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Submersions Related to Non-Pool and Non-Spa Products, 2009 Report

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Executive Summary

This report contains information on non-pool and non-spa product-related submersion incidents involving children younger than five years of age. The reported deaths occurred between 2004 – 2006 and the reported non-fatal incidents are for 2006 – 2008 which are the latest available data. The years for injury frequencies differ from the years for fatality frequencies because of the lag in reporting fatalities. Spa-related injuries and fatalities are not included in the statistics in this report but are presented in the 2009 pool and spa report¹.

Highlighted findings regarding non-pool and non-spa incidents include:

- On average, there were 43 reported non-fatal incidents per year for 2006 – 2008 and 98 reported submersion fatalities per year for 2004 – 2006 for children younger than five years of age.
- The majority of the reported non-fatal incidents for 2006 – 2008 and the reported fatalities for 2004 – 2006 were associated with bathing products such as bathtubs and baby bath seats.
- Children younger than two years of age accounted for 80 percent of the reported non-fatal incidents for 2006 – 2008 and 81 percent of reported fatalities for 2004 – 2006 involving children younger than five.
- 89 percent of the reported non-fatal incidents for 2006 – 2008 and 86 percent of the fatalities for 2004 – 2006 for children younger than five occurred at a residence.

¹ Pool and Spa Submersion: Estimated Injuries and Reported Fatalities, 2009 Report, May 2009.

Reported Non-fatal Incidents

For 2006 – 2008, the Consumer Product Safety Commission (CPSC) staff received reports of 128 non-fatal non-pool and non-spa product-related submersion incidents² involving children younger than five years of age³. Table 1 shows the total number of reports received by CPSC staff by year and provides a breakdown by injury versus no apparent injury or unknown injury status for the reported incidents.

Table 1
Non-Fatal Non-Pool & Non-Spa Product Related Submersion Incidents for Children
Less than Five Years of Age Reported to CPSC, 2006 – 2008

Year	Injury	No Apparent Injury/ Unknown ⁴	Total
Average			43
2008	48	4	52
2007	35	4	39
2006	36	1	37

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

Over the three year period, 48 percent of the reported incidents involved males, 48 percent involved females, and for the remaining 3 percent gender was not reported⁵. The age distribution of children in the reported incidents was as follows: 48 percent of the victims were younger than one year of age, 32 percent were one year or more but less than two years, 11 percent were two years old, five percent were three years old, two percent were four years old, and two percent did not report an age.

The majority of the reported incidents (89 percent) occurred at a residence. Five percent occurred in public places, and for the remaining six percent of the incidents a location was not recorded.

² A submersion incident is defined as the submersion of the face, particularly the mouth and nose, into water.

³ Non-fatal incidents extracted from CPSC's epidemiological databases on November 16, 2009.

⁴ The definition for a submersion incident resulted in a few incidents for 2006 and 2007 being removed from previously reported counts for these years due to no actual submersion occurring.

⁵ Percentages do not add up to 100 due to rounding.

Table 2
 Non-Fatal Non-Pool & Non-Spa Product-Related Submersion Incidents for Children
 Less than Five Years of Age Reported to CSPC by Product, 2006 – 2008

Product(s)	Percent⁶
Bath/Bathing	82
Bathtub only	77
Baby baths/bathinettes or bathtub seats/rings used in bathtubs	2
Baby baths or bathinettes only	2
Container	9
Buckets or pails	6
Other containers	2
Miscellaneous	9
Decorative water features	6
Cisterns, cesspools, or septic tanks	3

Table 2 above shows the products associated with the non-pool and non-spa submersion incidents. Notice that bathtubs and bathing-related products account for 82 percent of the reported incidents involving children younger than five years old. The “baby baths or bathinettes only” category represents incidents involving these products reported without identifying their use in a bathtub or sink.

⁶ Tabulated percentages in subcategories may not add up to category total due to rounding.

Reported Fatalities

Table 3 shows the number of non-pool and non-spa product-related submersion deaths reported to CPSC. As of November 16, 2009, CPSC received reports of 293 fatalities involving children less than five years of age that occurred during 2004 – 2006⁷.

Table 3
Non-Pool & Non-Spa Product Related Submersion Fatalities for Children
Less than Five Years of Age Reported to CPSC, 2004 – 2006

Year ⁸	Deaths
Average	98
2006	92
2005	87
2004	114

Source: CPSC databases including NEISS, IPII (Injury and Potential Injury Incidents), DTHS (Deaths) and INDP (In Depth Investigations).

