident about what happened while being prepared for transport to an emergency room. The victim stated that he was trimming grass in his yard on July 5, and he observed what appeared to be some type of fireworks device in the grass after hitting it with his trimmer. The victim reached down to pick up the item and it exploded in his hand. The officer observed that the victim had sustained a large laceration to the palm of his hand and his hand was missing several fingers. In addition, the victim had lost a significant amount of blood. The local emergency room was unable to stabilize the victim and he was airlifted to another hospital. The victim had a previous medical history of alcoholism and liver failure. The victim died of explosive damage to left hand complicating micronodular cirrhosis with resulting liver failure on July 28 in the hospital.

- On July 5, a 35-year-old male died in North Dakota as a result of the injuries he sustained when he was hit in the face by fireworks. According to the witnesses at the scene, the victim and several other adults traveled in a rental car and it became inoperable. The victim then contacted the rental company and requested a tow truck. Due to their remote location the tow truck was unable to find them. The victim decided to light off fireworks to guide the tow truck to their position. The victim exited the car while others stayed in the vehicle. It was reported that the victim lit off three to four fireworks at that time. The victim was on his cell phone with the tow truck driver and she asked the victim to light one more firework. The victim agreed, and the firework was ignited and exploded in the victim's face. The persons who stayed in the car said that they heard and saw the other three to four fireworks that the victim lit previously. When they did not see the last firework, they got out of the backseat of the car and found the victim lying behind the car. They called 911 and the tow truck arrived around that time. They placed the victim into the tow truck and drove to a more easily located position and transferred him into a waiting ambulance. Life saving measures were performed, but the victim could not be revived.

- On July 5, two victims from Ohio—a 78-year-old male and a 76-year-old female—died in a house fire. The fire was suspected to have been caused by falling debris from fireworks in their neighborhood. On the night of the incident, witnesses reported several people in the neighborhood using fireworks. It is believed that falling debris from one of the fireworks devices ignited combustible material on the back patio area of the victim's home. At the time of the fire, the

victims were sleeping inside the home. A neighbor was awakened by his barking dog and saw the fire on the back patio of the victim's home. He went to the victims' home and knocked on the front door. The male victim came to the door but went back into the house to get his wife who was unable to get out of bed on her own. The neighbor stated the male victim never came back out of the house. The neighbor tried to enter the house to help but stated the smoke was too thick. The fire department responded and put out the fire. The victims were found deceased inside of the home. This incident was still under investigation at the time this report was prepared.

- On July 5, a 25-year-old male died of blunt force trauma head injuries in Oklahoma. According to witnesses, the victim and others were setting off fireworks around dusk on July 5. The victim had been drinking alcohol before the incident. The victim lit a shell and placed it in a launching tube and held it over his head. The shell went off and hit the victim in the top of the head. The victim fell to the ground instantly. The victim was transported to a local hospital by emergency responders and was pronounced deceased the next day.

- On August 28, a 24-year-old male died and a 23-year-old male was seriously injured in a garage explosion in Texas. According to the official reports, the victim and his friend were removing powder from consumer fireworks and placing the powder into a compressed gas cylinder in the garage. During the process the flash powder used in the consumer fireworks was ignited inside the cylinder, and that caused the pressure to build in the cylinder and an explosion occurred while the 24-year-old victim was over the top of it. The 24-year-old victim suffered fatal traumatic injuries and the 23-year-old sustained second-degree burns and blast injuries.

- On July 4, 2014, a 14-year-old victim from Washington State, his family and friends were gathered at a private residence for a holiday celebration. According to witnesses, attendees at the party were sitting and standing around a bonfire while others were lighting off fireworks. Two launch tubes were set about eight inches apart. Individuals (possibly including the victim) lit the launch tubes and ran away. The witnesses described a "blinding light" and realized that one of the devices had been shot into the crowd of people. One witness said the device "exploded rather than going up." After everything cleared, the victim was discovered lying on the ground with a significant head injury. The victim was airlifted to a trauma hospital, and he died there 9 days later from his injury.

Including the 11 deaths described above, CPSC staff has reports of 106 fireworks-related deaths between 2000 and 2014, for an average of 7.1 deaths per year.[4]

[4] See previous reports in this series (*e.g.*, the report for 2013: Tu and Granados (2014)). In the most recent 3 years, the number of deaths included six deaths in 2011, six deaths in 2012, and eight deaths in 2013.

3. National Injury Estimates for 2014

Table 1 and Figure 1 present the estimated number of non-occupational, fireworks-related injuries that were treated in U.S. hospital emergency departments between 1999 and 2014.

Table 1
Estimated Fireworks-Related Injuries: 1999–2014

Year	Estimated Injuries	Injuries per 100,000 People
2014	10,500	3.3
2013	11,400	3.6
2012	8,700	2.8
2011	9,600	3.1
2010	8,600	2.8
2009	8,800	2.9
2008	7,000	2.3
2007	9,800	3.3
2006	9,200	3.1
2005	10,800	3.7
2004	9,600	3.3
2003	9,300	3.2
2002	8,800	3.1
2001	9,500	3.3
2000	11,000	3.9
1999	8,500	3.1

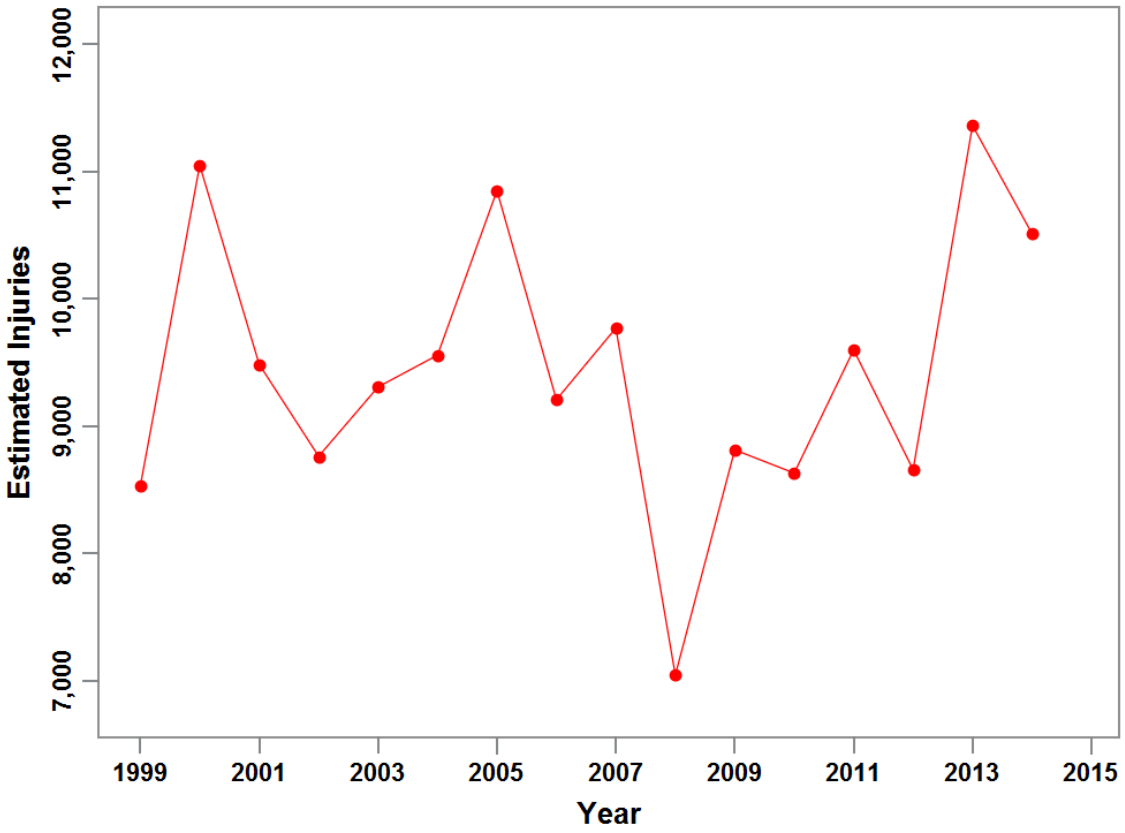
Source: NEISS, U.S. Consumer Product Safety Commission. The estimate for 2003 excludes an estimated 150 emergency department-treated injuries following the nightclub fire in West Warwick, RI. Population estimates for 2010 to 2014 are from Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2014 (NST-EST2014-01), U.S. Census Bureau, Population Division. Release Date: December 2014. Population estimates for 2000 to 2009 are from Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2009 (NST-EST2009-01). Population Division, U.S. Census Bureau. The estimate for 1999 is available at: http://www.census.gov/popest/data/national/totals/1990s/tables/nat-agesex.txt.

