

# HAZARD

VISAR  
VICTORIAN INJURY SURVEILLANCE & APPLIED RESEARCH

**Hazard**  
(Edition No. 50)  
Autumn 2002  
Victorian Injury Surveillance  
& Applied Research System (VISAR)  
(Formerly VISS)

[www.general.monash.edu.au/muarc/visar](http://www.general.monash.edu.au/muarc/visar)

Monash University  
Accident Research Centre



*This edition of Hazard highlights the significant contributions that VISAR has made to injury prevention in Victoria, nationally and internationally.*

## The 50<sup>th</sup> issue of HAZARD, a celebration of VISAR's achievements

*Karen Ashby, Angela Clapperton, Joan Ozanne-Smith, Erin Cassell, Jenny Sherrard, Christine Chesterman and Virginia Routley*

### Introduction

This is the 50<sup>th</sup> issue of *Hazard*, the quarterly publication of the Victorian Injury Surveillance & Applied Research System (VISAR). VISAR (formerly VISS) was established in 1988 to collect, maintain, analyse and disseminate injury data from hospital Emergency Departments (EDs). The initial focus was confined to child injury prevention. The service expanded from 1990 to address injury issues across all age groups and utilised surveillance data at three levels of injury severity (deaths, hospital admissions and ED presentations).

In its early years of operation, VISS concentrated on defining the size and nature of the injury problem in Victoria, always linking new information to potential countermeasures and injury prevention strategies. In 1999 the role of VISS was formally expanded to include an applied research function and its name

was changed to better reflect its expanded role. VISAR is a major project of the Monash University Accident Research Centre (MUARC) and is funded by VicHealth.

*Hazard* is a popular and important vehicle for the widespread and timely dissemination of data and injury prevention information on current and emerging injury issues. *Hazard* reports information on the causes and severity of injury, the risk and contributory factors to injury and the locations, products and activities associated with injury. *Hazard* includes commentary and recommendations on injury prevention implementation and evaluation, the development of supportive policy, regulation and legislation and also reports data and surveillance system development. The ultimate goal of VISAR is to contribute to injury prevention. This 50<sup>th</sup> issue of *Hazard* is devoted to presenting 50 achievements in injury prevention in

Victoria and beyond in which VISAR has played a significant role.

### The foundation stone of prevention: data collection and analysis

VISAR has substantial holdings of statewide injury data at three levels of severity (Table 2). Case numbers are very large permitting a broad range of statistical analyses to inform injury prevention interventions and to provide an evidence base for evaluation of the effectiveness in injury prevention programs, strategies and measures.

Notwithstanding the real progress in injury prevention over the past 15 years for some causes and age groups, injury remains the leading cause of premature death between 1 and 44 years and accounts for approximately 10% of all Victorian hospital admissions. There were 1,933 injury deaths, 166,484 injury



hospitalisations and at least 224,723 injury ED presentations in Victoria in the latest year of data for each level of severity. The estimated total lifetime cost of injury sustained in 1993/4 in Victoria was \$2,583 million, equivalent to approximately \$3,305 million in Year 2002 dollars.

## VISAR services

VISAR data need to be utilised extensively to support the goal of injury prevention. Aside from information published in *Hazard*, injury data and information on specific issues are available 'on-request' or limited data can be accessed via the VISAR website. VISAR utilises all available data sources when servicing information requests. Regular VISAR clients include education bodies, all levels of government, researchers, industry/commerce and the media. VISAR has successfully encouraged local government and community organisations to use its data and information service. This integrates with MUARC's role as a World Health Organisation (WHO) Safe Communities Affiliate Support Centre.

*Hazard* is circulated quarterly to a mailing list of 1,400 direct subscribers. Approximately 1,700 copies of various editions are now downloaded monthly from the VISAR website [www.general.monash.edu.au/muarc/visar](http://www.general.monash.edu.au/muarc/visar). The number of special information requests completed by VISAR increased to a high of 591 in 2001 (Figure 1). In addition, there were 8,532 information downloads from the VISAR website in the 12-month period July 2000-June 2001, including *Hazard* downloads.