Of the reported fatalities involving children younger than five years of age that occurred during 2004 – 2006, 53 percent of the victims were males and 46 percent were females⁹. The age distribution was as follows: 49 percent were less than one year, 32 percent were one year or more but less than two years, 11 percent were two years, three percent were three years, and four percent were four years of age⁹. The pattern for age distribution is similar to that observed with non-fatal incidents. That is, the majority of fatalities involved children less than two years of age.

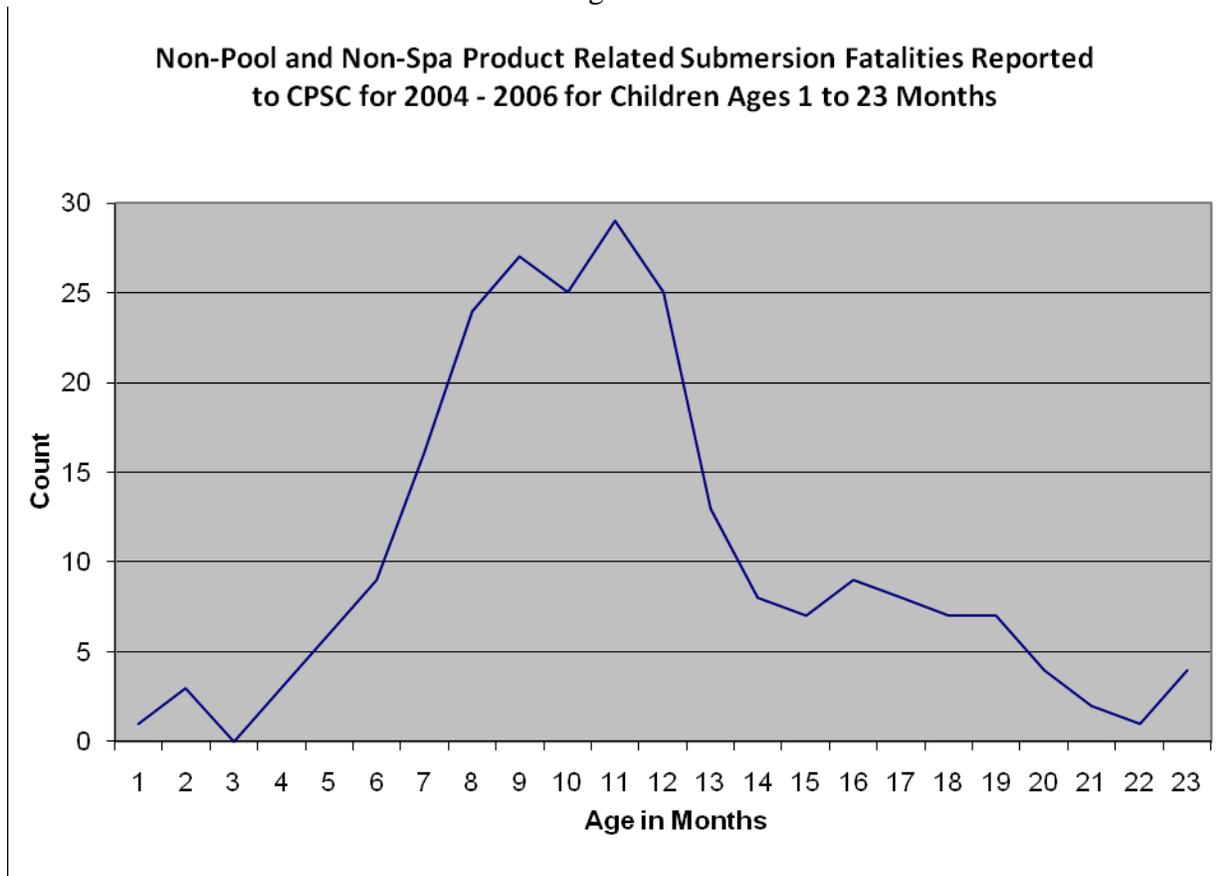
Figure 1 is a graph of the number of reported fatalities by the age of the victim in months for children younger than two years of age. Notice that many of the reports involve children in the age range of seven to thirteen months.

⁷ Total reports include 1, 5, and 1 death reported in NEISS during 2004, 2005, and 2006, respectively.

⁸ DTHS and IPII are updated on an ongoing basis.

⁹ Tabulated percentages do not add up to 100 due to rounding.

Figure 1¹⁰



Source: CPSC databases including NEISS (National Electronic Injury Surveillance System), IPII (Injury and Potential Injury Incidents), DTHS (Deaths) and INDP (In Depth Investigations).

Based on examination of fatality reports it was determined that, like non-fatal incidents, most of the deaths (86 percent) occurred at a residence. One percent occurred at public places, and the remaining 13 percent of the deaths did not record a location.

