

ARIZONA POISON AND DRUG INFORMATION CENTER

ANNUAL REPORT 2020



WWW.AZPOISON.COM

ARIZONA
Poison and Drug
Information Center



1-800-222-1222

YEAR OVERVIEW

Welcome to the 2020 Arizona Poison and Drug Information Center (AzPDIC) Annual Report. This report summarizes the activities of the AzPDIC during our 65th year of service.

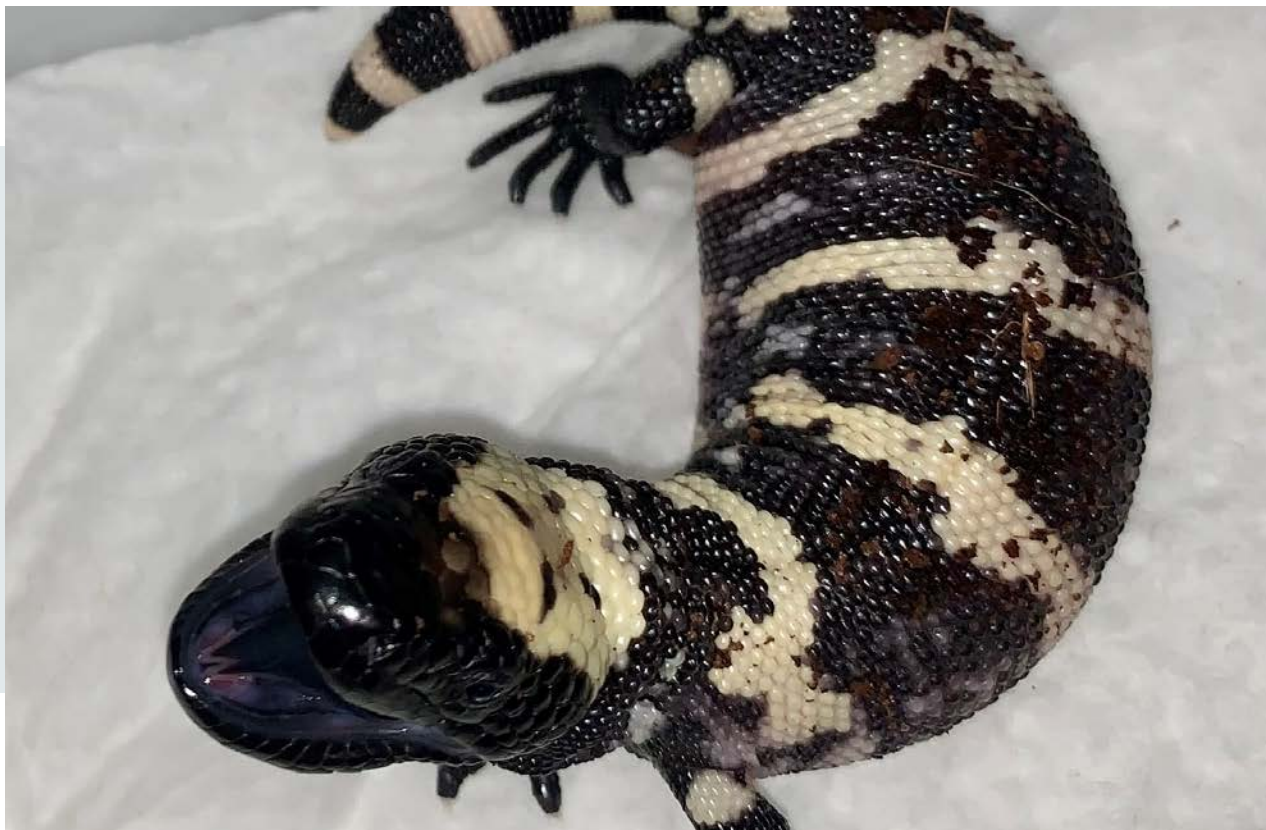
In early 2020 the AzPDIC became an integral part of Arizona's COVID-19 response through development of the COVID-19 Helpline, providing in the moment information and referrals to the lay public, businesses, schools, and healthcare professionals. In addition, the AzPDIC continued to operate the Arizona Opioid Assistance and Referral Line, which provides services 24/7 to anyone seeking help for a substance use disorder.

All these ventures were done in conjunction with local health departments across the state of Arizona and with the Arizona Department of Health Services.

Despite the pandemic, and with the majority of the AzPDIC staff working from home, we were still able to successfully continue our mission, while also implementing some of the following activities (and much more):

1. Worked with state and federal agencies to discover and treat methanol containing hand sanitizer exposures.
2. Developed a limited podcast series on medication assisted treatment in coordination with local partners.
3. Documented and educated the public on the reproduction cycle of Gila monsters, including the hatching of eight baby Gila monsters.

The AzPDIC accomplished a great deal in 2020, and we are extraordinarily proud of our staff for persevering in difficult times.



