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2024 FIREWORKS ANNUAL REPORT

FIREWORKS-RELATED FATALITIES AND NEISS ESTIMATE OF U.S. EMERGENCY DEPARTMENT-TREATED INJURIES IN 2024

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EXECUTIVE SUMMARY

This report provides the results of the American Fireworks Standards Laboratory (AFSL) staff's analysis of data on non-occupational, fireworks-related fatalities and injuries during calendar year 2024, as reported by the U.S. Consumer Product Safety Commission (CPSC).

AFSL obtained information on fireworks-related fatalities through CPSC's Clearinghouse database. The database contains information from various sources such as news clippings, internet news alerts, CPSC's Death Certificate database (DTHS), Medical Examiner and Coroner Reports database (MECAPS), and the Injury/Potential Injury Incident database (IPII). AFSL also estimated fireworks-related injuries treated in hospital emergency departments from data contained in CPSC's National Electronic Injury Surveillance System (NEISS).

AFSL was founded in 1989 by key members of the fireworks industry to provide the American consumer the safest consumer fireworks available in the USA by monitoring and improving the quality of consumer fireworks being exported out of China. AFSL's Consumer Fireworks Standards are more extensive and more rigorous than CPSC standards, thus offering requirements that are more protective against unreasonable risk of injury and property damage. AFSL tests consumer fireworks for compliance to its standards in China and Cambodia, with smaller volumes being tested on occasion in Brazil, Thailand, and Mexico.

There is no legal requirement to test with AFSL. AFSL members elect to have their consumer fireworks tested to the most rigorous set of standards available because they are committed to providing the safest consumer fireworks available to the American consumer. AFSL typically tests about 70% of the consumer fireworks being imported into the USA. From 2015 through 2024, AFSL tested 83.3 million cases of consumer fireworks, rejecting 4.4 million cases as noncompliant with AFSL Standards. The remaining 30% of the imported fireworks, those not tested by AFSL, contains the illegal explosives/overloaded fireworks that are not compliant with federal law and present the greatest risk of a fireworks-related injury to the consumer.

KEY FINDINGS

Fatalities

AFSL reviewed reports of 19 non-occupational, fireworks-related fatalities that occurred during 2024. Four (4) of the fatalities involved launching the fireworks from the body or holding them in the hands. Most of the information provided on the fireworks-related fatalities, contained in the narrative found in CPSC's Clearinghouse database, lacks sufficient detail to determine the type of device or the hazard scenario that led to these tragic outcomes.

Injuries

Fireworks were reportedly associated with an estimated 14,741 injuries treated in U.S. hospital emergency departments during calendar year 2024. At a 95% confidence interval, the estimated 2024 injuries can range from 10,779 to 18,703. An estimated 11,287, or 76%, of the injuries were treated and released from the emergency department. Another 285, or about 2%, of the victims left the emergency department without being seen by emergency department personnel. The remaining 3,170 (or 22%) of the injuries required hospitalization.

Unfortunately, 318 of the 347 records comprising the 2024 NEISS fireworks-related data were submitted without the CPSC code identifying the type of fireworks associated with the reported injury. These

records represent 13,597 (92%) of the 14,741 estimated fireworks-related injuries. Knowledge of the type of device involved in a fireworks-related injury is required for a comprehensive analysis of the contribution of each fireworks device to the number of emergency department-treated injuries. AFSL will continue to seek out sources of information that will contribute to a better understanding of the relationship between the reported injuries and the type of fireworks associated with the incidents.

AFSL has seen, and continues to see, evidence of illegal fireworks devices, packaged and marketed as legitimate consumer fireworks, being sold across the country in increasing volumes. Items such as Reloadable Aerial Shells, Multiple-tube devices, Rockets, Missiles, and large Firecrackers that contain illegal amounts and types of pyrotechnic materials are being openly displayed and sold to consumers. These devices typically do not list the name of the manufacturer or retailer, may not have all the required warnings and instructions, and the pricing is higher than similar items. These illegal devices have not been tested and certified as compliant with all federal requirements, as required by CPSC regulations, and present an unreasonable risk of injury to the American consumer.

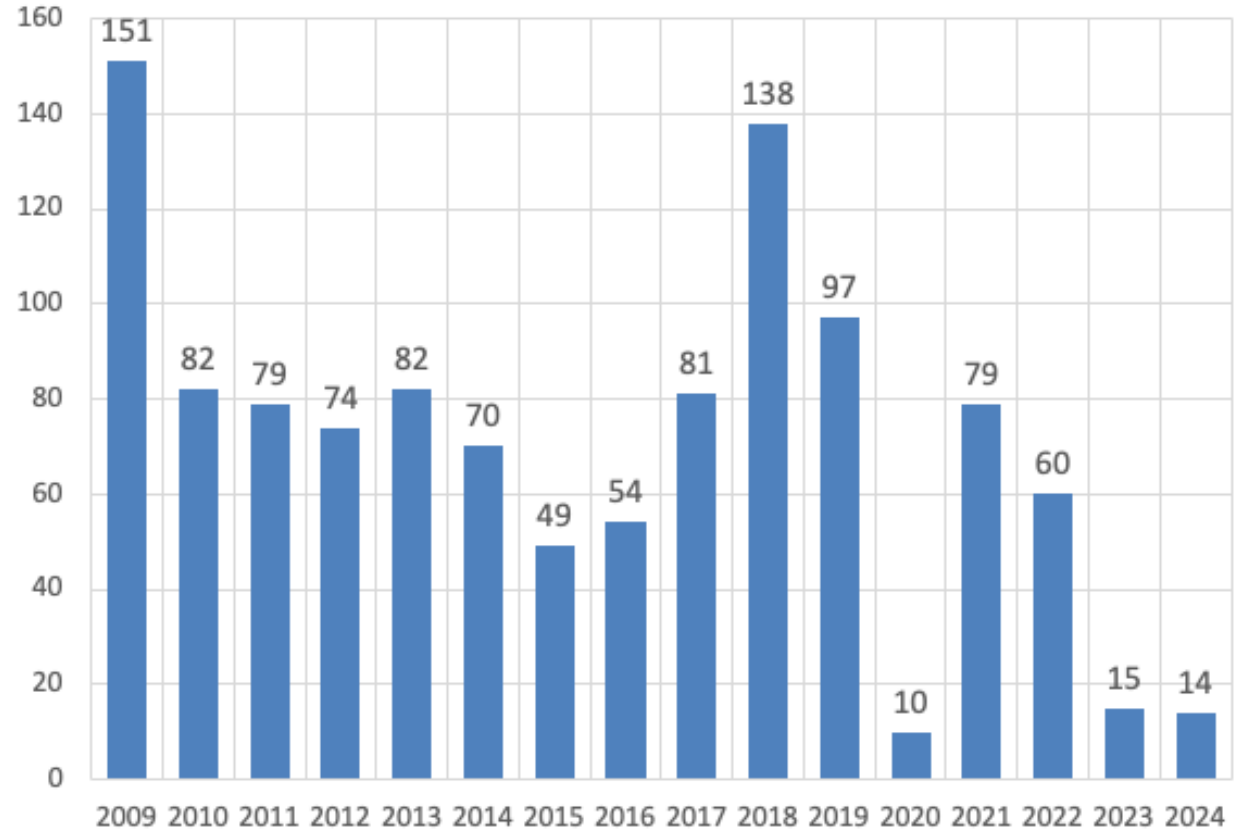
AFSL has also seen evidence of fireworks intended to be used by trained professionals (1.4G UN0336 Fireworks Professional Use Only) finding their way into the hands of consumers lacking the proper knowledge and training to safely use the devices. In addition to risking life and limb, any consumer contemplating using illegal or professional use only fireworks should be aware that their homeowners' insurance policy may not cover damages caused by illegal or professional grade fireworks.

Enforcement at the federal level has not been effective at deterring the distribution and sales of these illegal and dangerous fireworks devices.

CPSC ENFORCEMENT ACTIVITIES

A review of the number of Notices of Violation (NOVs) issued provide some indication of the level of enforcement activity surrounding fireworks. As shown in Figure 1.1, the number of NOVs issued for violation of CPSC's fireworks regulation has been declining for many years. In 2024, NOVs were issued to eight (8) importers for 14 devices found to be in violation of CPSC regulations. Nine (9) of the devices failed fuse requirements specifying secure fuse attachment, fuse burn time, and the prevention of fuse side ignition. Another four (4) revealed evidence of pyrotechnic material leakage and one (1) was identified as failing device stability requirements.

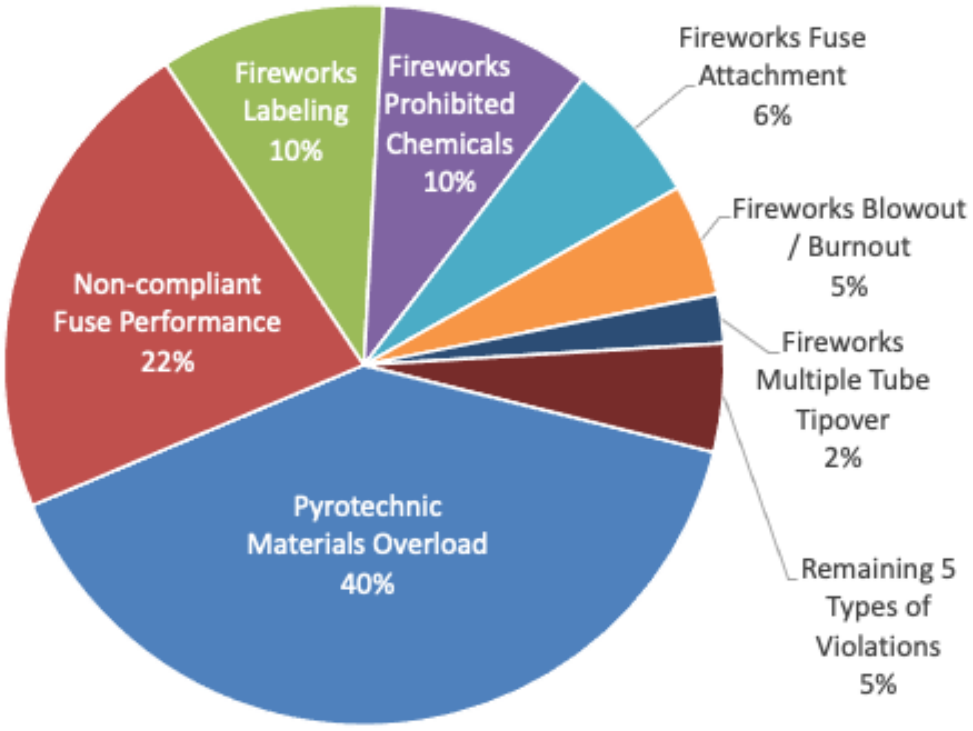
Figure 1.1
CPSC Notices of Violations
Fireworks
2009 – 2024



Source: U.S. Consumer Product Safety Commission. Office of Import Surveillance. CPSC-NOV-DATA-2025-5-16.

Since 2009, most NOVs have been issued for excessive amount of pyrotechnic material. Fuse performance, specifying the speed at which the fuse burns and resistance to ignition of the fuse from the side, was found to be non-compliant in another 22% of the NOV issued, as shown in Figure 1.2. There were no NOVs issued for pyrotechnic materials overload in 2024, despite the fact that evidence of violative fireworks being sold to consumers was provided to CPSC on numerous occasions.

Figure 1.2
Distribution of Violations Cited in CPSC Notice of Violations
2009-2024



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1. INTRODUCTION

This report describes observations about the fireworks-related emergency department-treated injury data contained in the U.S. Consumer Product Safety Commission's (CPSC) National Electronic Injury Surveillance System (NEISS) and related fatality data contained in CPSC's Clearinghouse database. The American Fireworks Standards Laboratory (AFSL) reviews the data released each year to inform and guide the development of the AFSL Consumer Fireworks Standards.

AFSL standards are more expansive and more rigorous than CPSC standards, thus offering requirements that are more protective against the unreasonable risk of injury and property damage. These additional requirements include more stringent fuse burn times, restrictions on the composition and amounts of pyrotechnic and explosive materials, requirements for fuse covers and device stability, additional warning labels, residual burn restrictions, specifications for device and effect trajectories, and launch tube strength requirements.

These standards for consumer fireworks imported, distributed, and sold in the USA are created and managed by the AFSL Standards Committee. The Standards Committee is a balanced committee, with half its members representing the fireworks industry and the other half representing the insurance industry, State Fire Marshals' offices, consumers, and technical experts. Staff from DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) regularly attend as non-voting participants.

AFSL tests consumer fireworks for compliance to its standards in China and Cambodia, with smaller volumes being tested on occasion in Brazil, Thailand, and Mexico. There is no legal requirement to test with AFSL. AFSL members elect to have their consumer fireworks tested to the most rigorous set of standards available because they are committed to providing the safest consumer fireworks available to the American consumer. AFSL typically tests about 70% of the consumer fireworks being imported into the USA.

For over two decades, CPSC published the *Fireworks Annual Report* in June of each year. However, in 2024 CPSC made the decision to discontinue the report in order to allocate the resources to other matters. A review of CPSC's NEISS data, ranked by the number of estimated emergency department-treated injuries assigned to each product code, reveals fireworks ranked 154 of the 757 products ranked from most to least number of estimated injuries, as listed in the 2024 NEISS database. The 153 products ranked higher than fireworks are associated with close to 89% of the total estimated injuries for 2024. Refer to Appendix B for the detailed listing of the top 154 consumer products, as ranked by number of estimated injuries, contained in the NEISS 2024 dataset.

