

ANNUAL REPORT

2022

ARIZONA
Poison and Drug
Information Center



 1-800-222-1222

Arizona Poison and Drug Information
Center

68 YEARS OF SERVICE

WWW.AZPOISON.COM

2022

A year's overview

Welcome to the 2022 Arizona Poison and Drug Information Center (AzPDIC) Annual Report. This report summarizes the activities of the AzPDIC during our 68th year of service.

AzPDIC continued its efforts to serve Arizonans in times of need in a variety of ways. We provided clinical guidance and treatment assistance for diseases such as COVID-19 and Mpox for healthcare providers and the general public. We improved patient access to life-saving care for those in rural areas by launching a new statewide transfer service. We also increased our outreach and education to reduce the spike in pediatric hospitalizations due to unintentional cannabis exposures.

AzPDIC achieved this all while maintaining our core service of providing immediate treatment recommendations for poisonings to the public and healthcare providers 24/7/365.

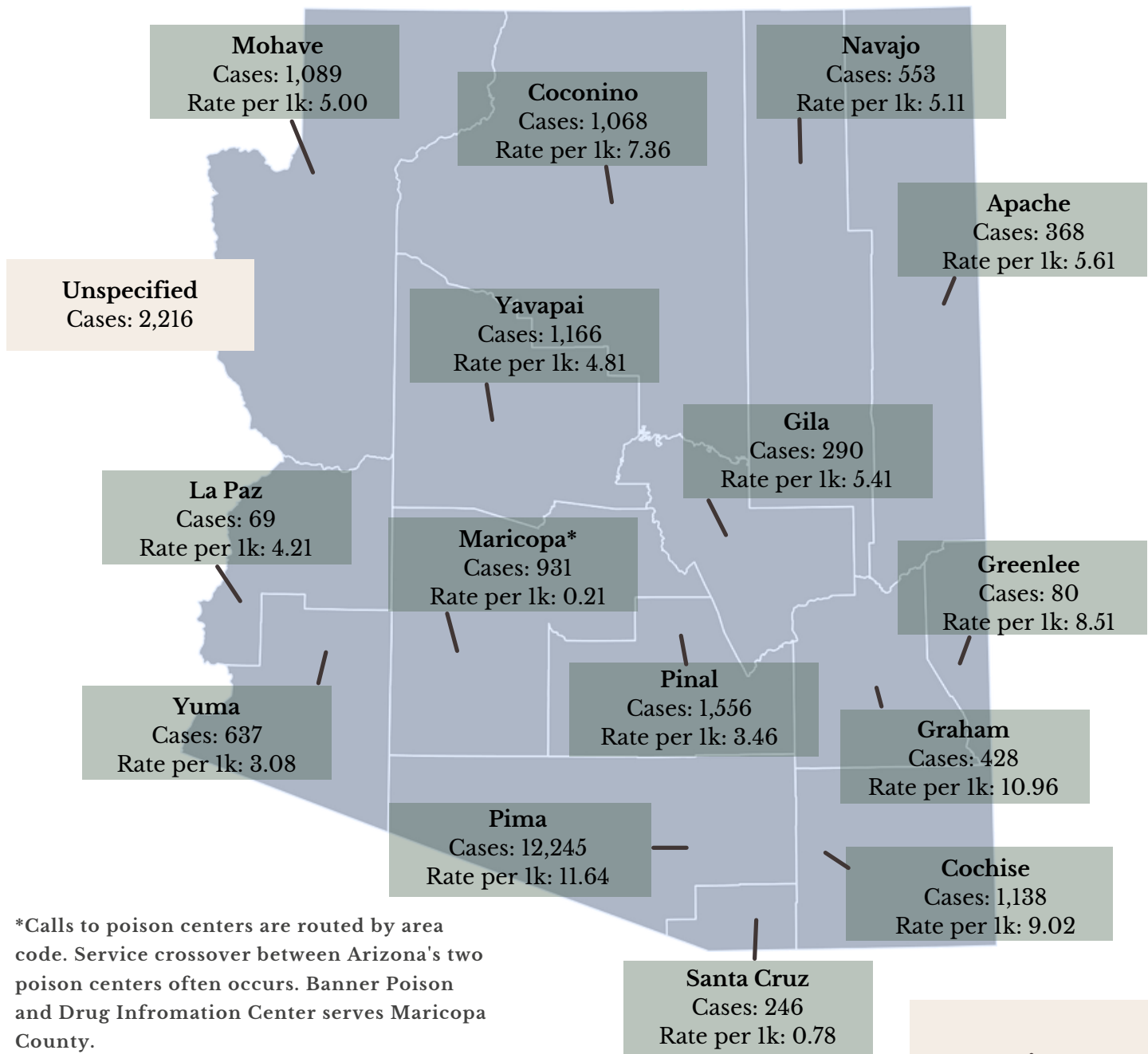
Director's Note

2022 began the process of trying to establish a new normal. In some regards, the more things change, the more they stay the same as was the case with AzPDIC. We continued our commitment to provide invaluable services to improve the health and wellbeing of our fellow Arizonans through patient care, public health initiatives, research, and clinical training. This all leads to a system that saves lives, healthcare costs, and most importantly, the stress of having to navigate such a worrisome experience alone.

