

# National Battery Ingestion Hotline

1-800-498-8666

*July 1, 2019 to June 30, 2020 Annual Report*

## **Rocky Mountain Poison Center**

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## EXECUTIVE SUMMARY

This report summarizes 1,771 human battery exposures reported to the Rocky Mountain Poison Center's National Battery Ingestion Hotline (NBIH) during the 12-month period from July 1, 2019 through June 30, 2020. Of these, 1,713 cases involved ingestion of a battery, and furthermore, 1,251 of these cases specifically involved ingestion of one or more disc batteries. See Figure 1 for case volume characterization during this 1-year period.

We compared the National Battery Ingestion Hotline disc battery ingestion data (Table 1) to the National Poison Data System (NPDS) (Table 2) over the same time period. Nationally, there was a total of 3,930 human ingestion of disc batteries; 2,467 (63%) specifically involving children 0-6 years of age. The most common age in this range was 1-year old (n=829) followed by 2-year old children (n=573). In the age range of 6-12 years there were 374 cases. For teenagers (13-19 years) there were 162 cases. For cases involving 20 to 59-year-old adults, there were 384 cases, and there were 550 (14%) cases involving adults greater than 60 years.

Regarding exposures to disc battery ingestion reported to NPDS nationally, medical outcomes included 1,635 no effects, 267 minor effects, 176 moderate effects, and 41 major effects. There were 3 deaths reported (one reported directly to a poison center, and 2 by indirect reports in which there was no poison center involvement). Of note, 86% of cases were either referred to or originated from healthcare facilities (HCF).

In children age 0-6 years, there were 2,467 disc battery ingestion exposures reported to NPDS during this same time period (Table 3). Medical outcomes included 1,031 no effects, 126 minor effects, 41 moderate effects, 15 major effects. The 3 deaths mentioned above were in this age group. Like the overall NPDS data, 87% of cases were either referred to or originated from healthcare facilities.

Figure 2 shows a slight downward trend over the 2-year time period in total human exposures to disc batteries as well as major outcomes and fatalities. We suspect this difference continues to represent the general downward volume of calls to poison control centers and an increased promotion of the National Battery Ingestion Hotline and overall heightened public awareness of the ingestion hazard. Similar to the prior year, Table 4 shows that the majority (54%) of exposures in the second contract year involved male patients. The most common age associated with reported cases was one year old followed by two years of age (Table 1). This follows age of patients' trends from previous years and was the same for disc battery ingestion and all types of batteries and routes (Figure 3). Additionally, it appears as though case numbers increase from young adult age ranges into patients who are 60, 70, and 80 years. This is likely due to exposures involving disc batteries used to power hearing devices as well as the smaller

sizes of those disc batteries being mistaken for pills or food. In fact, these types of “therapeutic errors” represented 11% (n=192) of all disc battery ingestions, all occurring in the adult age range with 89% specifically in the 60 years old and above group. Of all disc battery exposures, the disc battery type was unknown in 55% of cases (Figure 4). 20% of cases involved alkaline disc batteries while another 17% of cases involved zinc-air batteries and 6% involving lithium coin cell batteries. Table 5 demonstrates the location of the caller when known. The top 3 states with the highest number of callers were California (256), Texas (236), and Florida (193). This is unsurprising as these three states are the most populated by census in the United States. There were also 95 calls that originated from Canada. There were a small number of calls that originated from other countries around the world (Table 5). The most common caller site of was the caller’s own residence (78%) followed by healthcare facilities (12%) (Figure 5).