Bathtubs and bathing-related products were associated with 222 of the 293 reported deaths (76 percent) involving children younger than five years of age for non-pool and non-spa submersions in the period 2004 – 2006. Sixty-three percent of the deaths involved a bathtub only while 12 percent involved a bathtub and another bathing aid such as a bathinette or a bath seat. Buckets, pails and containers were involved in 29 submersion-related deaths (10 percent). Twenty-eight deaths (10 percent) were classified as involving miscellaneous products. This category includes a variety of products such as decorative ponds/fountains, septic tanks, toilets, and washing machines. Table 4 summarizes the frequency distribution for the products involved in these submersion deaths.

¹⁰ CPSC databases code age in months for individuals younger than two. After 23 months, ages are coded in years. A child reported as a 1 year old is coded in the data as a 12 month old but it should be noted that the child's age could range from 12 to 23 months.

Table 4
 Non-Pool & Non-Spa Product-Related Submersion Deaths for Children
 Less than Five Years of Age Reported to CPSC by Product, 2004 – 2006¹¹

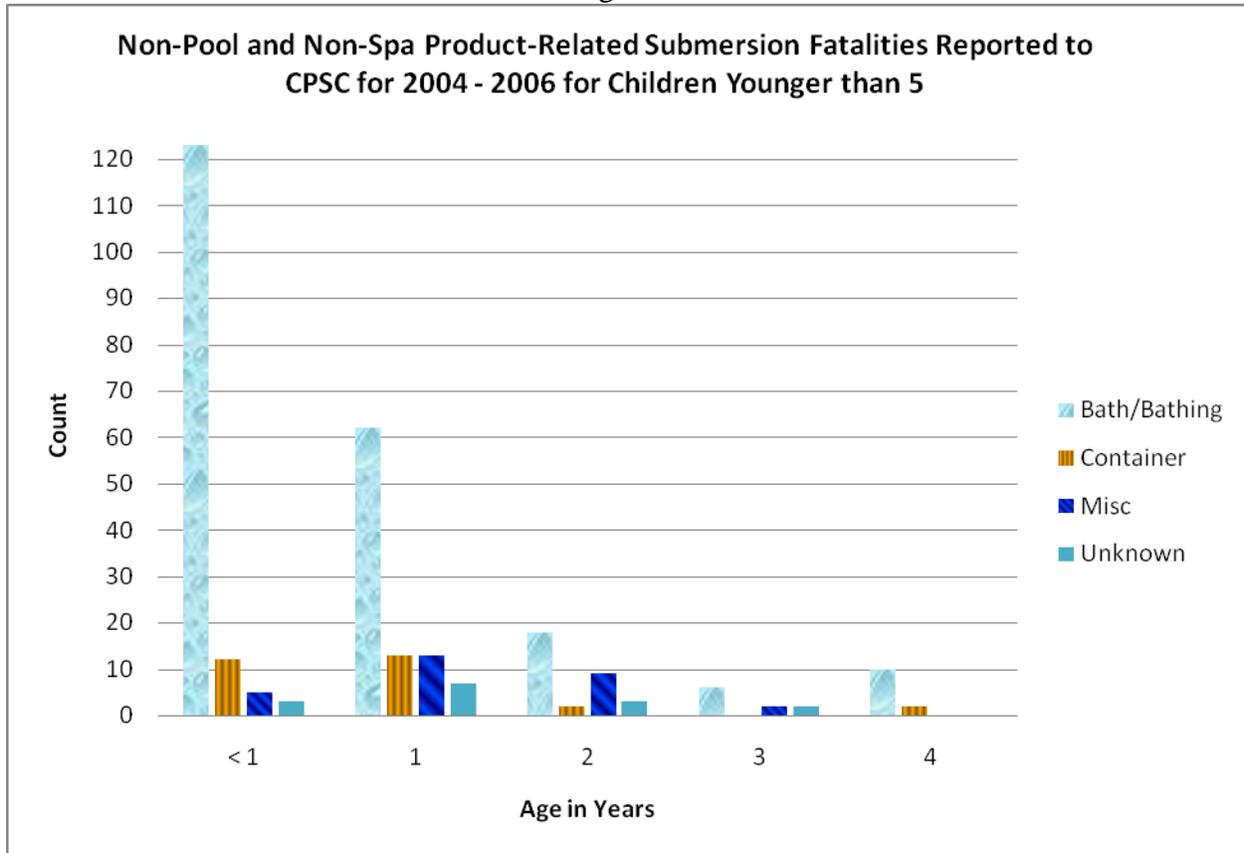
Product(s)	Percent¹²
Bath/Bathing	76
Bathtub only	63
Bathtub and baby baths/bathinettes or bathtub seats/rings	12
Container	10
Buckets or pails	8
Other containers	2
Miscellaneous	10
Decorative water features	5
Cisterns, cesspools, or septic tanks	1
Toilets	1
Washing machines	1
Unknown Product at Residence	5

Figure 2 is a graph of the number of reported fatalities by product category and age of the victim in years for children younger than five years of age. The “bath/bathing” category is associated with the most fatalities for each age group.