We could not achieve this level of success without the partnership and support of various agencies, organizations, and county health departments around the state. I would like to give a special recognition to the Arizona Department of Health Services and the Arizona State Board of Pharmacy. Without their unwavering support, we would not be able to make the impact we do today. Thank you.

Sincerely,
Steve Dudley, PharmD, DABAT

AZ Cases by County



Arizona Cases

Human Cases: 17,756

Animal Cases: 1,072

Information Cases: 6,553

The AzPDIC managed 25,381 case reports in 2022 with the summer months experiencing the most reports.

Case reports by county include human cases, animal cases, and information requests.

Rate per 1k provides a breakdown of cases per 1,000.

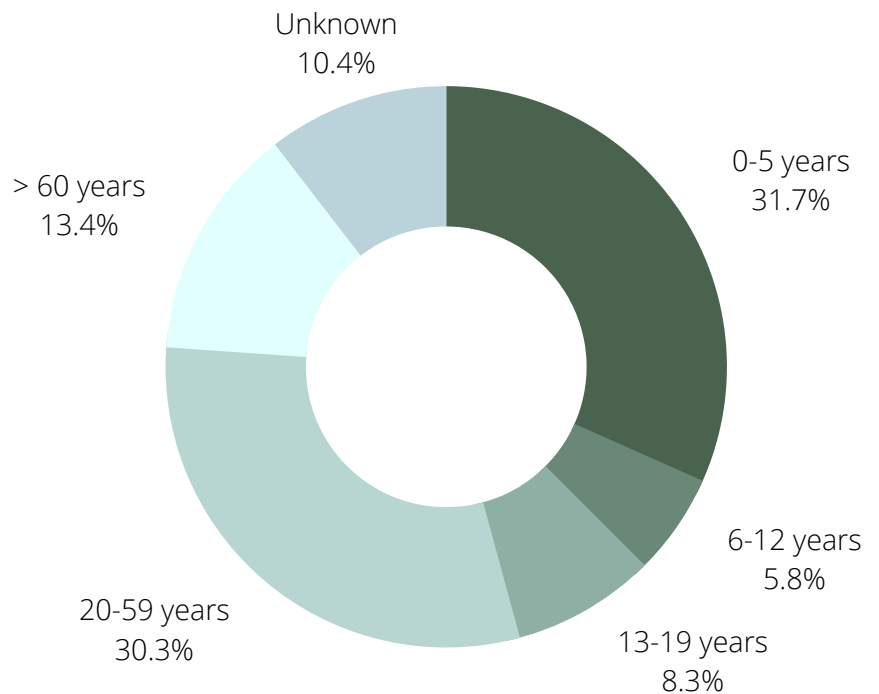
Exposures by Age & Gender

In 2022, children ages 0-5 accounted for the majority (31.7%) of exposure cases.

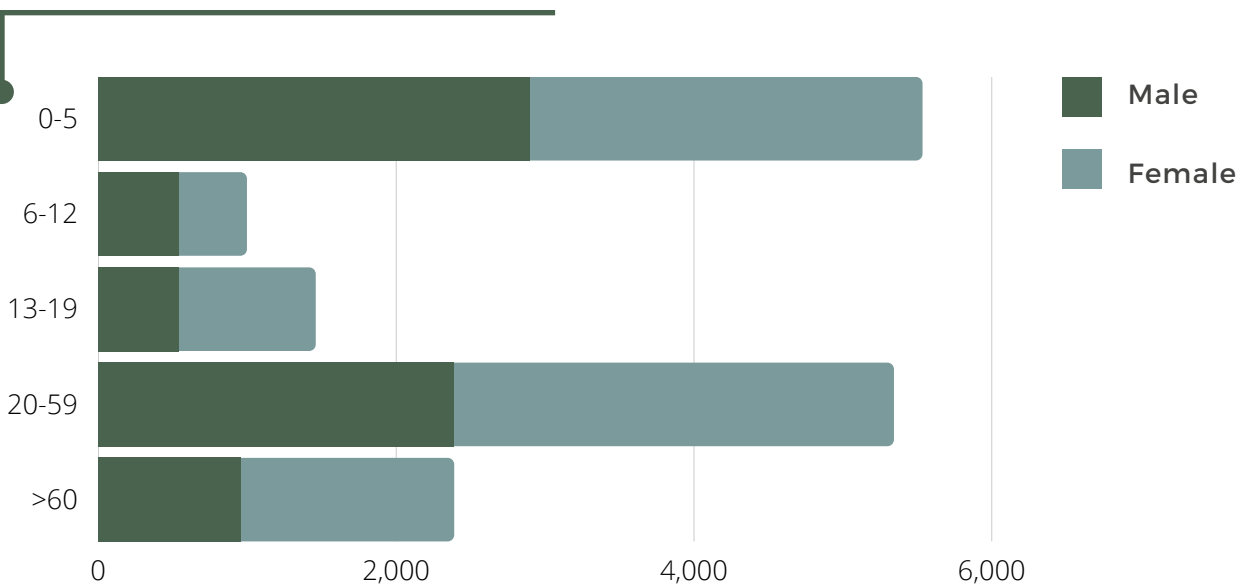
Adults ages 20-59 followed with 30.3% of cases.