The most common medical outcome (Figure 6) reported that was associated with battery exposures [all routes, ingestion only of any type] was no effect [1054, 1020] followed by minor [220, 176], moderate effect [28, 28], and major effect [5, 5]. Of these cases, [188, 182] were lost to follow up. There was one fatality reported to the NBIH posthumously. There were [295, 294] cases where it was later confirmed that there was no exposure after all and there were [46, 42] cases where the caller reported signs and symptoms unrelated to battery exposure. Medical outcomes reported specifically involving disc battery ingestion were as follows: no effect (732) followed by minor (105), moderate effect (24), and major effect (5). Of these cases, 128 were lost to follow up and there was one fatality, as mentioned above (Figure 6). There were 226 cases where it was confirmed that there was no exposure and there were 30 cases where the caller reported signs and symptoms unrelated to battery exposure. The other age ranges shown in the figures appear to follow the same proportions. The age group with the highest number of major outcomes was the 0-5 years range (n=5, or 100% of the major outcomes). Disc batteries were the most common battery type involved in human exposures. There were 1251 cases where disc battery ingestion was confirmed or suspected. The percentage of cylindrical alkaline battery exposure cases from total human battery exposure cases reported to the NBIH was 26% with similar distribution among AAA and AA batteries. When the source of the battery was known, hearing aids (427) were the most common devices associated with human battery exposures. Of note, 355 cases of battery exposure were associated with cases where the devices were unknown (Figure 7). Disc battery access from games and toys were frequently involved in cases of disc battery ingestion (182). The most common size of disc batteries associated with human exposures when known, was less than 10 mm (258) followed by batteries within the 10-14 mm range (231),  $\geq 20$  mm (81), and 15-19 mm (8). Unfortunately, in a majority (676) of cases, the battery size was unknown or not able to be determined (Figure 8).

Similar to our report last year, the ingestion of disc batteries was previously thought to be a public health issue regarding children (0-5 years). The National Battery Ingestion Hotline data demonstrate that patients greater than 60 years of age are also at risk of accidental disc battery ingestion since usage of hearing aid devices tends to parallel advancing age.

*Prevention tips are available at <https://www.rmpds.org/mechanism-and-safety-tips.html>. For data prior to July 1, 2018, statistics can be found at [www.poison.org/battery/stats.asp](http://www.poison.org/battery/stats.asp). Cases may be reported 24/7/365 to the National Battery Ingestion Hotline at 1-800-498-8666.*

Acknowledgements: Lynn Antony and Amber Lucero, for their clerical assistance in the preparation of this report.

Tables and Figures

Table 1. National Battery Ingestion Hotline Human Exposures by Age Range, Gender, and Disc Battery Ingestion, July 2019 to June 2020

<b>Age</b>	<b>Female</b>	<b>Male</b>	<b>Unknown</b>	<b>Total (all routes, all types)</b>	<b>Disc battery ingestion only</b>
<1	30	47	1	78	45
1	168	170	6	344	242
2	98	145	3	246	170
3	61	96	3	160	123
4	35	64	2	101	80
5	19	36	0	55	41
Unk ≤ 5years	1	1	2	4	3
6 to 12 years	52	105	3	160	124
13 to 19 years	45	38	0	83	38
Unknown age - Child	4	2	5	11	6
20's	24	18	1	43	8
30's	25	33	0	58	18
40's	14	15	1	30	13
50's	28	17	0	45	36
60's	30	34	1	65	59
70's	51	47	0	98	93
80's	43	46	0	89	86
≥ 90 years	22	20	0	42	41
Unknown Adult	27	15	3	45	13
Unknown Age	4	5	5	14	12
<b>Total:</b>	<b>781</b>	<b>954</b>	<b>36</b>	<b>1,771</b>	<b>1251</b>

Figure 1. National Battery Ingestion Hotline Case Volume Characterization, July 2019 to June 2020

