



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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Memorandum

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TO: The File

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SUBJECT: Submersions related to Non-Pool Products, 2007 Memorandum¹

This memorandum contains information on non-pool product related submersion incidents of children under five years of age. A characterization of non-fatal reports received by the CPSC staff is presented first. Following the discussion of non-fatal incidents is a characterization of fatal incident reports received by CPSC staff. The reported deaths occurred between 2002-2004 and the non-fatal reported incidents are for 2004-2006, in both cases using the latest available data.

Non-fatal Incident Reports

For 2004-2006, the CPSC staff has reports of 129 non-fatal non-pool product related submersion incidents involving children under five years of age². Table 1 shows the number of reports received by CPSC staff by year as well as injury versus no injury for the reported incidents.

¹ This analysis was prepared by the CPSC staff, has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

² Non-fatal incidents extracted on August 2, 2007.

CPSC CONFIDENTIAL - PUBLIC
9/17/07
NO OTHER
PRODUCTION
EXCEPT BY
RULEMAKING AND
WITH PORTIONS REMOVED

Table 1
Non-Fatal Non-Pool Product Related Submersion Incidents for Children
under Five Years of Age Reported to CPSC Staff, 2004-2006

Year	Injury	No Injury	Total
Average			43
2006	45	0	45
2005	42	1	43
2004	35	6	41

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 memorandum 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, 62 percent of the reported incidents were to males, 36 percent to females, and for the remaining 2 percent gender was not reported. The age distribution of children in the reported incidents was as follows: 48 percent of the victims were under one year of age, 29 percent were one year or more but less than two years, 12 percent were two years old, 9 percent were three years old, and 1 percent was four years old³.

The majority of the reported incidents (70 percent) occurred at a residence. One percent occurred at other public places, and for the remaining 29 percent of the incidents a location was not recorded.

Table 2
Non-Fatal Non-Pool Product Related Submersion Incidents for Children
under Five Years of Age Reported to CPSC Staff by Product, 2004-2006³

Product(s)	Percent
Bathtub only	53
Bathtub and (baby bathtub/bathinettes or bathtub seats/rings)	14
Whirlpools, hot tubs or home spas	12
Buckets/Pails/Containers	10
Decorative Yard Equipment	4
Baby baths or bathinettes only	2
Baby bathtub seats or rings only	2
Sinks	2
Sinks and Baby baths or bathinettes	1
Other Products	2

Table 2 above shows the products associated with the non-pool submersion incidents. Notice that bathtubs and bathing related products accounted for 72 percent of the reported incidents to children under five years old. The baby baths or bathinettes only category represents these products used by themselves and not in conjunction with a bathtub or sink.

³ Incidents included injury and no injury reports. Tabulated percentages do not add up to 100 due to rounding.

Death Reports

Table 3 shows the number of non-pool product related submersion deaths reported to CPSC staff. As of April 24, 2007, CPSC staff has received reports of 311 fatalities of children under five years of age during 2002-2004⁴.

Table 3
Non-Pool Product Related Submersion Deaths for Children
under Five Years of Age Reported to CPSC Staff, 2002-2004

Year ⁵	Deaths
Average	104
2004	113
2003	98
2002	100

Source: CPSC databases including NEISS, IPII (Injury and Potential Injury Incidents), DTHS (Deaths) and INDP (In Depth Investigations). Italics denote period for which reporting is incomplete.

Of the reported fatalities of children younger than five years of age during 2002-2004, 56 percent were males and 44 percent were females. The age distribution was as follows: 42 percent were less than one year, 39 percent were one year or more but less than two years, 13 percent were two years, 3 percent were three years, and 4 percent were four years. The pattern for age distribution is similar to that observed with non-fatal incidents. That is, the majority of fatalities involve children less than two years of age.

Based on examination of fatality reports it was determined that, like non-fatal incidents, most of the deaths (78 percent) occurred at a residence. Two percent occurred at other public places, and the remaining 20 percent of the deaths did not have a location recorded.

Bathtubs and bathing related products were associated with 221 of the 311 reported deaths (71 percent) to children under five years of age for non-pool submersions across 2002-2004. Fifty-nine percent of the deaths involved a bathtub only while 12 percent involved a bathtub and another bathing aid such as bathinettes or bath seats. Whirlpools, hot tubs and home spas accounted for 33 non-pool related submersion deaths (11 percent). This is followed closely by buckets, pails and containers which were involved in 30 non-pool related submersion deaths (10 percent). Fourteen deaths (5 percent) involved decorative yard equipment. This includes products such as decorative ponds and fountains. Table 4 summarizes the results for the products involved in the submersion deaths.