Adults over the age of 60 accounted for just over 13% of exposure cases.

By Age



By Age & Gender



There was a male predominance in the 0-5 and 6-12 age groups. For all other age groups, females accounted for the majority of exposure cases reports



Exposure Statistics



Residence

64.29% (11,417 cases)



Other/Unknown

7.34% (1,304 cases)



School

1.02% (181 cases)



Healthcare Facility

26.70% (4,741 cases)



Workplace

0.64% (113 cases)

The AzPDIC managed 17,756 exposures nationwide in 2022 with the summer months experiencing the most reports.

Residences (own or other) were the source accountable for the most reports (64%). Healthcare facilities followed with 26.70% reports.

Other exposures occurred in schools (1.02%) and workplaces (0.64%).

Exposure sites classified as "other" include, public areas, restaurants/food service locations and other/unknown sites.

Substances Involved in Poisonings

Top 10

Drug Substances	No.	%
Analgesics.....	2,252	23.78
Antidepressants.....	1,154	12.18
Antihistamines.....	992	10.47
Sedative/hypnotic/ antipsychotic.....	893	9.43
Cardiovascular drugs.....	859	9.07
Dietary supplements/ herbals/homeopathic.....	619	6.54
Anticonvulsants.....	557	5.88
Stimulants and street drugs.....	527	5.54
Hormone and hormone antagonists.....	483	5.10
Antimicrobials.....	441	4.66

Top 10

Non-Drug Substances	No.	%
Bites and envenomations.....	1,769	19.90
Cleaning substances (household).....	1,249	14.05
Cosmetics/personal care products.....	933	10.50
Alcohols.....	751	8.45
Foreign bodies/toys/misc.....	561	6.31
Pesticides.....	522	5.87
Plants.....	437	4.92
Chemicals.....	394	4.43
Fumes/gases/ vapors.....	384	4.32
Hydrocarbons.....	238	2.68

The tables on the left list the most common substances involved in human exposures reported to the AzPDIC in 2022. In these cases, a patient may be exposed to more than one substance.

The top drug substance found in human exposures was analgesics, followed by antidepressants and antihistamines. The top non-drug substance found in human exposures was bites and envenomations, followed by cleaning substances and cosmetics/personal care products.



Substance Exposures by Age

The tables on the right list the most common substance exposures by age range. These tables provide insight on the difference between pediatric and adolescent exposures.

The most common substances found in pediatric exposures were household cleaning substances, analgesics, and cosmetic/personal care products.

The most common substances found in adolescent exposures were bites and envenomations, analgesics, and antihistamines.

Top 10 Substances

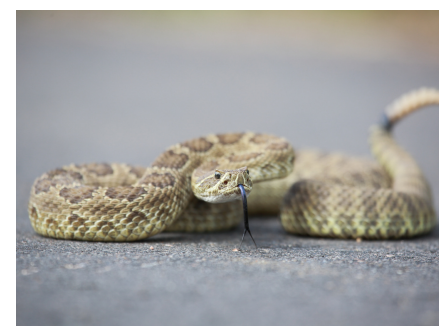
Pediatric (0-5 years)

	No.	%
Cleaning substances (household).....	593	10.54
Analgesics.....	549	9.76
Cosmetic/personal care products.....	468	8.32
Dietary supplements/ herbals/homeopathic.....	409	7.27
Foreign bodies/toys/ miscellaneous.....	401	7.13
Antihistamines.....	276	4.91
Vitamins.....	242	4.30
Topical preparations.....	236	4.19
Plants.....	204	3.63
Bites/envenomations.....	187	3.32

Top 10 Substances

Adolescent (6-12 years)

	No.	%
Bites/envenomations.....	162	15.61
Analgesics.....	104	10.02
Antihistamines.....	73	7.03
Cosmetic/personal care products.....	67	6.45
Foreign bodies/toys/ miscellaneous.....	56	5.39
Cold and cough preparations.....	49	4.72
Dietary supplements/ herbals/homeopathic.....	49	4.72
Stimulants and street drugs.....	48	4.62
Cleaning substances (household).....	36	3.47
Plants.....	31	2.99



Substance Exposures by Age

Top 10 Substances

Teenage (13-19 years)	No.	%
Analgesics.....	365	24.83
Antidepressants.....	231	15.71
Antihistamines.....	180	12.24
Sedative/hypnotic/ antipsychotic.....	133	9.05
Bites and envenomations.....	94	6.39
Stimulants and street drugs.....	82	5.58
Cough and cold preparations.....	77	5.24
Cardiovascular drugs.....	65	4.42
Cleaning substances (household).....	61	4.15
Alcohols.....	56	3.81

Top 10 Substances

Adult (>20 years)	No.	%
Analgesics.....	1,113	14.32
Bites and envenomations.....	1,090	14.02
Antidepressants.....	767	9.87
Sedative/hypnotic/ antipsychotic.....	623	8.01
Alcohols.....	608	7.82
Cardiovascular drugs.....	593	7.63
Antihistamines.....	421	5.42
Anticonvulsants.....	417	5.36
Cleaning substances (household).....	406	5.22
Hormones and Hormone Antagonists.....	290	3.73

The tables on the left list the most common substance exposures by age range. These tables provide insight on the difference between teenage and adult exposures.

