



[REDACTED]

Submersions Related to Non-Pool and Non-Spa Products, 2012 Report

[REDACTED]

September 2012

Kevin Gipson
Directorate for Epidemiology
Division of Hazard Analysis
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

~~CPSA 6(b)(1) CLEARED for PUBLIC~~
 NO MEMS PRIVILEGES OR
PRODUCTS IDENTIFIED *9/25/12*
EXCEPT BY: PETITION
RULEMAKING ADMIN. PRCDG
WITH PORTIONS REMOVED: _____

This analysis was prepared by CPSC staff and has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

Executive Summary

This report characterizes non-pool and non-spa product-related submersion incidents reported to the U.S. Consumer Product Safety Commission (CPSC).¹ The incidents occurred from 2006 to 2010, and involve children younger than 5 years old.

Findings regarding the 684 non-pool and non-spa submersion incidents (2006–2010) for children younger than 5 years old include:

- Victims
 - Severity
 - 434 (63 percent) were fatalities;
 - 233 (34 percent) were injuries; and
 - 17 (2 percent) were incidents with no apparent injury or unknown injury.
 - Majority of the victims were younger than 2 years old (562 incidents, 82 percent).
 - Gender patterns observed were more males (367 incidents, 54 percent) than females (308 incidents, 45 percent).²
 - Majority of the incidents occurred at a residence (632 incidents, 92 percent).
- Products
 - Majority of the incidents involved bath-/bathing-related products (555 incidents, 81 percent):
 - Full-size bathtubs (483 incidents, 87 percent); and
 - Bathing aid in a full-size bathtub (66 incidents, 12 percent); and
 - Bathing aids only (4 incidents, 1 percent); and
 - Bathing aid (1 incident) in a sink and sink only (1 incident);
 - Containers such as buckets and pails were associated with 65 (10 percent) incidents.
 - Remainder of the incidents (64 incidents, 9 percent) included a range of products:
 - Decorative water features, such as ponds (44 incidents, 69 percent); and
 - Septic tanks (13 incidents, 20 percent); and
 - Toilets (3 incidents, 5 percent); and
 - Washing machines (2 incidents, 3 percent); and
 - Sump pump (1 incident, 2 percent); and
 - Playground equipment (1 incident, 2 percent).
- Hazard Scenarios for Fatalities (434 incidents)
 - Bath/bathing category (348 fatalities, 80 percent)
 - Victim left alone temporarily in bathtub in 120 (28 percent) deaths; and
 - Victim and another child were left alone temporarily in bathtub in 99 (23 percent) deaths; and
 - Victim appears to have been assisted by another child in entering the bath and/or turning on the water in 16 (4 percent) deaths; and
 - Victim managed to get into the bathtub on their own in 15 deaths (3 percent); and

¹ Pool or spa-related injuries and fatalities are presented in *Pool or Spa Submersion: Estimated Injuries and Reported Fatalities, 2012 Report, May 2012*.

² There were 9 incidents (1 percent) where the gender was unknown.

- Incident scenario is known but does not fit into the above categories in 15 deaths (3 percent); and
- Incident information for 83 (19 percent) bath/bathing-related deaths provided not enough details to classify a scenario.
- Containers and miscellaneous categories (86 fatalities, 20 percent)
 - Victim found in product outside home in 43 (10 percent) deaths;
 - Victim found in product inside home in 14 (3 percent) deaths; and
 - Victim found in product containing cleaning solution in 13 (3 percent) deaths; and
 - Victim information for 16 (4 percent) deaths provided not enough details to classify a scenario.

Reported Fatalities and Nonfatal Incidents

Submersion incidents associated with consumer products that are reported to CPSC staff can be divided into two categories. The majority of these incidents involve pools or spas, and the remaining incidents involve a variety of products usually found around homes. The annual pool and spa report³ covers the first category of incidents, and the remaining product-related incidents are covered in this report. This report differs from the pool and spa report in that annual national estimates of emergency department-treated submersion injuries cannot be given, due to the small number of non-pool and non-spa submersion injuries in the National Electronic Injury Surveillance System (NEISS). In this report, injury and no apparent injury or unknown injury incidents are reported as counts from the CPSC epidemiological databases (NEISS, Injury and Potential Injury Incidents (IPII), and In-Depth Investigations (INDP)). The methods used to extract, review, and classify fatality counts are similar in this report and the pool and spa report. For any given year of death, the submersion fatality reports from each of the CPSC epidemiological databases can be combined, and duplicate incidents eliminated, in order to provide a minimum annual count of submersion fatalities involving children under 5 years of age, that are associated with consumer products.

