



Children ingesting dishwashing powder: Update 2007

Summary

Dishwashing powders for automatic dishwashing machines are readily available in many New Zealand homes and kitchens. Every year children access and ingest these powders.

Records of calls to the National Poisons Centre show there were 615 reported incidents of children ingesting dishwashing powders from June 2002 to January 2005, an average of nineteen per month. The ages of children involved ranged from seven months to seven years old, with the most incidents (109) involving two year olds.

Up until July 2007 New Zealand regulations permitted the sale of highly caustic formulations of dishwashing powders. Now the Domestic Cleaning Product (corrosive) Group Standard (2006) provisions of the Hazardous Substances and New Organisms (HSNO) Act (1996) prohibits the sale of powders with a pH of greater than 12.5.

While this will remove very caustic powders from New Zealand homes, Safekids NZ reminds families that automatic dishwashing powders remain a substance that must be kept away from children.

Safekids NZ congratulates Government for making New Zealand a safer place for children and urges;

- **Monitoring to ensure the industry maintains full compliance with regulatory requirements**
- **Child resistant packaging be used, reducing the opportunity for children to unintentionally access dishwashing powders**
- **Prominent warning notices on dishwashing powder containers, informing about the danger posed to children, with storage advice and information about what to do in the event of ingestion.**
- **Ongoing education programmes to inform the public of the dangers to children posed by dishwashing powders and other household cleaning agents.**

**Safekids Position Paper
Senior Policy Analyst
Julie Chambers**

July 2007

1. Background

Unintentional poisonings are a leading cause of hospital admissions of children under the age of five, both in New Zealand and overseas. Within New Zealand, on average, one child a year dies from unintentional access to poison [1-4] .

A record of calls to the New Zealand National Poisons Centre in 2000 shows enquiries about children ingesting household agents are the most frequently occurring concern by callers (figure one). From June 2002 to January 2005 there were 615 reported incidents of children ingesting dishwashing powders, an average of nineteen per month [5].

The ages of children involved ranged from seven months to seven years old, with the most incidents (109) involving two year olds (figure two). Most of the available brands are cited in this analysis (figure three). The frequency of some brands being identified is likely to be related to the numbers sold or available on supermarket shelves. Other generic or less well known brands are also available on supermarket shelves and may contribute to the Unknown Brand category. [5]

Hospitalisations also occur. In a four year period over June 2002 to January 2005 eleven children were admitted to Starship Children's hospital after ingesting dishwashing powder. Five children required admission to the paediatric intensive care unit. Two of these cases have and will require ongoing, multiple operations, including tracheostomy. These severe cases were following the ingestion of a specific type of highly caustic dishwashing powder [6].

2. Legislation and Group Standard Regulation

The Hazardous Substances and New Organisms (HSNO) Act (1996) provides for the classification and control of dangerous substances within New Zealand. The sale, use and storage of automatic dishwashing machine powders come under the control of this Act, under its Group Standards provisions [7].

Group Standards are a regulatory mechanism under Part 6A of the HSNO Act, providing an approval and control regime for the use of groups of specifically named hazardous substances. This mechanism was established by the Hazardous Substances and New Organisms (Approvals and Enforcement) Amendment Act 2005, commonly referred to as the Macropatch Amendment [8].

The Domestic Cleaning Products (Corrosive) Group Standard (2006) covers the sale, use and storage of a range of domestic cleaning agents. From 1st July 2007 this Group Standard prohibits the sale of dishwashing powders with a pH of greater than 12.5 (section 4, clause 5) [8].

Dishwashing powders legally remaining on the shelves after this date will have a formulation that does not need to be highly caustic to be effective as a cleaning agent [9]. The removal of such highly caustic powders from New Zealand kitchens will prevent the incidence of the very severe burn injuries sustained when small children have ingested such powders. However must be stressed that it is still undesirable for children to access and ingest any dishwashing powder [6].

3. Access

Children access automatic dishwashing powder in two main ways, either directly from the container or directly from the dishwasher itself.

Many reported incidents involve a child tasting powder from the dispenser on the door of the dishwasher, either prior to or after its operation. Stopping this method of access requires an adult to ensure the dishwasher door is firmly latched at all times and the dispenser is empty unless the machine is in a wash cycle. Some machine models have child safety locks on the doors. Another suggested strategies is to be sure the commonly occurring post cycle 'sludge' is avoided by correct use of the both the powder and dishwasher [10].

The second method of access to the powder is directly from the dishwashing powder container or box. The high incidence of children accessing automatic dishwashing powder directly from their containers is most likely due to the habit of placing powder containers in low level cupboards under the kitchen sink.

Certain containers have featured more frequently in the more severe childhood ingestions. One brand of powder, in one container style, was involved in six of the eleven cases admitted to Starship hospital through 2004 and early 2005 [6].

The frequency of particular brands or containers being associated with greater numbers of ingestions may reflect the greater market share and prevalence of that particular product in homes, or it may reflect the interaction between the child and the type of container used by the manufacturer.