The most common substances found in teenage exposures were analgesics, antidepressants, and antihistamines.

The most common substances found in adult exposures were analgesics, bites and envenomations, and antidepressants.



Management Site

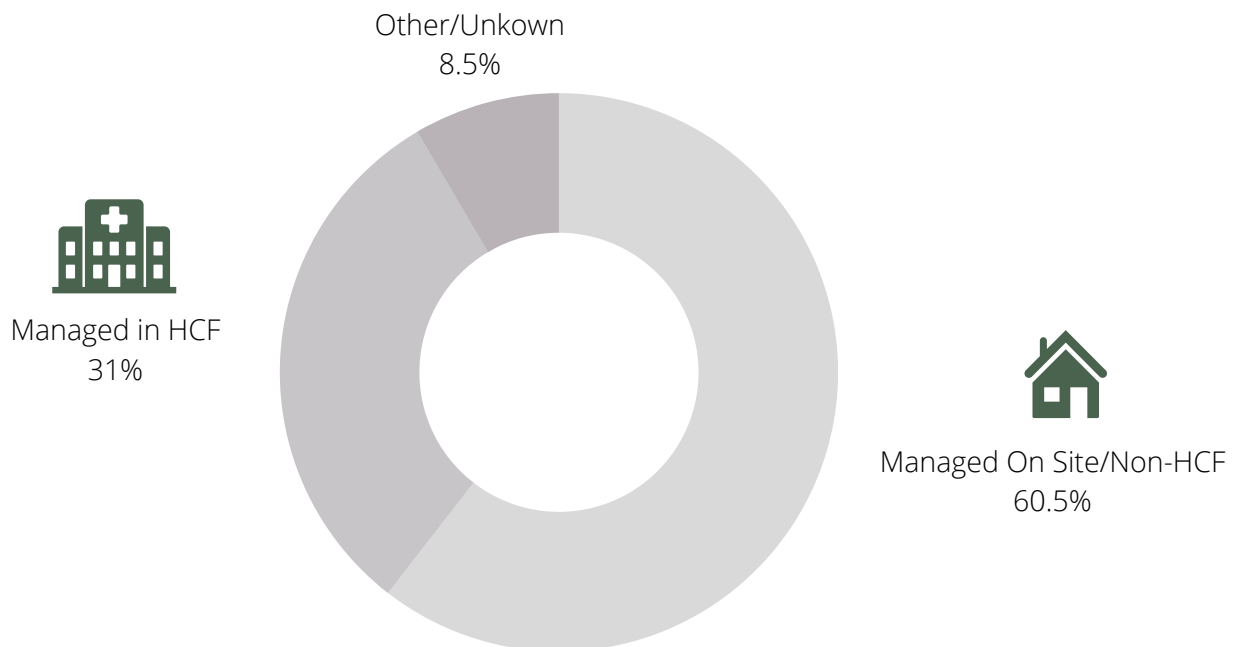


Managing cases safely at home saves millions of dollars in unnecessary health care costs compared with managing patients in a healthcare facility (HCF). This allows for more efficient and effective use of limited health care resources.

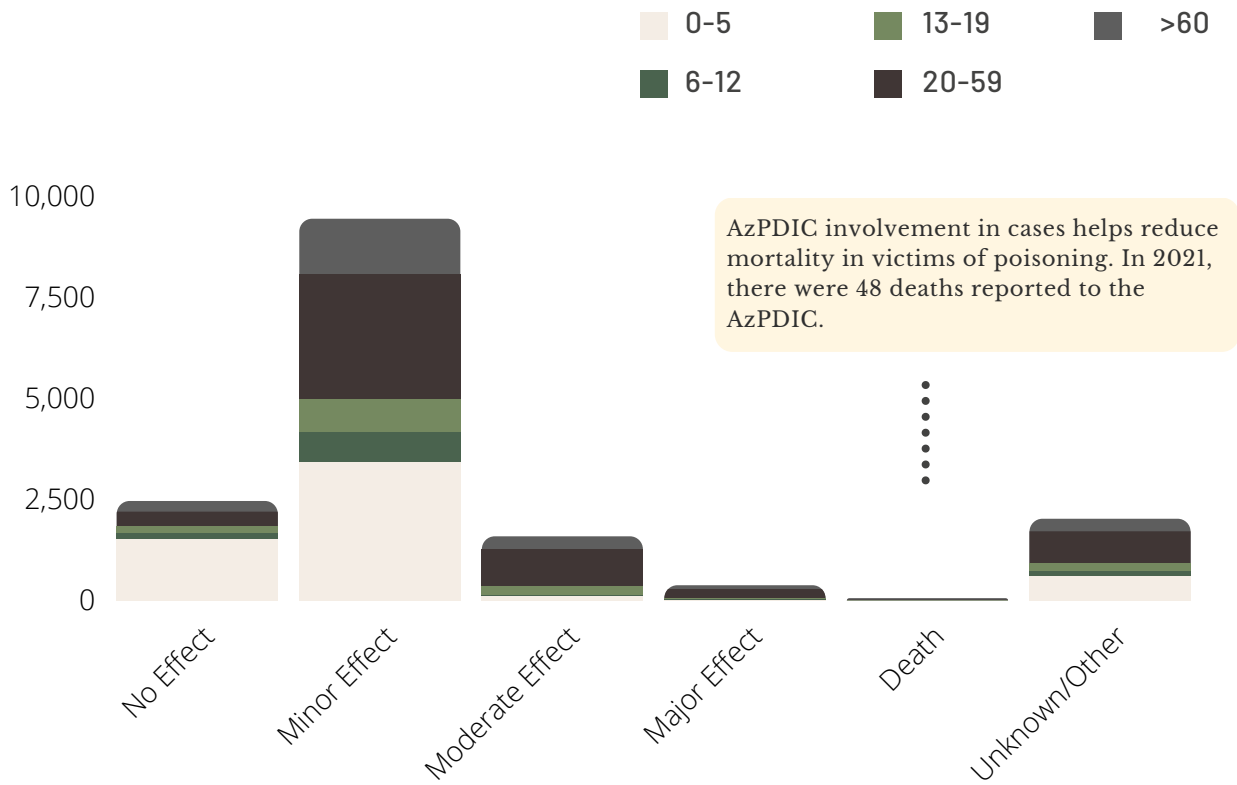
A majority of cases (60.5%) reported to the AzPDIC were managed on site which is primarily a site of residence.

