# 2023 ANNUAL REPORT

WWW.AZPOISON.COM | 69 YEARS OF SERVICE







## A YEAR IN REVIEW

Welcome to the 2023 Arizona Poison and Drug Information Center (AzPDIC) Annual Report. This report summarizes the activities of the AzPDIC during our 69th year of service.

In this report you will find a summary of activities that demonstrate the value our poison control center provides Arizonans. Our services and outreach efforts fall under one of our four main pillars: 1) Patient Care 2) Public Health 3) Education and 4) Research.

We are staffed by specially trained and certified pharmacists, physicians, educators and genetic counselors who are committed to protecting Arizonans in their time of need.

AzPDIC prides itself on providing free and immediate treatment recommendations for poisonings to the public and healthcare providers 24/7/365.

#### **DIRECTOR'S NOTE**

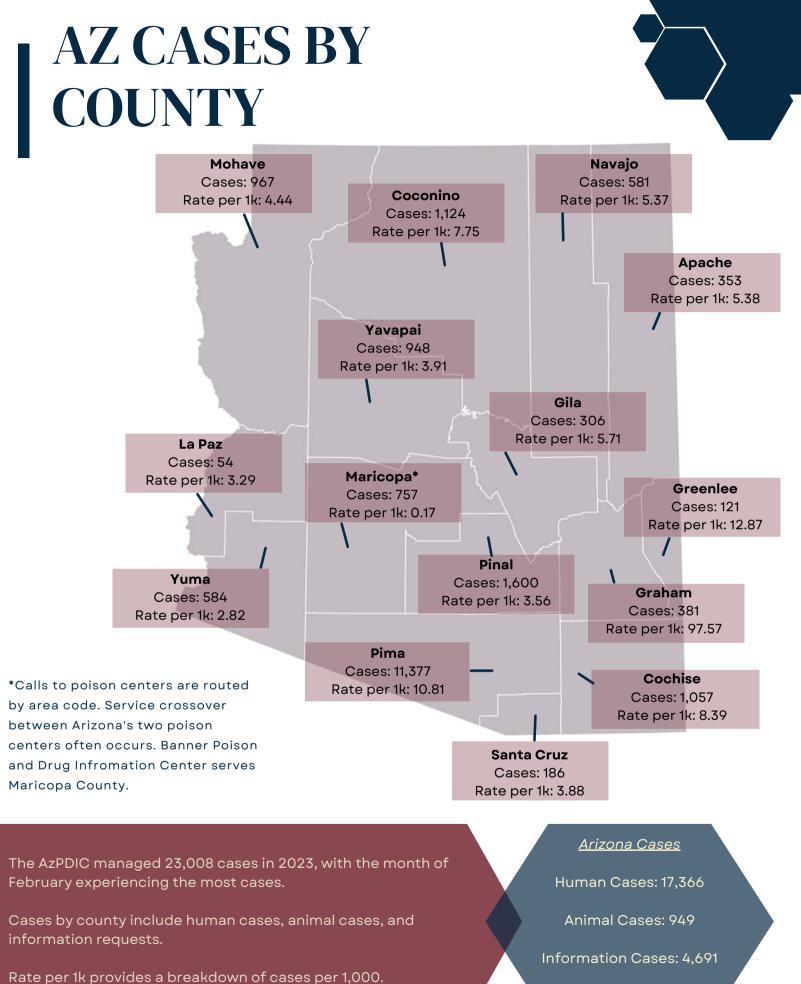
In 2023, we continued our mission to save lives, healthcare costs, and most importantly, ease the stress of having to navigate the worrisome experience of a poisoning or envenomation. This could not be accomplished without an intelligent, compassionate, and dedicated staff. From our pharmacists who answer the phones to our health educators who perform community outreach and training, it takes an extraordinary effort to provide the high-quality services expected of our poison center.

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.