EXPOSURES BY COUNTY

Total contacts: 44,406

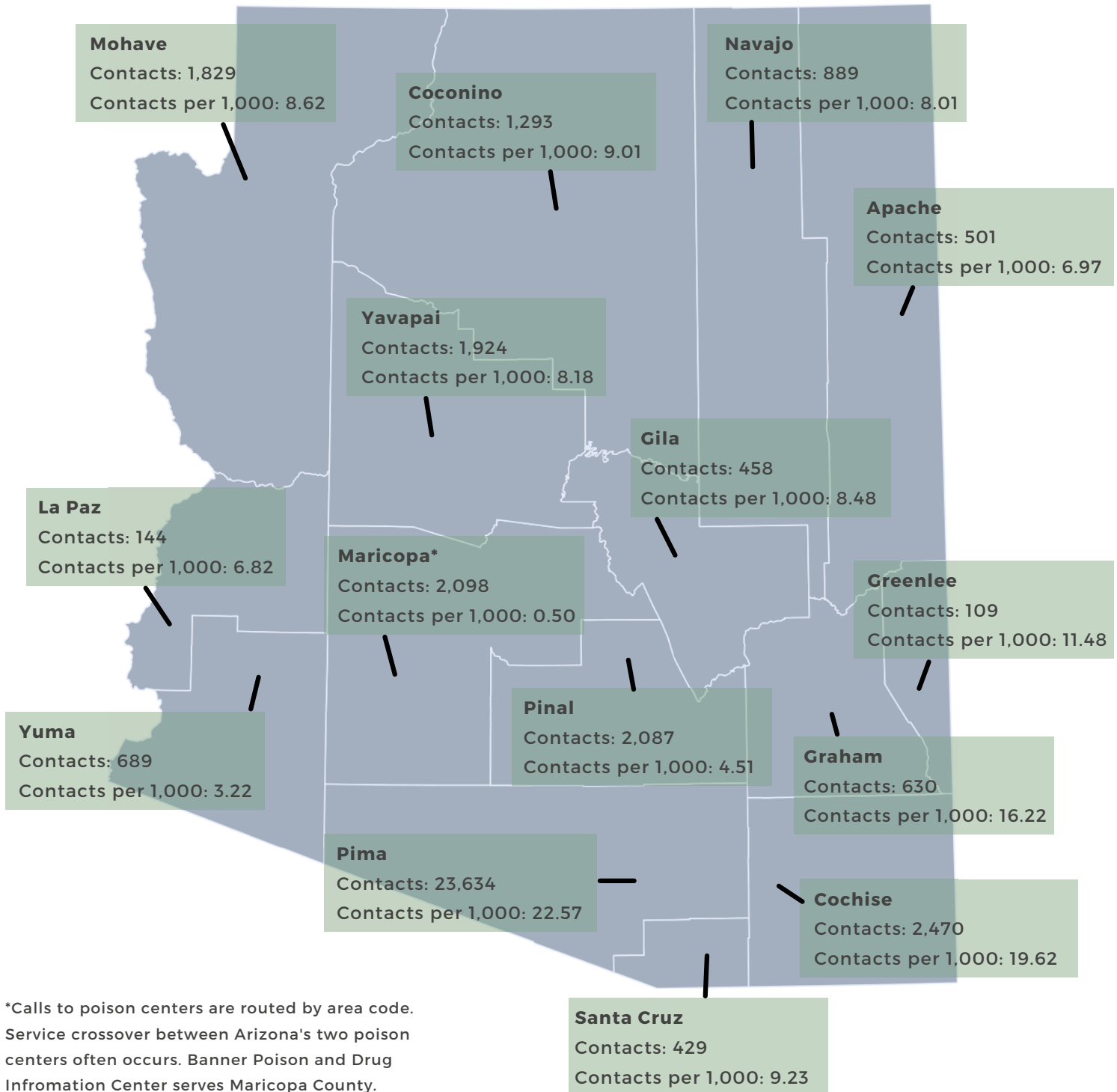
Total contacts include exposures (all species), information requests, and calls originating from states outside of Arizona answered by the AzPDIC.

Exposure contacts: 18,477

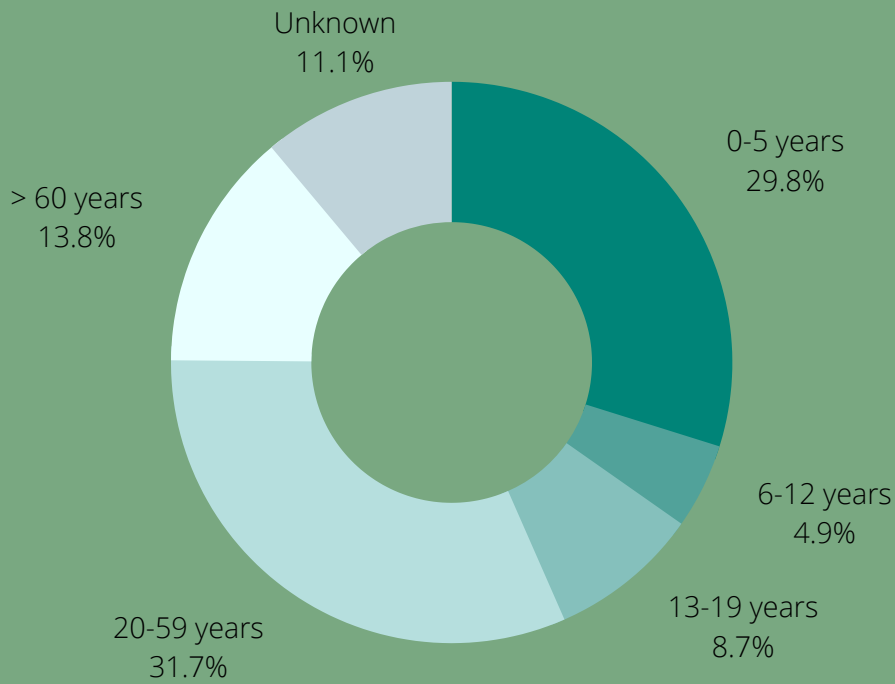
Information requests: 25,929

Follow-up contacts: 39,924

Out-of-state contacts: 618



*Calls to poison centers are routed by area code. Service crossover between Arizona's two poison centers often occurs. Banner Poison and Drug Information Center serves Maricopa County.