In calendar year 2014, there were an estimated 10,500 fireworks-related, emergency department-treated injuries (95 percent confidence interval 7,700–13,300). There were an estimated 11,400 injuries in 2013. The difference between the injury estimates for 2014 and 2013 is not statistically significant.

Figure 1 shows that the highest estimated number of annual fireworks-related injuries was 11,400 in 2013, followed by 11,000 estimated injuries in 2000, 10,800 estimated injuries in 2005, and 10,500 estimated injuries in 2014. For the other years, the estimated number of injuries fluctuated between 7,000 and 9,800. In 2008, the estimated number of fireworks-related injuries was 7,000, which was the lowest between 1999 and

2014. There is not a statistically significant trend detected in the fireworks-related injury estimates from 1999 to 2014.[5]

Figure 1
Estimated Fireworks-Related, Emergency Department-Treated Injuries
1999–2014



Source: NEISS, U.S. Consumer Product Safety Commission.

Appendix A contains a table showing estimated fireworks-related injuries and fireworks imports between 1999 and 2014.

[5] For details on the method to test a trend that incorporates the sampling design, see Schroeder (2000) and Marker et al. (1999).

4. Injury Estimates for the 2014 Special Study: Detailed Analysis of Injury Patterns

The injury analysis in this section presents the results of the 2014 special study of fireworks-related injuries that were treated in hospital emergency departments between June 20, 2014 and July 20, 2014. During this period, there were an estimated 7,000 fireworks-related injuries (95 percent confidence interval 4,900–9,200), accounting for 67 percent of the total estimated fireworks-related injuries for the year, which is not statistically different from the estimated 7,400 fireworks-related injuries in the 2013 special study period.

The remainder of this section provides the estimated fireworks-related injuries from this period, broken down by fireworks device type, victims' demographics, injury diagnosis, and body parts injured.

Fireworks Device Types and Estimated Injuries

Table 2 shows the estimated number and percent of emergency department-treated injuries by type of fireworks device during the special study period of June 20, 2014 to July 20, 2014.

Table 2
Estimated Fireworks-Related Injuries
By Type of Fireworks Device
June 20–July 20, 2014

Fireworks Device Type	Estimated Injuries	Percent
Total	7,000	100
All Firecrackers	1,400	20
Small	400	5
Illegal	400	6
Unspecified	700	9
All Rockets	300	4
Bottle Rockets	100	2
Other Rockets	100	2
All Other Devices	2,900	41
Sparklers	1,400	19
Fountains	100	1
Novelties	400	6
Multiple Tube	100	2
Reloadable Shells	600	9
Roman Candles	300	4
Public Display	300	4
Unspecified	2,200	31

Source: NEISS, U.S. Consumer Product Safety Commission. Based on 184 NEISS emergency department-reported injuries between June 20, 2014 and July 20, 2014, and supplemented by 31 completed In-Depth Investigations ("IDIs"). Fireworks types are obtained from the IDI, when available; otherwise, fireworks types are identified from information in victims' reports to emergency department staff that were contained in the NEISS narrative. Illegal firecrackers include M-80s, M-1000s, Quarter Sticks, and other firecrackers that are banned under the Federal Hazardous Substances Act ("FHSA") (16 C.F.R. § 1500.17)**.** Fireworks that may be illegal under state and local regulations are not listed as illegal, unless they violate the FHSA. Subtotal estimates are presented below the estimates for firework type. Estimates are rounded to the nearest 100 injuries. Percentages are calculated from the actual estimates, and they may not add to subtotals or the total due to rounding.

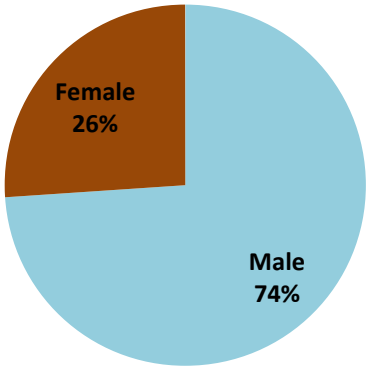
As shown in Table 2, sparklers accounted for an estimated 1,400 emergency department-treated injuries, which represents 19 percent of the total fireworks-related injuries during the special study period. Firecrackers were also associated with 1,400 estimated injuries, 20 percent of the total. Small firecrackers were involved in 400 injuries. The estimate for illegal firecracker-related injuries was 400, as well. However, some of the estimated 700 unspecified firecracker-related injuries, and some of the estimated 2,200 unspecified fireworks-related injuries also may have involved illegal firecrackers. Reloadable shells were associated with 600 estimated injuries, 9 percent of the total. Novelty devices accounted for 400 estimated injuries, 6 percent of the total. Roman candles were associated with 300 estimated injuries, 4 percent of the total.

Rockets were involved in 300 estimated injuries as well. Among the injuries from rockets, 100 injuries were related to bottle rockets. Public display fireworks also accounted for 300 estimated injuries, 4 percent of the total. While public display fireworks are not associated with a large number of injuries, the larger load in these devices makes them involved disproportionately in serious injuries. Multiple tube devices and fountains each accounted for 2 percent or less of the estimated fireworks-related injuries during the 2014 special study period.

Gender and Age of Injured Persons

Some 5,200 of the estimated fireworks-related injuries were to males, representing 74 percent of the total injuries. Males experienced an estimated 3.3 fireworks-related, emergency department-treated injuries per 100,000 individuals during the special study period. Females, with an estimated 1,800 emergency department-treated injuries, had 1.1 injuries per 100,000 people. Figure 2 shows the distribution of estimated fireworks-related injuries by gender.

Figure 2
Estimated Injuries by Gender



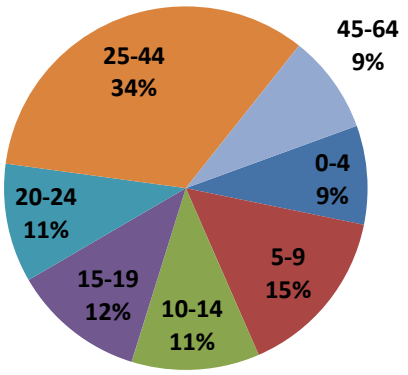
Source: NEISS, U.S. Consumer Product Safety Commission.

Children and young adults under age 20 constituted 47 percent of the fireworks-related injuries. Children under 5 years old experienced an estimated 600 injuries (9 percent of all fireworks-related injuries during the special study period), as shown in Figure 3 and Table 3. Children in the 5- to 14-year-old age group experienced an estimated 1,900 injuries (27 percent of all fireworks-related injuries).[6] Breaking down that age group further, children 5 to 9 years old had an estimated 1,100 injuries and

[6] The percentages are calculated from actual injury estimates, and age subcategory percentages may not sum to the category percentage due to rounding.

children 10 to 14 years old accounted for 800 injuries. In the aggregate, children under 15 years old accounted for 35 percent of the estimated fireworks-related injuries.

Figure 3
Percentage of Injuries by Age Group



Source: NEISS, U.S. Consumer Product Safety Commission. Percentages may not sum to 100 due to rounding.

The detailed breakdown by age and gender is shown in Table 3. The concentration of injuries among males and people under 25 has been typical of fireworks-related injuries for many years.

Table 3
Estimated Fireworks-Related Injuries
By Age and Gender
June 20–July 20, 2014

Age Group	Total	Per 100,000 People	Male	Female
Total	7,000	2.2	5,200	1,800
0–4	600	3.1	300	300
5–14	1,900	4.5	1,500	400
5–9	1,100	5.2	800	200
10–14	800	3.9	700	100
15–24	1,600	3.6	1,200	400
15–19	800	3.9	600	300
20–24	700	3.3	600	100
25–44	2,400	2.8	1,900	500
45–64	600	0.7	300	300

Sources: NEISS, U.S. Consumer Product Safety Commission. Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties, and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2013, U.S. Census Bureau, Population Division. Release Date: June 2014. The oldest victim was 60 years old. Estimates are rounded to the nearest 100 injuries. Age subcategory estimates may not sum to the category total due to rounding.