Steven Dudley, PharmD, DABAT Director

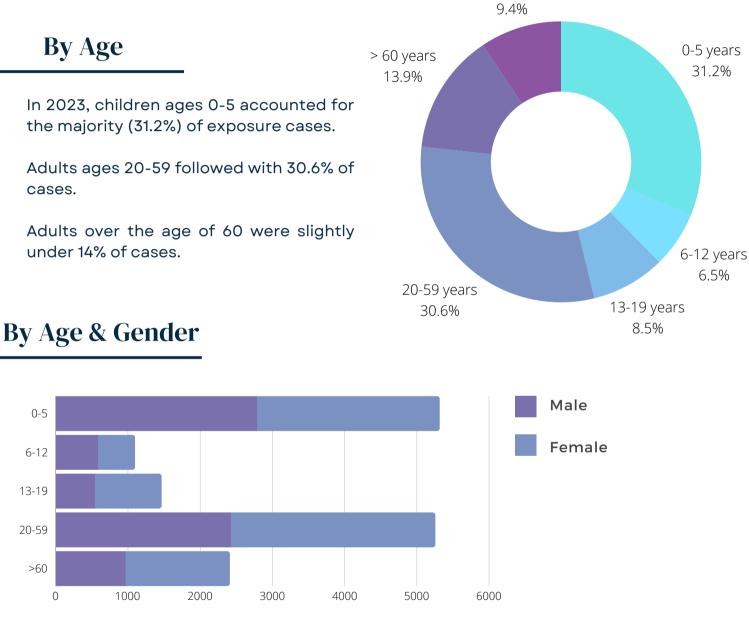


Unspecified: 2

### **EXPOSURES BY** AGE & GENDER

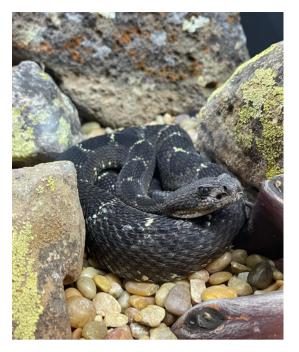


Unknown



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

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### CALLER STATISTICS

In 2023, there were 17,366 human exposure cases reported to the AZPDIC. Exposure cases peaked during the months of May, August, and November.

Of the 17,366 human exposure cases reported, 63.56% of cases originated from a site of residence. Another 27% were cases reported from a health care facility.

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





Residence

63.56% (11,037 cases)



School

1.19% (207 cases)



Healthcare Facility

27.27% (4,735 cases)



Workplace

0.76% (132 cases)



Other/Unknown

7.23% (1,255 cases)



### SUBSTANCES INVOLVED IN POISONINGS

Top 10 Drug Substances	Number/Percent
Analgesics	2,169 / 23.85%
Antidepressants	1,078 / 11.85%
Antihistamines	911 / 10.02%
Cardiovascular Drugs	816 / 8.97%
Sedatives/Hypnotics/	789 / 8.68%
Antipsychotics	
Dietary	607 / 6.67%
Supplements/Herbals	
/Homeopathic	
Anticonvulsants	597 / 6.56%
Stimulants & Street	529 / 5.82%
Drugs	
Hormones & Hormone	479 / 5.27%
Antagonists	
Antimicrobials	406 / 4.46%

Top 10 Non-Drug Substances	Number/Percent
Bites &	1,520 / 17.16%
Envenomations	
Household Cleaning	1,259 / 14.21%
Substances	
Cosmetics/Personal	938 / 10.59%
Care Products	
Alcohols	780 / 8.81%
Foreign	685 / 7.73%
Bodies/Toys/Misc.	
Fumes/Gases/Vapors	513 / 5.79%
Pesticides	488 / 5.51%
Chemicals	457 / 5.16%
Plants	399 / 4.5%
Hydrocarbons	267 / 3.01%



The tables on the left list the most common drug and non-drug substances involved in human exposures reported to the AzPDIC in 2023. 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 home cleaning substances and cosmetics/personal care products.

### SUBSTANCE EXPOSURES BY AGE

The tables below list the most common substance exposures by pediatric age group.

The most common substances found in pediatric 0-5 year exposures were household cleaning substances, analgesics, and cosmetic/personal care products.

The most common substances found in 6-12 year exposures were bites and envenomations, foreign bodies, and analgesics.