Of cases managed at a HCF, 16.92% were treated/evaluated and released, 3.79% were admitted to a noncritical care unit, and 3.69% were admitted to a critical care unit.

Of the cases managed on site, 53.8% were pediatric cases.



Medical Outcomes



Cost Savings

By calling poison control, Arizona residents can receive professional care from toxicologists, specialists in poison information, and more. Often times, poison center staff advise that exposures can be safely treated at home, saving Arizona residents a trip to the hospital.

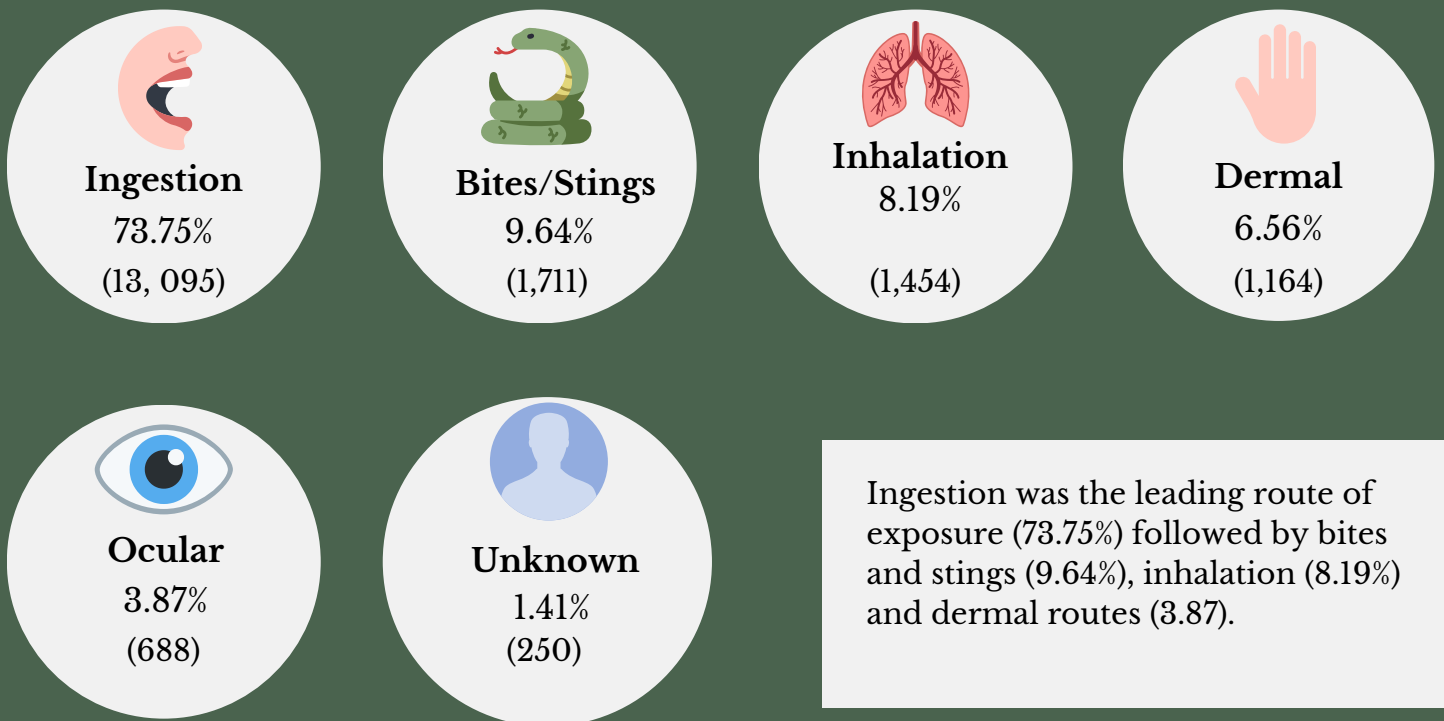
In 2022, the AzPDIC kept 60% of home exposure cases at home, saving Arizona an estimated \$24.5 million in unnecessary medical expenditures (based on the average cost of an emergency room visit in Arizona).

