

EVERYONE CAN BE A LIFESAVER



Royal Life Saving
THE ROYAL LIFE SAVING SOCIETY AUSTRALIA

Home Pool Barrier Research Program 2004 - 2007

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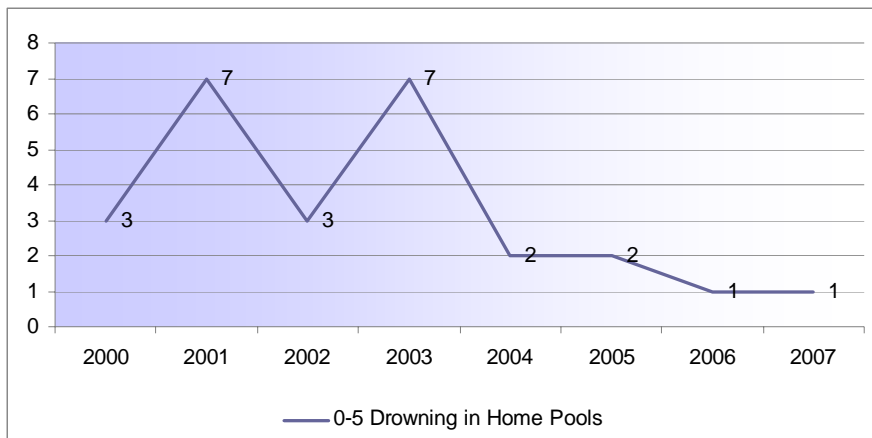
- Department of Housing and Works
- The Local Government Authorities in which the inspections were undertaken
- Royal Life Saving Society Australia (Western Australia Branch) Home Swimming Pool Barrier Inspectors



Executive Summary

This report looks at the factors contributing to toddler drowning in home swimming pools/spas, the effectiveness of child safety barriers, and the effectiveness of the current inspection system in Western Australia.

The report analyses information from coronial records and a sample of 996 swimming pool barrier assessments conducted in five local government areas by the Royal Life Saving Society over the 2004 – 2007 period. It builds upon a similar study conducted by Royal Life Saving over the 2000 – 2003 period.



Over the last four years six (6) children aged 0-5 have drowned in home swimming pools/spas. This represents a reduction compared to the previous 4 years when twenty one (21) drowned. Consistently a lack of supervision and or inadequacies in the installation/maintenance of the pool barrier was identified as contributing factors in these accidents.

Since 1991 Western Australian home pool barriers have been inspected at least every 4 years. Based on the sample of 996 barrier assessment there as been improvement in compliance of these barriers when first inspected compared to previous '4-year' cycles.

Over the 2004 – 2007 inspection cycle it is estimated eighty-four percent (84%) of pools had an effective barrier prior to the first inspection. Or from an alternative point of view, 16% of barriers became non-compliant over the same 4 year period. This compares favourably with 74% compliance at first inspection during the 2000 – 2003 cycle and is a significant improvement compared to only 45% compliance at first inspection back in 1991, the time before inspections were compulsory (Gillam et. al. 2003).

In terms of barrier faults, the most common were the self closing mechanisms of doors/gates, the latch height/shielding and/or the presence of cli mbable objects.

This report also found it was more common for a Type 2 barrier to have a fault (26% of the time) than a Type 1 '**isolation**' barrier (14% of the time).

It is hoped the information in this report will assist policy makers in the Department of Housing and Works and Local Government improve the existing inspection system by providing information on:

- the factors contributing to toddler drowning in the home
- the effectiveness of child safety barriers, and
- the effectiveness of the current inspection system