VISAR data are regularly used by the media to inform the public and to stimulate public debate on important injury issues including sport and recreation, farm, nursery furniture and dog bite injuries, motor vehicle exhaust gassing suicides, drowning, poisoning, and DIY (do-it-yourself) maintenance related injury. VISAR contributes injury

## Commonly used abbreviations

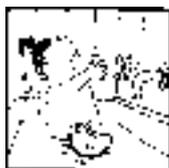
Table 1

VISAR	Victorian Injury Surveillance and Applied Research System
MUARC	Monash University Accident Research Centre
VISS	Victorian Injury Surveillance System
ABS	Australian Bureau of Statistics
VCFS	Victorian Coroner's Facilitation System
VAED	Victorian Admitted Episodes Dataset
VEMD	Victorian Emergency Minimum Dataset
ED	Emergency Department
WHO	World Health Organisation
DHS	Department of Human Services
DHAC	Department of Health and Aged Care
RCH	Royal Children's Hospital
ACCC	Australian Competition and Consumer Commission
VWA	Victorian WorkCover Authority
TGA	Therapeutic Goods Association
INPAA	Infant and Nursery Product Association of Australian
ASTM	American Society for Testing and Materials
DIY	Do-It-Yourself
CRC	Child Resistant Closure
OTC	Over-the-counter
ROPS	Roll Over Protective Structures
PPE	Personal Protective Equipment

## Databases of incident cases held and utilised by VISAR Table 2

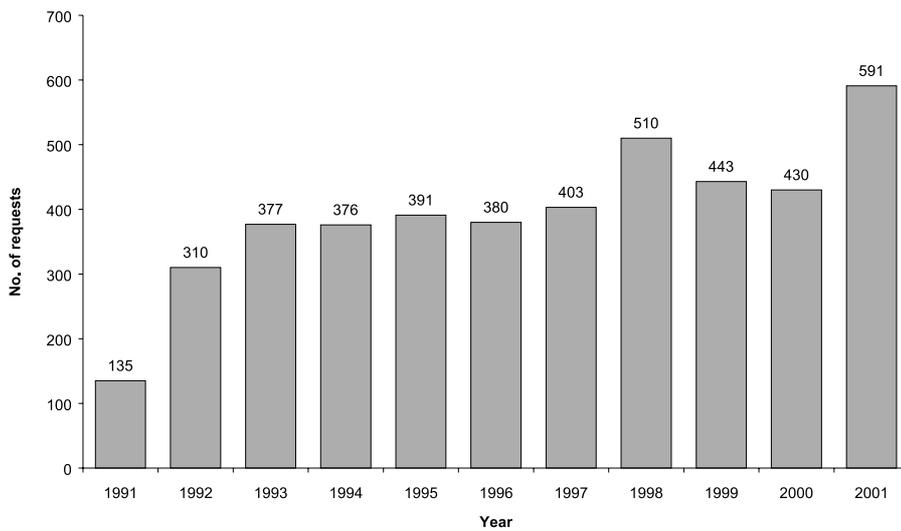
Level of severity	Source	No. of cases
Death	Victorian Coronial Facilitation System (VCFS): July 1989 to June 1995	9,238
	Australian Bureau of Statistics – National Injury Death data (ABS-Deaths) 1970; 1975; 1980; 1985; and 1990 to 2000	118,109
Hospital admission	Victorian Admitted Episodes Database (VAED). Comprised of: - public hospitals, July 1987 to June 2001	1,335,184
	- private hospitals, July 1992 to June 2001	1,075,132 260,052
Hospital emergency department presentation	Original Victorian Injury Surveillance System database (VISS): Nov 1988 to July 1996, 7 campuses of 5 Victorian public hospitals (detailed data)	173,330
	Victorian Emergency Minimum Dataset (VEMD): October 1995 to March 2002, 28 Victorian public hospitals (Level 1 data)	1,213,306

data and information to an average of five newspaper, magazine, radio and television reports each month.



## VISAR data information requests (1991-2001)

Figure 1



## An overview of 50 achievements

The grouping of 50 selected success stories (Table 3) reflects the mixed approaches taken to injury prevention which may focus on the injury cause, age group, the setting in which the injuries occur or the method of prevention. VISAR's efforts and achievements have been weighted heavily in three areas: unintentional child injury; all-age injuries that occur in three settings - the home, sport and recreation facilities, and work (particularly the farm environment); and the development and promotion of safe design solutions (including the development of voluntary and mandatory safety standards and safety regulations and their enforcement). Other age groups, settings and preventive approaches have also received attention and examples in the areas of intentional injury prevention and organisational and policy change are included in this report.

### Child unintentional injury prevention

The latest year of VISAR data at each level of severity records 60 deaths, 11,364 hospital admissions and 53,723 ED presentations for unintentional injury in

Victorian children aged 0-14 years. The major causes of child unintentional injury death in 2000 were transport (30%), drowning (22%), fire/burns/scalds (13%), choking/suffocation/foreign body (7%) and poisoning (7%). The highest-risk age group for childhood injury fatalities is 0-4 year olds. ABS death data indicate that unintentional injury deaths in children (0-14 years) have decreased by more than 50% since 1979 across all three five-year age groups, mainly due to decreases in motor traffic related deaths and drowning. Injury deaths associated with fire/flames and hot substances appear not to have changed much over time, although numbers are too small to draw definitive conclusions.