³ The latest version of the pool and spa report can be found at: <http://www.cpsc.gov/library/foia/foia12/os/poolsub2012.pdf> .

For 2006 through 2010, CPSC staff received reports of 684 non-pool and non-spa product-related submersion incidents⁴ involving children younger than 5 years old.⁵ The majority of the reported incidents were fatalities (434 incidents, 63 percent). Table 1 shows the total number of reports received by CPSC staff, by year, and provides a breakdown, by severity, of the reported incidents.

Table 1
Non-Pool & Non-Spa Product-Related Submersions Reported to CPSC Staff
for Children Younger than 5 Years Old by Year,⁶ 2006–2010⁷

Year ⁸	Fatal	Injury	No Apparent Injury or Unknown	Total Fatal, Injury, and No Apparent Injury or Unknown	Percent of Total (n = 684)
2010	73	52	5	130	19%
2009	93	61	3	157	23%
2008	81	48	4	133	19%
2007	97	36	4	137	20%
2006	90	36	1	127	19%
Column Total	434	233	17	684	
Percent of Total (n = 684)	63%	34%	2%		

Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), DTSH (Deaths), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII, DTSH, and INDP are updated on an ongoing basis. Also note that NEISS data are being used in this report to count incidents and not to generate national estimates. There were too few NEISS incidents to generate reliable annual national injury estimates.

Over the 5-year period, 54 percent of the total reported incidents involved males; 45 percent involved females; and for the remaining 1 percent, gender was not reported. Similar gender patterns were observed for fatalities (56 percent male, 44 percent female) and injuries (51 percent male, 45 percent female, 4 percent gender not reported).

Based upon examination of the reports, it was determined that most of the incidents (92 percent) occurred at a residence. Two percent occurred at public places, and the remaining 6 percent of reported incidents did not specify a location. The public places included: hotels/motels, childcare centers, homeless shelters, and recreation facilities. Location patterns are similar for fatalities (94 percent residential, 1 percent public) and injuries (88 percent residential, 3 percent public).

⁴ A “submersion incident” is defined as the submersion of the face, particularly the mouth and nose, into a liquid.

⁵ The existing database was updated to include new reports extracted from the CPSC’s epidemiological databases on June 26, 2012.

⁶ Fatality counts are based on the year of death, which may not necessarily be the same year in which the submersion incident occurred.

⁷ Percentages may not add up to 100 due to rounding.

⁸ Reporting is ongoing for 2010, 2009, and 2008.

Review of the reported incidents suggested three incident categories based on the scenario and type of product(s) involved. These categories are: bath/bathing, containers, and miscellaneous.

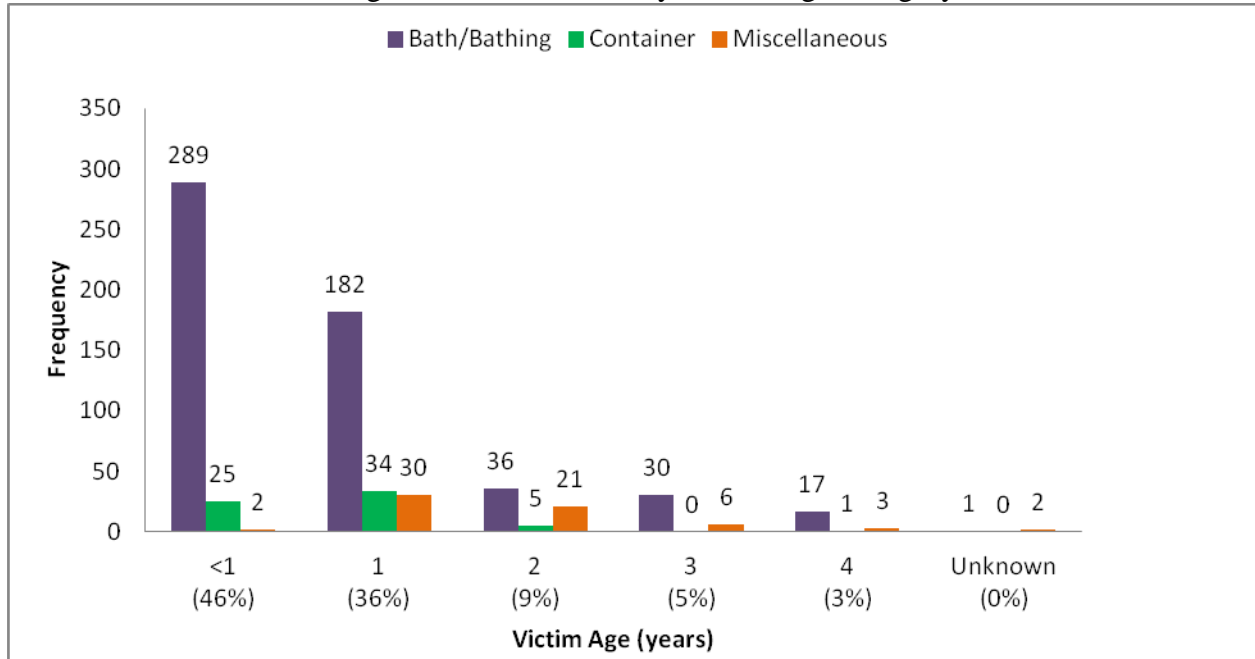
The bath/bathing category involved scenarios where the victim was being bathed or was in a bath-type product(s). This category has the largest number of reported incidents (555 incidents, 81 percent). Similarly, of the 434 total fatalities and the 233 total injuries, the largest number of fatalities (348 incidents, 80 percent) and injuries (193 incidents, 83 percent) are associated with bath/bathing. The bath/bathing incidents most frequently involved children younger than 12 months old (289 incidents; 52 percent). An additional 182 incidents (33 percent) involved children between the ages of 12 months and 23 months old.