Introduction

- Drowning is the leading cause of unintentional death amongst the 0-5 year old age group in Western Australia. Between 2000 and 2007, 50 children aged 0-5 drowned.
- Drowning and near drowning events contribute significantly to the health burden of the Western Australian population.
- Per head of population, the 0-5 Age Group are more than twice as likely to drown as the general population. The 0-5 Age Group makes up less than 10% of the population yet they represent 20% of all drowning fatalities.
- For every drowning, it has been suggested that 4 children are hospitalised and 16 children will require emergency department care as a result of a near drowning (Moon & Long 2002). 28% of these near drowning victims will be left with some selective deficit, while a further 3% will be left in a permanent vegetative state (Fenner 2000).
- Drowning contributes the greatest average number of potential years of life lost (PYLL) of all injury types, unintentional or intentional (Gillam et. al. 2003). Per fatality, an average of 44.8 years of life are potentially lost.
- Swimming pools are the most common location for submersion events involving the 0-5 Age Group, particularly amongst pre-schoolers aged 3-5 (Fenner 2000).
- Knowledge specifically relating to home pool barriers first began when researched was conducted by the University of Western Australia on the adequacy of inspection of private swimming pool barriers for the period 1988 – 2000 (Stevenson et al 2003).
- The information from Stevenson's research along with a report produced by the Royal Life Saving for the 2000 – 2003 period have been used as a benchmark in this report.

Methodology

Drowning Data Collection

Drowning data was collated and analysed from records from the Western Australian Coroners Court. Only unintentional deaths were analyzed.

For the purposes of this report, Royal Life Saving has extracted data on drowning incidents for 0-5 year olds for the period January 1 2000 to December 31 2007.

Barrier Assessment Data Collection

In the period 2004-2007 Royal Life Saving assessed over 20,000 home swimming pool barriers throughout Western Australia including metropolitan, rural, large and small communities.

Data from five Local Governments that represent a relatively broad cross-section of WA regions has been used.

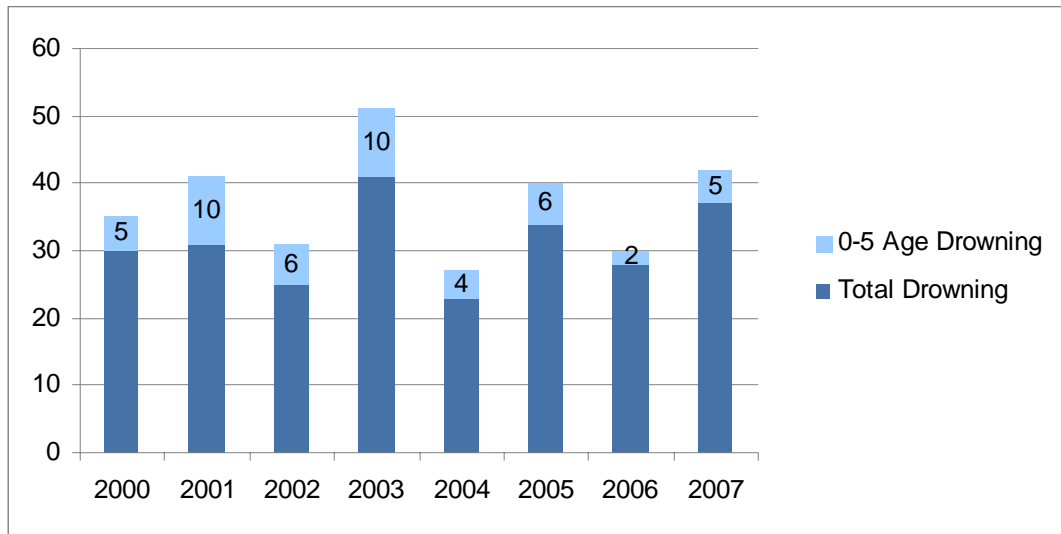
Assessment records were randomly selected from the five local governments. The sample size is tabled below;

	Sample
Local Government 1	70
Local Government 2	57
Local Government 3	585
Local Government 4	229
Local Government 5	55
Total	996

A record of every assessment included:

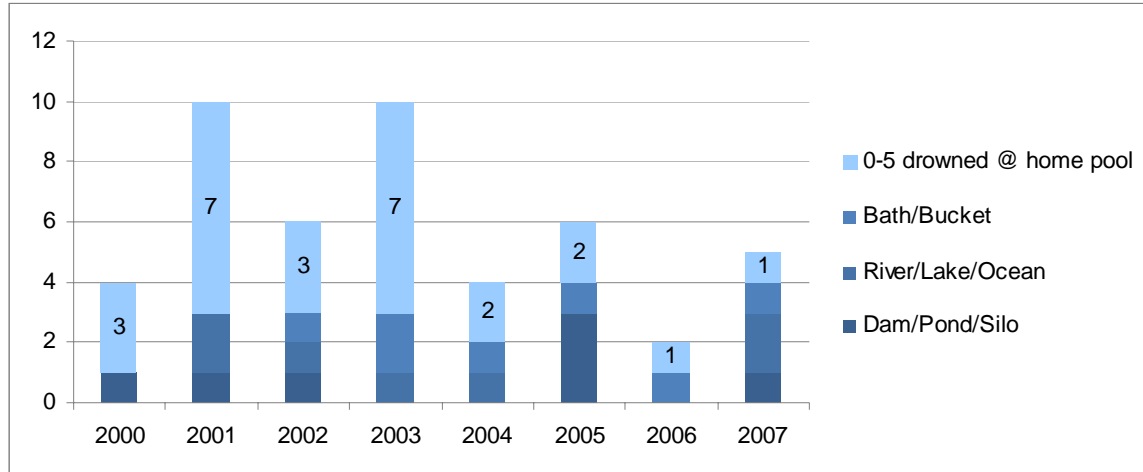
- the location (type) of the barrier,
- the date,
- the assessment number 1, 2 or 3 (where necessary, up to three individual barrier assessments were conducted),
- the assessment result (compliant/non compliant) in accordance with Regulations,
- faults within barrier.

3.1 Drowning in Western Australia



- Over the period 2000 - 2007 there were a total of 249 drownings in WA.
- Forty eight (48) of these drownings were children aged 0-5 years.
- The 0-5 age group represents 20% of all drowning.

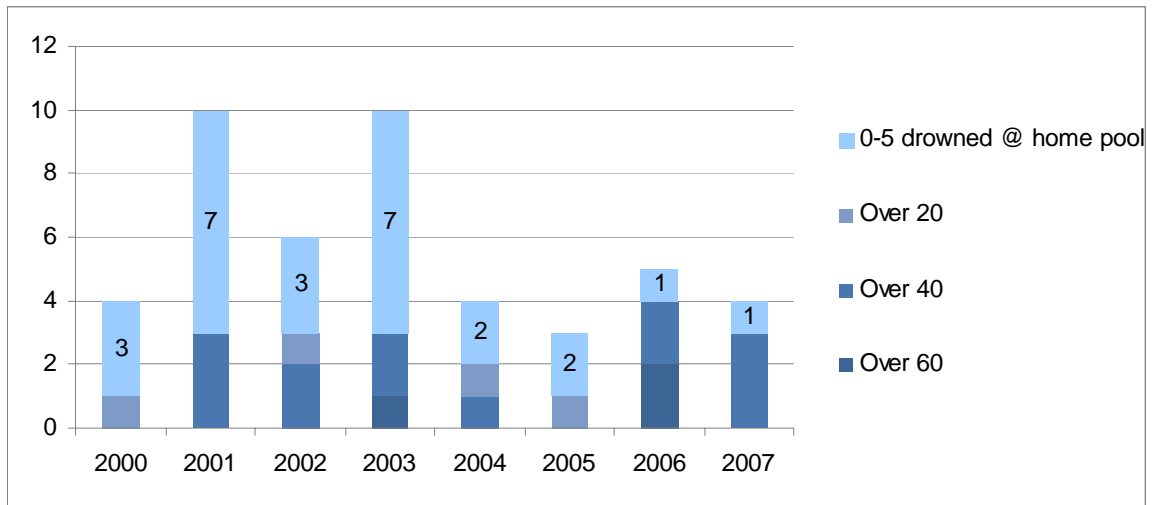
3.2 0-5 Age Drowning by location



Further analysis shows that children, aged 0-5 years, not only drowned in the home swimming pool/spa;

- Seven (7) occurred in other man-made water bodies like ponds, dams or silos,
- Seven (7) occurred in rivers, lakes or ocean,
- Seven (7) occurred in buckets or baths.
- One (1) location was not reported.