**Number / Percent** 

Number / Percent

Top 10
Substances
(0-5 vrs)

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Cleaning Substances (Household)	575 / 10.62%
Analgesics	547 / 10.10%
Cosmetics/Personal Care Products	475 / 8.77%
Foreign Bodies/Toys/Misc	473 / 8.74%
Dietary Supplements/Herbals/Homeopathic	414 / 7.65%
Antihistamines	236 / 4.36%
/itamins	223 / 4.12%
Plants	196 / 3.62%
Topical Preparations	174 / 3.21%
Bites & Envenomations	172 / 3.18%

#### **Substance**

#### **Bites & Envenomations** 120 / 10.66% Foreign Bodies/Toys/Misc. 112 / 9.95% 101 / 8.97% Analgesics Antihistamines 80 / 7.10% **Cosmetics/Personal Care Products** 70 / 6.22% Dietary Supplements/Herbals/Homeopathic 59 / 5.24% 48 / 4.26% **Cleaning Substances (Household)** 46 / 4.09% **Cold & Cough Preparations** 42 / 3.73% Stimulants & Street Drugs Plants 39 3.46%

Top 10 Substances (6-12 yrs)



### SUBSTANCE EXPOSURES BY AGE CON'T

**Top 10** Teen **Substances** (13-19 yrs)

Analgesics Antidepressants Antihistamines Sedative/Hypnotics/Antipsychotics Anticonvulsants **Bites & Envenomations** Stimulants & Street Drugs Alcohols Cardiovascular Drugs **Cold & Cough Preparations** 

**Substance** 

#### Substance

Analgesics	1,131 / 12.37%
Bites & Envenomations	1,124 / 12.29%
Antidepressants	762 / 8.33%
Alcohols	652 / 7.13%
Sedative/Hypnotics/Antipsychotics	633 / 6.92%
Cardiovascular Drugs	620 / 6.78%
Cleaning Substances (Household)	569 / 6.22%
Anticonvulsants	438 / 4.79%
Antihistamines	411 / 4.49%
Fumes/Gases/Vapors	377 / 4.12%

**Top 10** Adult **Substances** (>20 yrs)



AZPDIC

The tables above list a continuation of the most common substance exposures by age group. These tables provide insight on the difference between teen and adult exposures. The most common substances found in teen exposures were analgesics, antidepressants, and antihistamines. The most common substances found in adult exposures were analgesics, bites & envenomations, and antidepressants.



**Number / Percent** 

376 / 25.39%

238 / 16.07%

180 / 12.15% 108 / 7.29%

90 / 6.08%

89 / 6.01%

79 / 5.33%

70 / 4.73%

69 / 4.66%

61 / 4.12%

**Number / Percent** 

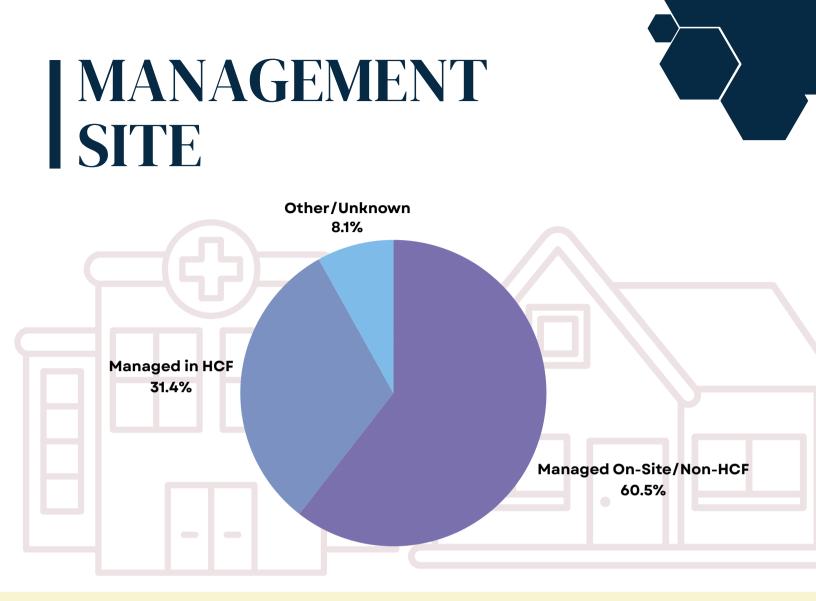
### SUBSTANCE EXPOSURES BY AGE (UNKNOWNS)