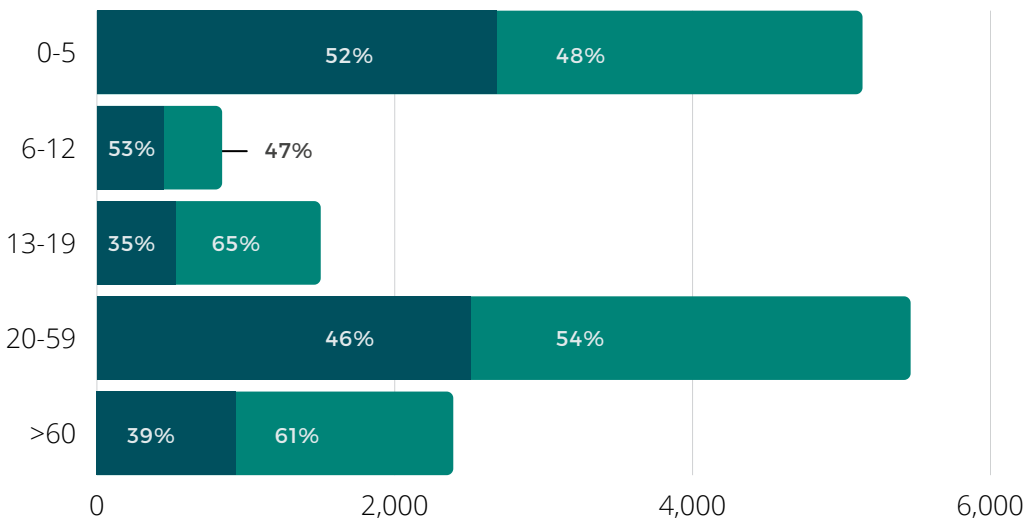
BY AGE

Children 0-5 years accounted for 30% of human exposures.



HUMAN EXPOSURES

BY AGE & GENDER



A male predominance was found among cases involving children <12 years, but this gender distribution was reversed in teenagers and adults, with females comprising the majority of reported exposures.



EXPOSURE STATISTICS

In 2020, there were 17,378 human exposure cases reported to the AzPDIC. Exposure cases peaked in May and June of 2020.



RESIDENCE
64% (11,094 CONTACTS)



HEALTH CARE FACILITY
27% (4,707 CONTACTS)



WORKPLACE
0.7% (122 CONTACTS)



SCHOOL
0.6% (97 CONTACTS)



OTHER/UNKNOWN
8% (1,358 CONTACTS)

SITE OF CALLER

Of the 17,378 human exposure cases reported, 64% of contacts originated from a residence (own or other). Another 27% of contacts were made from a health care facility.

Beyond residences, exposures occurred in the workplace (0.7%) and schools (0.6%).

Health care facilities include hospitals, doctor's offices, urgent care centers, clinics, and others.

SUBSTANCES INVOLVED IN POISONINGS

The tables below list the most common substances involved in human exposures reported to the AzPDIC in 2020. A patient may be exposed to more than one substance in a poisoning or overdose case.

The top drug substance involved in human exposures was analgesics, followed by antidepressants and sedatives/hypnotics/antipsychotics.

The top non-drug substance involved in human exposures was bites and stings, followed by household cleaning substances and cosmetics or personal care products.

Top 10

Drug Substances	No.	%
Analgesics.....	2,138	12.09
Antidepressants.....	1,164	6.58
Sedative/hypnotic/ antipsychotic.....	921	5.21
Antihistamines.....	851	4.81
Cardiovascular drugs.....	818	4.63
Anticonvulsants.....	605	3.42
Stimulants and street drugs.....	504	2.85
Dietary supplements/ herbals/homeopathic.....	480	2.71
Hormone and hormone antagonists.....	474	2.68
Vitamins.....	376	2.13

Top 10

Non-Drug Substances	No.	%
Bites and stings.....	2,150	12.16
Cleaning substances (household).....	1,279	7.23
Cosmetics/personal care products.....	988	5.59
Alcohols.....	746	4.22
Infectious and toxin-mediated diseases ..	608	3.44
Pesticides.....	585	3.31
Foreign bodies/toys/misc..	511	2.89
Plants.....	456	2.58
Chemicals.....	346	1.96
Fumes/gases/ vapors.....	212	1.20



Top 10 Substances

Pediatric (0-5 years)	No.	%
Cleaning substances (household).....	605	11.67
Cosmetic/personal care products.....	567	10.94
Analgesics.....	447	8.62
Foreign bodies/toys/ miscellaneous.....	363	7.00
Dietary supplements/ herbals/homeopathic.....	336	6.48
Bites/stings.....	252	4.86
Vitamins.....	246	4.74
Antihistamines.....	222	4.28
Topical preparations.....	215	4.15
Plants.....	159	3.07

Top 10 Substances

Adult (>20 years)	No.	%
Bites/stings.....	1,544	16.29
Analgesics.....	1,141	12.04
Antidepressants.....	807	8.52
Sedative/hypnotic/ antipsychotic.....	714	7.53
Alcohols.....	617	6.51
Cleaning substances (household).....	612	6.46
Cardiovascular drugs.....	578	
Anticonvulsants.....	479	5.05
Antihistamines.....	439	4.63
Infectious/toxin-mediated diseases.....	376	3.97

SUBSTANCES BY AGE

The tables to the left list the most common substances involved in human exposures stratified by age. These tables show the differences between substance categories involved in pediatric and adult exposures.