When considering per capita injury rates, children and young adults had higher estimated rates of injury than the other age groups during the 2014 special study period. Children 5 to 9 years old had the highest estimated per capita injury rate at 5.2 injuries per 100,000 population. This was followed by children 10 to 14 years old and young adults 15 to 19 years old at 3.9 injuries per 100,000 people.

Age and Gender of the Injured Persons by Type of Fireworks Device

Table 4 shows the ages of those injured by the type of fireworks device associated with the injury. For children under 5 years old, sparklers accounted for 61 percent of the total estimated injuries for that specific age group.[7]

No clear relationship between age and fireworks type is suggested by the data in Table 4. It is worth noting that the number of estimated injuries does not completely

[7] The percentages are calculated from the actual injury estimates.

represent the usage pattern because victims are often injured by fireworks used by other people. This is especially true for rockets and aerial shells (*e.g.*, fountains, multiple tube, and reloadable devices), which can injure people located some distance away from where the fireworks are launched.

Table 4
Estimated Fireworks-Related Injuries
By Device Type and Age Group
June 20–July 20, 2014

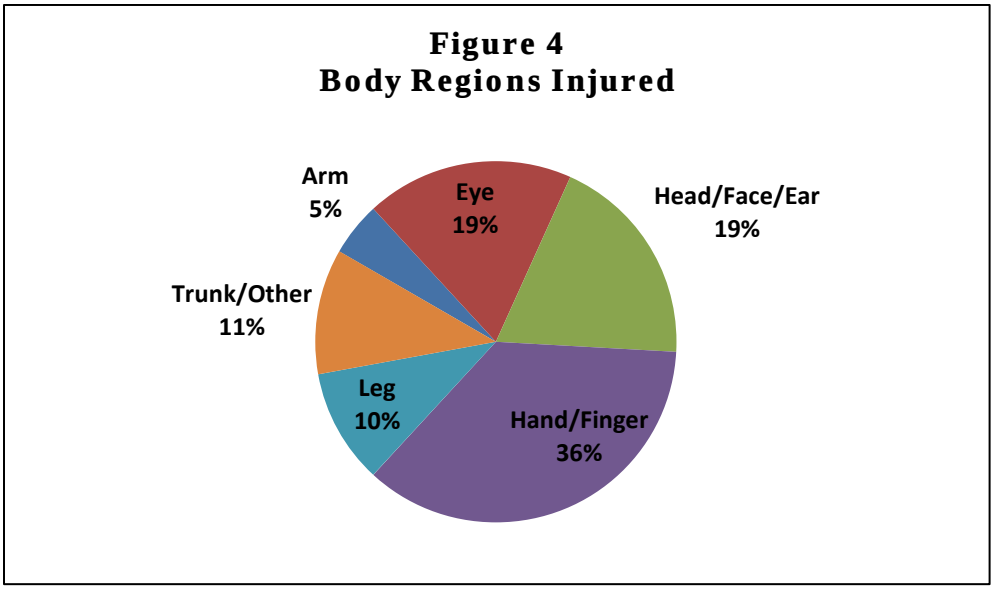
		Age Group				
Fireworks Type	Total	0–4	5–14	15–24	25–44	45–64
Total	7,000	600	1,900	1,600	2,400	600
All Firecrackers	1,400	*	300	300	700	100
Small	400	*	100	100	200	*
Illegal	400	*	100	100	200	*
Unspecified	700	*	100	200	200	100
All Rockets	300	*	*	100	*	100
Bottle Rockets	100	*	*	100	*	*
Other Rockets	100	*	*	*	*	100
Other Devices	2,900	400	900	600	700	200
Sparklers	1,400	400	600	200	100	*
Fountains	100	*	*	*	*	*
Novelties	400	100	100	200	100	*
Multiple Tube	100	*	*	*	*	100
Reloadable	600	*	200	100	200	100
Roman Candles	300	*	100	*	200	*
Public Display	300	*	100	100	100	*
Unspecified	2,200	100	500	400	800	200

Source: NEISS, U.S. Consumer Product Safety Commission. Estimates are rounded to the nearest 100 injuries. Estimated injuries may not sum to subtotals or totals due to rounding. Estimates of fewer than 50 injuries are denoted with an asterisk (*).

As shown previously in Figure 2, males accounted for 74 percent of the estimated fireworks-related injuries, and females comprised 26 percent. Males accounted for a majority of the estimated injuries from firecrackers; rockets; sparklers; novelties; multiple tube devices; reloadable devices; Roman candles; and unspecified devices. Females were involved in more estimated injuries from fountains and public display fireworks.

Body Region Injured and Injury Diagnosis

Figure 4 presents the distribution of estimated emergency department-treated injuries by the specific parts of the body to which the injury occurred. Hands and fingers, with an estimated 2,500 injuries, accounted for 36 percent of the total injuries. These were followed by an estimated 1,300 injuries to the head/face/ear region (19 percent); 1,300 eye injuries (19 percent); 800 injuries to the trunk/other category (11 percent); 700 leg injuries (10 percent); and 300 arm injuries (5 percent).

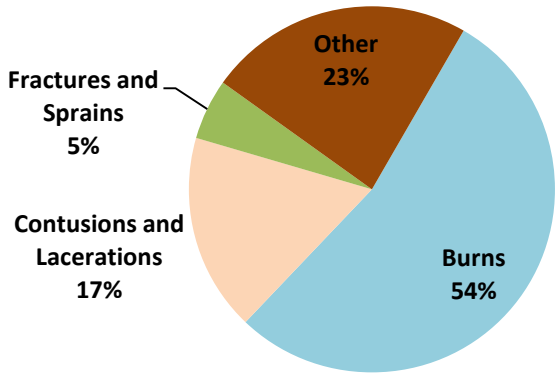


Source: NEISS, U.S. Consumer Product Safety Commission.

Figure 5 shows the diagnoses of the estimated injuries associated with fireworks devices. Burns, with 3,800 estimated injuries (54 percent), were the most frequent injury diagnosis. Contusions and lacerations were associated with 1,200 estimated injuries (17 percent), and fractures and sprains were associated with 400 estimated injuries (5 percent). The remaining 1,700 estimated injuries (23 percent) were attributed to other diagnoses.[8]

[8] Percentages are calculated from the actual injury estimates and do not sum to 100 due to rounding.

Figure 5
Type of Injuries



Source: NEISS, U.S. Consumer Product Safety Commission. Percentages may not sum to 100 due to rounding.

As shown in Table 5, burns were the most frequent injuries to all body parts except for eye injuries, which were contusions, lacerations, and other diagnoses that included foreign bodies in the eye.

Table 5
Estimated Fireworks-Related Injuries
By Body Region and Diagnosis
June 20–July 20, 2014

Body Region	Total	Diagnosis			
		Burns	Contusions Lacerations	Fractures Sprains	Other Diagnoses
Total	7,000	3,800	1,200	400	1,700
Arm	300	300	*	*	100
Eye	1,300	200	500	*	600
Head/Face/Ear	1,300	600	300	*	400
Hand/Finger	2,500	1,700	200	300	300
Leg	700	400	200	100	*
Trunk/Other	800	500	*	*	300

Source: NEISS, U.S. Consumer Product Safety Commission. Fractures and sprains also include dislocations. Other diagnoses include all other injury categories. Arm includes NEISS codes for upper arm, elbow, lower arm, shoulder, and wrist. Head/Face/Ear regions include eyelid, eye area, nose, neck, and mouth but not the eyeball. Leg includes upper leg, knee, lower leg, ankle, foot, and toe. Trunk/other regions include chest, abdomen, pubic region, all parts of body, internal, and 25–50 percent of body. Estimates are rounded to the nearest 100 injuries. Estimated injuries may not sum to subtotals or totals due to rounding. Estimates of fewer than 50 injuries are denoted with an asterisk (*).

Type of Fireworks Device and Body Region Injured

Table 6 presents estimated injuries by the type of fireworks device and body region injured.