	Substance	Number / Percent	
	Fumes/Gases/Vapors	14 / 23.33%	
	Analgesics	6 / 10.0%	
	Hydrocarbons	5 / 8.33%	
Top 10	Foreign Bodies/Toys/Misc.	5 / 8.33%	
Substances	Miscellaneous Foods	4 / 6.67%	
(Age Unknown,	Stimulants & Street Drugs	3 / 5.0%	
<=19 yrs)	Pesticides	3 / 5.0%	
	Cleaning Substances (Household)	3 / 5.0%	
	Topical Preparations	2 / 3.33%	
	Cosmetics/Personal Care Products	2 / 3.33%	
	Substance	Number / Percent	
	_ Bites & Envenomations	126 / 8.84%	
	Cleaning Substances (Household)	120 / 8.42%	
	Fumes/Gases/Vapors	100 / 7.02%	
Top 10	Chemicals	90 / 6.32%	22.9
Substances	Analgesics	87 / 6.11%	COLUMN COLUMN
(Unknown Adult,	Pesticides	80 / 5.61%	
>=20 yrs)	Cosmetics/Personal Care Products	49 / 3.44%	
	Infectious & Toxin-Mediated Diseases	49 / 3.44%	
	Cardiovascular Drugs	47 / 3.30%	
	Miscellaneous Foods	47 / 3.30%	
	Substance	Number / Percent	
	Bites & Envenomations	14 / 9.59%	
	Pesticides	12 / 8.22%	
	Analgesics	9 / 6.16%	
Top 10	Fumes/Gases/Vapors	9 / 6.16%	la State and a state of the sta
Substances	Antidepressants	8 / 5.48%	
	Cleaning Substances (Household)	7 / 4.79%	March 1
(Age Unknown)	Cosmetics/Personal Care Products	7 / 4.79%	
	Sedative/Hypnotics/Antipsychotics	6 / 4.11%	
	Chemicals	6 / 4.11%	
	Stimulants & Street Drugs	5 / 3.42%	

Poison Control services are always confidential. This, along with other factors, may result in unreported or unknown age. This page details various substance exposures in different unknown age groups: Unknown 19 years and below, Unknown 20 years and above, and a general Unknown Age category.

Top substances listed are similar to those in known age groups located on previous pages.





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 those cases managed on site, approximately 45% occurred among adults over the age of 20 while 42% occurred among children aged 5 or younger.

Of the cases managed in a HCF:

- 56% were treated/evaluated and released
- 16% were admitted to psychiatric facility
- 12% were admitted to critical care unit

The expertise of AZPDIC specialists and toxicologists improved patient care provided by physicians, nurses, and pharmacists at Arizona hospitals.

# MEDICAL OUTCOMES & COST SAVINGS



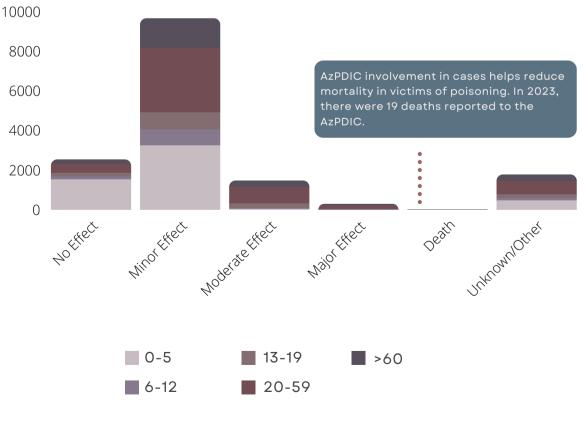


By calling poison control, Arizona residents can receive professional care from toxicologists, specialists in poison information, and more. Often times, poison center staff advise that exposures can be safely treated at home, saving Arizona residents a trip to the hospital.

In 2023, the AzPDIC kept 87.5% of home exposure cases at home, saving Arizona an estimated \$80.4 million in unnecessary medical expenditures (based on the average cost of an emergency room visit being \$7,940 in Arizona). Managing cases safely at home saves millions of dollars in unnecessary healthcare costs and allows for more efficient and effective use of limited healthcare resources.