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

The most common substances involved in adult exposures were bites/stings, analgesics, and antidepressants.

These rankings provide an indication where prevention efforts might be focused. The majority of pediatric exposures are highly preventable and involve common substances found inside the house. The majority of adult exposures involve pharmaceutical substances.



METHANOL CONTAINING HAND SANITIZERS

Due to the increased demand for cleaning products to prevent COVID-19, there was an unprecedented shortage of hand sanitizer in Arizona. The mismatch in supply and demand led to many new sources that used poor manufacturing processes.

These events resulted in widespread contamination of hand sanitizers containing methanol, a toxic and deadly substance closely related to ethanol. In early May 2020, the AzPDIC received the first case of methanol containing hand sanitizer.

The AzPDIC, in partnership with the treating hospitals, Arizona Department of Health Services, CDC, and FDA, was able to obtain samples for testing.

Poison centers in Arizona and New Mexico collaborated with the CDC and published a report of 15 severe poisonings including 4 deaths. The cooperation between the FDA, CDC, and Arizona's poison centers to manage this hazard is an excellent example of public health best practices.

The AzPDIC saw a nearly 300% increase in hand sanitizer exposures and treated 69 patients with methanol containing hand sanitizer exposures in 2020.

CDC Morbidity and Mortality Weekly Report

[Serious Adverse Health Events, Including Death, Associated with Ingestion Alcohol-Based Hand Sanitizer Containing Methanol - Arizona and New Mexico, May-June 2020](#)



MANAGEMENT SITE

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

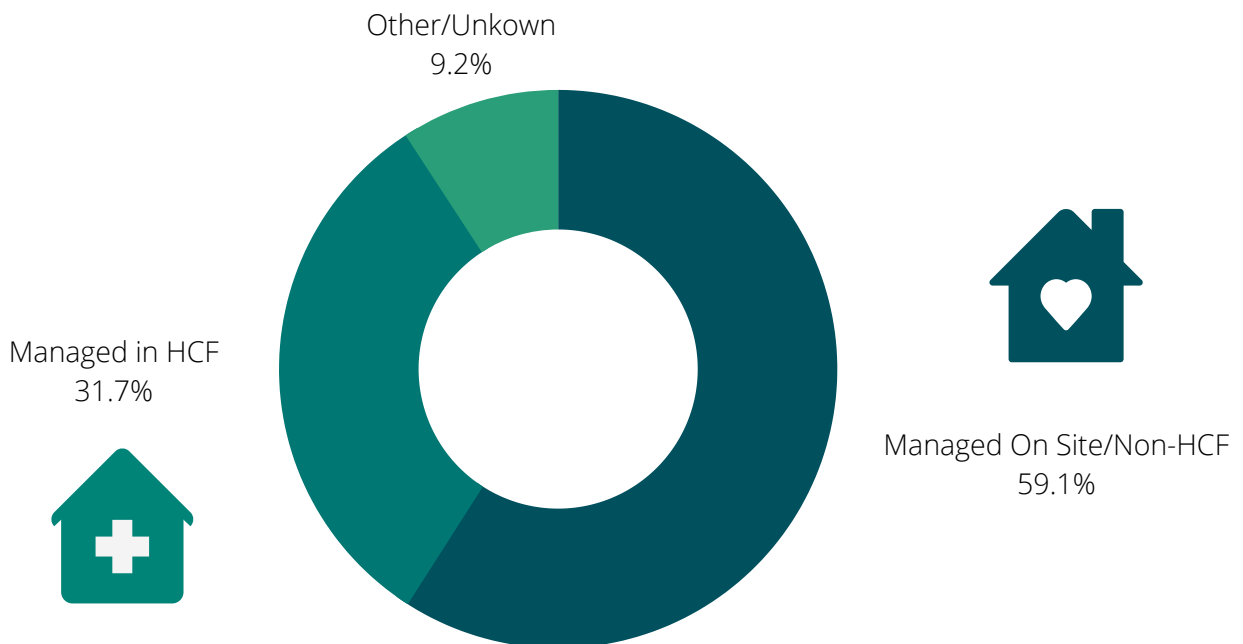


The majority of cases reported to the AzPDIC were managed outside of a HCF (59%), usually at the site of exposure, primarily the patient's own residence.

Of the cases managed in a HCF:

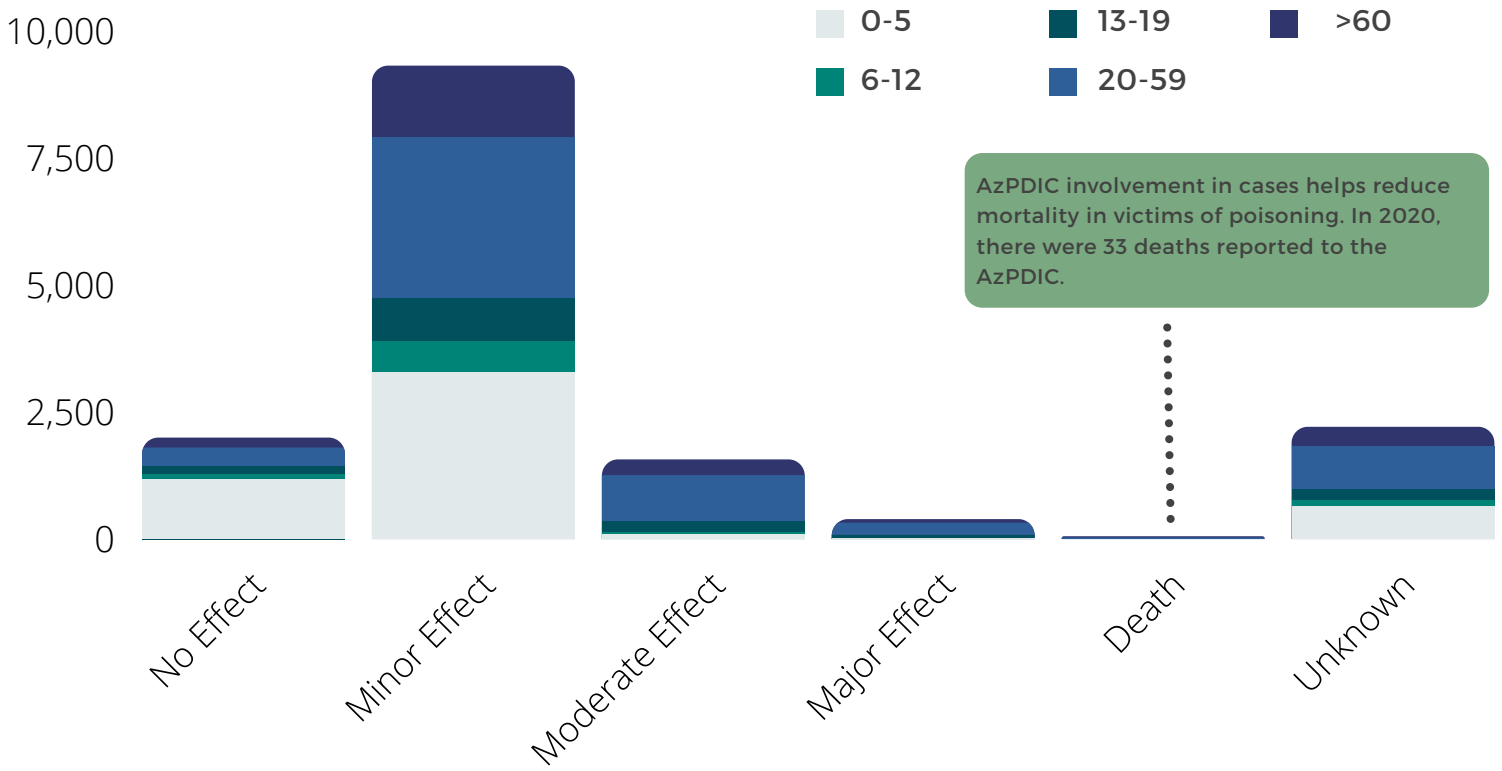
- 48% were treated and released
- 14% were admitted to a critical care unit
- 16% were admitted for psychiatric treatment

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



MEDICAL OUTCOMES

The graph below displays the medical outcomes of human exposures cases by age. Older age groups exhibit a greater number of severe medical outcomes.



AzPDIC involvement in cases helps reduce mortality in victims of poisoning. In 2020, there were 33 deaths reported to the AzPDIC.

COST SAVINGS

In 2019, the AzPDIC saved Arizona over \$26 million in unnecessary medical expenditures.

Studies have shown that poison centers, including the AzPDIC, reduce emergency department visits for poisoning and reduce length of stay for patients hospitalized for poisoning. Consultation with a poison center also reduces the probability of admission to a hospital, leading to increased cost savings.

"The efforts of poison centers has been shown to reduce unnecessary and costly health care utilization. A number of studies have demonstrated that poison centers reduce health care spending and that the amount of these savings far exceeds the cost of providing poison center services.

Reductions in preventive and educational services offered by poison centers are likely to result in higher health care spending paid for by federal and state governments, private insurers, and consumers". (Lewin Group, 2012)

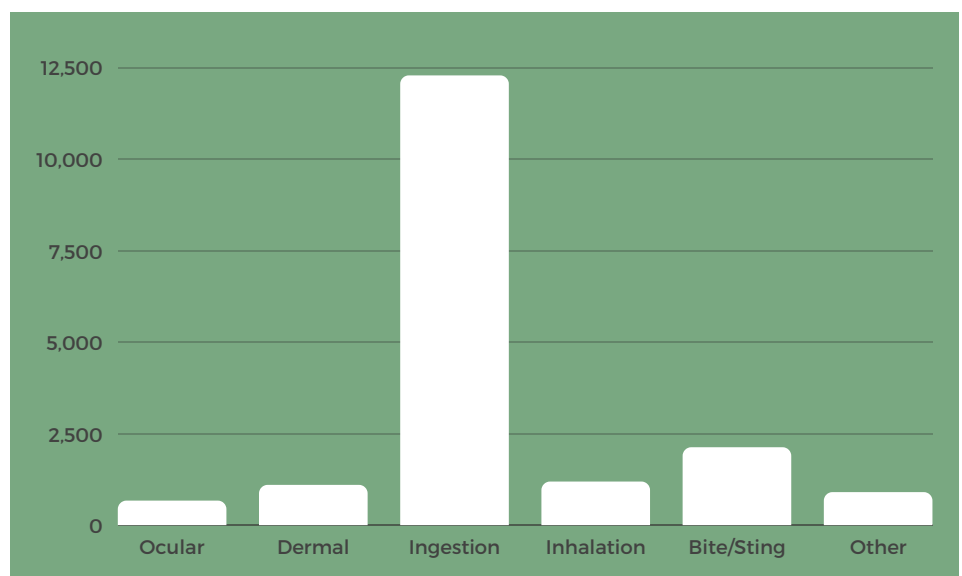
CIRCUMSTANCE

The reason category for most human exposures was unintentional (72%), including: unintentional general (38%), bite/sting (12%), and therapeutic error (11%). Intentional exposures accounted for 21% of human exposures. Suicidal intent was suspected in 15% of cases.