Table 6
Estimated Fireworks-Related Injuries
By Type of Fireworks Device and Body Region Injured
June 20–July 20, 2014

Fireworks Type	Total	Region of the Body Injured					
		Arm	Eye	Head/Face/Ear	Hand/Finger	Leg	Trunk/Other
Total	7,000	300	1,300	1,300	2,500	700	800
All Firecrackers	1,400	*	300	300	700	*	200
Small	400	*	*	*	200	*	100
Illegal	400	*	100	100	100	*	100
Unspecified	700	*	200	100	300	*	*
All Rockets	300	*	200	*	*	*	*
Bottle Rockets	100	*	100	*	*	*	*
Other Rockets	100	*	100	*	*	*	*
Other Devices	2,900	300	500	500	1,000	500	100
Sparklers	1,400	100	100	100	500	400	100
Fountains	100	*	*	100	*	*	*
Novelties	400	*	100	100	300	*	*
Multiple Tube	100	*	100	*	*	*	*
Reloadable	600	100	100	200	100	100	*
Roman Candles	300	100	100	*	100	*	*
Public Display	300	100	*	100	100	*	*
Unspecified	2,200	*	300	500	700	200	500

Source: NEISS, U.S. Consumer Product Safety Commission. Estimates are rounded to the nearest 100 injuries. Estimated injuries may not sum to subtotals or totals due to rounding. Estimates of fewer than 50 injuries are denoted with an asterisk (*).

Thirty-nine percent of the estimated sparkler injuries involved the hands and fingers. Fireworks devices that fly or emit sparks were primarily associated with eye, head, and face injuries. These included sparklers, rockets, Roman candles, and public display fireworks.

Hospital Treatment

An estimated 83 percent of the victims of fireworks-related injuries were treated at the emergency department and then released; about 6 percent of victims were treated and transferred to another hospital; approximately 8 percent were admitted to the hospital; and the remaining 3 percent of victims left without being seen. The treat-and-release percentage was lower compared to that for all consumer products in 2014 and the percentages of the treated and transferred and the admitted were higher for the fireworks-related injuries in the special study period.[9]

5. Telephone Investigations of Fireworks-Related Injuries

CPSC staff conducted telephone in-depth investigations of some fireworks incidents that occurred during the 1-month special study period surrounding the 4th of July holiday (June 20, 2014 to July 20, 2014). Completed telephone investigations provided more detail about incidents and injuries than the emergency department information summarized in the narrative in the NEISS record. During the telephone interview, respondents were asked how the injury occurred (hazard pattern); what medical care they received following the emergency-department treatment; and what long-term effects, if any, resulted from their injury. Respondents were also asked detailed questions about the fireworks involved in the incident, including their type, markings, and where they were obtained.

Cases were selected for telephone investigations based on the information provided in the NEISS narrative and coded information in the NEISS records. The selection criteria included: (1) unusual hazard patterns, (2) severity of the injury, and (3) lack of clear information in the narrative about the type of fireworks associated with the injury. For these reasons, and because many victims did not respond, the telephone investigation cases cannot be considered typical of fireworks-related injuries.

From the 202 emergency department-treated, fireworks-related injuries during the special study period, staff selected 109 cases for telephone investigations, of which 31 were completed and determined to be in scope; and 78 were incomplete. Table 7 shows the final status of these investigations, including the reasons why some investigations were incomplete.

[9]For all injuries in 2014, 91 percent of patients were treated and released; 1 percent was transferred to other hospitals; 6 percent were admitted to the hospital; and 2 percent had other dispositions, including left hospital without being seen, held for observation, or dead on arrival.

Table 7
Final Status of Telephone Investigations

Final Case Status	Number of Cases	Percent
Total Assigned	109	100
Completed Investigation	31	28
In Scope	31	28
Incomplete Investigations	78	72
Failed to Reach Patient	35	32
Victim Name Not Provided by Hospital	22	20
Victim Refused to Cooperate	21	19

Note: Percentages may not add to subtotals or the total due to rounding.

Short descriptions of the 31 completed cases are found in Appendix B. The cases are organized in order of emergency department disposition, with Admitted (to the hospital) first, followed by Treated and Transferred, Treated and Released, and Left without Being Seen by A Doctor. Within dispositions, cases are in order of increasing age of the victim.

Summary Statistics[10]

Of the 31 completed in scope cases, 24 (77 percent) involved males, and seven (23 percent) involved females. There were four victims (13 percent) younger than 5 years of age; eight victims (26 percent) ages 5 to 14 years old; four victims (13 percent) ages 15 to 24 years old; 10 victims (32 percent) ages 25 to 44 years old; and five victims (16 percent) ages 45 to 64 years old. As for emergency department dispositions, five victims (16 percent) were admitted to the hospital; three (10 percent) were treated at the emergency department and transferred to another hospital; 22 (71 percent) were treated and released; and one victim (3 percent) left without being seen by a doctor.

The most frequently used fireworks devices in these incidents were aerial shells,[11] which were associated with 12 incidents (39 percent). Unspecified devices were associated with six incidents (19 percent). Roman candles accounted for four (13 percent) incidents. Firecrackers were associated with four (13 percent) incidents as well, one (3 percent) was related to small firecrackers and three (10 percent) were related to large illegal firecrackers. Public display of fireworks was involved in two incidents (6 percent). Bottle rockets, sparklers, and novelty devices each accounted for one (3 percent) incident.

[10] Percentages may not add to 100 due to rounding.
[11] The category "aerial shells" includes multiple tube, reloadable mortars and rockets, but excludes bottle rockets.

Note that the distribution of the types of fireworks and the emergency department dispositions differ from the special study data in Section 4. These differences reflect the focus in the telephone investigation on more serious injuries and incompletely specified NEISS records. Note also that only 28 percent of the victims selected for the telephone investigations responded.

Hazard Patterns

The hazard patterns described below are based on the incident descriptions obtained during the telephone investigations and summarized in Appendix B. When an incident has two or more hazard patterns, the hazard pattern most likely to have caused the injury was selected. Hazard patterns are presented in Table 8, below, and a detailed description of the incidents follows Table 8. Case numbers refer to the case numbers shown in Appendix B.

Table 8
Hazard Patterns, as Described in Telephone Investigations of Fireworks-Related Injuries

Hazard Pattern	Number of Cases	Percent
All	31	100
Misuse	17	55
Holding Fireworks in Hand	7	23
Being Too Close to Lit Fireworks	4	13
Setting Fireworks Improperly	2	6
Mischief	2	6
Igniting Fireworks Too Close to Someone	1	3
Dismantling Fireworks	1	3
Malfunction	8	26
Errant Flight Path	5	16
Tip-over	1	3
Early Ignition	1	3
Blowout	1	3
Other	6	19
Debris	4	13
Smoke	2	6

Note: Percentages may not add to subtotals or the total due to rounding.

Misuse (17 victims injured, 55 percent).

Seventeen victims were injured when fireworks were used in ways that departed from proper usage.

Holding Fireworks in Hand.

- In Case 2, a 25-year-old held an M-1000 quarter stick in his right hand. When he ignited it, the firework exploded in his hand. The explosion amputated three fingers of his right hand and fractured his hand as well.
- In Case 4, a 29-year-old male and his friend lit some large firecrackers (M-80) in his backyard. The victim stated that the third firecracker exploded in his hand in 1.5 seconds instead of the normal 10 seconds after it was ignited. The victim sustained an amputation of the tip of his left index finger and a badly mangled middle finger.
- In Case 7, a 25-year-old male had been consuming alcohol and set off fireworks in his backyard. He ignited a mortar in his hand instead of lighting it in the tube. The mortar shot off in his hand immediately. The victim suffered second-degree burns to his left hand.
- In Case 18, a 10-year-old boy was at a neighbor's house, and the neighbor had been setting off artillery shells in the backyard. This neighbor tried lighting an aerial shell, and then he gave the shell to the victim to hold in the victim's hand. When the neighbor ignited the shell the second time, the shell exploded and hit the victim in his left eye. As a result, the victim suffered a second-degree burn to his left eye.
- In Case 21, a 15-year-old female was with her family in the backyard. She ignited a Roman candle and was holding it in her hand. The Roman candle shot off several fire balls and then exploded in her hand. The victim endured thermal burns to her left hand and fingers.
- In Case 24, a 30-year-old male lit an M-80 firecracker while holding it in his hand, and then he threw it to the ground. The victim stated that the firecracker hit a rock and the rock went into his face. The victim suffered a laceration below his nose.
- In Case 26, a 40-year-old male lit a Roman candle while holding it in his hand. The Roman candle popped in his hand, and the victim suffered a second-degree burn on his right hand.

Being too Close to Lit Fireworks.

- In Case 3, a 28-year-old male placed a mortar shell in a PVC pipe and ignited it. He walked away about three feet but the firework exploded near him within seconds. The victim sustained an abdominal wound where some fragments from the PVC pipe went into his abdominal area. It required 20 staples to close the abdominal wound. In addition, the victim suffered avulsions on his right lower arm and hand as well.
- In Case 9, a 22-month-old baby boy, his older sister and grandparents were in the backyard. His sister was holding a lit sparkler. A few of the sparks flew onto the victim's T-shirt and caused the T-shirt to catch fire in the upper right chest area. The victim sustained third-degree burns on his upper right chest and his chin.