This report is organized into six sections: Section 1 – Introduction, Section 2 – Information Sources and NEISS Data Analysis, Section 3 – Fireworks-Related Fatalities for 2024, Section 4 – National Injury Estimates for 2024, Section 5 – 2024 Fireworks-Related Injury Analysis and Observations, and Section 6 – Summary.

2. INFORMATION SOURCES AND NEISS DATA

AFSL obtained information on fireworks-related fatalities from news clippings, internet news alerts, CPSC's Death Certificate database (DTHS), Medical Examiner and Coroner Reports database (MECAPS), and the Injury/Potential Injury Incident database (IPII) available through CPSC's Clearinghouse database.

AFSL also estimated fireworks-related injuries treated in hospital emergency departments from data contained in CPSC's National Electronic Injury Surveillance System (NEISS, pronounced "nice"). NEISS is designed and structured as a probability sample of the U.S. hospitals having emergency departments, with representation from Children's Hospitals and hospitals of various sizes across the country. CPSC collects injury information from these NEISS hospitals, including the victim's age and sex, the emergency department diagnosis, the body part(s) injured, the consumer product(s) identified by hospital staff as associated with the injury, and a narrative that oftentimes provides insight into how the injury occurred.

Figure 2.1
NEISS Nationally Representative Probability Sample of Hospitals
Updated October 2024

NEISS. U.S. Consumer Product Safety Commission. NEISS Hospital Sample Map.

Lastly, in order to calculate the injury rate per 100,000 population, AFSL retrieved data from the Annual Estimates of the Resident Population by Single Year of Age and Sex for the for the United States: April 1, 2020, to July 1, 2024 (NC-EST2024-AGESEX-RES). Population Division, U.S. Census Bureau. Population estimates for prior years were taken from the following sources:

- 2010 to 2020 - Annual Estimates of the Resident Population for the United States, Regions, States, the District of Columbia, and Puerto Rico: April 1, 2010, to July 1, 2019; April 1, 2020; and July 1, 2020 (NST-EST-2020).
- 2007 to 2009 - Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000, to July 1, 2009 (NST-EST2009).

Unless noted otherwise, all tables, charts, and NEISS data elements (e.g., weight, case #) are derived from the data sources identified in this section.

CPSC DEVICE CATEGORY

NEISS coders have been provided with codes, distributed by CPSC, that designate the type of fireworks device (e.g., sparkler, firecracker) involved in the reported injury. This code, listed in Table 2.1, is assigned by the coder, based on their interpretation of the information contained in the medical records generated during treatment of a fireworks-related injury, and is included in the NEISS narrative when provided, as in the case below (emphasis added).

CPSC Case#: 240947067

49YOM, WAS HOLDING FIREWORKS M80, **TYPE C**, IT EXPLODED IN HIS LEFT HAND, LEFT 4TH FINGER APPEARS TO BE DANGLING FROM THE TISSUE, IMAGING SHOWED OPEN FRACTURE OF LEFT RING FINGER, DX: BLAST INJURY
weight = 27.587

Knowledge of the type of device involved in a fireworks-related injury is required for a comprehensive analysis of the contribution of each fireworks device to the number of emergency department-treated injuries.

Table 2.1
CPSC Fireworks Categories

CPSC Category	Description	CPSC Category	Description
A	Small Firecrackers	I	Roman Candles
B	Large Illegal Firecrackers	J	Fountains
C	Silver Salutes, M-Series, etc.	K	Ground Spinners, Novelties
D	Missiles	L	Sparklers
E	Rocket or Missile, unknown type	M	Pro Display Devices
E1	Bottle Rocket	N	Homemade Devices
E2	Stick Rocket	P	Firecracker, size unknown
F	Helicopters	R	Unknown/Unidentified Device
G	Multiple-tube Devices	T	Pest/Wildlife Control Device
H	Reloadable Aerial Shells		

Unfortunately, the use of these codes is inconsistent, with 318 of the 347 records comprising the 2024 NEISS fireworks-related data submitted without the CPSC code. These records represent 13,597 (92%) of the 14,741 estimated fireworks-related injuries.

AFSL DEVICE CATEGORY

Appendix A contains a list of the various types of consumer fireworks devices. AFSL reviewed the narrative for each case and assigned a category, when possible, based on the description noted in the narrative. AFSL was able to increase the estimated number of injuries associated with a known type of device from 8% to 36% by identifying the device in an additional 86 records. This report will include analysis of those incidents where the type of device is identified as we strive to gain useful insights into ways to mitigate the risk of future injuries.

3. FIREWORKS-RELATED FATALITIES FOR 2024

AFSL reviewed reports of 19 non-occupational, fireworks-related fatalities that occurred during 2024. Most of the information provided on the fireworks-related fatalities, contained in the narrative found in CPSC's Clearinghouse database, lacks sufficient detail to determine the type of device or the hazard scenario that led to these tragic outcomes.

MISUSE

Four (4) fatalities were identified as resulting from individuals holding devices not designed to be handheld or attempting to launch aerial fireworks from their head or abdomen. The unedited narrative contained in NEISS is as follows (emphasis added):

CPSC Case#: 20241015-FB45E-4949297

A 35 YOM WAS SHOOTING FIREWORKS WITH PEOPLE AND **HOLDING THEM IN HANDS**. A FIREWORK EXPLODED AND WENT INTO HIS CHEST, LEAVING A LARGE CHEST WOUND AND A CUT TO HIS RIGHT HAND. HE FELL TO THE GROUND BLEEDING. CREWS RESPONDED TO FIND PEOPLE PERFORMING CPR, BUT HE WAS DEAD.

CPSC Case#: 20241007-4A083-4932166

CREWS WERE DISPATCHED TO THE SCENE OF A MAN LYING IN THE ROADWAY UPON ARRIVAL. HE WAS SUFFERING FROM MAJOR INJURIES AND WAS PRONOUNCED DEAD AT THE SCENE. HE **REPORTEDLY PLACED FIREWORKS ON HIS HEAD**.

CPSC Case#: 20241015-97D4D-4949323

45 YOM PASSED AWAY AFTER FIREWORKS ACCIDENT IN A PARKING LOT, VICTIM WAS LIGHTING OFF FIREWORKS WITH HIS FAMILY, WHEN HE TRIED TO **LAUNCH A MORTAR-STYLE FIREWORK FROM THE TOP OF HIS HEAD**. WHEN OFFICERS ARRIVED, HE WAS FOUND NOT BREATHING AND PRONOUNCED DEAD ON SCENE.

CPSC Case#: 20240708-5D28B-4809249

41 YOM SUCCUMBED TO HIS INJURIES AFTER A **LARGE FIREWORK EXPLOSION PLACED ON HIS HEAD EXPLODED**. VICTIM WAS FOUND DEAD BY CORONER.

MALFUNCTION

One (1) fatality may have been associated with a device misfire/malfunction, as indicated in the NEISS narrative (emphasis added), provided the device was placed upright on a hard smooth surface, as directed in the required warning labels.

CPSC Case#: 20240708-24684-4809248

32 YOM WAS PRONOUNCED DEAD AFTER A LARGE FIREWORK EXPLODED NEAR THE VICTIM. INVESTIGATORS STATES THE TUBES THE MAN WAS USING STARTED TO **TIP OVER**, VICTIM TRIED SETTING IT BACK UPRIGHT WHEN IT EXPLODED AND KILLED HIM.

ILLEGAL AND HOMEMADE DEVICES

One (1) fatality was associated with illegal homemade explosives, as noted in the NEISS narrative (emphasis added). These extremely dangerous devices are not consumer fireworks devices and typically contain large amounts of very energetic pyrotechnic compositions.

CPSC Case#: 20240515-5E5D4-4735395

42 YOM PASSED AWAY DUE TO BLAST FORCE INJURIES TO THEIR HEAD, VICTIM WAS LIGHTING REPORTEDLY **HOMEMADE FIREWORK** WHEN IT EXPLODED. AUTOPSY REPORTS DECAPITATION OF HIS HEAD, FRACTURES TO NECK, SPINE, AND RIBS.

ASSOCIATED WITH, BUT NOT NECESSARILY CAUSED BY, CONSUMER FIREWORKS

One (1) fatality contained in CPSC's database was only remotely related to fireworks, as described in the summary below (emphasis added):

CPSC Case#: 20241211-9E56D-5047707

22 YOM HAS DIED AFTER FIREWORKS EXPLODED INSIDE CAR FOLLOWING CRASH. HE **LEFT ROADWAY & HIT BOTH TREE & LIGHT POLE. FIREWORKS INSIDE VEHICLE IGNITED & THEN BEGAN TO EXPLODE, CAUSING CAR TO GO UP IN FLAMES** MOMENTS LATER. DRIVER WAS ONLY ONE IN CAR & HE DIDN'T SURVIVE ACCIDENT.

UNIDENTIFIED

The circumstances surrounding the twelve (12) remaining incidents found in the Clearinghouse database are unclear from the narrative provided in NEISS. It is important to note that reports of fireworks-related fatalities submitted to CPSC for 2024 may not be complete.

4. NATIONAL INJURY ESTIMATES FOR 2024

NEISS records fireworks-related emergency department-treated injuries under product code 1313. The structure of the NEISS system permits the development of national injury estimates associated with the various fireworks products captured in the data. It is important to note that some of the fireworks involved in the estimates are not legal consumer fireworks.

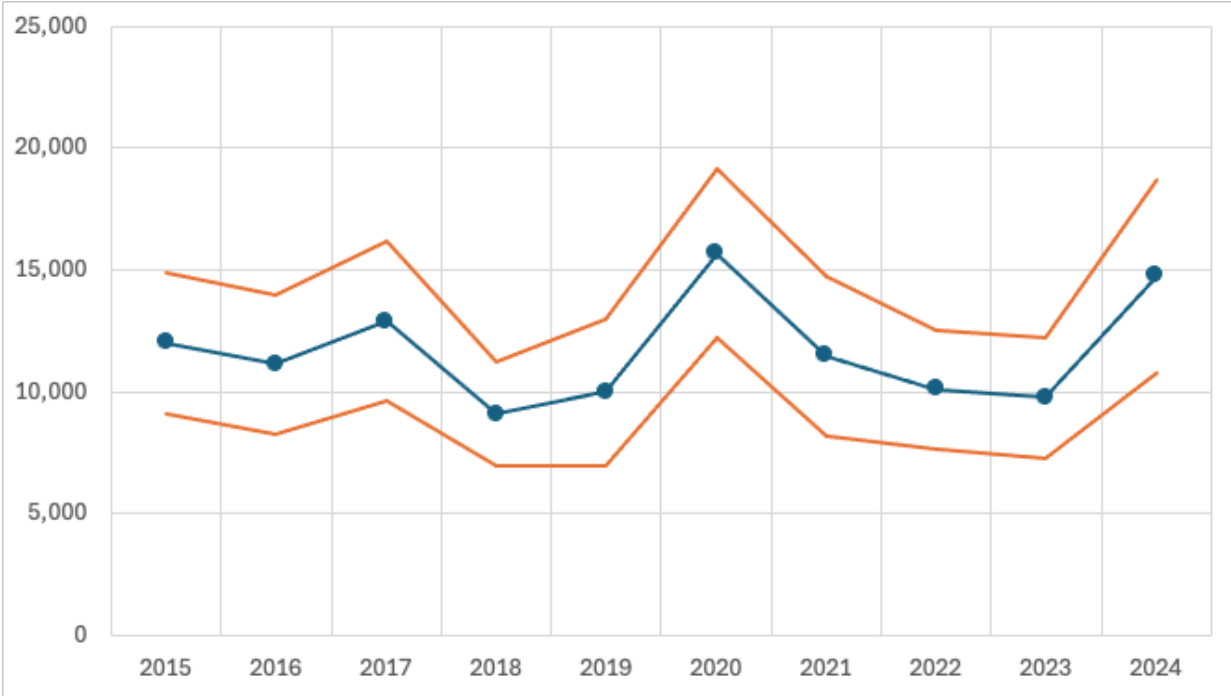
Table 4.1 and Figure 4.1 display the estimated fireworks-related emergency department-treated injuries, and the injury rate per 100,000 population, from 2008 through 2024.

Table 4.1
Estimated Emergency Department-Treated Injuries Associated with Fireworks
2008 - 2024

Year	Estimated Injuries	Estimated Injuries per 100,000 Population
2008	7,000	2.3
2009	8,800	2.9
2010	8,600	2.8
2011	9,600	3.1
2012	8,700	2.8
2013	11,400	3.6
2014	10,500	3.3
2015	11,900	3.7
2016	11,100	3.4
2017	12,900	4.0
2018	9,100	2.8
2019	10,000	3.0
2020	15,600	4.7
2021	11,500	3.5
2022	10,200	3.1
2023	9,700	2.9
2024	14,700	4.3

Source: NEISS, U.S. Consumer Product Safety Commission. Population estimates for 2023 and 2024 are from Annual Estimates of the Resident Population by Single Year of Age and Sex for the for the United States: April 1, 2020, to July 1, 2024 (NC-EST2024-AGESEX-RES). Population estimates for 2020-2022 are from Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia, and Puerto Rico: April 1, 2020, to July 1, 2022 (NST-EST2022-POP). Population Estimates for 2010 to 2020 are from Annual Estimates of the Resident Population for the United States, Regions, States, the District of Columbia, and Puerto Rico: April 1, 2010, to July 1, 2019; April 1, 2020; and July 1, 2020 (NST-EST-2020). Population estimates for 2007 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). Population Division, U.S. Census Bureau.

Figure 4.1
Estimated Fireworks-Related Emergency Department-Treated Injuries



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

Fireworks were reportedly associated with an estimated 14,741 injuries treated in U.S. hospital emergency departments during calendar year 2024. At the 95% confidence interval, the estimated 2024 injuries can range from 10,779 to 18,703.