¹¹ Tabulated percentages do not add up to 100 percent due to rounding.

¹² Tabulated percentages in subcategories may not add up to category total due to rounding.

Figure 2



Source: CPSC databases including NEISS (National Electronic Injury Surveillance System), IPII (Injury and Potential Injury Incidents), DTHS (Deaths) and INDP (In Depth Investigations).

Analyzing the narratives of incident reports involving bathtubs and bathing-related products for reported deaths during 2004 – 2006 allows common scenarios¹³ to be classified:

- There was a lapse of supervision for a child in a bathtub in 92 deaths (31 percent). Many of these incidents reportedly involved caregivers temporarily leaving the room for an activity such as answering the phone or to retrieve an item.
- The victim and another child were temporarily left alone in a bathtub in 47 deaths (16 percent).
- In five deaths (2 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.
- For five deaths (2 percent), there was another child involved with the victim getting into the bathtub or turning on the water. There were cases where an older child put a younger child in the bathtub.
- In five deaths (2 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

¹³ The 2008 report had the hazard scenario for a child being supervised by an older child. This scenario was dropped in favor of amending the category descriptor to a single child being temporarily left in the bathtub and the victim and another child being temporarily left in the bathtub for this year's report.

include a caregiver slipping on the bathroom floor and being knocked unconscious and a caregiver in the bathroom that was temporarily distracted before noticing the child was under water.

- For 68 deaths (23 percent), the submersion occurred in a bathtub, but little or no further information was available.

The remaining 71 non-pool and non-spa submersion fatalities (24 percent) for 2004 – 2006 that did not involve bathtubs or bathing-related products were classified as well by common scenarios. In 25 deaths (9 percent), the child was found in other products outside the home such as decorative yard equipment or buckets containing liquid. The child was found in other products inside the home in 10 deaths (3 percent) such as toilets and containers. Eight children (3 percent) were 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 28 deaths (10 percent), a child was found in other products with few details concerning the exact scenario.

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

In previous memoranda, the term drowning was used to refer to the hazard (incident). This year, the term submersion is used to more accurately reflect the event that occurred. Drowning is defined as suffocation and death resulting from filling of the lungs with water or other substances or fluid, so that gas exchange becomes impossible. A near drowning is survival for any length of time after submersion in water and temporary suffocation. Submersion is defined as the act of placing or the condition of being under the surface of a liquid¹⁴. Staff applies this term to incidents where, at a minimum, the nose and mouth are submerged. For this reason and since a considerable number of children are injured or do not die immediately, the term submersion better encompasses the various events that have occurred.

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

Data were extracted on November 16, 2009 from NEISS, IPII, DTHS and INDP for submersions involving children younger than five years of age or unknown age¹⁵ for the years 2004 to 2008. This was compared against last year's data to remove incidents that had already been reviewed. Table 5 gives the product codes of interest used in the data extraction based on products found in last year's data extraction for non-pool submersions.

¹⁴ *Dorland's Illustrated Medical Dictionary*, 30th Edition, Saunders, 2003.

¹⁵ Cases where an age was not given but the narrative used terms such as "toddler", "infant", "baby", or "preschooler" that indicated a young child were included.

Table 5
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 (69) or the narrative containing the term “drown” or “submer” or the diagnosis of anoxia (65) or aspirated on foreign object (42) or other/not stated (71) in conjunction with any of the product codes in Table 5 were used to extract data. For IPII, the hazard type of submersion (C) or the narrative containing the term “drown” or “submer” or the hazard type of suffocation or strangulation (8) or falls (9) or other (F) or unknown (G) used in conjunction with any of the product codes in Table 5 were 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 5 product codes were 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, 3251). Cases were marked as fatality, injury, no apparent injury, or unknown; and questionable cases were flagged for team review¹⁶. Records were then associated and duplicate records were removed. Cases were compared against existing databases from last year and merged to ensure all incidents had been captured. Fatalities for 2004 to 2006 and injuries or unknowns for 2006 to 2008 were then selected to be analyzed. Once the incident set was established, the incidents were examined to code the additional characteristics of the scenario.

¹⁶ The data review team consisted of Kevin Gipson (Hazard Analysis) and Sandra Inkster, PhD (Health Sciences).