Reported incidents related to containers (65 incidents, 10 percent) involved liquid, usually a water-based solution. Fifty-nine of these incidents involved children younger than 2 years old, with many of these children (25 incidents) being younger than 12 months old. A typical scenario associated with a container incident, particularly buckets, involved a child leaning headfirst into the container and toppling forward, submerging at least their face. Compared to bath/bathing incidents, these types of submersions do not usually have the potential for a full-body submersion.

The remainder of the total reported incidents (64 incidents, 9 percent) was associated with a range of products, including: decorative ponds/fountains, septic tanks, toilets, and washing machines. Most frequently, these scenarios involved children 12 months old to younger than 24 months old (30 incidents) and victims 2 years old to younger than 3 years old (21 incidents).

Graph 1 presents the number of reported incidents by victim age for each category.

Graph 1
 Non-Pool & Non-Spa Product-Related Submersions Reported to CPSC Staff
 for Children Younger than 5 Years Old by Victim Age Category,⁹ 2006–2010

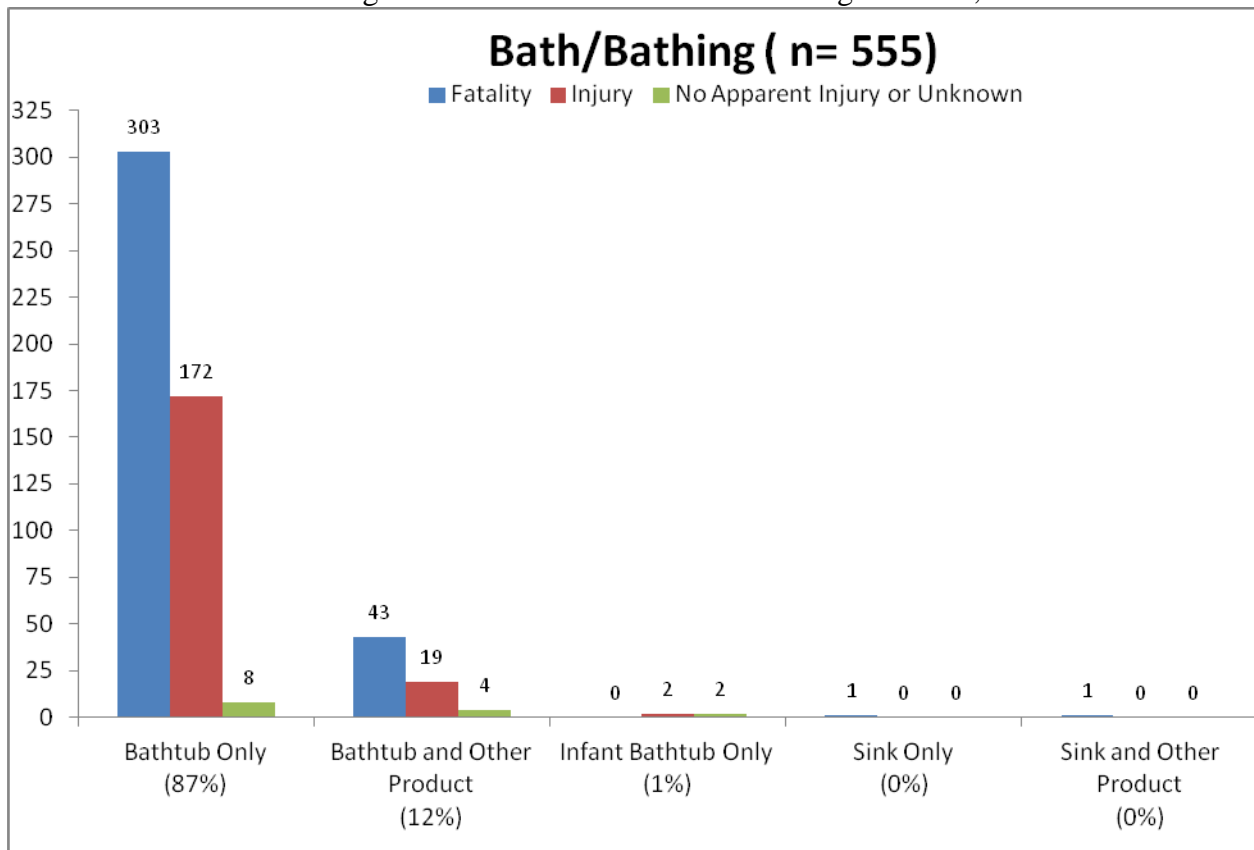


Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), DTHS (Deaths), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII, DTHS, and INDP are updated on an ongoing basis. Also, note that NEISS data are being used in this report to count incidents and not to generate national estimates. There were too few NEISS incidents to generate reliable annual national injury estimates.

⁹ Cases where an age was not given, but the narrative used terms such as: “toddler,” “infant,” “baby,” or “preschooler,” which indicated that a young child was involved, were included and counted in the unknown victim age category.

The 555 bath/bathing incidents occurred predominately in full-size bathtubs. Four hundred eighty-three of these incidents (87 percent) involved full-size bathtubs and did not specify involvement of a bathing aid product.¹⁰ In 66 incidents (12 percent), a bathing aid,¹¹ such as an infant bath seat or bath tub, was used in the full-size bathtub. Fatalities and injuries followed similar patterns for bathtubs (87 percent for fatalities, 89 percent for injuries) and bathtubs with bathing aid products (12 percent for fatalities, 10 percent for injuries). Graph 2 illustrates the number of reported incidents by products in the bath/bathing category.

Graph 2
 Non-Pool & Non-Spa Product-Related Submersions Reported to CPSC Staff
 for Children Younger than 5 Years Old for Bath/Bathing Products, 2006–2010



