**UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814**

Memorandum

Date: December 18, 2015

TO   :   The File

THROUGH: Kathleen Stralka, Associate Executive Director
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SUBJECT :   Unintentional Pediatric Poisoning Injury Estimates for 2014

In 2014, there were an estimated 87,400 emergency department-treated injuries involving unintentional pediatric poisonings. Unintentional pediatric poisonings are poisonings and chemical burns[1] resulting from accidental access to a substance by a child younger than the age of 5 years. Adverse reactions, therapeutic errors, and exposures beyond the victim's control that would not be impacted by the Poison Prevention Packaging Act (PPPA) were not included in the estimates. For a full specification of out-of-scope and in-scope cases, see the Methodology section. The annual average estimated number of emergency department-treated unintentional pediatric poisoning injuries across 2012–2014 is 85,300.

Results
Staff found 2,814 cases involving unintentional pediatric poisonings in 2014 in the National Electronic Injury Surveillance System (NEISS). Based on these cases, staff computed a national estimate of 87,400 emergency department-treated injuries, with a coefficient of variance (C.V.) of 10.21 percent. The 95 percent confidence interval (C.I) for this estimate is 69,900 to 104,900. A breakdown of the estimate by diagnosis is shown in Table 1 (next page).

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[1] Chemical burns are included in this memo because many of the substances regulated by the Poison Prevention Packaging Act cause chemical burns. Examples of such substances include: tire cleaners, etching creams, drain cleaners, and oven cleaners.

Table 1: 2014 Emergency Department-Treated Unintentional Pediatric Poisoning Estimates by Diagnosis*

Diagnosis (Code)	Estimate	Cases	C.V.	95% C.I.
Poisoning (68)	83,100	2,700	10.17%	66,600–99,700
Chemical Burn (49)	4,200	114	18.12%	2,700–5,700
Total[2]	87,400	2,814	10.21%	69,900–104,900

Source: National Electronic Injury Surveillance System, April 2015
* Adjusted to exclude adverse reactions, therapeutic errors, and exposures beyond the victim's control.

Table 2 gives a breakdown by year of the estimated emergency department-treated unintentional pediatric poisonings. Each diagnosis estimate and the total estimate were analyzed for a trend across years, but no statistically significant trend was found (the lowest p-value for all trends was 0.2612). The directional year to year increases in chemical burns is not statistically significant. A greater number of laundry packet chemical burn incidents (in addition to increases in burns associated with other products like toilet cleaners, general cleaners and bleach) was apparent though also not statistically significant.

Table 2: 2012–2014 Emergency Department-Treated Unintentional Pediatric Poisoning Estimates by Year*

Diagnosis (Code)	2012	2013	2014	Average
Poisoning (68)	85,900	76,700	83,100	81,900
Chemical Burn (49)	2,800	3,300	4,200	3,400
Total[2]	88,700	80,000	87,400	85,300

Source: National Electronic Injury Surveillance System, April 2015
* Adjusted to exclude adverse reactions, therapeutic errors, and exposures beyond the victim's control.

In 2014, there were an estimated 66,800 emergency department-treated unintentional pediatric poisonings that occurred at home, or 76 percent of the total 87,400 emergency department-treated unintentional pediatric poisonings. An estimated 19,500 (22 percent) of the 2014 emergency department-treated unintentional pediatric poisonings occurred at an unknown location. The remaining injuries occurred at other locations, including streets, manufactured/mobile homes, farms, schools, playgrounds, and other public property.

Table 3 (next page) gives a breakdown, by the product involved, for the estimated emergency department-treated unintentional pediatric poisonings. Note that the product categories are not exclusive. It is possible for two different products to be associated with the same poisoning.

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[2] Columns may not sum to totals and average may not correspond exactly to totals due to rounding.

Table 3: 2014 Emergency Department-Treated Unintentional Pediatric Poisoning Estimates by Top Ten Products*

Product	Estimate	C.V.	95% C.I.
Blood Pressure Medications	9,000	19.36%	5,600-12,400
Acetaminophen	7,900	16.17%	5,400-10,400
Anti-Depressants	4,900	19.70%	3,000-6,700
Bleach	4,600	16.63%	3,100-6,100
Narcotic Medications[3]	4,500	22.91%	2,500-6,500
Laundry Packets	4,100	20.96%	2,400-5,800
Ibuprofen	3,800	24.12%	2,000-5,700
Unknown	3,600	18.16%	2,300-4,800
Diphenhydramine	3,500	20.52%	2,100-4,900
Sedatives and Anti-Anxiety Medications[4]	3,400	18.12%	2,200-4,600

Source: National Electronic Injury Surveillance System, April 2015

* Adjusted to exclude adverse reactions, therapeutic errors, and exposures beyond the victim's control.

The emergency department-treated unintentional pediatric poisoning estimates increased from 2013 to 2014 for most of the top ten products (blood pressure medications, anti-depressants, bleach, narcotics medications, laundry packets, Ibuprofen, Diphenhydramine, and sedatives and anti-anxiety medications). Acetaminophen was ranked first in 2013, but dropped to second in 2014. Unknown drugs decreased from third in 2013 to eighth in 2014.

Methodology

NEISS is a probability sample of approximately 100 U.S. hospitals having 24-hour emergency departments (EDs) and more than six beds. Coders in each hospital code consumer product-related data from the ED record, and then the data are transmitted electronically to the CPSC. Because NEISS is a probability sample, each case collected represents a number of cases (the case's *weight*) in the total estimate of injuries in the United States. Different hospitals carry different weights, based on stratification by their annual number of emergency department visits (Kessler and Schroeder, 1999).

Hazard Analysis staff searched NEISS for all incidents with the poisoning diagnosis (code 68) or the chemical burn diagnosis (code 49) involving children under the age of 5. All incidents were examined by Health Sciences staff for cases that were not unintentional exposures, but were generally associated with a prescribed therapeutic regimen, or an unforeseen incidental exposure from a situation outside the victim's control. These types of cases, delineated below, are out of scope because they do not directly involve a child independently accessing a poison.

1. *Adverse Reactions:* This includes undesirable effects that occur with the proper use of a substance (*e.g.*, drowsiness after administration of an antihistamine). Allergic, hypersensitivity,

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[3] In previous reports (2011 and 2012), this category was referred to as anti-spasm medications, but narcotic medications is a better description of this product class.

[4] Benzodiazepines.

or idiosyncratic reactions to recommended doses of vaccines, antibiotics, or other medications are also included in this category.

2. *Therapeutic Errors:* Unintentional mistakes made during a prescribed or recommended course of treatment, such as: (1) a caregiver administering the wrong substance or an overdose (*e.g.*, two tablespoons instead of two teaspoons) to the patient; (2) a pharmacist mislabeling the dosage instructions on a prescription; and (3) a relative giving medication to the wrong child.

3. *Incidental Exposures:* This category refers to exposures resulting from a situation beyond the control of the victim. Examples include exposures to: (1) chlorine fumes from a pool; (2) gas fumes while in a dwelling or an automobile; (3) gasoline while it is pumped into an automobile; and (4) illicit drugs (*e.g.*, cocaine, methamphetamine, marijuana) while the caregiver is using or producing them.

Hazard Analysis staff used SAS$^®$ version 9.4 to compute estimates and the associated coefficients of variation for the number of unintentional pediatric poisoning injuries. A coefficient of variation (C.V.) is the ratio of the standard error of the estimate (*i.e.*, variability) to the estimate itself. This is generally expressed as a percent. A C.V. of 10 percent means the standard error of the estimate equals 0.1 times the estimate.

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