The major causes of hospital admissions in 1999/2000 for unintentional injury in children were falls (38%), transport (18%), hit/struck/crushed (12%), poisoning (8%) and cutting/piercing (5%). VAED trend data show that the rate of total admissions increased significantly over the period 1987/88 to 1998/99 for age groups 0-4 years and 5-14 years. In 0-4 year olds the trend in admissions increased for both falls and poisoning cases (but only significantly for poisoning), whereas near drowning, fire/burn injuries and scalds showed decreasing trends. Over the same period,

the total falls rate and falls from play equipment increased significantly in children aged 5-14 years, whereas pedestrian and bicycling injuries declined significantly.

The major causes of ED presentation for child unintentional injury in 2001 were: falls (42%); struck by/collision with person and object (20%); cutting and piercing (7%); transport (5%) and poisoning (3%). Trend data are not available because numerator data are incomplete.

### Nursery products and furniture-related injury

Each year in Australia 6,540 children aged 0-4 years present for medical treatment for nursery product and furniture-related injury and at least 540 of these cases (8%) require hospital admission. Just over half (54%) the children involved are under 12 months old.

Analysis of VISAR data reveal that the major nursery furniture products associated with injury are: prams, cots, high chairs, baby walkers, strollers, change tables and baby exercisers (bouncers). In terms of injury severity, cots are associated with the highest mortality. (Of the 13 nursery furniture-related deaths identified in Victoria between 1985 and 1994, 10 were associated with cots.) In terms of non-fatal injury, prams, cots and high chairs figured most prominently, although baby exercisers or bouncers are associated with the most severe non-fatal injuries (one in three cases result in hospital admission). Falls are the most common cause of non-fatal injury in every nursery furniture product category ranging from 43% in the case of baby bouncers to 78% in the case of change tables.

VISAR has strongly advocated for the development of Australian safety standards for those nursery products most associated with injury to facilitate the design, behavioural and environmental changes that have most potential to reduce injury (Table 3). VISAR has made a



substantial contribution to the Infant and Nursery Product Association of Australia (INPAA) *Code of Safe Practice* developed by Kidsafe with support from the Commonwealth Department of Health and Ageing. The Code is currently adopting best practice requirements for change table design. More globally, VISAR has made a significant contribution to the development of the ISO/IEC *Guide 50 Safety Aspects – Guidelines for child safety* which was approved by 36 countries in 1999, including Australia (Table 3).

### Unintentional poisoning

Although unintentional poisoning accounts for very few childhood injury deaths (four in Victoria in 2000), the latest year of VISAR data show 903 poisoning admissions (1999/2000 data) and 1,644 ED presentations (2001 data). The rate of hospitalisation for poisoning in children aged less than five years of age has significantly increased in Victoria over the last ten years (Stathakis, 1999). Children aged 0-4 years are the most vulnerable group for poisoning injury accounting for half the injury deaths, 89% of admissions and 87% of ED presentations. Most poisoning incidents involve very young children accessing pharmaceuticals in the home.

In terms of prevention, generic measures are more likely to be effective but agent-specific approaches are also justified. Child resistant packaging is the most effective intervention currently available (Clarke & Walton, 1979; Morris & Klinberg, 1986; Rodgers, 1996; Scherz et al., 1969; Walton, 1982; Wiseman et al., 1987). However, reports of poisoning by agents that are required to have child resistant closures (CRCs) suggest there is room for improvement in their efficacy (Hoy et al., 1999; Ozanne-Smith et al., 2001). Also, reports that access to poisoning agents frequently occurs at times when the agent is not in its usual storage place suggests that recommended safe storage options may not be practical in all circumstances (Ozanne-Smith et al., 2001).

### Home injury

VISAR data indicates that the home is the most common location for injury, particularly for the youngest and oldest age groups. Forty-nine per cent of child injuries presenting to EDs and 29% of adult injuries occur in the home (Routley & Ashby, 1997). Of these injuries, at least 30% and 26%, respectively, are associated with structures, fixtures and other features incorporated into a home at the design, building or renovation stage.

Each year in Victoria 50,000 new homes are built and 100,000 homes undergo major renovations. If these homes incorporated safety features, the potential for injury reduction would be high and long lasting. VISAR conducted a review of injuries associated with home design in 1997 and found that the most frequently identified structural components of the home that were associated with injury were floors, concrete and paved surfaces, stairs and steps, doors and domestic architectural glass.