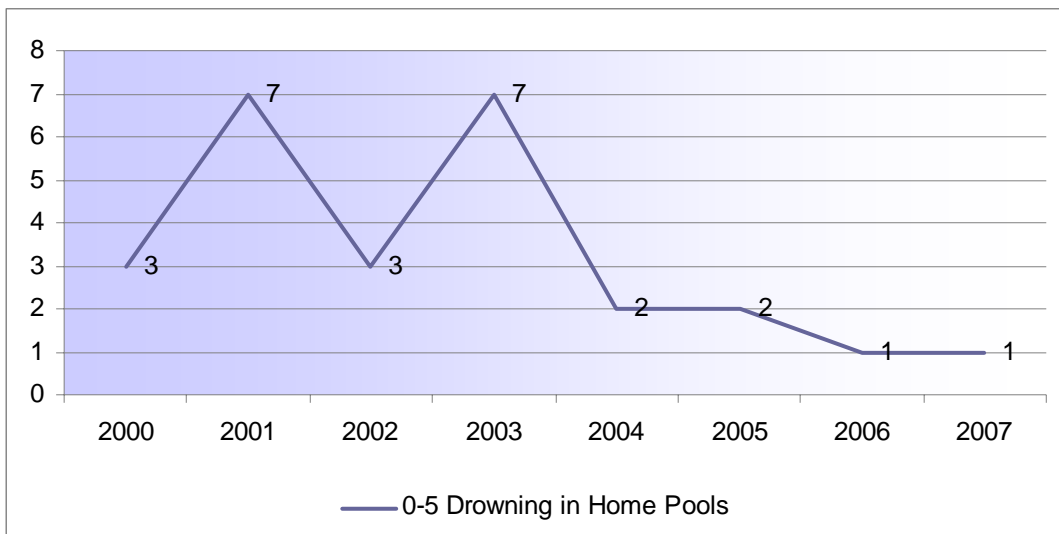
3.3 Home Pool Drowning



Not all home pool drowning involved the 0-5 age group;

- Three (3) were between 20-39 years of age,
- Thirteen (13) were between 40 – 59 years of age,
- Three (3) were over 60 years of age.

3.4 0-5 Drowning in Home Pools



- Twenty (20) toddlers drowned between 2000 and 2003.
- Six (6) toddlers drowned between 2004 and 2007.

Of the twenty six drowning:

- Eighteen (18) were in the metropolitan areas and eight (8) in rural areas.
- Only one (1) victim wandered into another property. Twenty one (21) occurred in the victims own home or home they were meant to be (ie. friends/parents). Information was unclear in the remaining four (4) incidents.

3.5 Contributing Factors

Coronial records highlight that drowning incidents occur when the child enters the pool without the knowledge of the parent/carer. Inadequacies in the installation or maintenance of the pool barrier are also identified as contributing factors in the majority of incidents.

Below is a brief summary of the contributing factors:

- Lack of supervision, non-swimmer, no appropriate barrier
- Lack of supervision
- Lack of supervision, no fence around pool (isolation fence sufficient at time of inspection), damaged self closing door
- Lack of supervision, unlocked back door and gate
- Lack of supervision, gate left open
- Lack of supervision, gate not shut properly (faulty lock)
- Lack of supervision, no fencing, remote location
- Lack of supervision, faulty self closing door
- Lack of supervision, non-swimmer
- Lack of supervision, faulty gate
- Lack of supervision, faulty gate
- Lack of supervision and no fence (barriers didn't meet regulations)
- Lack of supervision and faulty pool gate
- Lack of supervision and faulty pool fencing
- Lack of supervision
- Lack of supervision and non swimmer, no barrier
- Unable to swim, lack of supervision
- Lack of supervision
- Lack of supervision, open gate (not self closing, upright pole not vertical - difficult to shut)
- Lack of supervision, faulty barrier
- Lack of supervision and lack of a barrier
- Lack of supervision, no barriers, unlocked sliding door
- Lack of supervision, uncompliant barrier

3.6 Barrier Analysis

Information on drowning incidents and the circumstances in which they occurred provides a context for the remainder of this report which looks at the effectiveness of pool barriers. In particular the following issues will be reviewed;