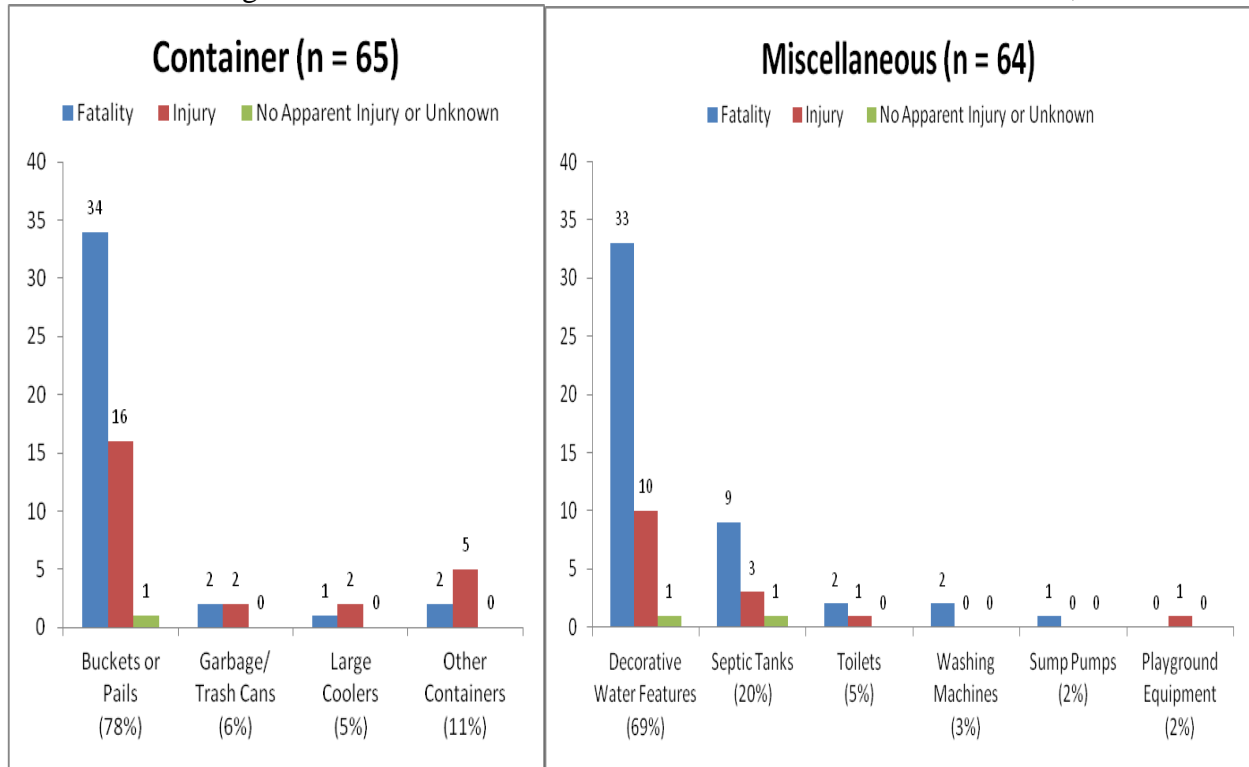
Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), DTSH (Deaths), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII, DTSH, and INDP are updated on an ongoing basis. Also note that NEISS data are being used in this report to count incidents and not to generate national estimates. There were too few NEISS incidents to generate reliable annual national injury estimates.

¹⁰ Failure to mention another product does not necessarily rule out any involvement of another product in these incidents, it simply means no other product could be identified from the source documents.

¹¹ There were four incidents (3 fatalities and 1 injury) where the product used in the full-size bathtub was not designed specifically for a bathing environment, such as a booster seat.

Graph 3 presents the number of container and miscellaneous product incidents by product type. The majority of incidents associated with containers involved buckets or pails (51 incidents, 78 percent). Decorative water features (44 incidents, 69 percent), such as ponds, and septic tanks (13 incidents, 20 percent), comprised most of the products in the miscellaneous category. It is worth noting that roughly one-third of the 33 decorative water feature fatalities occurred in 2010, because the disproportionate distribution of deaths in the most recent and least complete of the five years of data, might indicate a new emerging hazard scenario.

Graph 3
Non-Pool & Non-Spa Product-Related Submersions Reported to CPSC Staff
for Children Younger than 5 Years Old for Containers¹² & Miscellaneous Products,¹³ 2006–2010



Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), DTGS (Deaths), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII, DTGS, and INDP are updated on an ongoing basis. Also note that NEISS data are being used in this report to count incidents and not to generate national estimates. There were too few NEISS incidents to generate reliable annual national injury estimates.