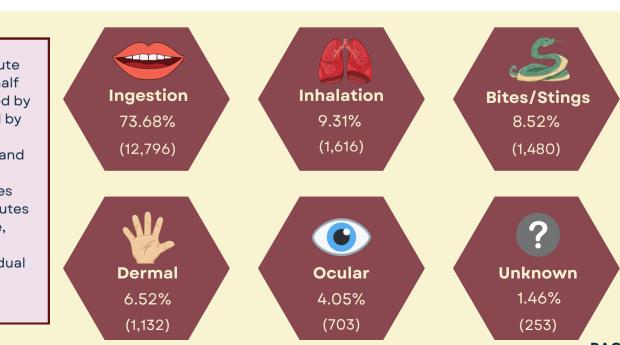


### CIRCUMSTANCE & ROUTE OF EXPOSURE

The reason category for most human exposures was unintentional (73.8%), including: unintentional general (37%), bite/sting (8%), and therapeutic error (14%). Intentional exposures accounted for 18.5% of human exposures. Suicidal intent was suspected in 13% of cases.

UNINTENTIONAL	UNINTENTIONAL EXPOSUR	RES:
73.8% (12,819)	<ul> <li>general misuse of products</li> <li>occupational (workplace)</li> <li>environmental</li> </ul>	<ul><li>bites/stings</li><li>therapeutic errors</li><li>food poisoning</li></ul>
INTENTIONAL	INTENTIONAL EXPOSURES	:
18.5% (3,219)	<ul><li>misuse</li><li>abuse</li><li>suicide attempts</li></ul>	
ADVERSE REACTION	ADVERSE REACTIONS TO: • drugs	
REACTION	• drugs • food	NS:

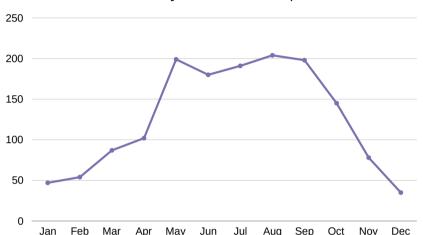
Ingestion was the route of exposure in over half of the cases managed by the AZPDIC, followed by inhalation (9.31%), bites/stings (8.52%) and dermal exposures (6.52%). In some cases there are multiple routes of exposure per case, resulting in the percentage of individual routes of exposure equaling over 100%.



### BITES AND STINGS SUMMARY



Bites and stings continued to be one of the leading exposures in Arizona in 2023. Arizona is known as the venomous creature capital of the United States, with the most diversity in venomous species.



The graph above indicates the total number of cases over time. In 2023, AZPDIC managed 1,520 bite/sting cases. Bite/Sting exposures were highest between May and September. The months of May, August, and September were high exposure months with 199, 204, and 198 cases respectively. The top bite/sting exposure reported to the AZPDIC was scorpion stings (847 cases).

A majority of exposures (65.33%) occurred at a place of residence and 61.45% of cases were safely managed at home. However, all rattlesnake bites require hospital evaluation. Medical outcomes for bites and stings are typically good, with only 1.32% resulting in a major effect (symptoms that are lifethreatening or resulted in significant residual disability). Of those treated at a health care facility, 19.41% were treated and released while 8.42% were admitted to a critical care unit.

A majority of cases (73.95%) occurred among adults aged 20 and over followed by 13.75% of cases occurring among children between the ages of 6-19. Bites/Stings cases were most frequently reported in the following counties: Pima (58.42%), Pinal (6.78%), and Cochise (6.68%).





175 Rattlesnake Bites



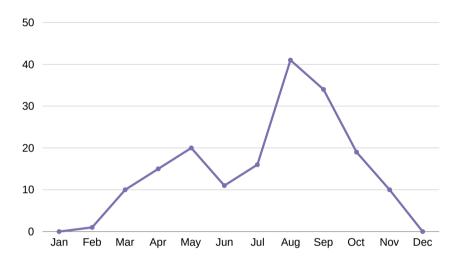






### RATTLESNAKE BITES

The AZPDIC specializes in treating envenomations, predominantly rattlesnake bites. Rattlesnake envenomations were the second most reported bite/sting exposure in 2023.