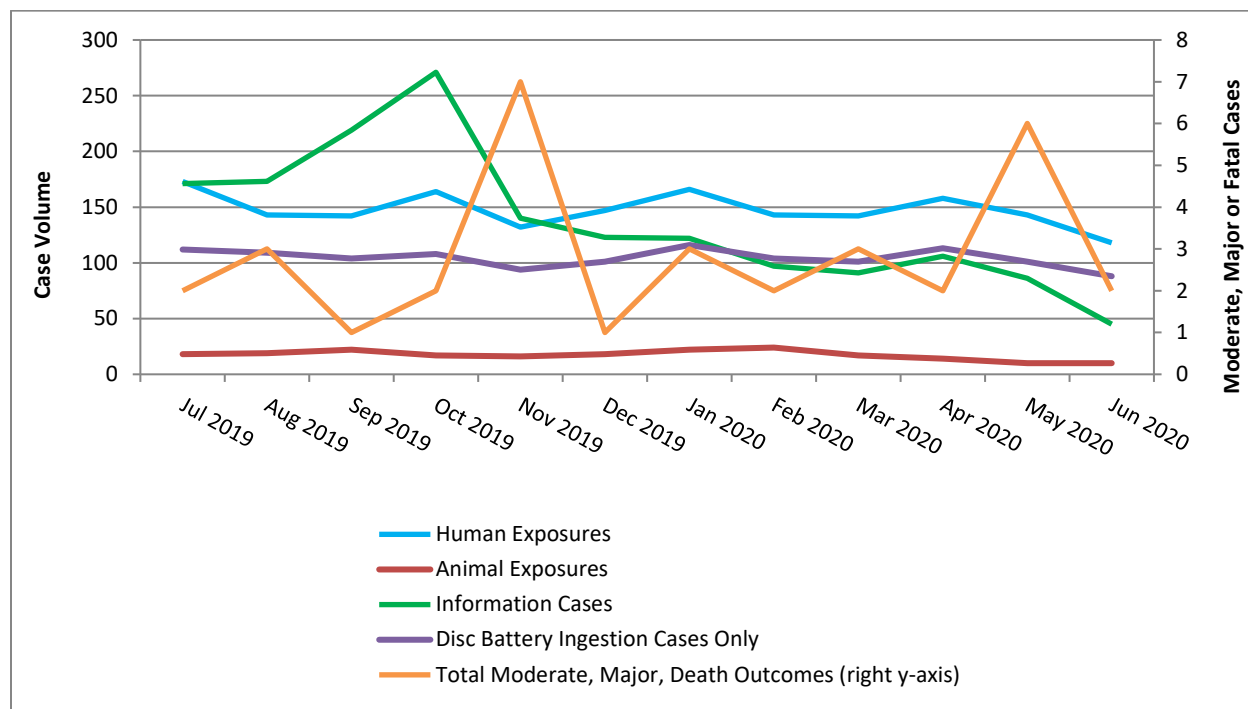


Table 2. National Poison Data System, Human Disc Battery Ingestion Exposures and Outcomes, July 2019 to June 2020, All Ages

Total Number of Ingestions	Age < 6 years	Age 6-12 years	Age 13-19 years	Age 20-59 years	Age > 60 years	% Treated in HCF	No Effect	Minor Effect	Moderate Effect	Major Effect	Death
3930	2,369	374	162	384	550	85	1,635	267	176	41	3*

\*2 of the deaths were by *indirect* report to regional poison centers, not direct poison center consultation.

Data used by permission: American Association of Poison Control Centers, National Poison Data System. [www.aapcc.org](http://www.aapcc.org). [accessed on 12/3/2020].

Table 3. National Poison Data System, Human Disc Battery Ingestion Exposures and Outcomes, July 2019 to June 2020, Age 0 to 6 years

Number of Ingestions	% Treated in HCF	No Effect	Minor	Moderate	Major	Death
2,467	86	1,031	126	41	15	1

Data used by permission: American Association of Poison Control Centers, National Poison Data System. [www.aapcc.org](http://www.aapcc.org). [accessed on 12/3/2020].

Figure 2. 2-Year Trend of National Battery Ingestion Hotline, July 2018 to June 2020