- Barrier compliance
- Type of barrier
- Reliability of barrier types
- Common faults

3.6.1 Barrier Compliance at First Assessment

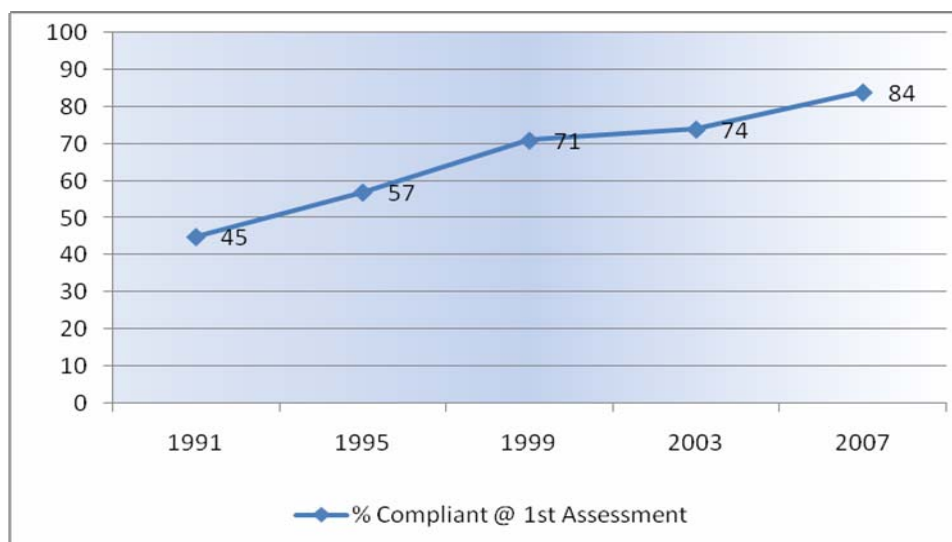
The initial (first) assessment of a pool barrier not only provides information about the barrier at that point in time it also provides an insight into the status of the barrier for the period between assessments which could have been as much as 4 years earlier.

The number of pool barriers that were complaint when first assessed from 2004 – 2007 is tabled below.

	Sample	1st time compliant	Percentage
Local Government 1	70	66	94%
Local Government 2	57	40	70%
Local Government 3	585	522	89%
Local Government 4	229	180	79%
Local Government 5	55	29	53%
Total	996	866	84%

3.6.2 Long term trend of Barrier Compliance at First Assessment

The graph below represents the barrier compliance at the first assessment for the last 4 inspection cycles. This graph is a combination of data from Stevenson (2001) for the first three rounds and data collected by Royal Life Saving from the last two rounds 2000 – 2007.



Since mandatory assessments were introduced in January 1991, there has been an improvement in first assessment compliance for each subsequent 4-year inspection cycle ending in 1995, 1999, 2003 and 2007.

3.6.3 Type of Barrier

Only two types of barrier location have been permitted since the amendment of pool barrier legislation in 2001.

Type 1 Access to the pool from the premises is protected by a separate barrier.

Type 2 Access to the pool from the premises is protected by child resistant doors/windows