<p>UNINTENTIONAL</p> <p>72% (12,585)</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>21% (3,630)</p>	<p>INTENTIONAL EXPOSURES:</p> <ul style="list-style-type: none"> • misuse • abuse • suicide attempts
<p>ADVERSE REACTION</p> <p>4.7% (815)</p>	<p>ADVERSE REACTIONS TO:</p> <ul style="list-style-type: none"> • drugs • food • other substances
<p>OTHER/ UNKNOWN</p> <p>2.0% (347)</p>	<p>OTHER/UNKNOWN REASONS:</p> <ul style="list-style-type: none"> • malicious • contaminant/tampering • withdrawal

ROUTE OF EXPOSURE

Ingestion was the route of exposure in 72% of cases, followed in frequency by bite/sting (12%), inhalation (6%), and dermal (5.8%) routes.



Rattlesnake Bites: 168

Scorpion Stings: 1,292

Gila Monster Bites: 2

Black Widow Bites: 43

Brown Spider Bites: 5

Bees/Wasps/Hornet Stings: 129

Centipede/Millipede Bites: 27

Ant or Fire Ant Bites: 20

BITES & STINGS



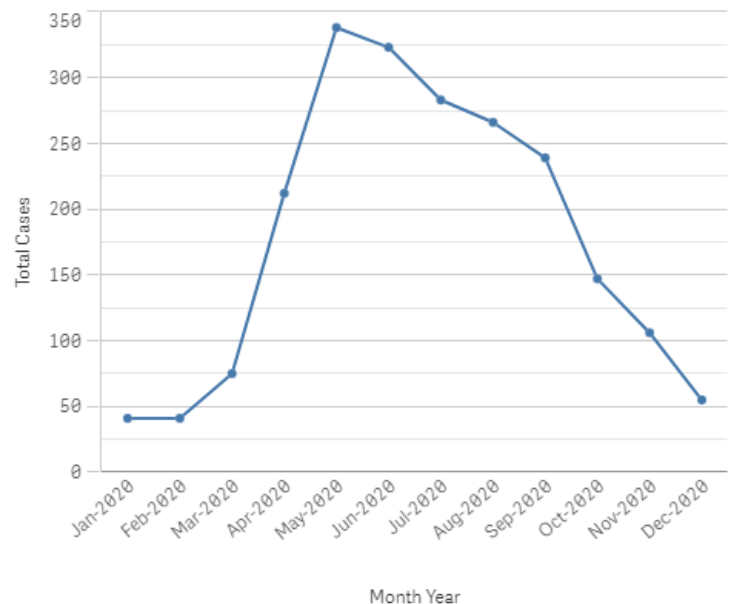
Bites and stings were the second most common exposure in Arizona in 2020. Arizona is known as the venomous creature capital of the United States, with the most diversity in venomous species.

The top bite/sting exposure reported to the AzPDIC was scorpion stings. The majority (84%) of scorpion stings were managed at home with AzPDIC guidance.

Most bites and stings are unintentional (98%) and can be managed on site (72%). However, all rattlesnake bites require hospital evaluation. Outcomes for bites and stings are typically good, with only 2% resulting in a major effect (symptoms that are life-threatening or resulted in significant residual disability).

In 2020, bite/sting exposure cases were reported in more women (55%) than men (45%). Bite/sting cases were most frequently reported from the following counties: Pima (52%), Pinal (12%), and Maricopa (8%).

Total Cases over Time



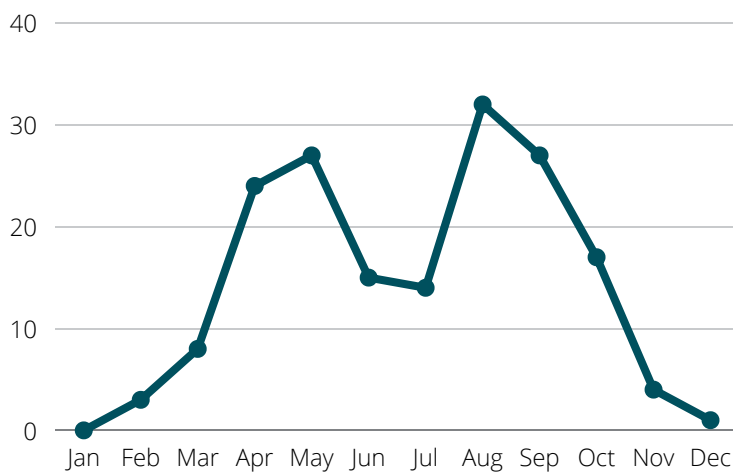
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The graph above displays bite/sting exposures cases over time. Bite/sting exposures (contacts) were highest in late spring and summer and lowest in the winter. The months with the most exposure cases were May and June, which coincide with warming weather in Arizona.

RATTLESNAKE BITES

The AzPDIC specializes in treating envenomations, including rattlesnake bites. Please note that in each case the patient initially presented to the hospital with a rattlesnake bite. Rattlesnake bites decreased 3% from 2019 to 2020.