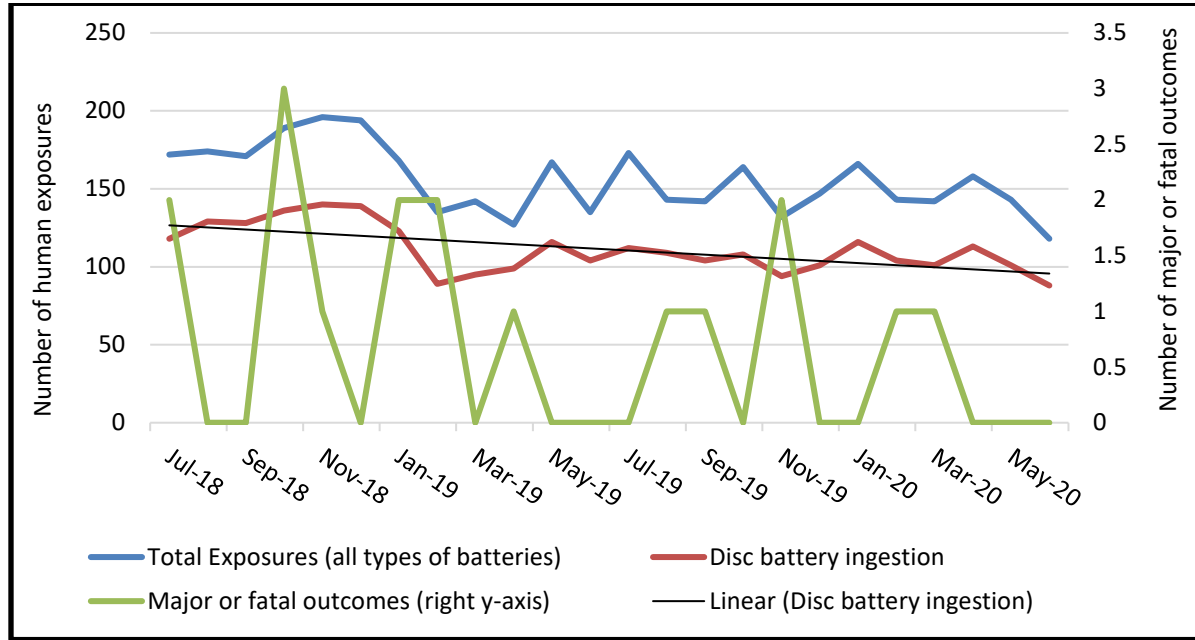


Table 4. National Battery Ingestion Hotline Exposures by Gender, July 2019 to June 2020

Gender	Number of Exposures
Male	954
Female	781
Unknown	36

Figure 3. Battery Exposure by Age Range and Type Reported to the National Battery Ingestion Hotline, July 2019 to June 2020