Managing cases safely at home both saves millions of dollars in unnecessary healthcare costs and allows more efficient and effective use of limited healthcare resources.

Circumstance

<p>UNINTENTIONAL</p> <p>73.6% (13,071)</p>	<p>UNINTENTIONAL EXPOSURES:</p> <ul style="list-style-type: none"> • general misuse of products • occupational (workplace) • environmental • bites/stings • therapeutic errors • food poisoning
<p>INTENTIONAL</p> <p>18.6% (3,310)</p>	<p>INTENTIONAL EXPOSURES:</p> <ul style="list-style-type: none"> • misuse • abuse • suicide attempts
<p>ADVERSE REACTION</p> <p>4.5% (791)</p>	<p>ADVERSE REACTIONS TO:</p> <ul style="list-style-type: none"> • drugs • food • other substances
<p>OTHER/ UNKNOWN</p> <p>3.3% (584)</p>	<p>OTHER/UNKNOWN REASONS:</p> <ul style="list-style-type: none"> • malicious • contaminant/tampering • withdrawal

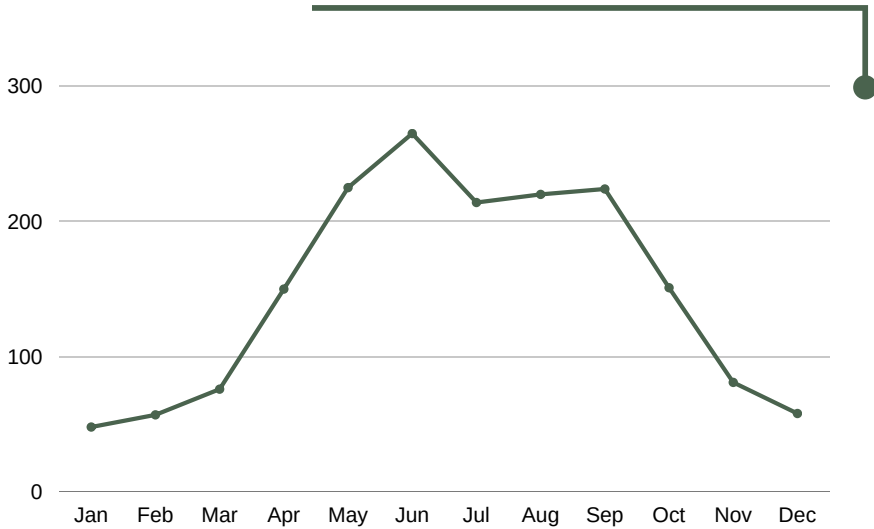
Route of Exposure



Bites & Stings Summary

Bites and stings continued to be the second most common exposure in Arizona in 2022. Arizona is known as the venomous creature capital of the United States, with the most diversity in venomous species.

Total Cases over Time



The graph above indicates the total number of cases over time. Bite/Sting exposures were highest between April and October. The months of May through September were high exposure months with cases totaling over 200 each month. The top bite/sting exposure reported to the AzPDIC was scorpion stings (917 cases).

A majority of cases (96.44%) were unintentional and managed onsite (64.9%). However, all rattlesnake bites require hospital evaluation. Medical outcomes for bites and stings are typically good, with only 2.44% resulting in a major effect (symptoms that are life-threatening or resulted in significant residual disability).

Bites and stings were most frequent in the following counties: Pima (53.99%), Pinal (9.55%), and Maricopa (6.27%). Exposures occurred more often among women (55%) than men (44%). Adults aged 20 years and older accounted for 61.96% of exposure cases. Children aged 5 years and younger accounted for 10.57% of cases.

1,769

bites/stings cases reported to the AzPDIC

Scorpion Stings	917
Rattlesnake Bites	172
Bee/Wasp/Hornet Stings	102
Centipede/Millipede Bites	18
Black Widow Spider Bites	63
Brown Recluse Spider Bites	21
Ant or Fire Ant Bites	21
Colorado River Toad*	23
Gila Monster Bites	2