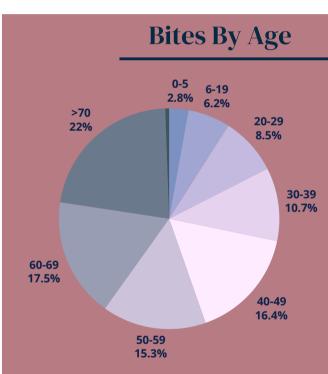


The graph above shows the total number of rattlesnake bite cases over time. Rattlesnake bites increased by 1.7% from 172 cases in 2022 to 175 cases in 2023. Cases peaked during the months of August (41 cases) and September (34 cases).

Residential sites were the top (69.49%) exposure site. Rattlesnake bite cases occurred more frequently in the following counties: Pima (119 cases), Cochise (23 cases) and Gila (6 cases). As mentioned previously, all rattlesnake bites require hospital evaluation. In regards to level of healthcare facility care, 68.93% of patients were admitted to a critical care unit. Medical outcomes were typically moderate with pronounced symptoms and extensive treatment required.







There was a male predominance in rattlesnake envenomation cases, 66.10% of cases occurred among men while 33.33% of cases occurred among women. A majority of cases (90.96%) occurred among persons aged 20 years and older. More specifically, rattlesnake bites occurred most frequently among adults between 60 and 69 years of age. Children between the ages of 6 and 19 accounted for 6.21%.

#### PUBLIC EDUCATION HIGHLIGHTS

#### Program Highlights: Desert Dangers with Dan Massey

Community Outreach Coordinators Heather Doss and Cori Cantin joined reptile curator and pharmacist Dan Massey as he presented to a Sahuarita Boy Scouts group on venomous reptiles and what to do in case of an envenomation.

This fun and educational event allowed for a more hands-on and personal experience when learning about keeping yourself and venomous critters safe in nature.

#### 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**

- 23,628 educational materials distributed (mailed and events combined)
- 65 events held in three different counties attended by 17,670 people
- 42 presentations, 21 health fairs





of 2023 at the Lunar New Year community celebration

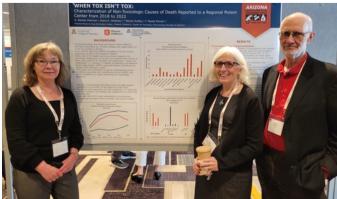
### RESEARCH HIGHLIGHTS

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

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

- Acute Alcohol Withdrawal Syndrome
- Methylxanthine Toxicity
- Rattlesnake/snakebite envenomation
- Aspirin Toxicity, Tricyclic antidepressants and Acetaminophen Case discussion





#### **Publications/Posters:**

Mimosa Van, Sarah Watkins, Geoffrey Smelski, Micheal Cardwell, Daniel Jarell, Charles Gerardo, Timothy Platts-Mills, Farshad "Mazda" Shirazi, The "7 T's" of Snakebites Review in Arizona. Poster Presented at Annual Biomedical Research Conference for Minoritized Scientists 2023, November 15-18

McNally J, Smelski G. News From The Pit – History of Pitviper Antivenom in the United States. Arizona Poison and Drug Information Center; 2023

Aizenberg, et al. Serotonergic Toxidrome after Insufflation with an MDMA Precursor. Poster Presented in Montreal at NACCT 2023.

Chiakmakis A, Neilson V, Rushton W, Smelski G. News From The Pit – Thromboelastography (TEG) and Snakebites. Arizona Poison and Drug Information Center; 2023.

Cedar Mitchell, G. Smelski, K. Schmid, M. Roland, M. Christenberry, K. Ellingson, D. Brooks, K. Komatsu, S. Dudley, T. Cullen. Rattlesnake Bites Characterization – Arizona 2017-2021. Poster presented at Council of State and Territorial Epidemiologists Annual Conference 2023, June 25-29

Sarah A. Watkins, Geoffrey Smelski, Epic Fail? Try Again, Annals of Emergency Medicine, Volume 81, Issue 6, 2023, Pages 765-766, ISSN 0196-0644, https://doi.org/10.1016/j.annemergmed.2022.12.03 1.