Figure 4.2

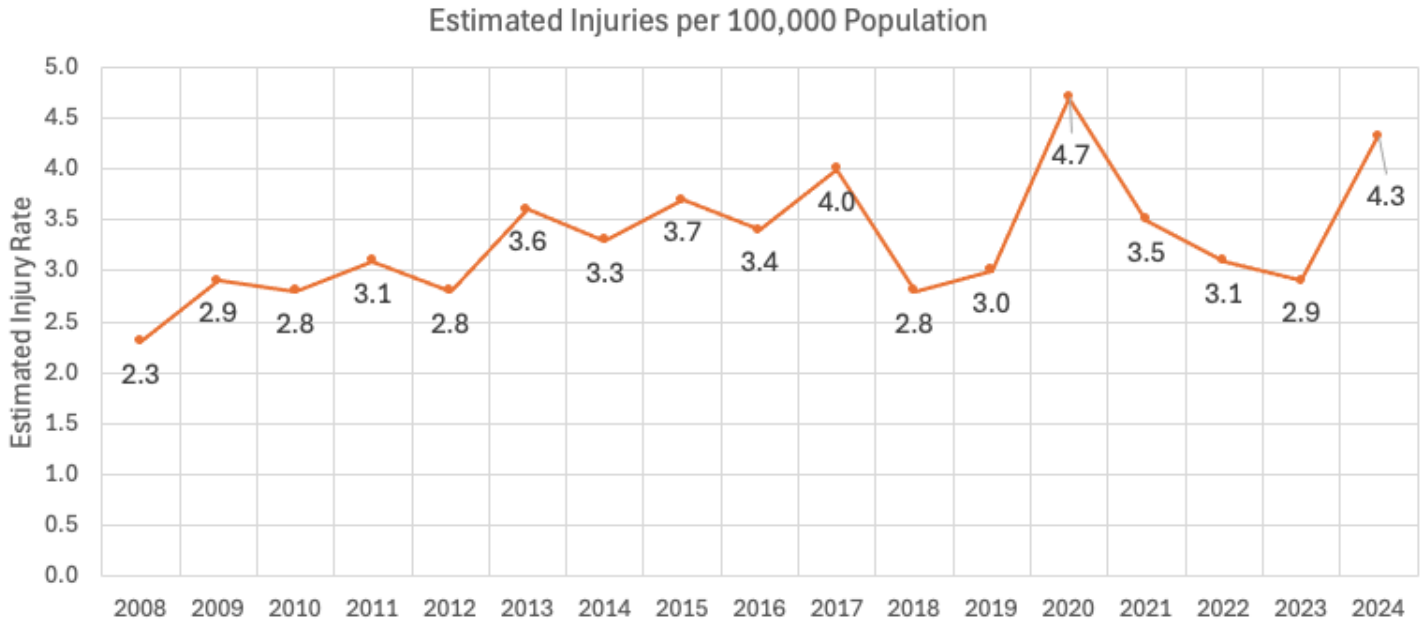
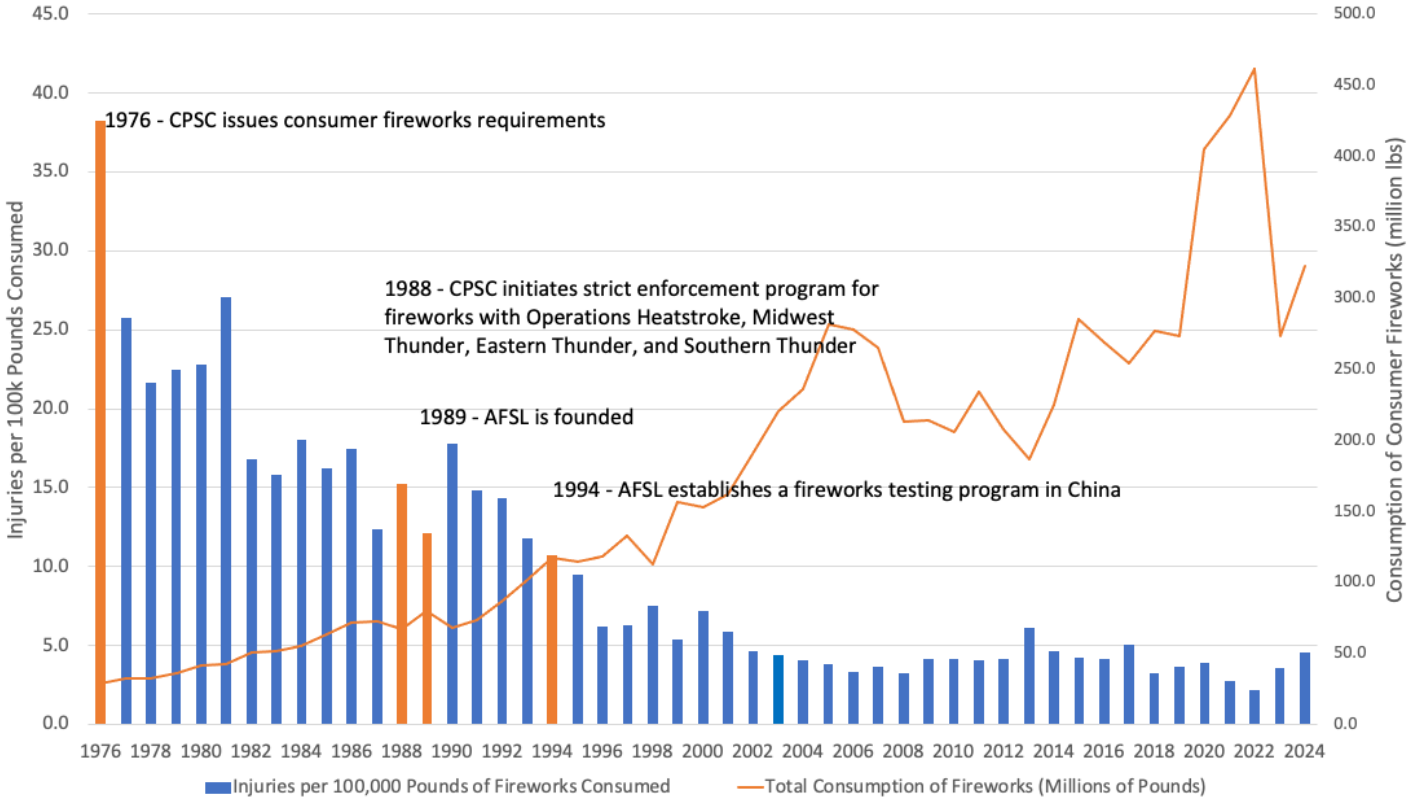


Figure 4.2 illustrates the estimated injury rate per 100,000 population, a metric used by CPSC for many years. The estimated rate of emergency department-treated injuries for 2024 is 4.3 per 100,000 population in the United States, an increase from the 2.9 estimated injuries per 100,000 population in 2023.

However, the number of fireworks devices consumed is a better indicator of exposure, which is a key element in the risk calculation[1]. The consumption of consumer fireworks has doubled since 2000, as illustrated in Figure 4.3, growing from 152.6 million pounds in 2000 to 322.8 million pounds in 2024. Nevertheless, the number of injuries has not followed the same upward trend. The estimated injury rate per 100,000 pounds consumed has dropped from 38.3 in 1976, to 7.2 in 2000, and 4.5 in 2024. It should, however, be noted there was an increase from 2023 to 2024 in the estimated injury rate per 100,000 pounds consumed, from 3.6 to 4.5.

Figure 4.3
Consumer Fireworks Consumption and Estimated Injury Rate



Source: American Pyrotechnic Association. Industry Facts and Figures, Fireworks Consumption vs. Injury Rate Table.

[1] The basic formula used to calculate risk is Risk = likelihood of exposure to the hazard (probability) x severity (potential impact).

FIREWORKS DEVICE ASSOCATION WITH NEISS ESTIMATED INJURIES

Only 36% of the 14,741 estimated fireworks-related emergency department-treated injuries were identified as being associated with a specific type of fireworks device (e.g., Firecracker, Fountain, Sparkler). The NEISS cases containing narrative noting the generic description "fireworks" as the product were placed into the "Unidentified" Device Type Category, absent an identifying CPSC Fireworks Code.

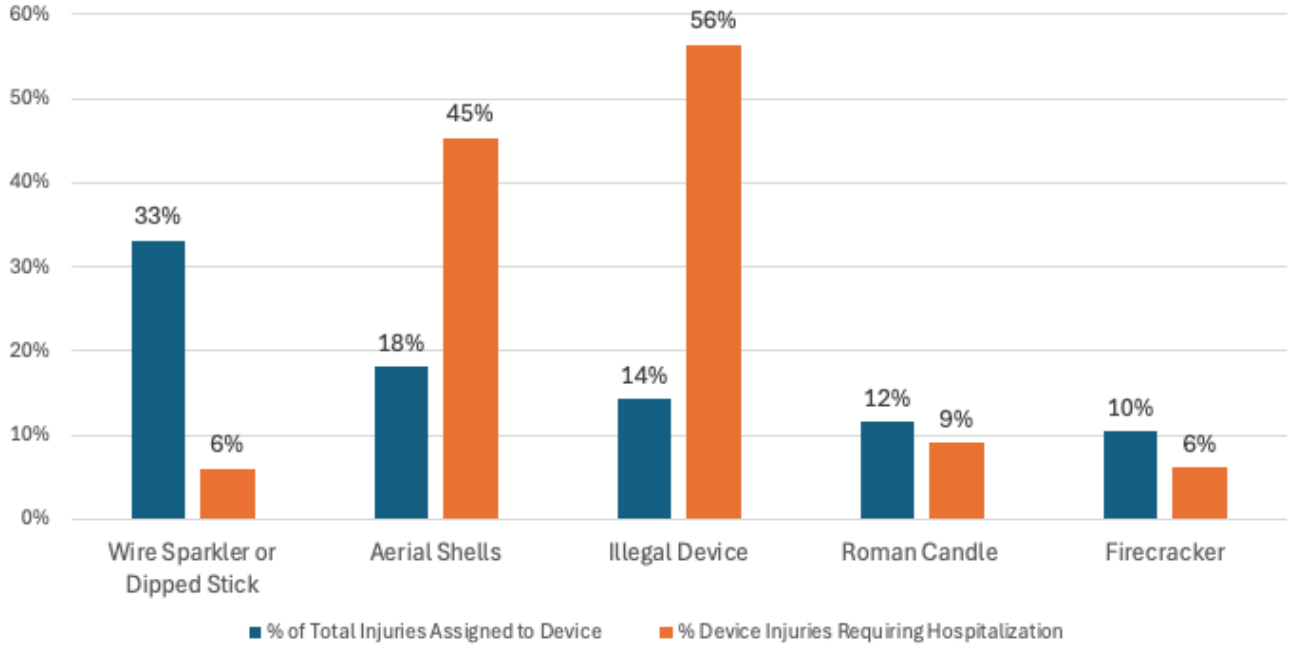
As shown in Table 4.2 and Figure 4.4, of those cases where the type of fireworks was identified, Sparklers were associated with an estimated 33% of the injuries seen at an emergency department. However, only 6% of those Sparkler-associated injuries required hospitalization. Reloadable Aerial Shells were associated with 18% of the cases, with 45% of those suffering a reloadable aerial shell-associated injury requiring hospitalization.

Table 3.2
Fireworks-Related Emergency Department-treated Injuries by Type of Fireworks Devices Identified
2024

Devices Associated with NEISS Reports	Estimated Fireworks-Related Injuries	% of Total Injuries Assigned to Device	% Device Injuries Requiring Hospitalization
Wire Sparkler or Dipped Stick	1,779	33%	6%
Reloadable Aerial Shells	973	18%	45%
Illegal Device	763	14%	56%
Roman Candle	619	12%	9%
Firecracker	560	10%	6%
Rocket (Bottle)	261	5%	0%
Smoke	108	2%	0%
Wheel	108	2%	0%
Snapper	55	1%	0%
Cake 500	51	1%	0%
Rocket (Stick)	51	1%	0%
Missile	28	1%	0%
Party Poppers	8	0.1%	100%

Illegal and/or homemade explosive devices were associated with 14% of the NEISS fireworks-related injuries where the device was identified, with 56% of those injured by one of these devices requiring hospitalization. An estimated 12% of the injuries were attributed to Roman Candles, and 10% to Firecrackers, with 9% and 6% respectively requiring hospitalization.

Figure 4.4
Fireworks-Related Emergency Department-Treated Injuries by Type of Fireworks Devices Identified
2024



NEISS ESTIMATED FIREWORKS-RELATED INJURIES BY AGE

Table 4.5 lists the number of estimated fireworks-related injuries for each age group[2] by the type of fireworks identified by CPSC Fireworks Code or the NEISS Narrative. Of those devices that were identified, Sparklers were associated with the highest number of estimated injuries for children, from birth to 12 years of age, and young adults age 20 to 29. Teens suffered injuries from Roman Candles more frequently than any other device, and adults, age 30 and older, suffered more injuries from Reloadable Aerial Shells than all other fireworks devices.

[2] For the purposes of this analysis, AFSL sorted the data into the following age groups: Infant – under 2 years of age, Preschool – 2 to 5 years of age, Child – 6 to 12 years of age, Teen – 13 to 19 years of age, Young adult – 20 to 29 years of age, and Adult – 30 years of age and older.