¹² The other containers were items such as plastic containers, clay pots, cisterns, and paint cans.

¹³ Percentages do not add up to 100 due to rounding.

Analyzing the narratives of incident reports involving bathtubs and bathing-related products for reported deaths (348 incidents) during 2006 through 2010, allowed common scenarios to be classified:

- There was a lapse of supervision for a single child in a bathtub in 120 deaths (34 percent of the bathtub and bathing-related fatalities). Many of these incidents reportedly involved caregivers leaving the room temporarily for an activity, such as answering the phone or retrieving an item.
- The victim and another child were left alone temporarily in a bathtub in 99 deaths (28 percent).
- For 16 deaths (5 percent), it appears that another child (typically older) assisted the victim entering the bath and/or turning on the water.
- In 15 deaths (4 percent), the children managed to get into the bathtub on their own. Some of these cases involved a child finding their way into a bathtub that had standing water in it, while others managed to turn the water on themselves.
- In 15 deaths (4 percent), the scenario is known but does not fit into the categories above. These cases are unusual and do not represent any common hazard scenario. These incidents included cases where there was a lapse in supervision due to a caregiver slipping on the bathroom floor and being knocked unconscious, and where it was reported that a caregiver in the bathroom was distracted temporarily and did not notice that the child was under water.
- For 83 deaths (24 percent), the submersion occurred in a bathtub, but little or no additional information was available.