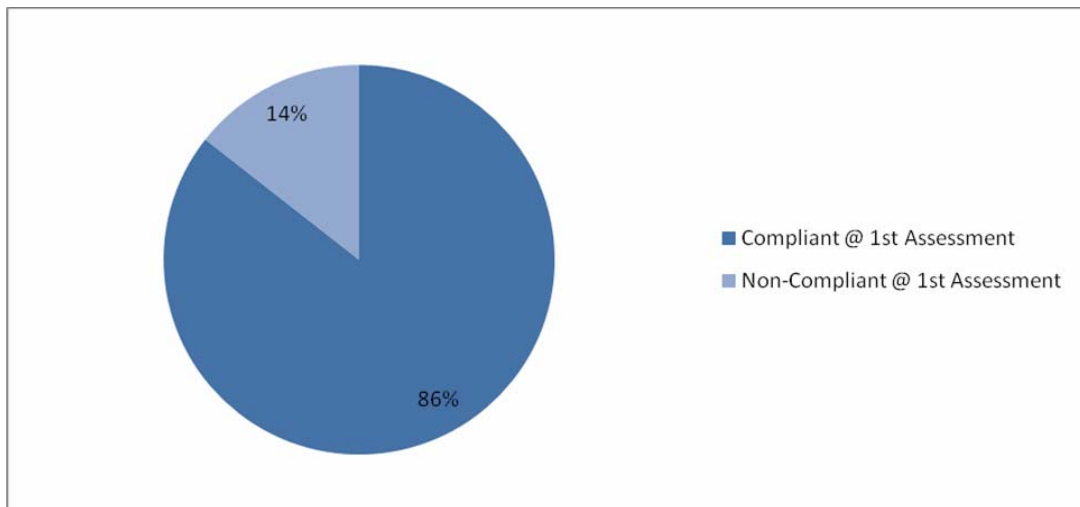
Type 3 barriers – where access to the pool from outside the property is protected but not from the premises were not permitted from December 2006.

The proportion of each barrier type is tabled below;

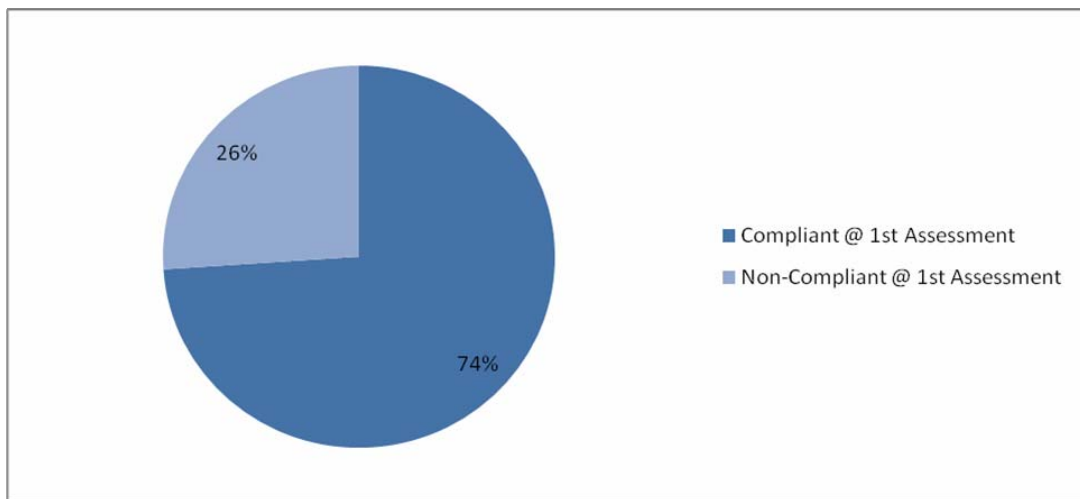
	Number of Pools	Percentage
Type 1	854	86%
Type 2	142	14%
Total	996	100%