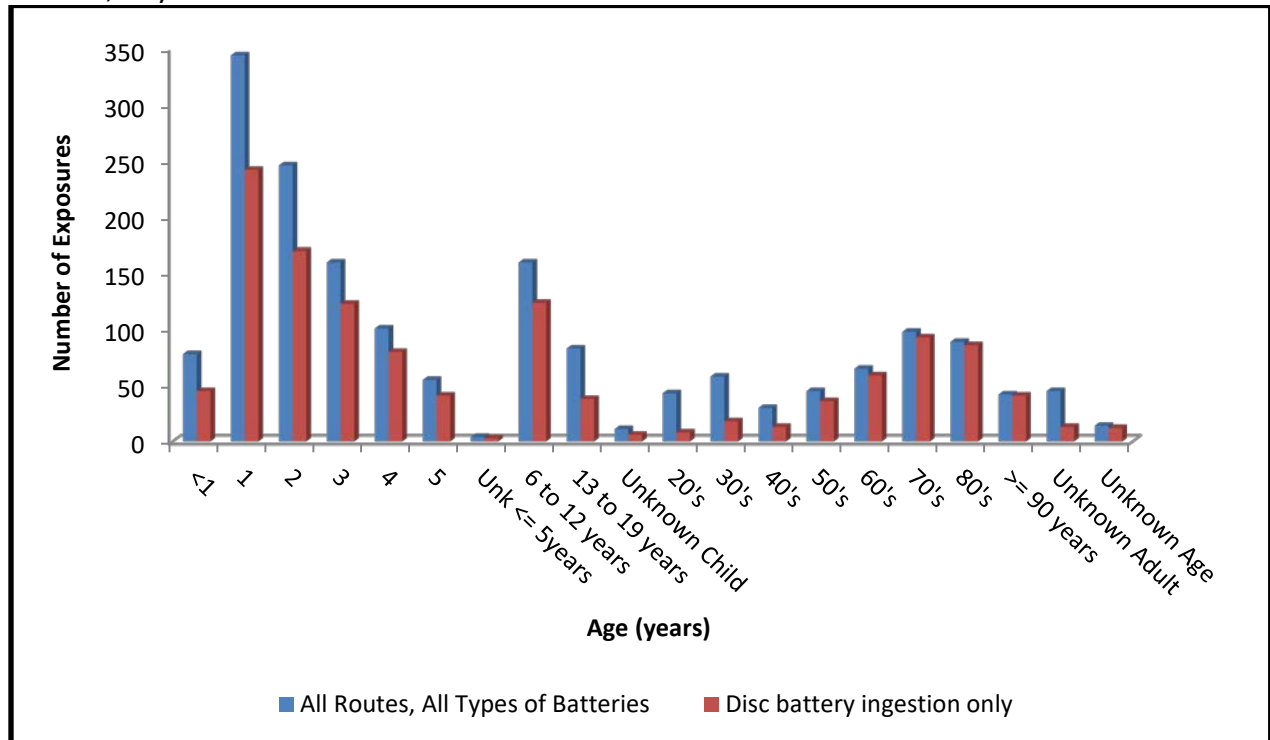


Figure 4. Disc Battery Ingestion by Types Reported to the National Battery Ingestion Hotline, July 2019 to June 2020

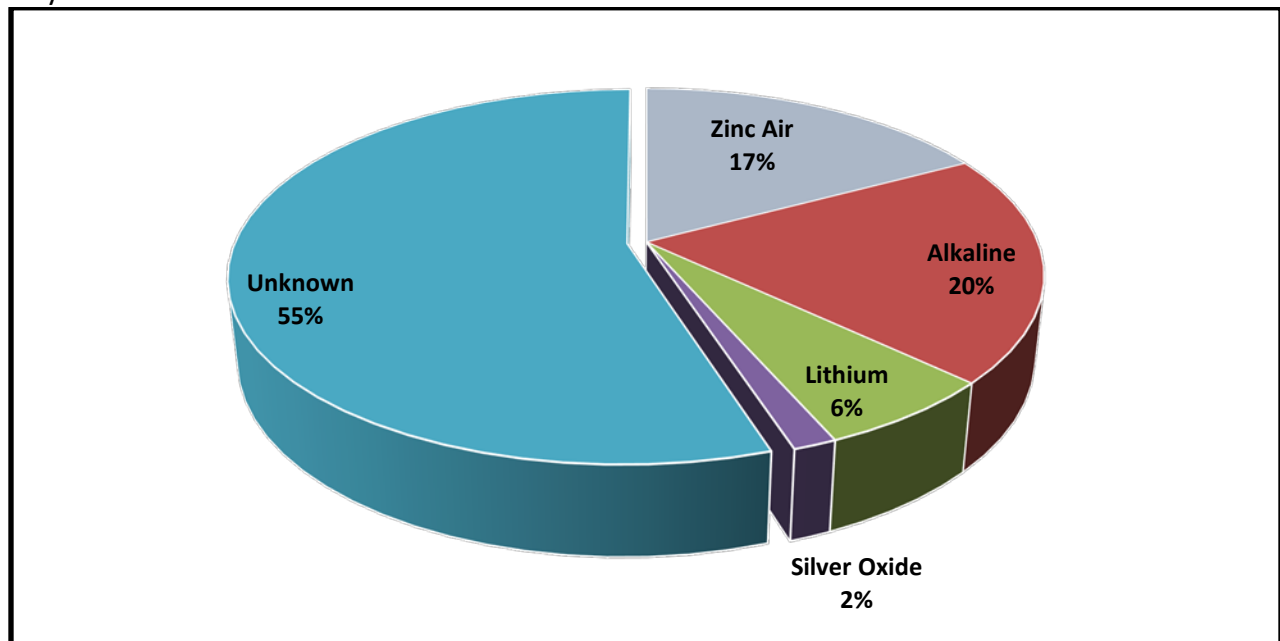




Table 5. Geographical Distribution of Caller by State, Country as Reported to the National Battery Ingestion Hotline, July 2019 to June 2020

United States	Number of Cases	United States	Number of Cases
Alabama	46	New York	180
Alaska	4	North Carolina	79
Arizona	83	North Dakota	5
Arkansas	17	Ohio	94
California	<b>256</b>	Oklahoma	25
Colorado	47	Oregon	41
Connecticut	34	Pennsylvania	127
D.C.	8	Puerto Rico	6
Delaware	10	Rhode Island	5
Florida	<b>193</b>	South Carolina	49
Georgia	77	South Dakota	9
Hawaii	1	Tennessee	50
Idaho	11	Texas	<b>236</b>
Illinois	125	Unknown State	758
Indiana	55	Utah	41
Iowa	27	Vermont	3
Kansas	17	Virginia	83
Kentucky	38	Washington	66
Louisiana	26	West Virginia	19
Maine	12	Wisconsin	40
Maryland	54	Wyoming	3
Massachusetts	79		
Michigan	100	Country	Number of Cases
Minnesota	43	Albania	1
Mississippi	11	Canada	95
Missouri	57	England	1
Montana	10	France	1
Nebraska	10	Germany	1
Nevada	41	Israel	1
New Hampshire	9	Italy	1
New Jersey	72	Netherlands	8
New Mexico	18	Saudi Arabia	1