4. Packaging

Child resistant packaging is designed to lengthen the time it takes for a child to open a container. This increases the probability of adult intervention before the child accesses the contents. Child resistant packaging is effective in preventing poisonings, but such packaging is not 'child proof' [1].

New Zealand has a Standard (NZS 5825: 1991) for child resistant closures that provides a best practice description for child secure packaging. However, even with child resistant closures that meet the most stringent performance testing requirements, a certain number of children will still be able to access the substance within the container [1, 11].

The Cleaning Products (Corrosive) Group Standard (2006) also defines child resistant packing and identifies which substances which must have child resistant packaging (pages 14, 20 and 23). This definition is similar to NZS 5825:1991 [8, 11].

Dishwashing powder manufacturers and distributors currently provide containers with approximations of child resistant closures. Unfortunately many of these containers can still be easily opened, especially after incomplete closure [9].

Frequent opening and closing of the lid on some brands distorts the plastic of the lid, flexing it in a way that reduces the effectiveness of the latch component on the neck of the bottle. This can lead to the belief the contents are secure from children, and that the container meets the specifications contained within the Group Standard, when in reality access is quite simple and quick [9].

Another feature is container design. The bottle opening on several brands is wide, allowing the contents to flow freely when the bottle is tilted. That feature facilitates the more rapid delivery of larger quantities of the dishwashing powder into an infant's mouth and increases the likelihood more will be ingested.

Loose powder or granules are usually sold in plastic containers and tablets are usually packaged in blister packs within boxes. However even boxes may not provide secure packaging. One overseas study reports a child ingested powder after it had "sucked through a corner of a cardboard box". Container refills are also at risk of being manufactured in lightweight materials that may provide greater access [10].

Well constructed packaging that does not meet an approved Standard can still create delay and provide a good first line of defence against unintended access. Based on evidence of the effectiveness of child resistant closures, and understanding of how they work, the provision of dishwashing powders in these containers would be helpful in reducing the incidence of dishwashing powder ingestion [2].

Manufacturers are urged to select packaging and product forms, such as tablets, that will best prevent small children from unimpeded access to all automatic dishwashing products.

5. Education

Public education on the safe use and storage of dishwashing powders is essential and must be on-going.

Young children are at risk from the presence of dishwashing powders in their own homes and homes where they might only occasionally visit. This means education and information strategies should be targeted to parent or caregiver groups and the wider community, and manufacturers and distributors of these products [12]

Industry representative have been co-operative in providing educational resources in both New Zealand and Australia.

The Victorian Committee on Poisoning Prevention (Australia) invited detergent and machine suppliers and representatives of the packaging industry to a workshop to collectively seek a solution to this complex problem. Within weeks of the workshop suppliers of generic brand dishwashing products undertook improved safety measures [10].

Within New Zealand one company (Reckitt and Benckiser) funded the development and distribution of educational materials to promote safe use and storage of dishwashing powders [12].

Warning labels are a vital part of public education. Such labelling is already present on containers available, but with high rates of unintentional ingestions there would be benefit in making these warnings even more evident.

The dishwasher door was one method of access. Any residual sludge left in the dispenser following a cycle is unsafe. It is recommended the public are also reminded of this danger.

Educational programmes need to stress the importance of;

- Keeping the product out of reach of children, either by locating the container on a high shelf and/or having a child resistant latch on the storage cupboard door
- Securely closing the lid on the container at all times
- Keeping powders in their original containers
- Ensuring people in the household follow instructions about the correct use of the dishwasher and powder, keeping the dishwasher door closed if a cycle has been incomplete or if the powder was not completely dissolved during a cycle.
- Contacting the Poisons Center in the event of any suspected poisoning
New Zealand: **0800 POISON** (0800 764 766)
<http://www.poisons.co.nz>
- or seeking medical advice from a health professional urgently

6. Conclusion

Dishwashing powder is a substance readily available in household kitchens. Every year substantial numbers of New Zealand children access and ingest dishwashing powders. They do so from both containers and dishwashing machines.

The New Zealand Government's action to remove dishwashing powder formulations with a pH greater than 12.5 was an important step in preventing severe cases of poisoning.