- In Case 14, a 6-year-old boy was watching fireworks. He kept getting too close to the fireworks, and people kept telling him to back up. A firework shot sideways and hit him in the ear. The victim suffered a burn to his ear.
- In Case 27, a 44-year-old male ignited a mortar shell in a cardboard tube on the ground. He stepped away about three feet, and the mortar exploded and injured him. The victim stated that he probably should have been farther away from the mortar, but he did not anticipate that the mortar would explode instead of shooting upward. The victim suffered a laceration to his right thigh, as well as second-degree burns on his stomach, left shoulder and left knuckle.

Setting Fireworks Improperly.

- In Case 8, a 60-year-old female sat in a lawn chair by a lake to watch fireworks set off by her family. The victim stated that her grandsons shot off two fireworks at the same time. Two tubes were set side by side and the ground was not level. The two fireworks went up together and collided in midair. One firework went up and the other came down straight and landed between the victim's legs and exploded at her feet. The victim suffered lacerations on her left heel and ankle, as well as burns on both her legs.
- In Case 28, a 46-year-old male set up a 4-tube fireworks device that was attached on a barrel in his backyard. It was reported that when the victim lit the first tube, the other three tubes turned over and started shooting off in all directions. One was going towards the victim's family, so the victim stepped in front of the firework to protect his family. The firework hit the victim in his right eye. As a result, the victim sustained hemorrhage and corneal abrasion in his eye.

Mischief.

- In Case 6, a 21-year-old male was watching fireworks set off by people on a street. One person lit a Roman candle and pointed it at the victim. The victim grabbed the Roman candle and it snapped in half. The victim had the ignited half of the Roman candle in his hand and tried to throw it away, but the Roman candle shot the victim in his eye twice before he could get rid of it. The victim suffered abrasions to his eyeball and blurred vision.
- In Case 19, an 11-year-old female and her mother were in their neighborhood. One teenage boy was reportedly intending to be playful while igniting fireworks. This boy threw a lit Roman candle and sparks from it went near the victim's face. One spark went into the victim's eye, and the victim's eye was irritated as a result.

Igniting Fireworks Too Close to Someone.

- In Case 17, a 10-year-old boy was in his front yard with a friend. His friend brought two firecrackers to the victim's house. While the victim was leaning over to get one firecracker, his friend lit the other. The firecracker exploded in the victim's face. The victim suffered a corneal scratch.

Dismantling Fireworks.

- In Case 20, a 13-year-old boy took apart an unspecified firework and emptied the pyrotechnic powder onto a rock. The victim then lit the powder, and it created a flash fire that went to his face. The victim sustained second-degree burns to his forehead.

Malfunction (eight victims injured, 26 percent).

Eight victims were injured when fireworks reportedly malfunctioned. These injuries resulted from errant flight paths, tip-overs, early ignitions, and blowout. Note that some of the errant flight path injuries may have involved tip-overs, but victims may have been unable to observe the tip-over if they were far from the fireworks.

Errant Flight Path.

- In Case 1, a 20-year-old male ignited a mortar type firework in a canister on the ground and stepped away. The shell went sideways instead of going up and hit the victim on his upper leg and lower back. The victim sustained a 12-inch wound on his leg and a hole the size of an egg on his lower back.
- In Case 5, a 57-year-old male was helping with setting off different types of fireworks at his church. He ignited a military parachute firework on the ground and stepped away. The firework went sideways and hit the victim in his right eye. The victim suffered retinal detachment in his right eye. The blood had to be drained from the injured eye.
- In Case 12, a 4-year-old girl was with her brother and mother on their porch to watch fireworks being set off by neighbors down at the corner of the street. An unspecified firework landed on the victim's shirt and burned through to her skin. The victim suffered a burn to her chest.
- In Case 13, a 5-year-old boy was standing in a street with his father nearby. A neighbor ignited a reloadable aerial shell on the ground. The shell went sideways instead of shooting upward. The victim started running, but the shell hit him on his left leg. The victim sustained a thermal burn to his lower left leg.
- In Case 16, a 9-year-old boy and his family set off fireworks in an open area. A bottle rocket shot at the victim instead of going straight up into the air. The victim suffered a burn to his chest as a result.

Tip-Over Incident.

- In Case 15, a 6-year-old girl was watching fireworks with a bunch of other people in a farm. An adult lit a multiple-shot firework that shot little parachutes into the sky. Everyone was looking up waiting to catch the parachutes as they fell, but the firework tipped over and shot into the crowd. The firework hit the victim on the right side of her face. The victim sustained second-degree burns to her right cheek.

Early Ignition.

- In Case 23, a 27-year-old female had a smoke grenade in her hand. She pulled the string of the smoke grenade for it to emit smoke. The victim expected that she would have a few seconds to throw or drop the smoke grenade. But within a second, the smoke started and the victim suffered first- and second-degree burns on two fingers of her left hand.

Blowout.

- In Case 25, a 34-year-old male set off fireworks in his yard. One mortar blew up in the tube, and shrapnel from the fireworks and tube flew into the victim's face and hands. As a result, the victim sustained punctures to his face and hands.

Other (six victim injured, 19 percent).

There were six victims whose injuries were related to fireworks, based on the NEISS incident narrative and telephone IDI. However, the telephone IDIs did not yield enough information to pinpoint definitively the hazard associated with the incidents.

Debris.

- In Case 10, a 3-year-old boy and his family were at a city's public display of fireworks, and it was windy at the time. The victim sat on his father's lap when a piece of burning amber from fireworks hit his shoulder and then bounced to the left side of his face. The victim suffered a contusion and surface burn on his left cheek.
- In Case 22, a 16-year-old male was in the yard of his house with other children and adults. Someone lit an unspecified firework device and it went into the sky. As the victim was looking up to watch the firework, a piece of cardboard came down and hit him in the eye. The victim sustained trauma to his right eye.
- In Case 29, a 46-year-old male ignited a rocket firework in his front yard. It was windy outside, and a fragment of the rocket went into the victim's eye. The victim suffered a scratch on his cornea.
- In Case 30, a 51-year-old female was at a public display of fireworks near a lake. A piece of ash went into her eye, and she sustained a blister to her eyeball.

Smoke.

- In Case 11, a 3-year-old boy suffered eye irritations from fireworks. In the evening of June 28, fireworks were set off after a baseball playoff game. The victim sat with his family outside of the fence. The wind shifted, and dust from fireworks got into the victim's eyes. The victim's family flushed the victim's eyes with bottled water. The victim could not stop scratching his eyes, and he developed cellulitis and an abscess in his eye. The victim was treated at the emergency department on July 6.
- In Case 31, a 27-year-old male was watching fireworks set off by his friend. The victim's eyes began burning after fireworks went off. The victim thought that smoke or something went into his eyes.

Long-Term Consequences of Fireworks-Related Injuries

Victims were asked whether there were any long-term consequences of their injuries. Most (25 of 31, or 81 percent) expected complete recoveries with no long-term effects. A few victims reported that they have experienced or might suffer long-term effects of the injuries, as follows:

- In Case 1, the victim sustained serious injuries on his upper leg and lower back. The victim had not recovered when he was interviewed for this report. The victim stated that the effect of his injuries might be long term.
- In Case 2, the victim lost three fingers of his right hand when an M-1000 Quarter Stick exploded in his hand. The victim will not gain back full function of his right hand.
- In Case 4, the victim suffered an amputation of the tip of his left index finger when an M-80 exploded in his hand. He might not gain full function of his left hand.
- In Case 5, the victim was hit in his right eye when an aerial shell went sideways instead of going upwards. The victim suffered retinal detachment in his right eye. The victim's vision was still in question when he was interviewed for this report, and he was still healing from the surgery for the retinal detachment.
- In Case 6, the victim was shot in the eye twice by a Roman candle. As a result, the victim suffered cuts to his eyeball. The victim's vision has been reduced and blurry.
- In Case 22, the victim was hit in the right eye by a piece of cardboard from fireworks when he was looking up to watch fireworks. The victim sustained a trauma to his right eye. The victim's parent did not know whether the effect of the injury would be long-term.