Table 4.5
ESTIMATED INJURIES BY AGE GROUP AND TYPE OF FIREWORKS DEVICE
2024

Device Type	Infant	Preschool	Child	Teen	Young Adult	Adult	Grand Total
Unidentified	85	399	973	1907	1722	4291	9377
Wire Sparkler or Dipped Stick	**60**	**334**	**465**	58	**455**	407	1779
Reloadable Aerial Shells			7	140	238	**588**	973
Illegal Device			111	58	163	431	763
Roman Candle			108	**166**	265	81	619
Firecracker		108	115	41	106	191	560
Rocket (Bottle)			79		155	28	261
Smoke			108				108
Wheel						108	108
Snapper			28			28	55
Cake 500						51	51
Rocket (Stick)					51		51
Missile					28		28
Party Poppers			8				8
Grand Total	144	841	2000	2369	3183	6204	14741

Table 4.6 lists the number of estimated fireworks-related injuries that resulted in the hospitalization of the victim for each age group, by the type of fireworks identified by the CPSC Fireworks Code or the NEISS Narrative. Of those devices that were identified, Illegal Devices sent more victims (an estimated 320 adults and 104 children) to the hospital than any other fireworks device. Reloadable Aerial devices were responsible for the highest number of estimated injuries to Teens and tied Illegal Devices for highest number of estimated injuries to Adults. Sparklers were associated with the highest number of estimated injuries for Preschool children, from 3 to 5.

Table 4.6
ESTIMATED INJURIES REQUIRING HOSPITALIZATION BY AGE GROUP AND TYPE OF FIREWORKS DEVICE
2024

Device Type	Infant	Preschool	Child	Teen	Young Adult	Adult	Grand Total
Unidentified	7	13	172	665	305	931	2093
Reloadable Aerial Shells			7	**87**	28	**320**	442
Illegal Device			**104**	7		**320**	431
Wire Sparkler or Dipped Stick		**79**				28	106
Roman Candle					56		56
Firecracker				7		28	34
Party Poppers			8				8
Grand Total	7	92	291	765	389	1626	3170

5. 2024 ESTIMATED FIREWORKS-RELATED INJURY ANALYSIS AND OBSERVATIONS

CONTRIBUTING FACTORS

A close analysis of the NEISS fireworks-related narrative provides some insight into factors contributing to many of the fireworks-related injuries: Malfunction, Misuse, Other, Unidentified, and Associated with, but not necessarily caused by, consumer fireworks. AFSL has defined these categories as follows:

- Malfunction – Failure of the consumer firework to function as designed and intended.
- Misuse – Use of the consumer fireworks in ways contrary to warnings, instructions, and the common perception and judgement regarding fireworks devices possessed by the general population. This category does not include cases where the narrative noted the use of drugs or alcohol but there was no clear reference to another form of misuse.
- Other – Cases containing narrative where the product functioned as designed and intended but the narrative did not provide a clear indication of misuse.
- Unidentified – All cases where the narrative lacks sufficient detail to assign the case to another category.
- Associated with, but not necessarily caused by, consumer fireworks – It is not uncommon for NEISS to include cases containing narrative indicating the product in question had little direct involvement in the reported accident. However, these cases can distort any meaningful analysis of the data. Those cases where the narrative indicates a remote or no association with consumer fireworks were placed into this category.

Table 5.1 shows the Contributing Factor categories, along with the illegal/homemade device and drug/alcohol involvement, that are associated with the 2024 NEISS estimated fireworks-related emergency department-treated injuries.

Table 5.1
NEISS Estimated Injuries by Contributing Factor Category

Contributing Factor Category	NEISS Estimated Injury Count
Illegal or Homemade Devices Involved	763
Device Malfunction	821
Drug and/or Alcohol Use Involved	923
Associated with, but not necessarily caused by, consumer fireworks	1,691
Other	3,187
Unidentified	3,491
Product Misuse	3,865
NEISS Fireworks Total	**14,741**

The injury analysis in this report presents the results of the analysis of the 14,741 estimated fireworks associated injuries treated in emergency departments from January 1, 2024, through December 31, 2024. An estimated 10,585 fireworks-related injuries (or 72% of the total estimated fireworks-related injuries in 2024) were treated in U.S. hospital emergency departments during the period June 16, 2024, through July 16, 2024.

ILLEGAL AND HOMEMADE DEVICES

According to the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), consumer fireworks whose pyrotechnic material content exceeds CPSC's regulatory limits are classified as illegal explosives.[3] NEISS contains 763 estimated injuries (5% of total) associated with these illegal and/or homemade explosive devices. Data indicates that of all identified devices, these devices present the greatest risk of hospitalization with 56% of the estimated illegal/homemade device-related injuries resulting in hospitalization.

These illegal explosives are not fireworks. They have not been tested for compliance with federal standards and generally contain dangerous amounts of highly sensitive and very energetic explosive compositions. Federal law prohibits the manufacture, storage, distribution, receipt, or transport of explosive materials without a federal explosives license or permit. The mere possession of illegal explosives can result in being federally prosecuted with substantial monetary penalties and jail time attached to a conviction. In addition to being illegal, these illegal explosives are very dangerous and expose all in the vicinity of these devices to an unreasonable risk of injury.

DEVICE MALFUNCTION

Device malfunction contributed an estimated 925 fireworks-related emergency department-treated injuries, with 104 of the injuries also linked to drug or alcohol use. The devices were not identified with a CPSC code, or otherwise identified in the narrative, in those cases associated with 546 of the 925 estimated injuries. In those cases where the device was identified, 44% of the estimated 379 malfunction-related injuries were attributed to malfunction of Reloadable Aerial Shells (primarily tip-over), 28% Sparklers (exploded), 13% multiple tube devices (early detonation), and 7% each Roman Candles (early detonation) and Snappers (expelled debris). Some examples of the narrative associated with this category are as follows:

44YOM PRESENTS AFTER BEING HIT BY A FIREWORK. HE WAS STRUCK IN THE FACE AND CHEST BY A MORTAR TYPE FIREWORK SHELL. THE FIREWORK TIPPED OVER. HE WAS DRINKING ALCOHOL. BAL=230. HAS RIGHT CORNEAL ABRASION, LACERATION OVER ZYGOMATIC ARCH, FIRST DEGREE BURNS WITH SINGED TYPE BURNS TO THE CHEST AND RIGHT UPPER EXTREMITY. DX: THERMAL BURN, CORNEAL ABRASION, FACIAL LACERATION

45YOF WAS AT A FAMILY EVENT WHEN THE UNSPECIFIED FIREWORK, TYPE R, THAT WAS LIT ON THE GROUND TIPPED OVER AND SHOT SOMETHING THAT EXPLODED IN HER CHEST. ALSO HAS RINGING IN HER EAR. DX: THERMAL BURNS OF MULTIPLE SITES; BLAST INJURY OF LEFT EAR

32YOM A FIREWORK SHOT OFF THE SIDE OF THE FIREWORK INSTEAD OF OUT THE TOP AND STRUCK HIM IN THE FOREHEAD AND HOT ASH FELL INTO HIS EYE, NO FD AT SCENE DX FOREHEAD LACERATION, RT CORNEA ABRASION

[3] https://www.atf.gov/explosives/tools-services-explosives-industry/explosive-products-and-devices/illegal-explosives

DRUG/ALCOHOL USE

CPSC and others warn against using fireworks while under the influence of alcohol or drugs that impair judgement. Drug or alcohol use was associated with 923 of the estimated injuries.

ASSOCIATED WITH, BUT NOT NECESSARILY CAUSED BY, CONSUMER FIREWORKS

An estimated 1,691 NEISS fireworks-related injuries were not necessarily caused by legal fireworks. Illegal and homemade devices were responsible for 763 of the estimated injuries. The remaining incidents involved injuries only remotely associated with consumer fireworks, such as injuries sustained while running from fireworks, injuries caused by pets, and injuries suffered from reacting to a firework detonation as if it were a gun shot. Some examples of the narrative associated with this category are as follows:

19YOM HIT JAW WITH A MIRROR OF A CAR. HE WAS TRYING TO LIGHT A FIREWORK WHEN THE CAR RAN A LIGHT AND HIT HIM IN THE FACE. DX: INJURY OF JAW

20 YOM WAS MAKING A HOMEMADE FIREWORK WHICH EXPLODED IN HAND. DX: COMPLEX TRAUMATIC AMPUTATION OF LEFT INDEX FINGER THROUGH PHALANX, TRAUMATIC AMPUTATION OF MIDDLE FINGER OPEN FRACTURE RIGHT THUMB.

12YOM-PATIENT SAID HIS OLDER FRIENDS ARE FAMILY MEMBERS BUNDLE SOME "SPARKLER BOMB" SPARKLERS TOGETHER BUT THEM IN A MICROWAVE AND LIT THE FUSE AND THERE WAS AN EXPLOSION CAUSING MULTIPLE FACIAL LACERATIONS AND A FRACTURED TOOTH. PATIENT FELL BACK BUT CAUGHT HIMSELF WITH HIS RIGHT HAND AT HOME. NO FD DX: TOOTH FRACTURE-MULTIPLE FACIAL LACERATIONS.

12YOF HAD THE TIRE OF A CAR BACK OVER HER FOOT WHILE CLEANING UP FIREWORKS. DX: RIGHT FOOT INJURY

OTHER

These are cases where it is clear that the device functioned properly and, for the most part, the consumer followed the warnings and instructions, but someone was injured requiring emergency department treatment. In 2024, an estimated 3,187 injuries fell into this category. In 58% of these cases, the device was not identified. In those cases where the device was identified, most were associated with thermal burns from sparklers that were treated and released.

UNIDENTIFIED

AFSL was unable to identify a possible cause in 3,886 of the estimated injuries because the narrative was not clear as to the possible cause of the incident.

MISUSE

Excluding those incidents involving illegal explosive devices and drug or alcohol use, an estimated 3,865 of injuries were due to some form of misuse. Misuse includes lighting and holding devices in the hand

that were not designed as a handheld device, launching devices off the body, and shooting or throwing fireworks at others. Some examples of the narrative associated with this category are as follows:

16YOM WAS HOLDING THE BASE OF A MORTAR STYLE FIREWORK WHEN IT EXPLODED DX: LACERATIONS OF PALM AND WRIST OF BILATERAL HANDS *

22 YOM WAS DRINKING ALCOHOL AND PLAYING WITH HIS FRIENDS WITH ROMAN CANDLES WHERE THEY WERE THROWING THEM IN THE AIR AND THROWING THEM AT EACH OTHER ONE OF THEM WENT OFF AND A PIECE WENT INTO HIS EYE. BAL 81. DX: CORNEAL BURN LEFT.

37YOM HAD LIT AN ARTILLERY *** AND JUST WHEN HE RELEASED IT FROM HIS HAND IT WENT OFF RESULTING IN A TRAUMATIC AMPUTATION OF MID DISTAL PHALANX OF RIGHT MIDDLE FINGER, A LARGE GAPING LACERATION TO 4TH FINGER, 3CM AVULSION/LACERATION TO RIGHT THUMB, AND A PALM LACERATION. DX: DISCHARGE OF FIREWORK AS CAUSE OF ACCIDENTAL INJURY; TRAUMATIC AMPUTATION OF MIDDLE FINGER; MULTIPLE LACERATIONS

19YOM WAS HOLDING A ARTILLERY SHELL FIREWORK IN HIS RIGHT HAND, LIT THE FUSE, AND ATTEMPTED TO THROW THE SHELL. SHELL EXPLODED, AND BURNED HIS PALM OF HIS HAND AS WELL AS HIS PROXIMAL FINGERS. DX: SECOND DEGREE BURN OF TWO OR MORE DIGITS OF RIGHT HAND; BURN OF RIGHT HAND INCLUDING FINGERS

INJURY ANALYSIS AND OBSERVATIONS

The following observations were made from a review of NEISS data describing the age and gender of the victims, type of injuries, severity (disposition), and where available, the type of fireworks device associated with the injury. The dataset includes all 14,741 estimated, unless otherwise noted.

ESTIMATED INJURIES BY GENDER

Of the 14,741 estimated fireworks-related injuries sustained in 2024, about 73% involved males. As noted in Table 5.2, this is consistent with the distribution seen in prior years. Male victims have represented from 64% to 74% of the injured population since 2016, averaging 70% over the period.

Table 5.2
NEISS Estimated Injury Distribution by Gender

Year	Male	Female	% Male
2016	7,582	3,551	68%
2017	9,551	3,334	74%
2018	6,373	2,708	70%
2019	6,606	3,387	66%
2020	11,384	4,262	73%
2021	7,329	4,158	64%
2022	6,742	3,421	66%
2023	6,754	2,994	69%
2024	10,701	3,983	73%

ESTIMATED INJURIES BY AGE

Table 5.3 contains the estimated number of injuries by age[4] and disposition. The table contains data showing the number of estimated fireworks-related emergency department-treated injuries by age group and disposition. AFSL considers the injuries classified as requiring treatment and transfer or admission when calculating the hospitalization rate found in Table 5.4.