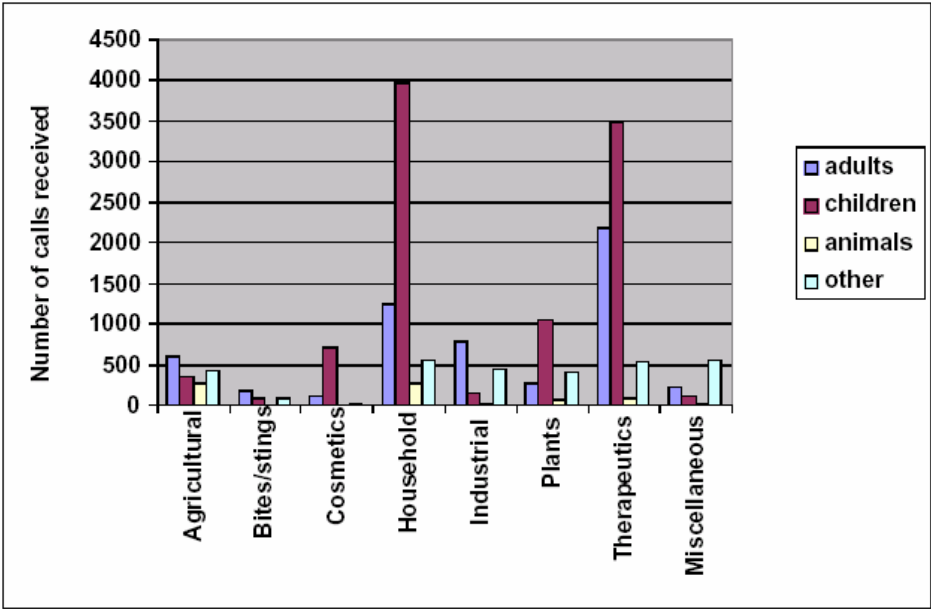
Safekids NZ congratulates Government for making New Zealand safer place for children and urges;

- Monitoring to ensure the industry maintains full compliance with regulatory requirements
- The use of child resistant packaging that reduces the opportunity for children to access dishwashing powders
- Prominent warning notices on dishwashing powder containers, informing about the danger posed to children, with storage advice and information about what to do in the event of ingestion.
- Ongoing education programmes to inform the public of the dangers to children posed by dishwashing powders and other household cleaning agents.

In case of poisoning:
 Please contact your local Poison Information
 Service immediately:
 New Zealand: **0800 POISON** (0800 764 766)
<http://www.poisons.co.nz>

Or seek medical advice from another health professional

Figure One:
 Distribution by subject and agent of telephone enquiries for the period July 2000 - June 2001 (total n = 19288).



*Source: National Poisons Centre; Thirty Sixth Annual Report July 2000 – June 2001
 Department of Preventive and Social Medicine; University of Otago*

Figure Two: DISHWASH POWDER INGESTIONS by Age; JUNE 2002 – JANUARY 2005

Age in Months	Number of Children
7	3
8	3
9	15
10	26
11	37
12	73
13	19
14	21
15	30
16	31
17	24
18	57
19	22
20	24
21	10
22	12
23	19
24	109
25	2
26	2
27	1
28	1
29	2
30	21
3 years	24
4 years	9
5 years	1
6 years	1
7 years	1
Age unknown	15

Female = 269

Male = 334

Unknown gender = 12

Source: National Poisons Centre; Department of Preventive and Social Medicine; University of Otago

Figure Three:

Percentage of Dishwasher Powder calls by brand name (includes powders, tablets and granules)

Brand Name	Percentage of calls
Active	20
Advance	0.002
Amaze	0.006
Finish	41.5
Morning Fresh	10
Sun	3.5
Unknown Brand	25

Source: National Poisons Centre; Department of Preventive and Social Medicine; University of Otago

Acknowledgements:

Safekids NZ acknowledges and thanks; the National Poisons Center; the Environmental Risk Management Authority (ERMA); the Ministry of Health; Auckland Regional Public Health Service and Reckitt and Benckiser for their intervention and support of action to prevent injury to New Zealand children

References

1. Safekids New Zealand, *Unintentional Childhood Poisoning*. Fact Sheet, 2006.
2. Smith N and Temple W, *Childhood Poisoning in New Zealand*, in *Department of Pharmacology and Toxicology University of Otago*. 1998: Dunedin.
3. Trotter M, et al., *Unintentional Poisonings in Children*. IPRU Fact Sheet Number 32, 2004.
4. Scott D, et al., *Non - Medical Ingestions in Queensland Children*. Injury Bulletin 87, ed. Queensland Injury Surveillance Unit. 2005, Brisbane.
5. National Poisons Centre, *THIRTY SIXTH ANNUAL REPORT July 2000 - June 2001*, in *Department of Preventive and Social Medicine University of Otago, Dunedin*. 2001.
6. Bertinelli A, et al., *Serious injuries from dishwasher powder ingestions in small children*. Journal of Paediatrics and Child Health, 2006. 42(3): p. 129 - 133.
7. New Zealand Government, *Hazardous Substances and New Organisms Act*. 1996.
8. New Zealand Government, *Cleaning Products (Corrosive) Group Standard*. 2006: Environmental Risk Management Authority of New Zealand.
9. Fredrickson B, *Acid Test - Dishwasher Detergent Safety*. Consumer 455, March 2004: p. pp 12 -14.
10. Cornish L and Dobbin M, *Automatic dishwasher detergent poisoning: opportunities for prevention*. Australia and New Zealand Journal of Public Health, 1996. 20(3): p. 278 -282.
11. Standards Association of New Zealand, *Child Resistant Packages NZS 5825*. 1991: New Zealand Standards Council.
12. Coyne-Beasley T, et al., *Storage of Poisonous Substances and Firearms in Homes with Young Children Visitors and Older Adults*. American Journal of Preventive Medicine, 2005. 28(1): p. 109–115.