Where Fireworks Were Obtained[12]

Of the 31 telephone survey respondents, 19 (61 percent) knew where the fireworks were obtained. Thirteen respondents reported that the fireworks had been obtained from a stand; five stated that fireworks were acquired from a friend or relative; and one said that the fireworks were obtained from a store.

Ten victims (32 percent) reported that they did not know the source of the fireworks. This is typically the situation when the victim did not purchase or light the fireworks device that caused the injury. The remaining two victims (6 percent) declared that they were injured at a public display of fireworks.

[12] Percentages may not add to 100 due to rounding.

6. Enforcement Activities

The Office of Compliance and Field Operations (Compliance) oversees enforcement activities related to the mandatory requirements for consumer fireworks under the FHSA, 15 U.S.C. §§ 1261-1278, and outlined in Commission regulations at 16 C.F.R. §§ 1500.17(a)(3), (8),(9),(11) and (12) and 16 C.F.R. part 1507.

In 2014, Compliance staff continued enforcement of the fireworks regulations, through screening and sampling of fireworks devices arriving in shipments at port, and by surveillance of goods already in commerce for sale. Compliance staff conducted inspections at fireworks retailers that import and sell consumer fireworks devices. Inspections allowed CPSC staff to gather information regarding the business practices of firms, and to collect samples for analysis and testing for compliance with mandatory requirements. In addition, Compliance staff investigated the reports of fireworks-related consumer injuries. These investigations helped CPSC staff to identify products that may be noncompliant with mandatory requirements, as well as to determine the cause of injury with a device.

Compliance staff maintains as a priority, the investigation of sales of kits and components to make illegal and dangerous explosive devices, such as M-80s and Quarter Sticks. Staff communicates actively with the industry to promote adequate understanding of the mandatory requirements and to maintain an open dialogue to address any issues that might arise with products in commerce, incident investigation, and follow-up on trade complaints. CPSC staff continues to work on new initiatives to increase consumer safety.

As in previous years, Import Surveillance and Compliance staff continues to monitor imported shipments of consumer fireworks and works closely with CBP on this endeavor. CPSC staff reviews the importation data provided by CBP and notifies the importer and broker when a shipment is selected for further examination. Follow-up correspondence is sent to the firm indicating which items, if any, will be sampled and tested. Fireworks may be selected for testing on a random basis or based upon a number of factors. These factors may include, but are not limited to, the past violation history of the type of device and whether the item had been sampled previously.

With assistance from CBP, CPSC staff sampled and tested shipments of imported fireworks for compliance with the FHSA in fiscal year 2014. Approximately 41 percent of the fireworks devices sampled and tested were found to be banned hazardous substances because they are noncompliant with mandatory CPSC fireworks regulations. The estimated import value of these violative fireworks was over a half million dollars. The majority of violations found this year involved violations of the performance requirements for fuses at 16 C.F.R. § 1507.3 [Fuses], along with violations for overloaded pyrotechnic composition. Pursuant to 16 C.F.R. § 1500.17(a)(3), fireworks devices that are intended to produce an audible effect and contain more than 2 grains of

pyrotechnic composition are banned hazardous substances.[13] In addition, fireworks devices must bear specific cautionary labeling set forth in 16 C.F.R. § 1500.14(b)(7). Fireworks that do not meet labeling requirements are classified as misbranded hazardous substances. In 2014, CPSC staff found products that did not meet the cautionary labeling requirements, as well as violations of other performance standards in 16 C.F.R. part 1507 such as blowout, tip-over, and pyrotechnic leakage. Products, which are stopped at import, collected from distribution or retail and found to be noncompliant with mandatory requirements for fireworks, cannot be distributed in commerce or sold to consumers.

CPSC staff continues to work closely with other federal partners that have an interest in fireworks devices, including the Bureau of Alcohol, Tobacco, Firearms and Explosives ("ATF"), the Department of Transportation Pipeline and Hazardous Materials Safety Administration ("PHMSA"), and CBP. CPSC staff continues to work with the U.S. Department of Justice to take enforcement against firms or individuals found in violation of mandatory requirements under the FHSA and against companies and/or individuals who are involved in the sale of chemicals and components used to make illegal fireworks.

CPSC staff's enforcement effort continues to focus on reducing the number of fireworks-related deaths and injuries, by stopping the sale and distribution of consumer fireworks that violate mandatory regulations.

[13] This provision does not apply to fireworks devices if the following conditions are met: (i) Such fireworks devices are distributed to farmers, ranchers, or growers through a wildlife management program administered by the U.S. Department of the Interior (or by equivalent State or local government agencies); and (ii) Such distribution is in response to a written application describing the wildlife management problem that requires use of such devices, is of a quantity no greater than required to control the problem described, and is where other means of control are unavailable or inadequate. 16 C.F.R. 1500.17(a)(3)(i),(ii). (See also § 1500.14(b)(7); § 1500.17(a) (8) and (9); § 1500.83(a)(27); § 1500.85(a)(2); and part 1507).

7. Summary

In 2014, there were 11 reported fireworks-related deaths. However, reporting for 2014 may not be complete at this time. Emergency department-treated injuries are estimated at 10,500 for 2014.

During the 1-month special study period from June 20, 2014 to July 20, 2014, there were an estimated 7,000 emergency department-treated injuries. Children under 15 years old experienced about 35 percent of the estimated injuries, and males of all ages experienced 74 percent of the estimated injuries.

Additionally, similar to previous years, more than half the estimated injuries during the special study period in 2014 involved burns. Burns were the most frequent injury to all parts of the body, except the eyes, where contusions, lacerations, and other diagnoses (mainly foreign bodies in the eye) occurred more frequently. The parts of the body most often injured were hands and fingers (an estimated 36 percent of the injuries); followed by the head, face, and ears (19 percent); eyes (19 percent); trunk (11 percent); legs (10 percent); and arms (5 percent). Most of the estimated injuries (83 percent) involved treat-and-release dispositions. An estimated 14 percent were treated and transferred to another hospital or admitted to the hospital where the emergency department was located.

Among the different types of fireworks, firecrackers accounted for 20 percent of the injuries. Sparklers were involved in 19 percent of the estimated injuries; reloadable shells were associated with 9 percent of the injuries; novelty devices were related to 6 percent of the injuries; Roman candles and public display fireworks each accounted for 4 percent of the injuries; and bottle rockets were associated with 2 percent of the injuries.

A review of data from telephone follow-up investigations showed that the typical causes of injuries were as follows: (1) misuse of fireworks; (2) errant flight paths; and (3) debris associated with eye irritations. At the time of the telephone investigation, which was conducted typically 1 to 2 months after the injury, most victims had recovered from their injuries. Six of the 31 victims interviewed reported that the effect of their injuries might be long term.

Finally, in 2014, CPSC staff continued to actively monitor import shipments of fireworks and products in the marketplace. CPSC staff worked with CBP to sample imported fireworks and to seize illegal shipments. Compliance staff conducted inspections at fireworks retailers to collect samples for analysis and testing for compliance with mandatory requirements.

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Appendix A
Fireworks-Related Injuries and Fireworks Imported

Table A-1 shows that fireworks imports have generally risen over the period 1999–2007, peaking in 2005 at 275.1 million pounds. From 2008 to 2012, fireworks imports have been relatively steady, except for 2011. In 2011, fireworks imports increased to 227.9 million pounds from the 199.6 million pounds imported in 2010. In 2012 and 2013, fireworks imports decreased to 201.2 and 180.1 million pounds respectively. In 2014, fireworks imports rebounded to 219.1 million pounds. The number of estimated emergency department-treated injuries in 2014 was 10,500, which was the fourth highest since 1999. The three highest estimated fireworks-related injuries were 11,400 in 2013, 11,000 in 2000, and 10,800 in 2005. The injury estimates have fluctuated between 7,000 and 9,800 for the other years. As shown in Table A-1 below, the number of injuries per 100,000 pounds of fireworks has declined from 7.5 injuries per 100,000 pounds in 2000, to 3.4 injuries per 100,000 pounds in 2006 and 2008. From 2009 to 2012, the number of injuries per 100,000 pounds of fireworks was noticeably stable at about 4.3 injuries per 100,000 pounds. The estimated injuries per 100,000 pounds of fireworks imported were 4.8 in 2014, which decreased from 6.3 in 2013.