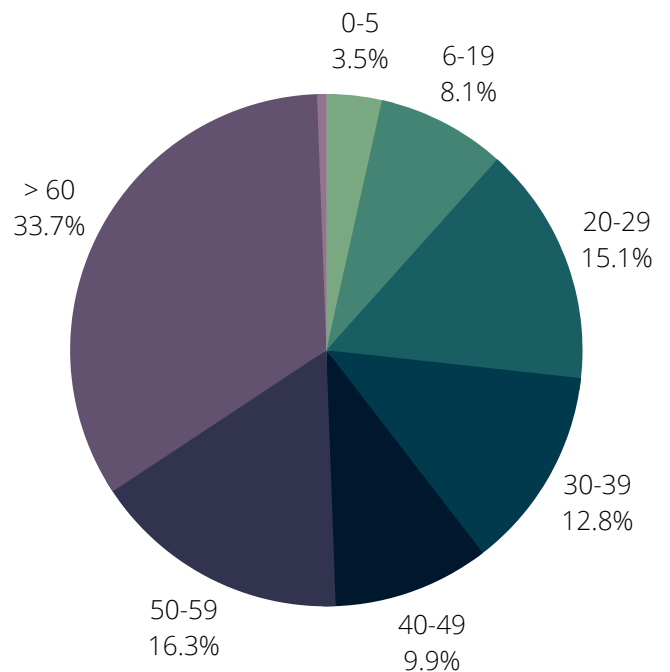
BITES BY MONTH



Rattlesnake cases peaked twice in 2020 in both May and August.

Climate, temperature, rattlesnake courtship and gestation, and the behaviors of humans help explain the peak exposures in April and the end of August/beginning of September.

BITES BY AGE



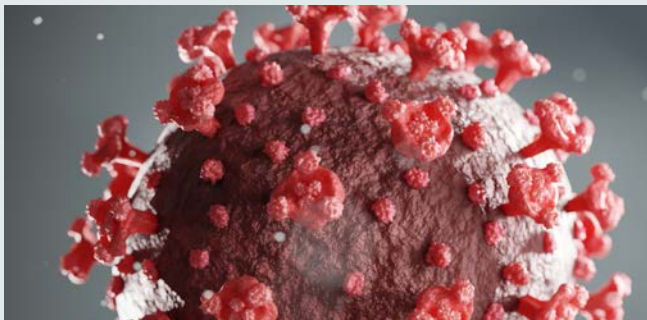
The majority of rattlesnake bites reported to the AzPDIC occurred in patients over 60 years of age. In the past, rattlesnake bite patients were typically young and handling the snake. Today, the age of patients is increasing and most bites are unintentional.

In analysis of rattlesnake bite cases reported to the AzPDIC in 2020, most patients were bitten while walking outside their house or doing daily activities of living, such as yardwork.

COVID-19 PANDEMIC

AZ COVID-19 HELPLINE

On March 11, 2020, as the COVID-19 pandemic swept the nation, the AzPDIC officially launched the Arizona Department of Health Services (ADHS) COVID-19 Helpline. The AzPDIC coordinated with county and state health departments to provide invaluable services, such as isolation/quarantine guidance, patient therapy services, testing locations, vaccine registration, vaccine adverse event reporting, antibody treatment assistance for healthcare providers and more.



The AzPDIC assisted nearly every county health department by taking the immense call volume off of their hands so they could focus on important work like contact tracing, while still providing the state with a high level of service. AzPDIC also coordinated with the University of Arizona to provide assistance when it launched its State Point of Distribution (POD) vaccine site.

This service could not have been provided without the herculean efforts of AzPDIC personnel, including pharmacists, pharmacy technicians, administrative staff, as well as public health and pre-pharmacy undergraduate student volunteers.

A LOOK AT THE DATA

From March 11, 2020 through February 28, 2021, the Arizona COVID-19 Helpline received over 638,000 calls and managed 79,191 cases (AzPDIC: 20,830 through 12/31, 28,861 through 3/10/21).

The majority of calls answered by the AzPDIC between March-December 2020 requested information on COVID-19 testing, including locations, whether or not the caller should be tested, and the meaning of results. Other popular categories of questions included exposure information, guidance for businesses, and isolation and quarantine considerations.

The highest number of calls was on March 16, 2020, with over 643 calls received by the AzPDIC in a single day. During the 9 months of 2020, the average number of COVID-19 related calls was 68 calls/day.

Calls numbers increased sharply after the release of the vaccine in January 2021. Staff have successfully registered over 2,128 Arizonans for a COVID-19 vaccine.

**>638,000
CALLS ABOUT
COVID-19
ACROSS THE
STATE OF
ARIZONA**

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.

The COVID-19 pandemic disrupted many of the public education activities planned for the year. Public education efforts were restricted as responsibilities shifted towards handling overflow calls to the AZ COVID-19 helpline. Outreach resumed in a new virtual environment for the remainder of 2020.

OUTREACH STATISTICS

- 46** events in **3** counties attended by over **3,200** people
- 12** health fairs
- 33** presentations/programs
- Over **12,000** pieces of educational materials distributed

PUBLIC EDUCATION

PROGRAM HIGHLIGHT: OPIOIDS AND YOU VIRTUAL NALOXONE TRAININGS

The AzPDIC received a Mobilize AZ grant from Blue Cross Blue Shield of Arizona to help tackle the critical health issues in Arizona, like the opioid epidemic, and work to prevent death from overdose.