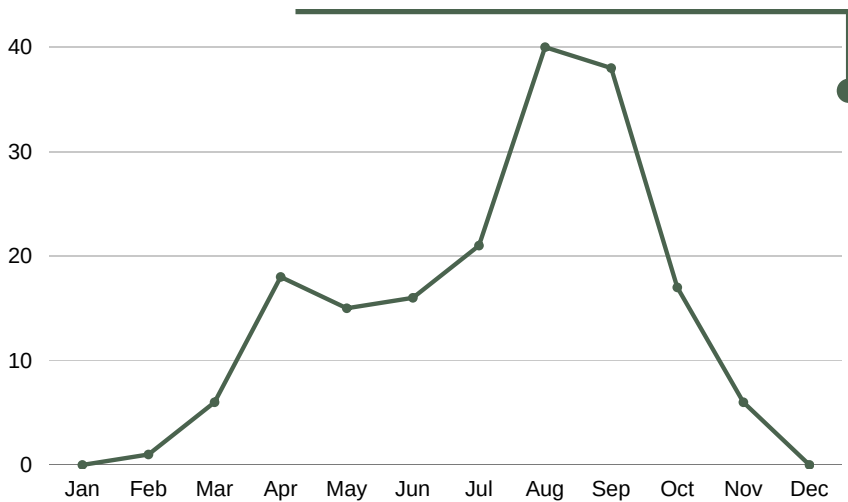
*indicates Colorado River Toad exposures.



Rattlesnake Bites

The AzPDIC specializes in treating envenomations, predominantly rattlesnake bites. Rattlesnake envenomations were the second most reported bite/sting exposure in 2022.

Total Cases over Time

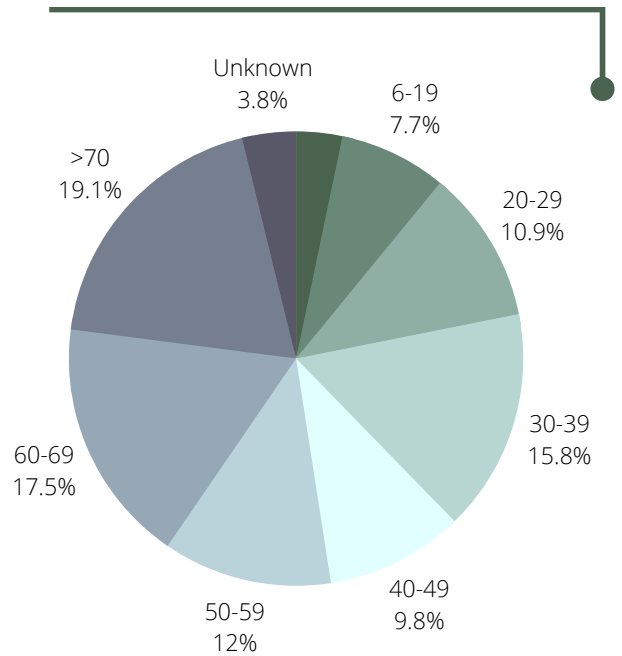


The graph above shows the total number of rattlesnake bite cases over time. Rattlesnake bites increased by 7.5% from 160 cases in 2021 to 172 cases in 2022. Cases peaked during the months of August and September.

There was a male predominance in rattlesnake envenomation cases, 65.73% of cases occurred among men while 34.27% of cases occurred among women. A majority of cases (87.64%) occurred among persons aged 20 years and older. More specifically, rattlesnake bites occurred most frequently among adults between 60 and 69 years of age.

Residential sites were the top (60%) exposure site. Rattlesnake bite cases occurred more frequently in the following counties: Pima (117 cases), Cochise (20 cases) and Yuma (12 cases). As mentioned previously, all rattlesnake bites require hospital evaluation. In regards to level of healthcare facility care, 68.54% of patients were admitted to a critical care unit.

Bites By Age



Public Education Highlights

Our Focus

1. Increase public awareness of potentially dangerous substances in everyday life.
2. Help prevent poisonings from occurring by developing and encouraging poison prevention skills.
3. Highlight the expertise of the staff at the AzPDIC and its many valuable services.

Outreach Statistics

- 45 events in five different counties attended by over 12,000 people
- 10 health fairs
- 34 presentations, 18 of which were virtual
- Over 15,000 pieces of educational materials distributed



Program Highlight: 2022 Tucson Festival of Books

The Arizona Poison and Drug Information Center participated in the Tucson Festival of Books at the University of Arizona on March 12th and 13th.

The festival brings in over 100,000 people each year. The poison center had two booths set up at the festival: one highlighting the different venomous creatures in Arizona, including two live Tiger Rattlesnakes and a Gila Monster, and the other table educating the public on medication safety and lookalikes (candy vs. medicine).

Over 5,000 pieces of educational materials were distributed at this event alone.

Research Highlights

AzPDIC is a site for training healthcare professionals, including pharmacy students and residents, medical students and residents, nurses, military personnel, and others.

Clinical Education Topics:

Poison Center clinical education topics included, but were not limited to:

- Rattlesnake/snakebite envenomation
- Acetaminophen Toxicity
- Acute Alcohol Withdrawal Syndrome
- Pediatric Toxicology
- Aspirin Toxicity
- Serotonin Toxicity
- Hexachlorobenzene Toxicity
- Digoxin Toxicity
- Metabolism and Neurotransmitter Homeostasis

Publications:

Adiel Aizenberg, Amr Awad-Yassin, Sarah A. Watkins. Toxicological Observation of Clinical Exposures in the Aquatic Niche (OCEAN). Poster presented at Annual North American Congress of Clinical Toxicology 2022, September 16-18.