Table 5.3
NEISS Estimated Injuries by Age Group and Disposition
2024

Age Group	Treated/Examined and Released	Treated and Transferred	Treated and Admitted/Hospitalized	Left Without Being Seen
Infant	138		7	
Preschool	736	51	41	13
Child	1709	164	127	
Teen	1523	132	634	81
Young Adult	2794	113	276	
Adult	4387	393	1233	191
All Ages	11287	852	2318	285

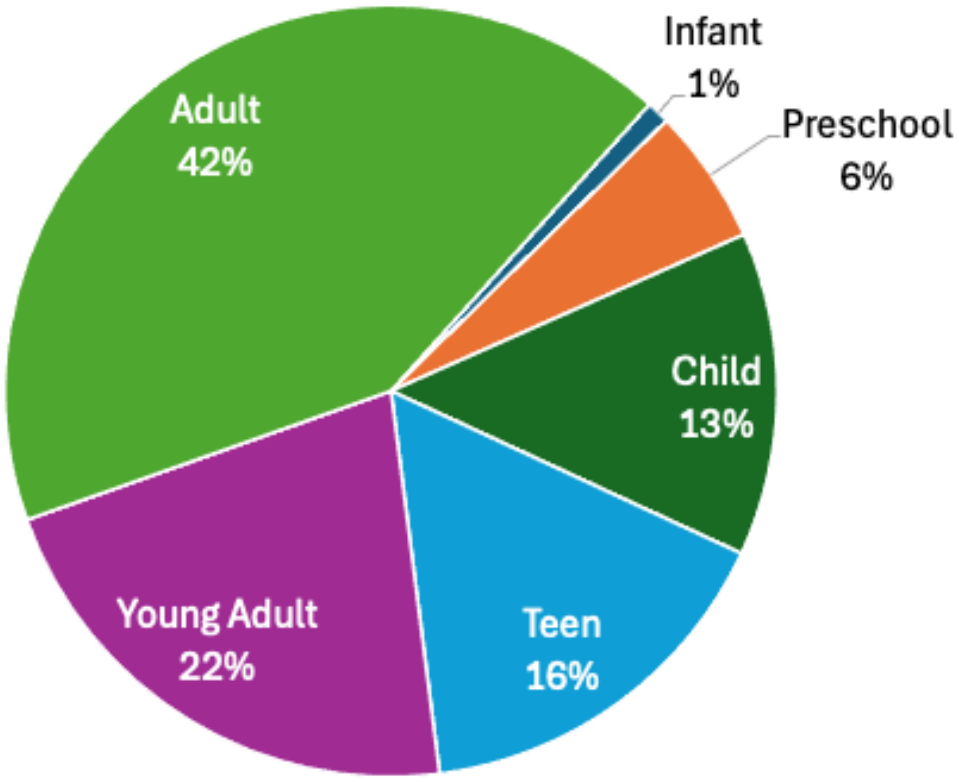
[4] For the purposes of this analysis, AFSL sorted the data into the following age groups: Infant – under 2 years of age, Preschool – 2 to 5 years of age, Child – 6 to 12 years of age, Teen – 13 to 19 years of age, Young adult – 20 to 29 years of age, and Adult – 30 years of age and older.

Table 5.4
NEISS Estimated Fireworks-Related Injury and Hospitalization Rate per 100,000 Population
2024

Age Group	Injury Rate	Hospitalization Rate
Infant	1.97	0.09
Preschool	5.55	0.60
Child	6.95	1.01
Teen	7.68	2.48
Young Adult	7.09	0.87
Adult	2.91	0.76
All Ages	4.33	0.93

Teens experienced the highest injury and hospitalization rates, with 32% of the teen injuries resulting in hospitalization. Young adults suffered the next highest injury rate, but only about 12% of those injuries required hospitalization. Adults had one of the lowest injury rates, but 26% of those adults injured required hospitalization.

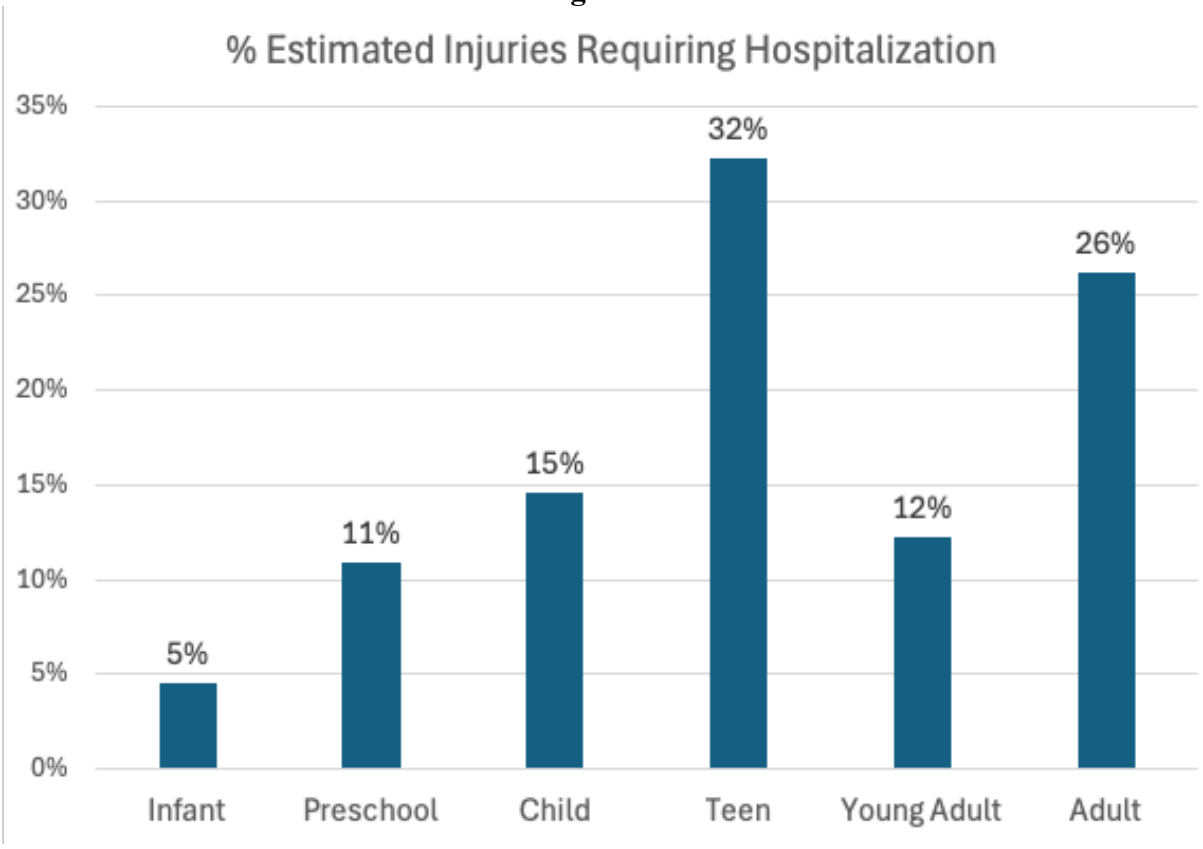
Figure 5.1
Distribution of Estimated Fireworks-Related Injuries by Age Group
2024



As illustrated in Figure 5.1, Adults (30 and older) experienced about 42% of the estimated fireworks-related emergency department-treated injuries. This is an 88% increase over the prior year estimate (6,204 vs. 3,446). Young adults (20 to 29) were involved in 3,183 estimated injuries (22% of total), a 106% increase (3,183 vs. 1,544) year over year. Teenagers experienced about 16% of the estimated injuries, with the number of estimated injuries increasing by 11% over 2023 levels, while the remaining age groups (Child, Preschool, Infant) were responsible for 13%, 6%, and 1% of the total estimated injuries, respectively.

As Figure 5.2 illustrates, 32% of fireworks-associated injuries to Teens resulted in the victim being treated and transferred/admitted to the hospital as a result of their injury, followed by Adults at 26%, Child at 15%, Young Adult at 12%, Preschool at 11%, and Infant at 5%.

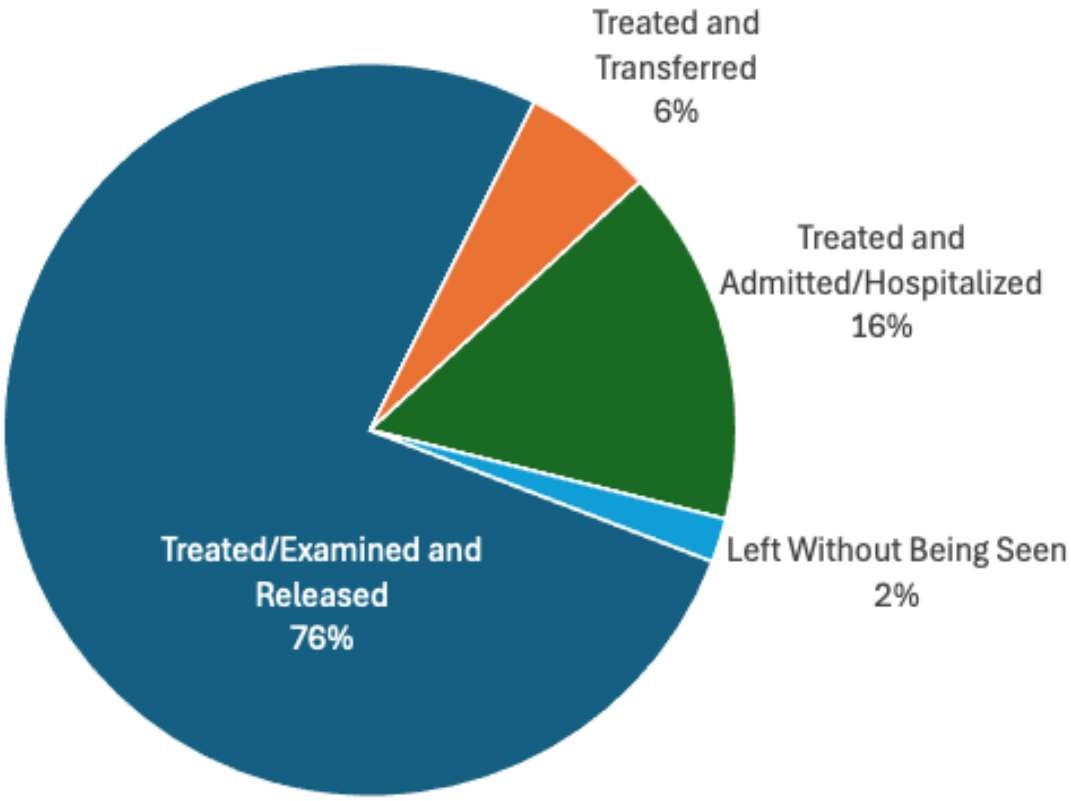
Figure 5.2



CASE DISPOSITION

An estimated 11,287, or 76%, of the injuries were treated and released from the emergency department, as illustrated in Figure 5.3. Another 285, or about 2%, of the victims left the emergency department without being seen by emergency department personnel. The remaining 3,170 (or 22%) of the injuries required hospitalization.

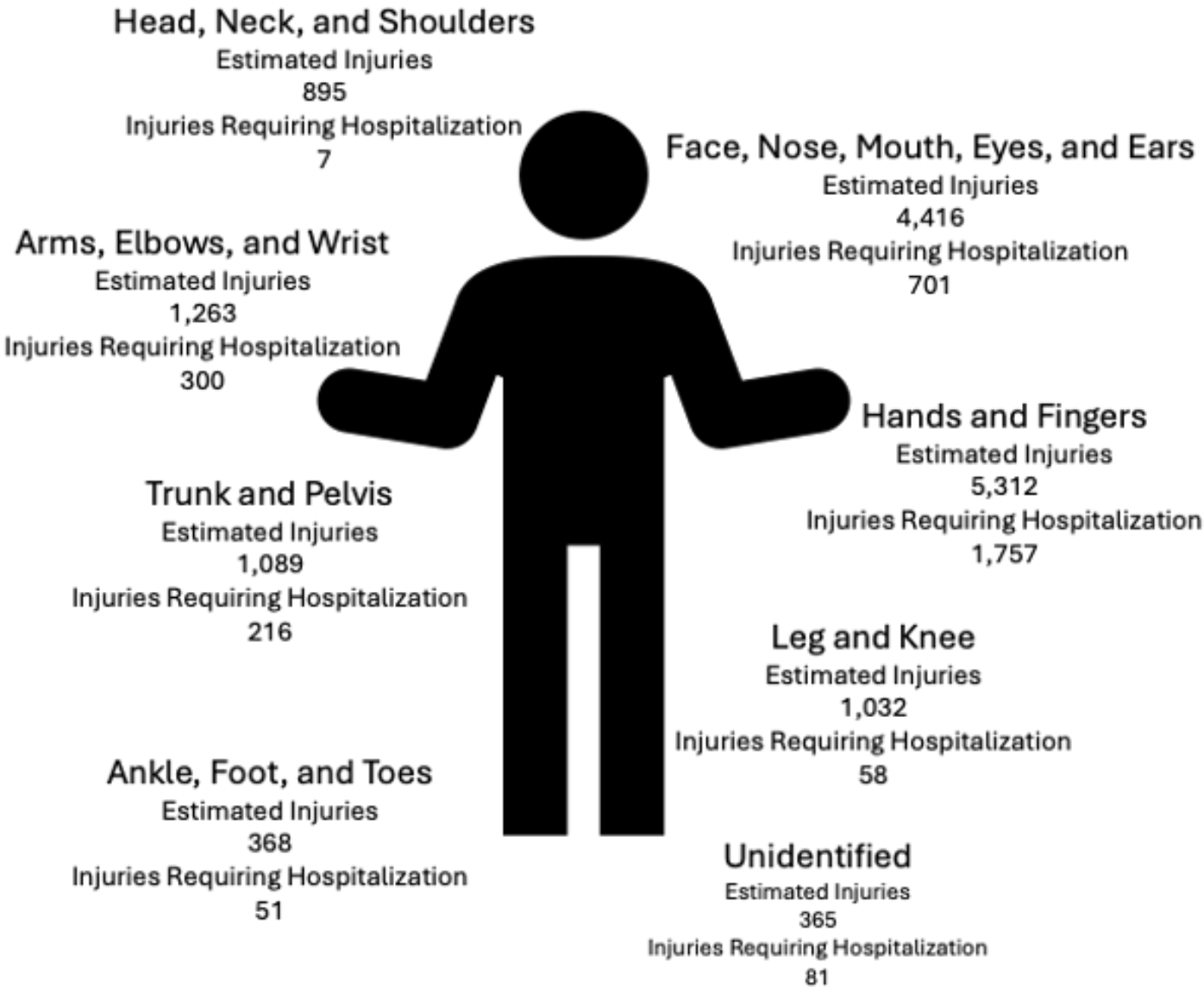
Figure 5.3
NEISS Disposition
Estimated Fireworks-Related Emergency Department-Treated Injuries
2024



DIAGNOSES

This section of our NEISS data review concerns itself with discussion of injury by body part. Figure 5.4 illustrate the general anatomical injury pattern indicated by the NEISS records. Note the ratio of those injuries requiring hospitalization to the total injuries.