⁴ Total reports include 3, 7, and 1 death reported in NEISS during 2002, 2003, and 2004 respectively.

⁵ DTHS and IPII are updated on an ongoing basis.

Table 4
 Non-Pool Products Related to Submersion Deaths for Children
 under Five Years of Age Reported to CPSC Staff by Product, 2002-2004⁶

Product(s)	Percent in Category
Bathtub only	59
Bathtub and baby bathtub/bathinettes or bathtub seats/rings	12
Whirlpools, hot tubs or home spas	11
Buckets/Pails/Containers	10
Decorative yard equipment	5
Other Products	4

Analyzing the narratives of records involving bathtubs and bathing related products for reported deaths during 2002-2004 allows common scenarios to be classified. There was a lapse of supervision for a child in a bathtub in 136 deaths (44 percent). Many of these incidents involved caregivers temporarily leaving the room for an errand such as answering the phone or to retrieve an item. In 9 deaths (3 percent), the child was being supervised by an older child. In many of these cases an older sibling was left to watch a younger sibling. The children managed to get into the bathtub on their own for 9 deaths (3 percent). 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 6 deaths (2 percent), there was another child involved in the child getting into the bathtub or turning on the water. There were cases where an older child was putting a younger child in the bathtub. The submersion occurred in a bathtub with little or no further information for 61 deaths (20 percent).

The remaining 90 non-pool submersion fatalities (29 percent) for 2002-2004 were classified as well by common scenarios. In 36 deaths (12 percent), the child was found in other products outside the home such as outdoor hot tubs/spas, decorative yard equipment or buckets with liquid in them. The child was found in a bucket/container or trash basket that was being used for cleaning for 13 deaths (4 percent). Many of these cases involved some type of cleaning solution in the container. The child was found in other products inside the home in 13 deaths (4 percent) such as toilets and indoor hot/whirlpool tubs. A child was found in other products with few details concerning the exact scenario for the remaining 28 deaths (9 percent)⁶.

⁶ Tabulated percentages do not add up to 100 percent due to rounding.

Appendix
Methodology for Deaths and Non-Fatal Incidents related to Submersion in Non-Pool
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 liquid⁷. For this reason and since a considerable number children are injured or do not die immediately, the term submersion better encompasses the various events that have occurred.

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

Non-fatal injury counts came from NEISS, IPII and INDP data extracted on August 2, 2007 for the time period 2004 to 2006. The NEISS diagnoses codes of submersion (69) and anoxia (65) and IPII hazard type for submersion (C) were used to extract the data. Also, the age restriction was applied to extract data for children under five years of age only. The two product code fields were examined to remove all pools. The NEISS pool product codes are 3251 (Built-in pools), 3221 (Above-ground pools), 1246 (Wading pools), and 1284 (Pools, not specified). All dispositions indicating death as well as any incidents associated with death certificates were removed from the data. Due to a lag in reporting deaths, incidents that have currently been classified as non-fatal could change in the future based on new information indicating a fatality. Further screening of the data for submersions of children under the age of five produced additional incidents which mentioned non-pool submersions in their narratives.

Data were extracted on April 24, 2007 from NEISS, IPII, DTHS and INDP for submersion deaths involving children under five years old for the years 2002 to 2004. It should be noted that for a given year, incidents are included on an ongoing basis for IPII and DTHS. In particular, additional reports are generally received for the most recent years. Submersion incidents which were associated with a diagnosis code of submersion (69) and did not have product codes 3251 (Built-in pools), 3221 (Above-ground pools), 1246 (Wading pools), and 1284 (Pools, not specified) were extracted into a database. Additional searches for diagnoses anoxia (65) and aspirated on foreign object (42) were also examined to determine if submersion criteria were met for inclusion. Information from cases meeting the inclusion criteria was extracted into an Excel spreadsheet and sorted by date and incident location. As submersion incidents are notable events in the community where they occur, there were often multiple news reports (IPII), a medical examiner's report (IPII), a death certificate (DTHS), an in-depth investigation (INDP) and, less frequently, a hospital emergency department report (NEISS) for a single incident. IPII is a mixture of various types of information including newspaper clippings, consumer complaints, and reports from other government agencies such as medical examiners/coroners. Information is voluntarily submitted to IPII, so that staff cannot be sure that information on all the deaths has been received. Source documents were checked to eliminate

⁷ *Dorland's Illustrated Medical Dictionary*, 30th Edition, Saunders, 2003.

duplicate incident reports. Once the incident set was established, the incidents were examined to code the additional characteristics of the scenario.