Three separate opioid overdose prevention and naloxone administration trainings were created for the following target populations: community organizations, schools, and the workforce.

Preliminary results from the pre-and post-surveys show almost a 50% increase in participants agreeing that they would be able to tell if someone had overdosed on opioids. Over 95% of participants stated in the post-survey that they would be able to administer naloxone to someone who has overdosed on opioids.



RESEARCH

PUBLICATIONS/POSTERS

Brady M, Junak M, Smelski G, Shirazi FM (2020) Rattlesnake Envenomation in the Setting of Disrupted Lymphatic Flow: A Case Series. J Clin Toxicol. 10:455. DOI: 10.35248/2161-0495.20.10.455

Bryan Wilson, MD, Jaiva Larsen, MD, Geoffrey Smelski, PharmD, Steve Dudley, PharmD, Farshad Mazda Shirazi, MD PhD. Successful Use of Anavip for Treatment of an Agkistrodon Envenomation. Poster presented at Annual North American Congress of Clinical Toxicology 2020, September 10-14; Webinar

Molly Brady, Mary Junak, Geoffrey Smelski, PharmD. Rattlesnake Envenomation in the Setting of Disrupted Lymphatic Flow: A Case Series. Poster presented at Annual North American Congress of Clinical Toxicology 2020, September 10-14; Webinar

Smelski G, Fain M, O'Neill L, Vitkus L, Dudley S. Poison Center Intervention For Geriatric Medications Of Concern. Poster presented at University of Arizona College of Medicine 2020, January 22; Tucson, AZ

CLINICAL EDUCATION

The 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:

- Alcohol withdrawal syndrome
- Salicylate toxicity
- Rattlesnake envenomation
- Ethanol & the NAD+: NADH ratio
- Jamaican vomiting sickness
- Metabolic acidosis, oxidant stress & neurodegeneration
- Seizures in toxicology
- Beta blocker & CCB toxicity

Pick Your Poison 2020 Virtual Conference

In August 2020, Arizona's two poison centers hosted the annual Pick Your Poison: Current Trends in Toxicology and Medical Cannabis conference in a virtual format. Pick Your Poison provided attendees with an overview of current research and practices that are the focus of toxicology and pharmacology management.

Conference presentation topics included:

- Anticholinergic toxicity and antidotes
- Novel psychoactive substances
- Clinical envenomations
- Assessment and treatment of geriatric delirium
- Use of cannabinoids in pediatric epilepsy
- Cannabinoids and pain management
- Genetic testing of marijuana

MEDIA HIGHLIGHTS

SOCIAL MEDIA

- 193 posts on Facebook with a page reach of 79,865, a 131.1% increase from 2019.
- 63 posts on Instagram with a reach of 22,962 people, a 6.3K% increase from 2019.
- More than 47,036 people visited the AzPDIC website, yielding approximately 85,180 page views. The top two most visited pages were on scorpions and poisonous plants
- In 2020, the AzPDIC and/or staff appeared in the media, including newspaper articles, podcasts, and TV/radio interviews at least 71 times. Topics included COVID-19, rattlesnakes, and methanol containing hand sanitizers.



www.azpoison.com



[@azpoisoncenter](https://www.instagram.com/azpoisoncenter)



[facebook.com/AZPDIC](https://www.facebook.com/AZPDIC)



[@AzPDIC](https://twitter.com/AzPDIC)

POPULAR POSTS

A Facebook content post about the dangers of ingesting or injecting bleach to treat COVID-19 reached over 18,500 people on April 24, 2020. The post had 572 reactions and likes, 561 comments, and was shared 156 times.



The most popular Instagram content included two posts about our resident *Heloderma* species! One post (pictured to the right) on the *Heloderma horridum*, aka Mexican Beaded Lizard, reached over 411 people, with 46 likes and reactions.



2020 ACHIEVEMENTS

FATALITY REPORT COMMITTEE

The AzPDIC established a Fatality Report Committee and won the "Most Improved Fatality Reporting Score" through the American Association of Poison Control Centers.

AZPA CORPORATE APPRECIATION AWARD

The Arizona Pharmacy Association (AzPA) Corporate Appreciation Award is presented to an Arizona corporation or business who serves Arizona pharmacy, routinely demonstrates a very high level of professionalism, and is committed to improving medication use by supporting AzPA in a significant way.

METHANOL CONTAINING HAND SANITIZER

The AzPDIC discovered and notified ADHS, the FDA, and the CDC of a methanol containing hand sanitizer outbreak in Northeastern Arizona. We coordinated with the FDA to get the product added to their list and recalled from store shelves.

PICK YOUR POISON 2020

The AzPDIC successfully hosted the annual Pick Your Poison 2020 conference in coordination with the Banner Poison and Drug Information Center. Over two days, 198 registered attendees learned about current trends in toxicology and medical cannabis.

BABY GILA MONSTERS

The AzPDIC resident reptile curator, in partnership with Arizona Game and Fish, rescued a pregnant Gila monster in May of 2020. The Gila monster laid eggs in mid-June and the eggs hatched in December. The babies will find new homes at zoos and museums across the United States.

STAFF AWARDS

The AzPDIC is proud to celebrate the achievements of our staff! In 2020, Dr. Steven Dudley received the University of Arizona College of Pharmacy Award for Excellence, recognizing outstanding achievement on the job. In addition, he was honored as a Tucson Hispanic Chamber of Commerce 40 under 40 winner.



AZPDIC STAFF

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