Figure 5. Caller Site Location, Reported to the National Battery Ingestion Hotline, July 2019 to June 2020

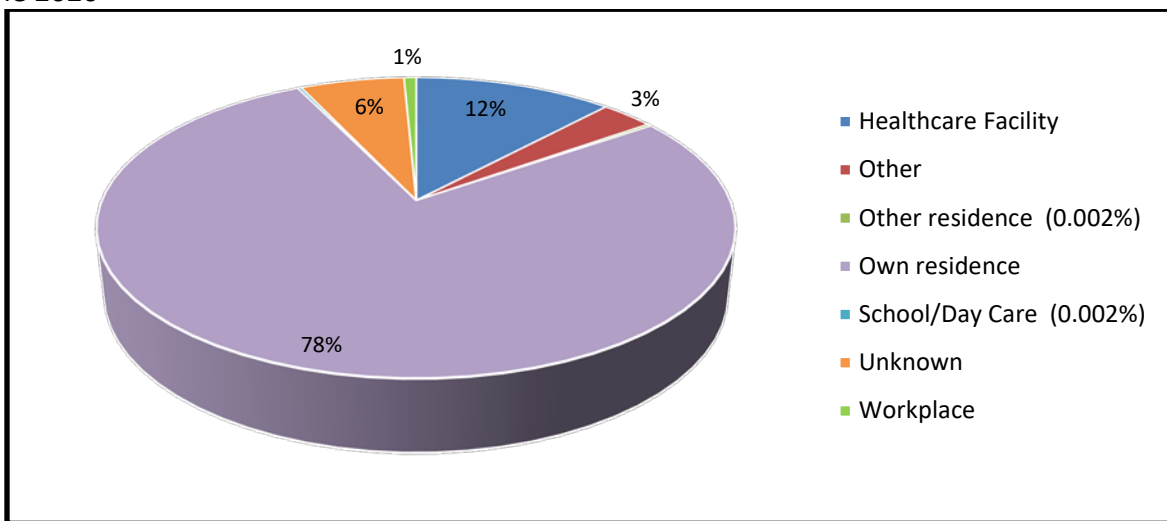


Figure 6. Medical Outcomes for Cases Reported to the National Battery Ingestion Hotline, July 2019 to June 2020.