Table A-1
Estimated Fireworks-Related Injuries and
Estimated Fireworks Imported into the U.S. 1999–2014

Year	Estimated Injuries	Estimated Fireworks Imports (millions of pounds)	Injuries Per 100,000 Pounds
2014	10,500	219.1	4.8
2013	11,400	180.1	6.3
2012	8,700	201.2	4.3
2011	9,600	227.9	4.2
2010	8,600	199.6	4.3
2009	8,800	199.3	4.4
2008	7,000	208.3	3.4
2007	9,800	260.1	3.8
2006	9,200	272.1	3.4
2005	10,800	275.1	3.9
2004	9,600	230.0	4.2
2003	9,300	214.6	4.3
2002	8,800	175.3	5.0
2001	9,500	155.3	6.1
2000	11,000	146.2	7.5
1999	8,500	146.7	5.8

Source: Injuries from NEISS, U.S. Consumer Product Safety Commission. See Table 1 for further details. Estimated fireworks imports data from the U.S. International Trade Commission, using Harmonized Tariff Schedule ("HTS" code 3604.10). Imports include consumer fireworks (1.4G HTS code 3604.10.90.10 and 3604.10.90.50) and display fireworks (1.3G HTS code 3604.10.10.00). Display fireworks were about 7.8 percent of the total imports in 2014. In addition to imported fireworks used in the United States, there is also a small amount of fireworks manufactured in the United States for domestic consumption; the data for these fireworks is not available from the International Trade Commission and is not shown in this table.

Although the table suggests a relationship between weight and the number of injuries, it should be interpreted with caution. First, the logical unit of exposure is the number of fireworks devices used, instead of the collective weight of the devices because a person is exposed to injury when a device is consumed (*i.e*., lit). Injuries per 100,000 fireworks devices imported might be more meaningful, but the number of devices imported is not available. Moreover, using weight overrepresents heavy devices and underrepresents light devices. There is no reason to assume that a heavy device is inherently more dangerous than a light device because the weight of the device includes things other than just the amount of explosive material.

In addition, international trade statistics do not provide weight by fireworks device types. Thus, it is not possible to associate injuries with the weight of different types of fireworks imported. As shown in Table 2 earlier in this report, different fireworks devices have different numbers of injuries. Thus, the decrease in injuries per 100,000 pounds between 1997 and 2008 may be due to different mixtures of types of fireworks imported over time, or an overall decrease in injuries among all types of fireworks. Similarly, the decrease in injuries per 100,000 pounds in 2014 may have resulted from different fireworks mixtures, a decrease in importation of fireworks, or just statistical variation. The data do not provide enough information to determine the relative contribution of these factors.