The remaining 86 non-pool and non-spa submersion fatalities for 2006 through 2010, which did not involve bathtubs or bathing-related products, also were classified by common scenarios. In 43 deaths (50 percent of the remaining fatalities), the child was found in a product outside the home, such as decorative yard equipment or a bucket containing liquid. Fourteen children (16 percent) were found in another product inside the home, such as a toilet or container. In an additional 13 deaths¹⁴ (15 percent), the child was found inside the home in a bucket/container or trash basket that was being used for cleaning. Many of these cases involved some type of cleaning solution in the container. For the remaining 16 deaths (19 percent), a child was found in the product, but there were few details available concerning the exact scenario.

¹⁴ One indoor atypical incident included in this count occurred in a decorative fountain in a hotel lobby.

Appendix
Methodology for Report on Submersions Related to Non-Pool and Non-Spa Products

“Drowning” is defined as suffocation and death resulting from the filling of the lungs with water or other substances or fluid, so that gas exchange becomes impossible. A “near drowning” is defined as survival for any length of time after submersion in water and temporary suffocation, but still could have resulted in death. “Submersion” is defined as the condition of being under the surface of a liquid.¹⁵ Staff applies this term to incidents where, at a minimum, the nose and mouth are submerged. The term “submersion” best describes the various events that have occurred because a considerable number of children are injured or do not die immediately.

All percentages in this report are rounded to the nearest integer.

Reported incidents were extracted on June 26, 2012, from the CPSC’s NEISS, IPII, DTHS, and INDP databases for submersions involving children younger than 5 years old or of unknown age¹⁶ for the years 2006 to 2010. This was compared against the incidents from last year’s report, to remove incidents that had been reviewed already. Table 2 gives the product codes of interest used for incident identification.

¹⁵ *Dorland’s Illustrated Medical Dictionary*, 30th Edition, Saunders, 2003.

¹⁶ Cases where an age was not given, but the narrative used terms such as: “toddler,” “infant,” “baby,” or “preschooler,” which indicated that a young child was involved, were included and counted in the unknown victim age category.

Table 2
Product Codes of Interest for Potential Submersion

Product Code	Category	Description
611	Bathing	Bathtubs or showers
648	Bathing	Sinks
1544	Bathing	Baby baths or bathinettes
1557	Bathing	Baby bathtub seats or rings
4030	Bathing	Bathtub or shower enclosures, not specified
413	Container	Waste containers, trash baskets or refuse bins
1107	Container	Other containers
1123	Container	Plastic containers
1141	Container	Containers, not specified
1143	Container	Buckets or pails
1413	Container	Greenhouse or gardening supplies
1715	Container	Pet supplies
3250	Container	Portable food or beverage container
140	Miscellaneous	Washing machines, other or not specified
649	Miscellaneous	Toilets
1417	Miscellaneous	Decorative yard equipment
1466	Miscellaneous	Decorative water feature
1818	Miscellaneous	Cisterns, cesspools or septic tanks
1597	Unknown	Non-poisoning death of victim under age 5

For NEISS and INDP databases, the diagnosis of submersion (code 69) or the narrative containing the term “drown” or “submer” or the diagnosis of anoxia (code 65) or aspirated on foreign object (code 42) or other/not stated (code 71) in conjunction with any of the product codes in Table 2 was used to extract data. For IPII, the hazard type of submersion (code C) or the narrative containing the term “drown” or “submer” or the hazard type of suffocation or strangulation (code 8) or falls (code 9) or other (code F) or unknown (code G) used in conjunction with any of the product codes in Table 2 was used to extract data. For the DTHS database, the International Classification of Diseases, 10th Edition (ICD10) codes related to submersion (W16, W29, W65, W66, W73, W74, Y21) or the narrative containing the term “drown” or “submer” or Table 2 product codes was used to extract data.

Each individual database (NEISS, INDP, IPII, and DTHS) was then merged into one database. Cases were screened to remove all pool and spa product codes (698, 1246, 1284, 3221, and 3251); and cases were marked as fatality, injury, or no apparent injury/unknown. Records were then compared against each other and duplicate records were removed. Cases were compared against existing databases from last year and merged to ensure that all incidents had been captured for 2006 through 2010 and that no duplicates remained. Once the incident set was established, the incidents were examined to code the additional characteristics of the scenario.