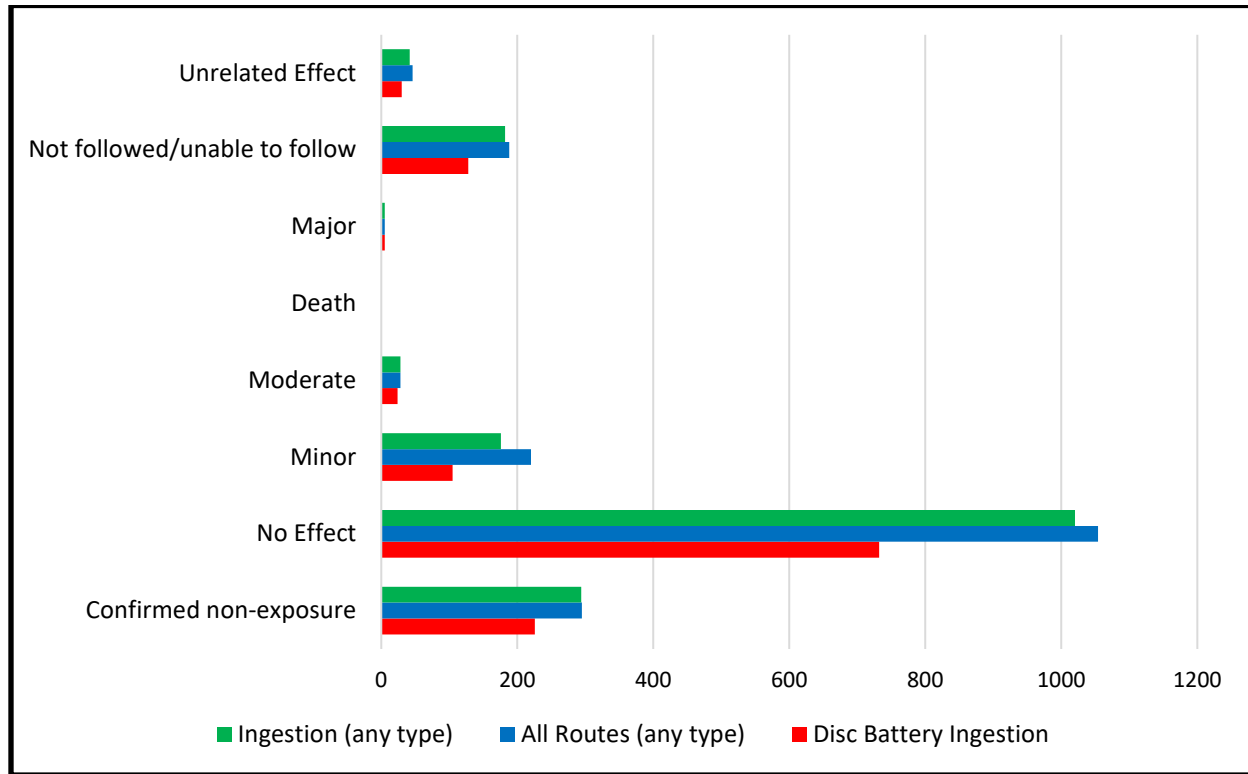


Figure 7. Battery Source by Device for Cases Reported to the National Battery Ingestion Line, July 2019 to June 2020.

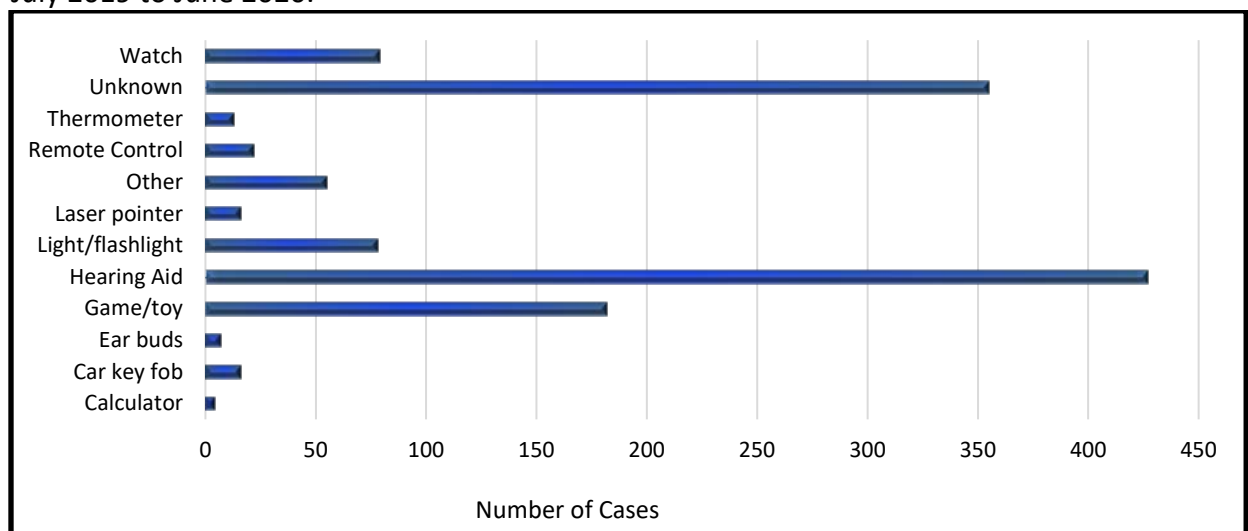


Figure 8. Battery Size, Cases Reported to the National Battery Ingestion Line, July 2019 to June 2020.