Figure 5.4
NEISS Fireworks-Related Anatomical Injury Pattern
2024



The leading outcome of a fireworks-related injury, responsible for over a third of the estimated 14,741 injuries, was thermal burns, as shown in Figure 5.5. Of those cases involving thermal burns, about 27% of the identified devices were Sparklers, followed by Roman Candles and Firecrackers at 7% each. Hospitalization was the disposition noted in 9% of the thermal burn cases.

Figure 5.5
NEISS Estimated Fireworks-Related Emergency Department-Treated Injuries by Diagnosis Code
2024

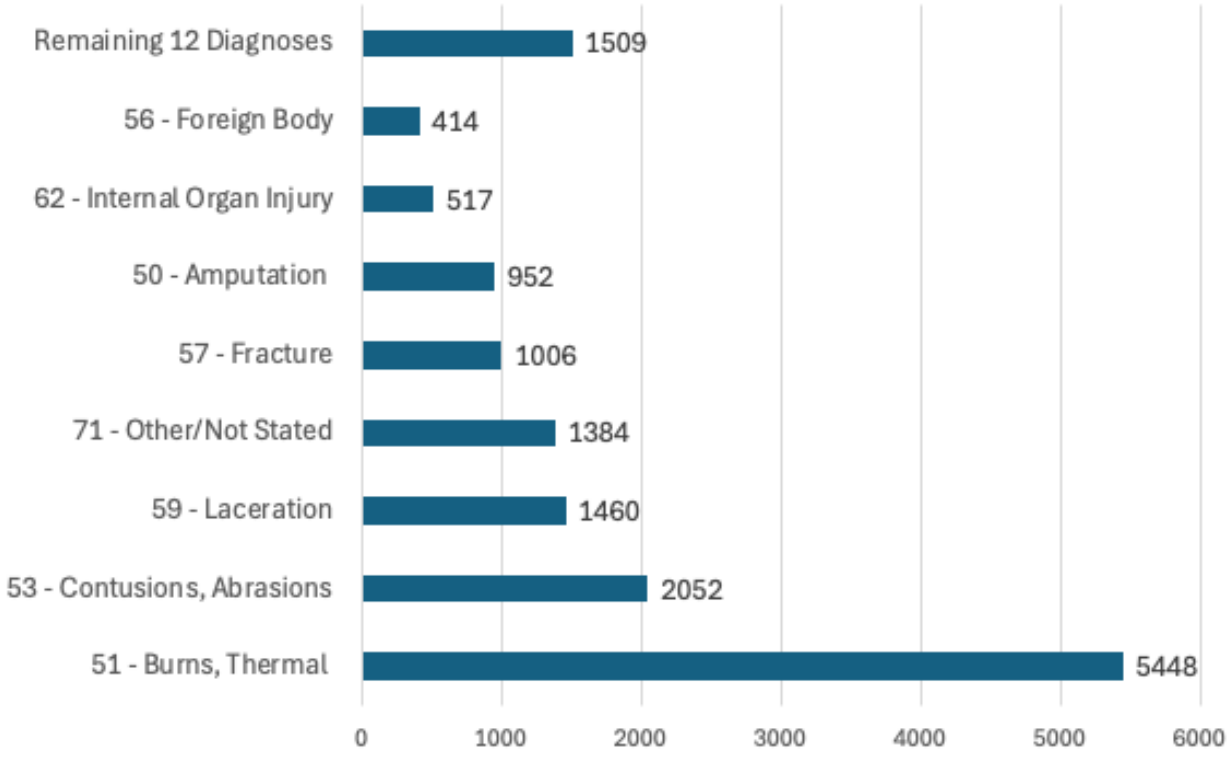
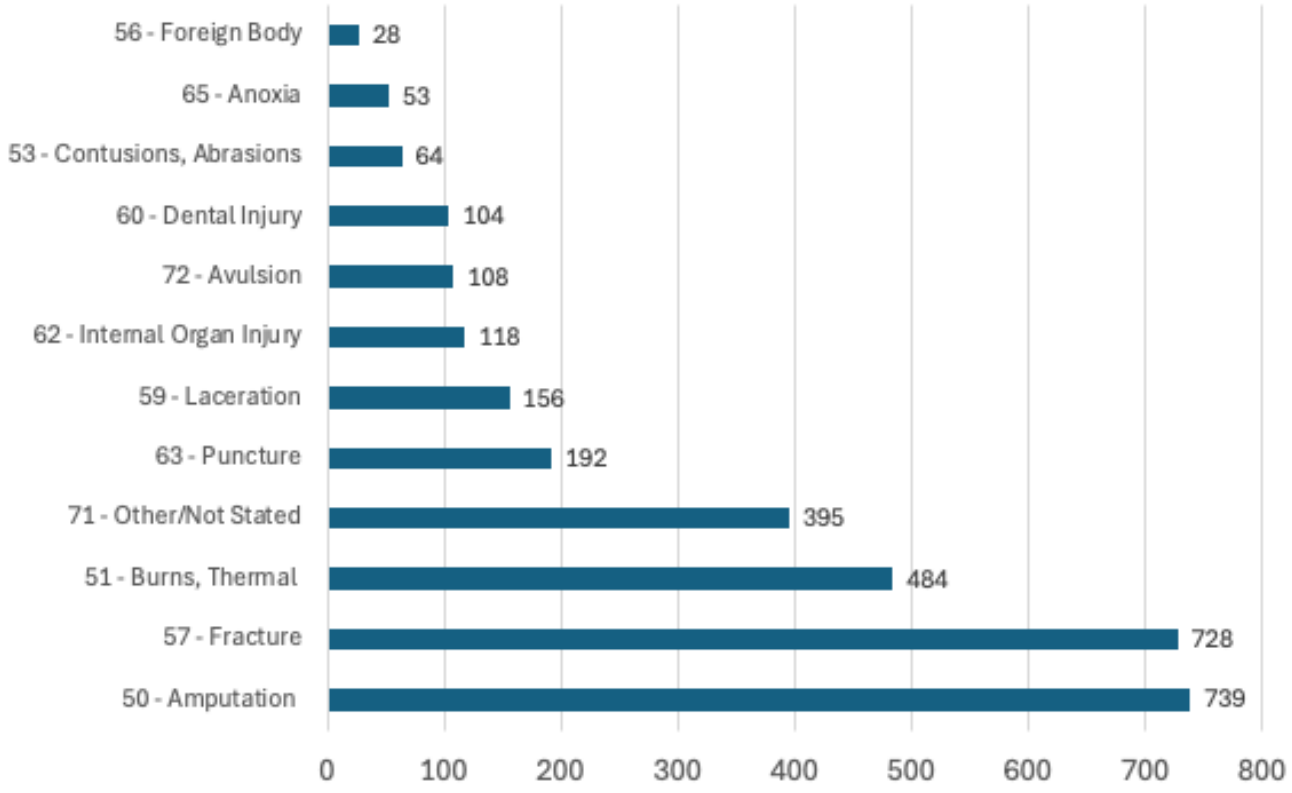


Figure 5.6, below, illustrates the ranking of those diagnoses resulting in hospitalization of the victim. The data reveals that amputations and fractures displace thermal burns as the leading outcome of a fireworks-related incident when considering only those cases resulting in hospitalization. Illegal devices were responsible for 56% of the amputations and 59% of the fractures associated with identified devices. Reloadable Aerial shells accounted for 44% of the amputations and 41% of the fractures associated with identified devices. Illegal devices were responsible for 46% of the hospitalizations associated with thermal burns caused by an identified device, followed by Reloadable Aerial Shells at 26%, and Sparklers and Firecrackers at 12% each.

Figure 5.6
NEISS Estimated Fireworks-Related Emergency Department-Treated Injuries With Treat and Transfer/Admit Disposition by Diagnosis Code
2024



6. SUMMARY

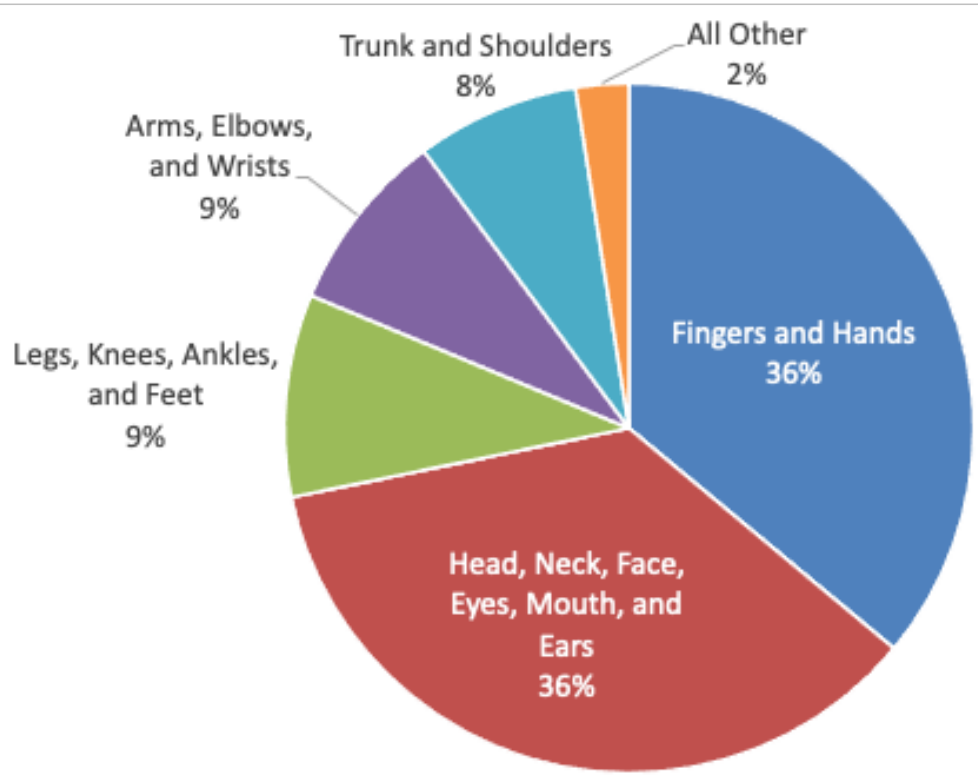
In the calendar year 2024, there were 19 reported non-occupational fireworks-related fatalities. However, reporting for 2024 may not be complete at this time due to delays in the receipt of death certificates by the CPSC. Most of the information provided on the fireworks-related fatalities, contained in the narrative found in CPSC's Clearinghouse database, lacks sufficient detail to determine the type of device or the hazard scenario that led to these tragic outcomes.

There were 14,741 estimated fireworks associated injuries treated in emergency departments from January 1, 2024, through December 31, 2024. An estimated 10,585 fireworks-related injuries (or 72% of the total estimated fireworks-related injuries in 2024) were treated in U.S. hospital emergency departments during the period June 16, 2024, through July 16, 2024.

INJURY DISTRIBUTION BY BODY PART

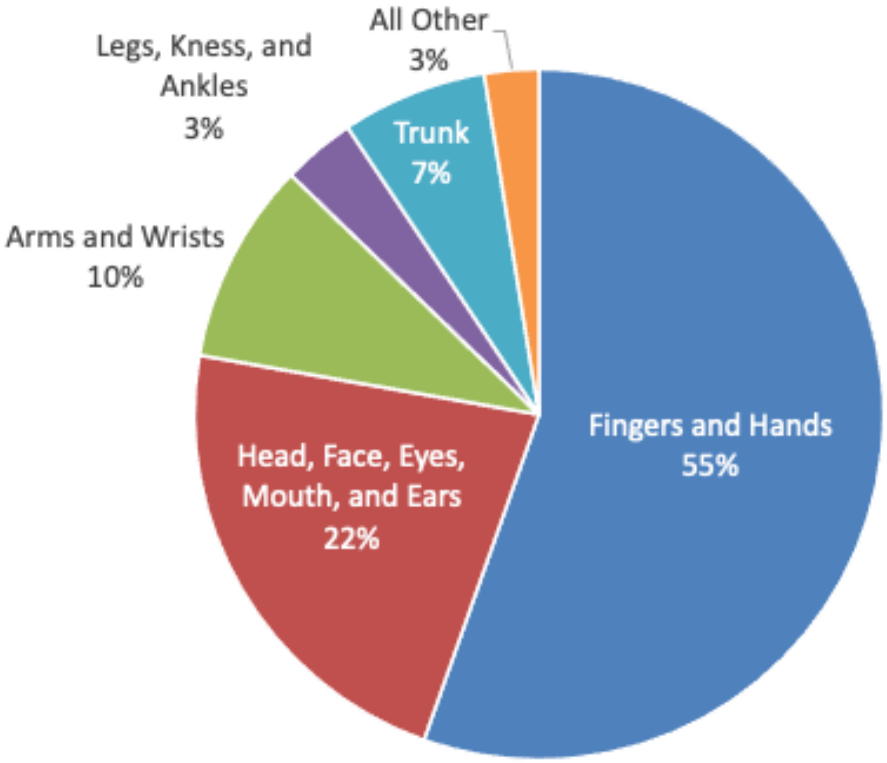
Thirty six percent (36%) of the estimated 14,741 fireworks-related injuries involved the fingers and hands, as shown in Figure 6.1. An additional 36% of the estimated injuries involved the head, neck, face, eyes, mouth, and ears, with 2,068 (39%) of these involving the eye. Most of the estimated injuries (11,571) were either treated and released or left without being seen.