Appendix B
Completed Telephone Investigations

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
1	20	Male	Other	Upper Leg	Admit	Reloadable Aerial Shell	Victim lit a mortar type firework in a canister on the ground at a public park and stepped away. The shell went sideways instead of going up, and it hit the victim on the upper leg and lower back. The victim sustained a 12-inch wound on his leg and a hole the size of an egg on his lower back.	The victim was admitted to the hospital for 10 days. After discharge, the victim had additional medical visits to treat the infections from his wounds and had skin graft done for both wounds. The victim had not recovered when he was interviewed for this report.
2	25	Male	Amputation	Hand	Admit	Large Firecracker	Victim was with his friend at a public park. The victim held an M-1000 quarter stick in his right hand. When he ignited the firework, the firework exploded in his hand. The explosion amputated three fingers of the victim's right hand and fractured his hand as well.	The victim was taken by EMS to emergency department (ED) and was admitted the hospital for 6 days. After discharge from the hospital, the victim had additional medical visits to see if his hand was healing properly. The victim had not recovered and was in physical therapy when he was interviewed for this report.
3	28	Male	Avulsion	Lower Trunk	Admit	Reloadable Aerial Shell	Victim set off mortars on a public island. He placed a mortar shell in a PVC pipe and ignited. The victim walked away about three feet but the firework exploded within seconds near him. The victim sustained avulsions on his right lower arm and hand, as well as an abdominal wound where some fragments from the PVC pipe went into his abdominal area. It required 20 staples to close the abdominal wound.	The victim was admitted for 3 days. After discharge from the hospital, the victim had an additional medical visit to remove the stitches from the wound. The victim had not recovered at the time of the telephone interview.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
4	29	Male	Amputation	Finger	Admit	Large Firecracker	A friend of the victim bought some large firecrackers (M-80) and took them to the victim's house. The victim and his friend lit the firecrackers in the backyard. The victim stated that the third firecracker exploded in his hand in 1.5 seconds instead of the normal 10 seconds after it was ignited. The victim suffered an amputation of the tip of his left index finger and a badly mangled middle finger.	The victim was admitted to the hospital for 1.5 days. After discharge, the victim had additional medical visits to remove stitches or to change bandage. The victim was still healing from his injuries when the telephone interview was conducted. The victim stated that it would take 6 months to 1year for him to fully recover.
5	57	Male	Other	Eye	Admit	Reloadable Aerial Shell	Victim was helping with setting off different types of fireworks at his church. He ignited a military parachute firework on the ground and stepped away. The firework went sideways instead of going upwards and hit the victim in the right eye. The victim suffered retinal detachment in his right eye. The blood had to be drained from the injured eye.	The victim was hospitalized for 4 days. After the discharge, the victim had a surgery to treat the retinal detachment. At the time of the telephone interview, the victim was still recuperating from his surgery and did not know when he would recover fully.
6	21	Male	Contusions Abrasions	Eye	Treat and Transfer	Roman Candle	Victim was watching fireworks set off by people in a street. One person lit a Roman candle and pointed it at the victim. The victim grabbed the Roman candle and it snapped in half. The victim had the ignited half of the Roman candle in his hand and tried to throw it away, but the Roman candle shot the victim in his eye twice before he could get rid of it. The victim sustained abrasions to his eyeball and blurred vision.	The victim was taken to ED and then transferred to another hospital. He was admitted for 1 night. After discharge from the hospital, the victim saw eye doctors for checkup. The victim was still seeing them for blurred vision and had not recovered fully at the time of the telephone interview.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
7	25	Male	Thermal Burns	Hand	Treat and Transfer	Reloadable Aerial Shell	Victim had been consuming alcohol and was in his backyard setting off fireworks. He ignited a mortar in his hand instead lighting it in the tube. The mortar shot off in his hand immediately. The victim sustained second-degree burns to his left hand.	The victim was taken to ED and admitted overnight. After discharge from the hospital, the victim had a medical visit for a checkup. The victim recovered fully in 2 weeks.
8	60	Female	Laceration	Foot	Treat and Transfer	Reloadable Aerial Shell	The victim sat in a lawn chair by water shed lake to watch fireworks display set by her family. She stated that her grandsons shot off two fireworks at the same time. Two tubes were set side by side and the ground was not level. The two fireworks went up together and collided in midair. One firework went up and the other came down straight and landed between the victim's legs and exploded at her feet. The victim suffered lacerations on her left heel and ankle, as well as burns on both legs.	The victim went to ED and was transferred to another hospital for further treatment. The victim had additional doctor visits to treat the burned tissues and to change bandage for her wounds. She still had a piece of metal in her leg. The victim had not recovered when she was interviewed for the report, and she stated that it might take 21 to 28 days for her to fully recover.
9	22 Months	Male	Thermal Burns	Upper Trunk	Treat and Release	Sparkler	Victim was in the backyard with his grandparents and older sister, and his sister was holding a lit sparkler. A few of the sparks flew onto the victim's t-shirt and caused his t-shirt to catch fire in the upper right chest area. The victim sustained third-degree burns on his upper right chest and his chin.	The victim was taken to ED where he was treated. At the recommendation of ED, the victim's parents then took the victim to another hospital with a burn unit where the victim was held overnight. The victim's parent did not know if the victim would need more treatments at the time of the telephone interview.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
10	3	Male	Contusions Abrasions	Face	Treat and Release	Public Display	Victim was with his family at a city's public display of fireworks. The victim was sitting on his father's lap when a piece of burning amber from a firework hit his shoulder and then bounced to the left side of his face. The victim sustained a contusion and surface burn on his left cheek. The person who answered the telephone interview witnessed the incident and stated that it was windy in the night of the fireworks display.	The victim recovered fully in 19 days.
11	3	Male	Contusions Abrasions	Eye	Treat and Release	Unspecified	Fireworks were set off after a baseball playoff game/cookout in the evening of June 28. The victim was sitting with his family outside of the fence. The wind shifted, and dust from the fireworks got into the victim's eyes. The victim suffered eye irritations and his family flushed his eyes with bottled water.	The victim's family called a pediatrician since the victim could not stop scratching his eyes. The victim developed cellulitis and an abscess in his eye and was treated at ED on July 6. The victim was recently diagnosed with leukemia. The victim had not recovered at the time of the telephone interview, and his parents did not know when he would recuperate fully.
12	4	Female	Thermal Burns	Upper Trunk	Treat and Release	Unspecified	Victim was with her brother and mother on their porch watching fireworks being set off by neighbors down at the corner of the street. Some firework landed on the victim's shirt and burned through to her skin. The victim sustained a burn to her chest.	The victim recovered fully in 1 month.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
13	5	Male	Thermal Burns	Lower Leg	Treat and Release	Reloadable Aerial Shell	Victim was standing in a street of his neighborhood with his father nearby. A neighbor ignited a reloadable aerial shell on the ground. The shell went sideways instead of shooting upwards. The victim started running but the shell hit him in his left leg. The victim suffered a thermal burn to his lower left leg.	The victim had not recovered at the time of the telephone interview and was expected to recuperate fully in 48 days.
14	6	Male	Thermal Burns	Ear	Treat and Release	Unspecified	Victim was watching fireworks. He kept getting too close and people kept telling him to back up. A firework shot sideways and hit the victim in the ear. The victim suffered a burn to his ear.	After being treated at ED, the victim had an additional medical visit to check the healing of his ear. The victim fully recovered in 7 days.
15	6	Female	Thermal Burns	Face	Treat and Release	Multiple Tube Device	Victim was with a bunch of other people watching fireworks in a farm. An adult lit a multiple-shot firework that shot little parachutes into the sky. Everyone was looking up waiting to catch the parachutes as they fell, but the firework tipped over and shot into the crowd. The firework hit the victim on the right side of her face. As a result, the victim sustained second-degree burns to her cheek.	The victim had a follow-up visit with the doctor and recovered fully in about 10 days.
16	9	Male	Thermal Burns	Neck	Treat and Release	Bottle Rocket	Victim's family was setting off the fireworks purchased from a local stand in an open area. A bottle rocket shot at the victim instead of going straight up into the air. The victim sustained a burn to his chest as a result.	The victim recovered fully in a few days.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
17	10	Male	Contusions Abrasions	Eye	Treat and Release	Small Firecracker	Victim was in his front yard with his friend. The victim's friend brought two firecrackers to the victim's house. When the victim was leaning over to get one firecracker, his friend lit the other. The firecracker exploded in the victim's face. The victim suffered a corneal scratch.	The victim fully recovered in 2 days.
18	10	Male	Thermal Burns	Eye	Treat and Release	Reloadable Aerial Shell	Victim was at a neighbor's house, and the neighbor had been igniting artillery shells in his backyard. The neighbor tried lighting an artillery shell, and then he gave the shell to the victim to hold in the victim's hand. When the neighbor tried igniting the shell a second time, the shell hit the victim in his left eye. The victim suffered a second-degree burn to his left eye as a result.	After the treatment at ED, the victim went to see an eye doctor to ensure that his eye was healing properly. The victim was still recuperating at the time of the telephone interview, and he was expected to recover fully in 35 days.
19	11	Female	Foreign Body	Eye	Treat and Release	Roman Candle	Victim and her mother were in their neighborhood. One teenage boy was kidding around and igniting fireworks. This boy threw a lit Roman candle and sparks from the Roman candle went near the victim's face. One spark went into the victim's eye, and the victim's eye was irritated as a result.	The victim fully recovered in 3 days.
20	13	Male	Thermal Burns	Face	Treat and Release	Unspecified	Victim was at a friend's house. The victim took apart an unspecified firework and emptied the black powder onto a rock. The victim then lit the powder, and it created a flash fire that went to his face. The victim sustained second-degree burns to his forehead.	After the treatment at ED, the victim had a follow-up visit to remove the scabs off the burns. The victim recovered fully in 2 weeks.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
21	15	Female	Thermal Burns	Finger	Treat and Release	Roman Candle	Victim was in the backyard with her family, and she ignited a Roman candle and holding it in her hand. The Roman candle shot off several fire balls and then exploded in her hand. The victim suffered thermal burns to her left hand and fingers.	The victim was still healing from her injury at the time of the telephone interview, and she was expected to recover fully in 35 days.
22	16	Male	Other	Eye	Treat and Release	Unspecified	Victim was in the yard of his house with other children and adults. Someone lit an unspecified firework and it went into the sky. As the victim was looking up to watch the firework, a piece of cardboard came down and hit him in the eye. The victim sustained trauma to his right eye.	After the treatment at ED, the victim had a surgery on his eye. He was still recuperating at the time of the telephone interview. The guardian of the victim who answered the interview did not know when the victim would recover fully.
23	27	Female	Thermal Burns	Finger	Treat and Release	Smoke Bomb	Victim was in her front yard and had a smoke grenade in her hand. She pulled the string of the smoke grenade for it to emit smoke. The victim expected that she would have a few seconds to throw or drop the smoke grenade. But within a second, the smoke started and the victim sustained first- and second-degree burns on two fingers of her left hand.	After being treated at ED, the victim had additional visits to doctors to change the bandage/dressing for her wounds. The victim was still improving when she was interviewed, and she expected to fully recover in 30 days.
24	30	Male	Laceration	Face	Treat and Release	Large Firecracker	Victim was at a friend's house where they ignited firecrackers in the backyard. The victim lit an M-80 firecracker while holding it in his hand, and then he threw the firecracker to the ground. The firecracker hit a rock and the rock went into his face. The victim sustained a laceration below his nose.	The victim had additional medical visits to remove stitches after the treatment at ED. The victim was still recuperating from his injury at the time of the telephone interview, and he expected to recover fully in 45 days.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
25	34	Male	Puncture	Face	Treat and Release	Reloadable Aerial Shell	Victim set off mortar type fireworks in his yard. One mortar blew up in the tube, and shrapnel from the firework and tube flew into the victim's face and hands. As a result, the victim suffered punctures to his face and hands.	After the treatment at ED, the victim had additional medical visits to get medications for his wounds. The victim had fully recovered in 2 weeks.
26	40	Male	Thermal Burns	Hand	Treat and Release	Roman Candle	Victim ignited a Raman candle while holding it in his hand. The Roman candle popped in the victim's hand, and the victim sustained a second-degree burn on his right hand.	The victim recovered fully in 14 days.
27	44	Male	Laceration	Upper Leg	Treat and Release	Reloadable Aerial Shell	Victim ignited a mortar firework with one shell in a cardboard tube on the ground. The victim stepped away about 3 feet, and the mortar exploded and injured the victim. The victim stated that he probably should have been farther away from the mortar, but he did not anticipate the mortar would explode instead of shooting upward. The victim suffered a laceration to his right thigh, and second-degree burns on his stomach, left shoulder and left knuckle.	The victim had additional medical visits to remove stitches or a cast after the treatment at ED. The victim was still recuperating when he was interviewed, and he anticipated recovering fully in 8 weeks.
28	46	Male	Other	Eye	Treat and Release	Multiple Tube Device	Victim set up a 4-tube fireworks device that was attached on a barrel in his backyard. When the victim ignited the first tube, the other three tubes turned over and started shooting off in all directions. One was going towards the victim’s family, so the victim stepped in front of the firework to protect his family. The fireworks hit the victim in his right eye. The victim sustained hemorrhage and corneal abrasion in his eye.	After treatment at ED, the victim had several visits with an eye specialist to see how his eye was healing and to check his cornea. The victim had not recovered at the time of the telephone interview.

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident Description	Medical Treatment and Prognosis
29	46	Male	Foreign Body	Eye	Treat and Release	Rocket	Victim ignited a rocket firework in his front yard. It was windy outside, and a fragment of the rocket went into the victim's eye. The victim suffered a scratch on his cornea.	The victim recovered fully in 3 days.
30	51	Female	Foreign Body	Eye	Treat and Release	Public Display	Victim was at a public display of fireworks near a lake. A piece of ash went into her eye, and the victim sustained a blister to her eyeball.	After the treatment at ED, the victim applied antibiotic drops to her eye and recovered fully in 5 days.
31	27	Male	Other	Eye	Left without Being Seen	Unspecified	Victim was watching fireworks set off by his friends in a field. His eyes began burning after the fireworks went off, and the victim thought that smoke or something went into his eyes.	The victim left ED before being seen by a doctor and recovered in 1 day.