3.6.4 Reliability of Barrier Types

Compliance @ First Assessment – Type 1 Barrier

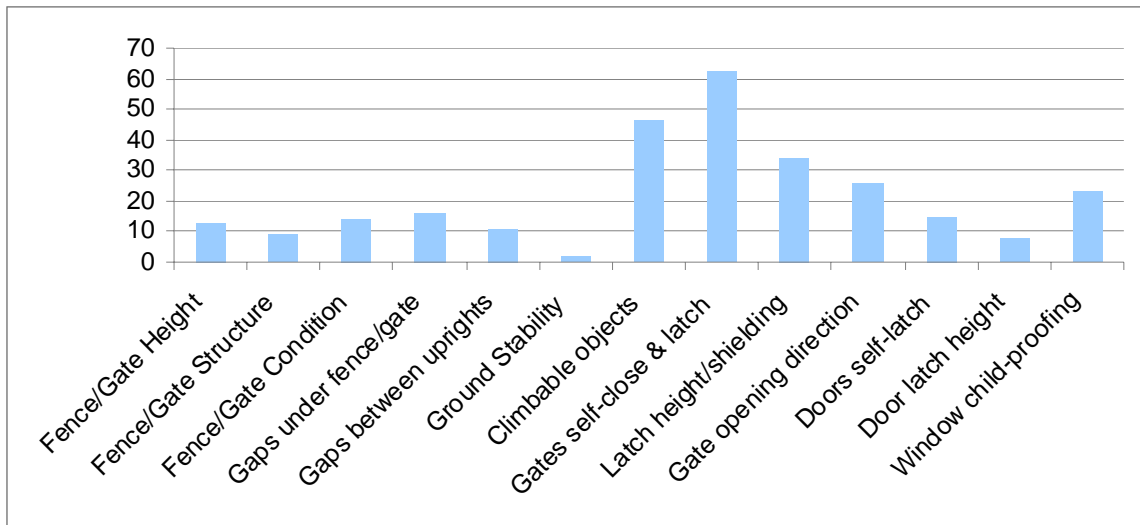


Compliance @ First Assessment – Type 2 Barrier



On average Type 1 pool barriers comply at the first assessment 86% of the time whereas Type 2 barriers comply 74% of the time.

3.6.5 Common Faults



The above graph illustrates the frequency of faults with barriers, gates, doors or windows.

Observations

The following observations are made in the context of finding ways to improve the existing assessment system.

Royal Life Saving estimates there are more than 150,000 home pools in WA. While state-wide statistics have not been gathered, one large metropolitan local government authority experienced a 25% increase (from 4016 to 5042) in registered home pools over the 2 year period 2005 and 2006. The increasing number of home swimming pools and spas suggests the introduction of legislation to limit barriers to Type 1 has not been a significant disincentive to new home pool buyers.

Even though there are more home swimming pools in Western Australia the number of children drowning, aged 0-5, has consistently been declining. The number of drowning over the last four years (2,2,1,1) has consistently been below the long term average.

With lack of supervision being a common theme, the challenge for safety advocates and health promotion organisations is to raise awareness of the risks and influence the behaviour of supervising adults to KEEP WATCH.

Apart from achieving improvements in supervision the greatest reduction in home pool drowning will be observed if barriers are installed and functioning appropriately as there is no evidence to suggest a functional barrier/gate was bypassed.

The continued improvement in the compliance of barriers at first assessment (to current 84%) is a positive outcome. However assuming there are 150,000 home pools in WA means that over 24,000 pools (150,000 x 16%) will become non-compliant during the next 4 years (assessment round).

The difference between the compliance at 1st assessment of Type 1 barriers (86%) and Type 2 barriers (74%) is significant and is consistent with findings from the 2000 – 2003 report. This discrepancy is a challenge for the industry and legislators to monitor and address.

- For manufacturers the challenge is to advance the development of barriers so that the reliability of self-closing gates, child protection doors and windows improves.
- Part of the solution is improving ongoing maintenance of barriers by the owner/occupier.
- For regulators the need to increase the frequency of inspections of Type 2 barriers may be required (for example from every 4 years to every 2 years).

Recommendations

Recommendation 1:

Community and health promotion organisations continue efforts to improve awareness of the need to constantly supervise young children in home swimming pools.

Recommendation 2:

Pool barrier manufacturers/installers advance the development of barrier design/construction so that the reliability of self-closing gates, child protection doors and windows improves.

Recommendation 3:

In order to reduce the number of barriers that become 'non-compliant' over the next 4 years, Local Government considers strategies (enforcement and incentive) that improves the ongoing maintenance of barriers by the owner/occupier.

Recommendation 4:

As part of the Department of Housing and Works review of AS 1926.1 and the WA variation to the Building Code of Australia (BCA):

- Royal Life Saving recommends the current requirement for new pools to install a Type 1 barrier be maintained.
- Any consideration of removing the BCA variation (which would make Type 2 barriers permissible) should only be considered if the frequency of barrier assessments is increased (for example from every 4 years to every 2 years) to address the reduced reliability of Type 2 barriers.

Recommendation 5:

Royal Life Saving continues barrier research and to review the compliance of Type 2 barriers at 1st assessment compared to Type 1 barriers.

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