Figure 6.1
Estimated Injuries by Area of the Body
2024



Of the 3,170 estimated injuries treated and transferred or admitted/hospitalized, fingers and hands injuries were responsible for over half of the injuries requiring hospitalization of the victim, as illustrated in Figure 6.2.

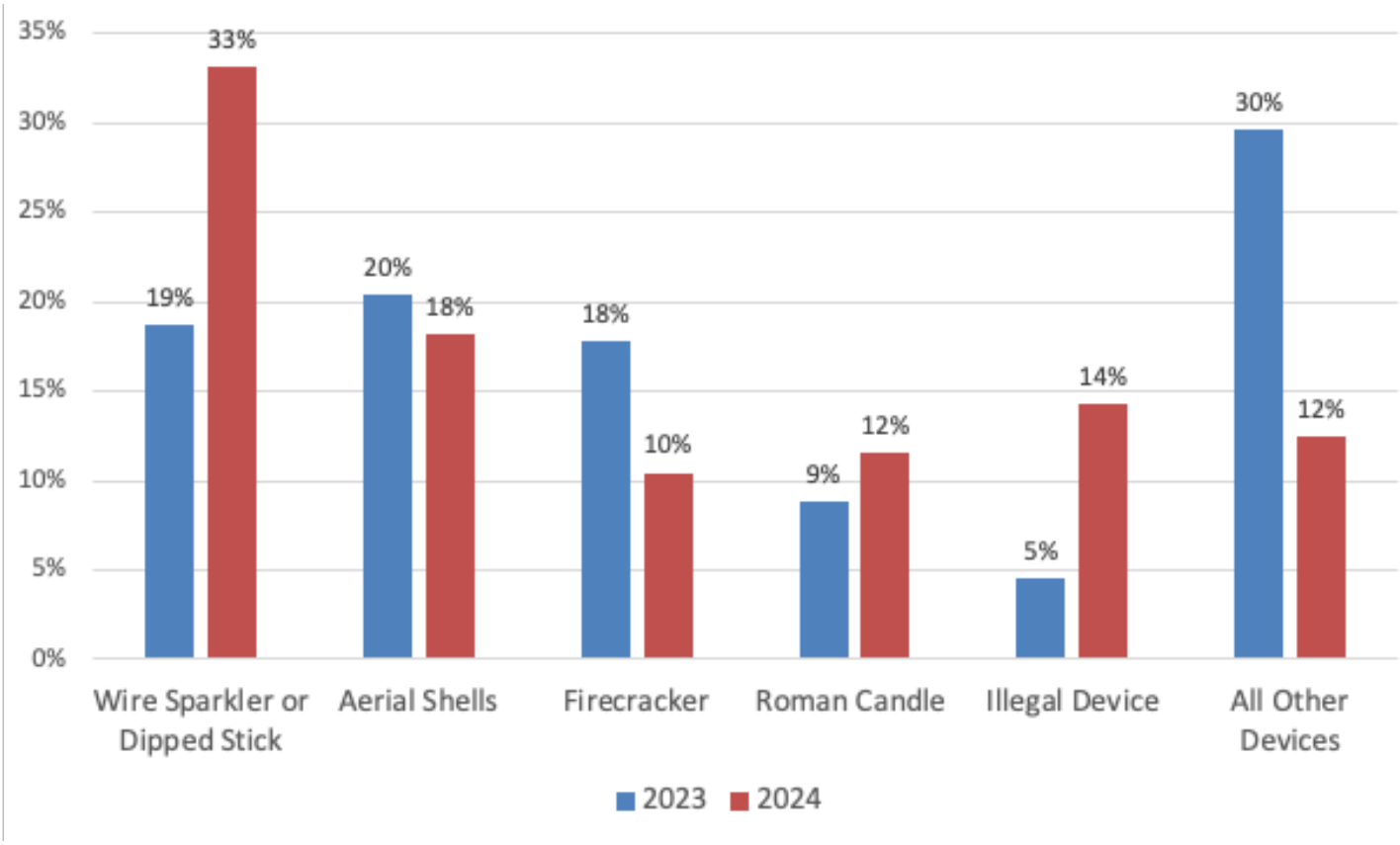
Figure 6.2
Estimated Injuries Requiring Hospitalization by Area of the Body
2024



DEVICE INVOLVEMENT

Among the various types of fireworks identified, Sparklers were involved in 33% of the estimated injuries in 2024, an increase from 19% in 2023. Reloadable Aerial shells were involved in 18%, down from 20% in 2023, and Firecrackers were associated with 10% of the estimated injuries, a decrease from 18% in 2023. The percentage of estimated injuries associated with illegal/homemade devices increased from 5% in 2023 to 14% in 2024. Many of the estimated fireworks-related injuries, 64%, were associated with firework devices for which the device type is unknown, an increase from 39% in 2023.

Figure 5.3
Change in Percentage of Estimated Injuries Associated with an Identified Device
2023 and 2024



ILLEGAL FIREWORKS

AFSL has seen, and continues to see, evidence of illegal fireworks devices, packaged and marketed as legitimate consumer fireworks, being sold across the country in increasing volumes. Items such as Reloadable Aerial Shells, Multiple-tube devices, Rockets, Missiles, and large Firecrackers that contain illegal amounts and types of pyrotechnic materials are being openly displayed and sold to consumers. These devices typically do not list the name of the manufacturer or retailer, may not have all the required warnings and instructions, and the pricing is higher than similar items. These illegal devices have not been tested and certified as compliant with all federal requirements, as required by CPSC regulations, and present an unreasonable risk of injury to the American consumer.

AFSL has also seen evidence of fireworks intended to be used by trained professionals (1.4G UN0336 Fireworks Professional Use Only) finding their way into the hands of consumers lacking the proper knowledge and training to safely use the devices. In addition to risking life and limb, any consumer contemplating using illegal or professional use only fireworks should be aware that their homeowners' insurance policy may not cover damages caused by illegal or professional grade fireworks.

Enforcement at the federal level has not been effective at deterring the distribution and sales of these illegal and dangerous fireworks devices.

However, Section 24 of the Consumer Product Safety Act (CPSA) authorizes the attorney general of any state, without CPSC agreement or permission, to bring suit in federal court to seek injunctive relief against any company or person that transacts business in that state for a violation of any of several "prohibited acts" under Section 19 of the CPSA, including selling, offering for sale, manufacturing, distributing, or importing consumer products, including consumer fireworks, that violate CPSC mandatory safety standards. Notice to the CPSC is required and no such state action can proceed if the CPSC or other federal agency has previously initiated its own action against the company.

AFSL conducts Fireworks Regulatory Compliance Training for local and state fire services and law enforcement personnel to facilitate more aggressive enforcement at the state and local level. This growing network of fire services and law enforcement personnel is committed to enforcing the applicable laws in their jurisdictions and sharing information on illegal products and operators.

When taken together, Section 29 (Cooperation with States and Other Federal Agencies) and Section 24 of the CPSA make clear that state fire marshals, working both in cooperation with the CPSC (regarding investigations and information sharing) and with their state attorneys general (regarding direct enforcement lawsuits) are empowered to take a much more active role in enforcing CPSC's mandatory fireworks standards to keep their citizens safe, in the absence of federal enforcement.

Appendix A - Types of Consumer Fireworks

The following definitions of the various types of consumer fireworks, with the exception of the definition of illegal explosives and homemade devices, can be found in the 2018 APA STANDARD 87-1A, STANDARD FOR THE CONSTRUCTION, CLASSIFICATION, APPROVAL, AND TRANSPORTATION OF CONSUMER FIREWORKS. (American Pyrotechnics Association, 2018).

Consumer Firework - a finished firework device, including a reloadable kit, that requires no assembly and is in a form intended for use by the public that complies with the limits and requirements of this standard, and the construction, performance, chemical composition, and labeling requirements codified by the CPSC in Title 16 of the Code of Federal Regulations (CFR).

Novelty Items

Booby Trap – a device that is actuated by means of friction that when pulled apart, activates the device producing a noise effect.

Novelty Flitter Sparkler – a paper or cardboard tube attached to a stick or wire that produces a shower of sparks, a colored flame and/or a crackling effect.

Party Popper – a device that is actuated by means of friction. Pulling the string or trigger activates the device producing a noise effect and releasing paper streamers or confetti. Common examples resemble champagne bottles and toy pistols.

Novelty Snake – a device in the form of a pressed pellet of chemical composition that upon burning produces a snake-like ash that expands in length as the pellet burns.

Snapper – a paper or plastic wrapped device that contains silver fulminate coated on small bits of sand or gravel. When dropped the device activates, producing a noise effect.

Wire Sparkler or Dipped Stick – a device that consists of a metal wire or wood dowel coated with a chemical composition that produces a shower of sparks, a colored flame and/or a crackling effect.

Novelty Smoke – a device that produces only smoke.

Ground Devices

Chaser – a device consists of a paper or cardboard tube venting out the fuse end of the tube.

Crackling Ball - a device that consists of a spherical ball that contains small granules (micro-stars) of chemical composition that produce sparks and/or a crackling effect.

Crackling Strip - a device that consists of small granules (micro-stars) of chemical composition adhered to and encased in a paper or cardboard wrapping that produce sparks and/or a crackling effect.

Crackling Tube - a device that consists of a tube that contains small granules (micro-stars) of chemical composition that produce sparks and/or a crackling effect.

Firecracker – a device that consists of a paper-wrapped or cardboard tube that produces a single report.

Flasher - a device containing a chemical composition that produces a crackling / flashing / strobing light effect.

Flitter Sparkler – a paper or cardboard tube attached to a stick or wire that produces a shower of sparks, a colored flame and/or a crackling effect.

Fountain, Cone or Cylindrical – a device that produces a shower of any combination of colored sparks, color flame, crackle, smoke, whistle and/or micro star effects.

Fountain, Nitrocellulose – a device that produces a shower of sparks, color and/or flame as its primary effect using nitrocellulose as the major chemical component.

Ground Spinner - a device that contains chemical composition that emits a shower of colored sparks that vent out of an orifice causing the device to spin rapidly on the ground.

Illuminating Torch - a device that emits a colored flame with or without crackles or sparks.

Smoke – a device that produces smoke as the primary effect.

Snake – a device in the form of a pressed pellet of chemical composition that upon ignition produces a snake-like ash that expands in length as the pellet burns.

Specialty Device – a device in the shape of an animal or a small vehicle, etc. that produces multiple effects.

Wheel – a multi-tube device intended to be attached to a support so it can rotate and produce a shower of sparks, whistle and/or other effects.

Wire Sparkler or Dipped Stick – a device that consists of a metal wire or wood dowel coated with a chemical composition that produces a shower of sparks, a colored flame and/or a crackling effect.

Aerial Devices

Aerial Spinner - a device that spins and rises into the air without a blade or propeller and may produce a secondary effect while in flight.

Girandola - a device that spins and rises into the air and may produce secondary effects while in flight.
Helicopter - a device containing an attached propeller or blade that spins and rises into the air and may produce a secondary effect while in flight.

Mine, Preloaded – a device that ignites and projects its effect directly out of the launch tube. Effects may be pyrotechnic and/or non-pyrotechnic.

Mine and Shell, Preloaded – a device that ignites and projects its effect and shell directly out of the launch tube. Effects may be pyrotechnic and/or non-pyrotechnic.

Missile, Fin Stabilized - a device that contains a driver attached to a set of fins (primary stabilizer) which may produce a secondary effect after launching.

Missile, Spin Stabilized – a device that contains a driver that sits on a launch spike attached to a base block. The driver spins (primary stabilizer) as it travels upward and may produce a secondary effect after launching.

Rockets– a device that contains a driver attached to a stick for guidance and stability. Rockets may produce a secondary effect.

Roman Candle - a device that expels a series of stars, shells, or other effects from a tube into the air.

Shell, Preloaded - a device that launches and ignites a preloaded shell into the air that bursts open and produces an effect. Effects may be pyrotechnic and/or non-pyrotechnic.

Cake and Combination Devices

Cake, 200 gram and 500 gram - a device that consists of multiple tubes fused together to form one device.

Combination, 200 gram and 500 gram –multiple devices that are fused and assembled together to form one device (e.g., a fountain combined with a helicopter).

Reloadable Kits

Reloadable Aerial Shell – a finished device that consists of a non-preloaded launch tube with base, with no more than 12 shell components. The shells are individually placed in the launch tube and launched into the air to produce an effect.

Reloadable Fountain - a finished device that consists of a non-preloaded support tube with base, with no more than 12 fountain components. The fountains are individually placed in the tube and ignited to produce an effect.

Reloadable Mine - a finished device that consists of a non-preloaded launch tube with base, with no more than 12 mine components. The mines are individually placed in the tube and ignited, and the effects are launched into the air.

Illegal Explosives and Homemade Devices

ATF considers any explosive devices, including fireworks, that have not been tested and approved for transportation by DOT/PHMSA or devices that contain amounts of pyrotechnic material that exceed CPSC's explosive weight limits as illegal explosives ((Illegal Explosives | Bureau of Alcohol, Tobacco, Firearms and Explosives, n.d.)

Some of the more common illegal explosive devices, often sold as consumer fireworks, include the M-Series devices (e.g., M-80, M-100/Silver Salute, M-250, M-1000/Quarter Stick) and Cherry Bombs. Other illegal explosives are frequently packaged to resemble legal consumer fireworks, such as large Rockets, Missiles, Reloadable Aerial Shell Kits, Multiple-tube devices, and Firecrackers. These devices have not been tested, as required by federal law, and contain illegal amounts of highly energetic pyrotechnic materials that present a substantial product hazard and an unreasonable risk of severe injury to the consumer.