Kaur R, Ramirez J, Cardwell M, Hughes B, Mitchell C, Smelski G. News From The Pit – Don't Get Easily Rattled This Snake Season. Arizona Poison and Drug Information Center; 2023.

Geoffrey Smelski, Michael Cardwell, Jaiva Larsen, Neurotoxic respiratory failure absent following Arizona Rattlesnake bites, Toxicon, 2023, 107034, ISSN 0041-0101,

https://doi.org/10.1016/j.toxicon.2023.107034.

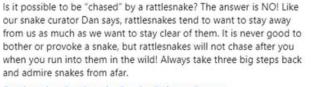
### MEDIA **HIGHLIGHTS**

#### Find us online:

- 174 Instagram posts with a 11,149 reach, a 105.8% increase from 2022
- 236 new Instagram followers
- 161 Facebook posts with a 36,272 reach, a 705.1% increase from 2022
- 92 new Facebook followers
- In 2023, 36,120 users visited the AZPDIC website yielding 59,622 page views. The most visited pages include those with information on breastfeeding, Gila monsters, scorpions, and poisonous plants.



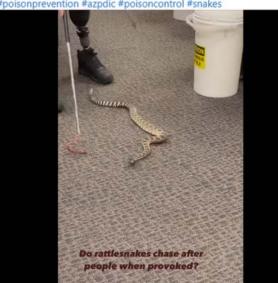
rattlesnake behavior. This post reached 10,140 people, received 83 likes and was shared 3 times.



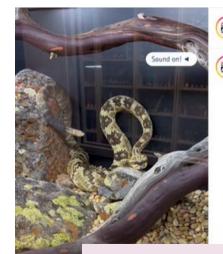
#rattlesnakes #rattlesnake #snake #arizona #venom #poisonprevention #azpdic #poisoncontrol #snakes

Arizona Poison & Drug Information Center

Published by Instagram @ - December 8, 2023 - @



The most popular post on Facebook was a video (bottom left) in which our reptile curator discussed



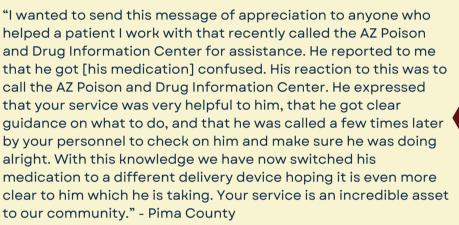
azpoisoncenter · Follow Original audio

> azpoisoncenter Do you know what a rattlesnake sounds like? Make sure your sound is on and have a listen to this rattler! This guy is a Black-tailed Rattlesnake (Crotalus molossus). These snakes are known for the dark coloration around the eye that looks like a mask and a black tail without bands.

#azpdic #azpoison #envenomation #rattlesnakes #rattlesnakeseason #rattlesnake #blacktailedrattlesnake #venom #arizonawildlife Edited - 41w

The most popular post on Instagram was a video showing a Black-tailed Rattlesnake rattling it's tail. This post reached 2,132 people, received 82 likes and was shared 5 times.

### PATIENT TESTIMONIALS







"I called poison control in a moment of panic, I had applied some benadryl cream to my two year old's bug bites and didn't immediately put it away. The next thing I knew my daughter had some in her mouth. I had no idea how much she had swallowed or how toxic topical benadryl would be. I immediately searched for and called poison control on my phone. They gave me specific things to look out for in case there was a reaction and a time frame. I think it is an invaluable resource. Thank you so much for the service you provide."-Pima County

"I called because my husband took an extra dose of medication. I got scared because it was about 5 times what he was supposed to take. I called the doctor's office and the assistant said that it would be faster to call poison control because she did not know how long it would take to get ahold of the doctor. That's when I called the poison center. If I had not gotten an answer, I probably would have gone to the ER. The person I spoke with was incredibly friendly. I was emotional and she calmed me down and told me what to do. I did not need to take my husband to the ER, which could be incredibly expensive. When this happened, I felt insecure and lonely. My doctor was not available. I was touched by the care, friendliness, and warmth when I called the poison center. I felt supported." - Yavapai County



### **AZPDIC STAFF**

## 2023

**DIRECTOR** Steven Dudley, PharmD DABAT

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