Elizabeth Grossart, Gabriella Gambadoro, Geoffrey Smelski, Mazda Shirazi. Incidence of Acute Hypersensitivity Reactions to Currently Available Crotaline Antivenoms in Pediatric Patients. Poster presented at Annual North American Congress of Clinical Toxicology 2022, September 16-18.

Laura Morehouse, Steve Dudley, Farshad Shirazi, Geoffrey Smelski. Public Health Implications of Pediatric Rattlesnake Envenomations: A 22-Year Demographic Review. Poster presented at Annual North American Congress of Clinical Toxicology 2022, September 16-18.

Michael D. Cardwell, Daniel J. Massey, Geoffrey Smelski, Wolfgang Wüster. Mohave Rattlesnake (*Crotalus scutulatus*) Identification Revisited, *Wilderness & Environmental Medicine*, 2022, ISSN 1080-6032

Reem Alsultan, Aditya Gupta, Mazda Shirazi. Animal Exposure Calls Management by the Poison Center- Data from 2017 to 2021. Poster presented at Annual North American Congress of Clinical Toxicology 2022, September 16-18.

Shirazi, F.M., Smelski, G.T., Dudley, S.W. 22 years of rattlesnake bites from the Arizona Poison & Drug Information Center. Abstract and platform presentation at Venom Week 2022, July 18-21.

Steve Dudley, Geoffrey Smelski, Daniel J. Massey, Thom Maciulewicz, Michael D. Cardwell, Farshad Mazda Shirazi, Fashionably late: A characterization of late coagulopathies in rattlesnake envenomations between Fab and F(ab')₂ antivenoms, *Toxicon*, Volume 212, 2022, Pages 49-54, ISSN 0041-0101, <https://doi.org/10.1016/j.toxicon.2022.03.017>.

Thom Maciulewicz, Geoffrey Smelski, Steven Dudley. Bad Brew: A Fatal Case of Nerium Oleander Tea Poisoning. Poster presented at Annual North American Congress of Clinical Toxicology 2022, September 16-18.

Thom Maciulewicz, Steven Dudley. Caught Red-Handed: Hydroxychloro-Skin. Poster presented at annual North American Congress of Clinical Toxicology 2022, September 16-18.

Media Highlights

- 36 Instagram posts with a 5,432 reach, a 331.1% increase from 2021
- 107 new Instagram followers
- 47 Facebook posts with a 4,578 reach, a 5.5% increase from 2021
- 126 new Facebook followers
- In 2022, 57,786 users visited the AzPDIC website yielding 90,451 page views. The most visited pages include those with information on breastfeeding, Gila monsters, scorpions, and poisonous plants.

Popular Posts



A Facebook post regarding the infant formula shortage and information about formula alternatives and substitutes. Posted on June 2, 2022 the post reached 393 people.



An Instagram video featuring the Center's Great Basin rattlesnake posted on August 11, 2022 reached 4,103 people and received 105 likes and 3 shares.



Instagram

(@azpoisoncenter)

621 Total Followers



Facebook

(Arizona Poison and Drug Information Center)

2,154 Total Followers



Twitter

(@AzPDIC)

325 Total Followers

2022 Achievements

AZ Reach Program

In collaboration with Blackbox Healthcare Solutions, we launched the AZ REACH (Arizona Resource Equity & Access Coordination Hub) line which is a 24/7/365 patient transfer service specifically for IHS, PL 93-638, and critical access hospitals. This service dramatically increases patient access to care in medically underserved areas which leads to improved wellbeing and lives saved.

Ophirex Clinical Trial

AzPDIC is honored to serve as clinical investigators in a novel rattlesnake bite treatment trial. While rattlesnake envenomations can be very costly and painful here in Arizona, it is a significant cause of death in other countries where hospital access and antivenom are not readily available. This trial is investigating the safety and efficacy of an oral medication to treat rattlesnake bites that could reduce the number of deaths we see around the world.

National Recognition from America's Poison Centers

For the second year in a row, AzPDIC won the “Highest Overall Quality of Reports” award from our national association for our detailed case write-ups.



In Memoriam



Alumnus Hal Wand '74

Former Executive Director of the Arizona State Board of Pharmacy and R. Ken Coit College of Pharmacy Alumnus Hal Wand passed away on January 30.

Wand completed a bachelor's of science in biology with emphasis in genetics at California State University, Northridge in 1974. He chose to pursue pharmacy and worked on his pharmacy degree at the University of Arizona, graduating in 1979. During this time, he met Marilyn Fruth, a 1974 alumna, and they married in 1977.

Wand played a key role in saving the Arizona Poison and Drug Information Center after funding was cut in half the state. Keith Boesen was the director of the Center at the time and remembers Wand coming up with the idea to use funds from licensing fees paid by the pharmacy profession.

"Hal felt the poison center, as a pharmacy run program that provides a public safety role, was a perfect fit for the mission of the State Board of Pharmacy," Boesen said. "The University worked to draft and pass legislation to make the transfer of funds possible. There were many people involved in saving the poison center but Hal's creativity and willingness to do what is right for pharmacy and the public was selfless and really quite remarkable."

Boesen added: "The profession of pharmacy is better for having him as a colleague and the University of Arizona should be proud to call him a Wildcat!"

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