Homemade Improvised Explosive Devices, which include homemade fireworks, are extremely dangerous and prohibited under federal law. The internet has made it easy to find the various formulations and chemicals needed to construct these explosive devices, but most of the information sources fail to educate the reader of the

extreme danger associated with the manufacture and handling of these very sensitive and highly energetic materials.

Appendix B – NEISS Product Ranking, Highest to Lowest Injury Estimate for 2024, Top 154 Product Codes

Product Code	Estimated Injuries	Product Description
1807	1,218,087	1807 - FLOORS OR FLOORING MATERIALS
1842	1,177,441	1842 - STAIRS OR STEPS
4076	928,261	4076 - BEDS OR BEDFRAMES, OTHER OR NOT SPECIFIED
5040	424,518	5040 - BICYCLES AND ACCESSORIES, (EXCL.MOUNTAIN OR ALL-TERRAIN)
4074	397,414	4074 - CHAIRS, OTHER OR NOT SPECIFIED
1205	379,714	1205 - BASKETBALL, ACTIVITY AND RELATED EQUIPMENT
611	363,940	611 - BATHTUBS OR SHOWERS
464	348,017	464 - KNIVES, NOT ELSEWHERE CLASSIFIED
3299	344,871	3299 - EXERCISE (ACTIVITY OR APPAREL, W/O EQUIP)
1211	313,656	1211 - FOOTBALL (ACTIVITY, APPAREL OR EQUIPMENT)
1884	300,123	1884 - CEILINGS AND WALLS (INTERIOR PART OF COMPLETED STRUCTURE)
1267	262,648	1267 - SOCCER (ACTIVITY, APPAREL OR EQUIPMENT)
4057	254,179	4057 - TABLES (EXCL. BABY CHANGING TABLES, BILLIARD OR POOL TABLES
1893	246,420	1893 - DOORS, OTHER OR NOT SPECIFIED
679	213,494	679 - SOFAS, COUCHES, DAVENPORTS, DIVANS OR STUDIO COUCHES
649	188,953	649 - TOILETS
1615	185,380	1615 - FOOTWEAR
4078	160,858	4078 - LADDERS, OTHER OR NOT SPECIFIED
4056	125,407	4056 - CABINETS, RACKS, ROOM DIVIDERS AND SHELVES, NEC
3265	124,054	3265 - WEIGHT LIFTING (ACTIVITY, APPAREL OR EQUIPMENT)
1616	122,889	1616 - JEWELRY
1817	120,261	1817 - PORCHES, BALCONIES, OPEN-SIDE FLOORS OR FLOOR OPENINGS

5022	117,073	5022 - SCOOTERS, POWERED
1233	115,560	1233 - TRAMPOLINES
1141	113,838	1141 - CONTAINERS, NOT SPECIFIED
1715	105,354	1715 - PET SUPPLIES
676	103,687	676 - RUGS OR CARPETS, NOT SPECIFIED
1871	99,359	1871 - FENCES OR FENCE POSTS
3274	94,633	3274 - SWIMMING (ACTIVITY, APPAREL OR EQUIPMENT)
5024	92,584	5024 - SCOOTERS, UNSPECIFIED
604	92,271	604 - DESKS, CHESTS, BUREAUS OR BUFFETS
5041	91,503	5041 - BASEBALL (ACTIVITY, APPAREL OR EQUIPMENT; EXCL SOFTBALL)
1645	88,954	1645 - DAY WEAR
1819	78,870	1819 - NAILS, SCREWS, CARPET TACKS OR THUMBTACKS
1894	76,792	1894 - WINDOWS AND WINDOW GLASS, OTHER THAN STORM WINDOWS
3277	75,874	3277 - EXERCISE EQUIPMENT
5036	72,551	5036 - TWO-WHEELED, POWERED, OFF-ROAD VEHICLES
4014	72,482	4014 - FURNITURE, NOT SPECIFIED
3223	71,673	3223 - FISHING (ACTIVITY, APPAREL OR EQUIPMENT)
1878	65,865	1878 - DOOR SILLS OR FRAMES
1244	65,435	1244 - MONKEY BARS OR OTHER PLAYGROUND CLIMBING APPARATUS
1333	64,515	1333 - SKATEBOARDS, UNPOWERED OR UNSPECIFIED
1266	63,862	1266 - VOLLEYBALL (ACTIVITY, APPAREL OR EQUIPMENT)
1200	62,323	1200 - SPORTS AND RECREATIONAL ACTIVITY, N.E.C.
5034	60,940	5034 - SOFTBALL (ACTIVITY, APPAREL OR EQUIPMENT)
3235	59,331	3235 - OTHER BALL SPORTS (ACTIVITY, APPAREL OR EQUIPMENT)
478	59,263	478 - DRINKING GLASSES, CUPS, AND MUGS

5045	58,718	5045 - ELECTRIC POWER-ASSISTED PEDAL BICYCLES
3286	58,102	3286 - ALL TERRAIN VEHICLES (FOUR WHEELS/OFF ROAD ONLY)
3278	57,590	3278 - DANCING (ACTIVITY, APPAREL OR EQUIPMENT)
1864	56,572	1864 - COUNTERS OR COUNTERTOPS
1270	55,937	1270 - WRESTLING (ACTIVITY, APPAREL OR EQUIPMENT)
413	55,251	413 - WASTE CONTAINERS, TRASH BASKETS OR REFUSE BINS
1439	54,804	1439 - LAWN MOWERS, NOT SPECIFIED
1112	51,226	1112 - METAL CONTAINERS
3283	51,043	3283 - SNOW SKIING (ACTIVITY, APPAREL OR EQUIPMENT)
670	50,954	670 - RECLINER CHAIR
3246	49,094	3246 - SWINGS OR SWING SETS
1395	47,808	1395 - TOYS, NOT SPECIFIED
1865	47,785	1865 - POLES
1239	47,717	1239 - HORSEBACK RIDING (ACTIVITY, APPAREL OR EQUIPMENT)
1284	47,353	1284 - SWIMMING POOLS, NOT SPECIFIED
1144	47,101	1144 - BAGS, NOT ELSEWHERE CLASSIFIED
5046	45,600	5046 - POWER-ASSISTED CYCLES, NOT ELSEWHERE CLASSIFIED
474	45,590	474 - TABLEWARE & ACCESSORIES (EXCLUDING DRINKING GLASS,CUPS,MUGS)
1934	43,987	1934 - HOT WATER
1212	42,564	1212 - GOLF (ACTIVITY, APPAREL OR EQUIPMENT)
687	42,113	687 - BENCHES
1242	42,066	1242 - SLIDES OR SLIDING BOARDS
661	40,492	661 - BUNK BEDS
276	40,357	276 - REFRIGERATORS
836	39,207	836 - KNIVES WITH REPLACEABLE BLADES

893	38,424	893 - TOOLS, NOT SPECIFIED
3273	37,191	3273 - PLAYGROUND EQUIPMENT, NOT SPECIFIED
3287	35,291	3287 - ALL TERRAIN VEHICLES (# OF WHEELS UNSPECIFIED/OFF ROAD)
469	35,196	469 - SLICERS AND CHOPPERS
1272	34,681	1272 - GYMNASTICS AND ASSOCIATED EQUIPMENT
3257	33,472	3257 - MARTIAL ARTS (ACTIVITY, APPAREL OR EQUIPMENT)
841	32,838	841 - BENCH OR TABLE SAWS
1679	32,768	1679 - GROCERY OR SHOPPING CARTS, UNPOWERED
1411	32,403	1411 - CHAIN SAWS
4080	31,956	4080 - STOOLS, OTHER OR NOT SPECIFIED
1686	31,307	1686 - COINS
1659	31,136	1659 - MANICURE, PEDICURE, AND MAKE-UP BRUSHES/TOOLS
3216	31,101	3216 - ROLLER SKATING (ACTIVITY, APPAREL OR EQUIPMENT)
5030	30,959	5030 - TRACK & FIELD (ACT., APPAREL, EQP.; EX. JOG, RUN FIT)
550	30,917	550 - TELEPHONES OR TELEPHONE ACCESSORIES
3254	30,253	3254 - CHEERLEADING (ACTIVITY, APPAREL OR EQUIPMENT)
5031	30,105	5031 - SNOWBOARDING (ACTIVITY, APPAREL OR EQUIPMENT)
557	28,470	557 - COMPUTERS (EQUIPMENT AND ELECTRONIC GAMES)
648	28,091	648 - SINKS
3219	27,725	3219 - OTHER PLAYGROUND EQUIPMENT
480	27,112	480 - MANUAL CLEANING EQUIPMENT (EXCL. BUCKETS AND PAILS)
1829	26,930	1829 - HANDRAILS, RAILINGS OR BANISTERS
1661	26,929	1661 - NONELECTRIC RAZORS OR SHAVERS
1213	26,824	1213 - GOLF CARTS, MOTORIZED VEHICLE
899	26,197	899 - WORKSHOP GRINDERS, BUFFERS OR POLISHERS, N.S.

1658	26,076	1658 - CLOTHING, NOT SPECIFIED
1293	25,965	1293 - AMUSEMENT ATTRACTIONS (INCLUDING RIDES)
281	25,585	281 - RANGES OR OVENS, NOT SPECIFIED
1931	25,460	1931 - TABLET OR CAPSULE DRUGS
1876	24,912	1876 - HOUSE REPAIR OR CONSTRUCTION MATERIALS,NEC
1207	24,612	1207 - BOXING (ACTIVITY, APPAREL OR EQUIPMENT)
1843	24,455	1843 - RAMPS OR LANDINGS
374	23,892	374 - PIPES (EXCLUDING SMOKING PIPES)
5016	23,571	5016 - BALLS, OTHER OR NOT SPECIFIED
1137	22,688	1137 - PAPER PRODUCTS
1623	22,169	1623 - LUGGAGE
3284	22,032	3284 - TENNIS (ACTIVITY, APPAREL OR EQUIPMENT)
466	21,981	466 - COOKWARE, NOT SPECIFIED
4004	21,959	4004 - MIRRORS OR MIRROR GLASS
3255	21,942	3255 - ICE SKATING (ACTIVITY, APPAREL OR EQUIPMENT)
5033	21,762	5033 - MOUNTAIN OR ALL-TERRAIN BICYCLES AND ACCESSORIES
983	21,739	983 - SOAPS (EXCL. LAUNDRY SOAPS OR DETERGENTS)
1403	21,451	1403 - OTHER UNPOWERED GARDEN TOOLS
1892	21,234	1892 - GLASS DOORS OR DOORS WITH GLASS PANELS
1866	21,163	1866 - GENERAL HOME OR ROOM INVOLVEMENT IN FIRES
1279	21,150	1279 - ICE HOCKEY (ACTIVITY, APPAREL OR EQUIPMENT)
572	20,878	572 - TELEVISIONS
949	20,878	949 - LAUNDRY SOAPS OR DETERGENTS
3272	20,622	3272 - HOCKEY (ACTIVITY, APPAREL OR EQUIPMENT), NOT SPECIFIED
4025	20,184	4025 - BARSTOOLS OR KITCHEN STOOLS

1667	20,043	1667 - RAZORS OR SHAVERS, NOT SPECIFIED
1820	20,028	1820 - CABINET OR DOOR HARDWARE
428	19,902	428 - KITCHEN GADGETS, NOT ELSEWHERE CLASSIFIED
1413	19,409	1413 - GREENHOUSE OR GARDENING SUPPLIES (EXCL HOSES, SPRAYERS, ETC
1447	19,407	1447 - PRUNING OR TRIMMING EQUIPMENT, NOT SPECIFIED
845	19,382	845 - SAWS, NOT SPECIFIED
827	19,359	827 - HAMMERS
620	19,251	620 - STEP STOOLS
1135	19,050	1135 - BOTTLES OR JARS, NOT SPECIFIED
956	18,948	956 - BLEACHES (NONCOSMETIC)
884	18,222	884 - BATTERIES
1647	18,148	1647 - CLOTHING ACCESSORIES
1422	17,904	1422 - RIDING POWER LAWN MOWERS
1415	17,806	1415 - MANUAL SNOW OR ICE REMOVAL TOOLS
1114	17,407	1114 - CARDBOARD PRODUCTS
1685	16,900	1685 - PENS AND PENCILS
612	16,550	612 - RUNNERS, THROW RUGS OR DOORMATS
1414	16,356	1414 - GARDEN HOSES, NOZZLES OR SPRINKLERS
5044	16,315	5044 - UTILITY VEHICLES
5025	16,299	5025 - HOVERBOARDS AND POWERED SKATEBOARDS
618	16,276	618 - STEPLADDERS
115	16,267	115 - VACUUM CLEANERS
1215	16,146	1215 - LACROSSE (ACTIVITY, APPAREL OR EQUIPMENT)
1464	16,130	1464 - LAWN TRIMMERS OR EDGERS, POWERED (EXCL. BRUSHCUTTERS)
546	15,736	546 - STEREO OR HI-FI COMPONENTS OR ACCESSORIES

1140	15,606	1140 - GLASS BOTTLES OR JARS, NOT SPECIFIED
1889	15,436	1889 - ELEVATORS OR OTHER LIFTS (EXCL. ESCALATORS, HOISTS, JACKS,
895	15,382	895 - POWER SAWS, OTHER OR NOT SPECIFIED
1555	15,279	1555 - HIGH CHAIRS
1381	14,730	1381 - TOYS, NOT ELSEWHERE CLASSIFIED
689	14,375	689 - BLANKETS, NOT SPECIFIED
1313	14,303	1313 - FIREWORKS