A series of Victorian safety display homes have demonstrated that a systems approach can be taken to preventing injury associated with home structures. These display homes showcase safety design features and products and are used for public education. According to the builders, the features that are most popular with home buyers are: poisons cabinets; designs that incorporate a full view of play areas from the kitchen; safe kitchen design; non-slip bath and shower bases; and a driveway separated from play areas.

Research by VISAR and others, advocacy by community groups and professionals, and policy development by relevant authorities have resulted in legislation of some home safety features including the regulation of bathroom hot water to 50°C, smoke alarms, swimming pool fencing and toughened glass for lower level windows. Each of these home safety design features has been mandated through incorporation into the Australian Building Code or the Building Code of Victoria.

Most recently, VISAR data were used to underpin the MUARC report commissioned by Kidsafe Australia and the Commonwealth Government which investigated the feasibility of addressing home design issues through a safety accreditation scheme for homes (Watson., et al, 2002). MUARC identified a number of potential interventions that could be included in a safety accreditation scheme which were assessed on three inclusion criteria: strong evidence base for injury prevention effectiveness, acceptability to homeowner and cost-effectiveness (Table 3).

VISAR also highlighted the home as the location of most falls in older people, Do-It-Yourself home maintenance injuries and domestic violence.

### Sport and recreation related injury

It is difficult to get a complete picture of the size and nature of the sport and recreation injury problem in Victoria. There is no comprehensive sports injury surveillance system that collects data from the full range of treatment facilities (hospitals, sports medicine centres, general practitioners, physiotherapists and other services). Although not representative of all sports injury cases, the VEMD currently has the best potential to yield useful and timely data but requires enhancement.

The VEMD underestimates the size of the hospital-treated injury problem mainly because the coding system classifies all sport and leisure-related cases together and there are no sub-classifications to identify the specific sport, recreation and leisure pursuits being engaged in at the time of injury. This information should be included in the one-line case description but is not well recorded. Searching on the broad codes (activity: sport and leisure) identified 119,126 injury presentations (excluding admissions) in the 3-year period 1999-2001. A text search of case narratives clearly identified 41,969 sport and active recreation cases (35% of all sport and leisure cases).



The sports and recreation activities with the highest frequencies of ED presentations in 1999-2001 were: Australian football (20% of identified sport and active recreation cases); bicycle riding (15%); motor/trail/mini-bike riding (10%); basketball (8%); soccer (6%); playing on play equipment (6%); netball (5%); skateboarding & in-line skating (5%); cricket (4%); and horse riding (4%).

Between 1996 and 2001 MUARC and the Deakin University School of Health Sciences, supported by grants from Sport and Recreation Victoria, undertook reviews of the epidemiology of injury in 22 popular sports and active recreational pursuits and the evidence base for prevention in each. The reviews covered: aerobics; alpine skiing; Australian football; baseball; basketball; cricket; cross-country skiing; golf; gymnastics; hockey; horse-related; in-line skating; lawn bowls; netball; running related; snowboarding; soccer; softball; squash; tennis; volleyball and boxing. VISAR provided Victorian ED surveillance data for each of these reviews. Sport and active recreation related injury is the subject of the next edition of *Hazard*. The edition will update sports and active recreation injury data for Victoria and provide evidence-based advice on potential countermeasures.

**Contributions to policy change, design standards, regulation and legislation**

Effective strategies for injury prevention fall into four major groups: legislation/regulation; environmental/design change; education/behaviour change; and community/organisation based programs. In order to achieve a particular objective a number of these may be employed concurrently or sequentially (Ozanne-Smith, 1995). VISAR has maintained a long-term interest in the development and adoption of safer designs and design standards and safety-related regulation and legislation particular in relation to consumer products.

Legislation/regulation in various forms has proven to be an effective injury

prevention and control method. Well documented Australian successes include Australian Design Rules for motor vehicle safety (eg. seat belts), child resistant packaging for poisoning agents, restrictions of the availability of barbiturates in the 1970s (suicide reduction) and roll over protective structures on new tractors. The level of compliance, influenced by level of enforcement (real or perceived) contributes to the effectiveness of regulations.

Consumer product related injury is the largest generic injury issue, crossing the boundaries of settings, population groups, intent and responsible jurisdiction. Products impact in approximately 70% of all injuries (Watson & Ozanne-Smith, 1995). MUARC studies, utilising VISAR data, have provided a broad descriptive analysis of child and adult injuries across varying severity levels looking at the involvement of different consumer products. These studies have highlighted the involvement of products in the vast majority of injuries, and the variation of product types at different severity levels and age groups (Altman et al, 1997; Watson et al, 1999; Watson et al, 2000).

Consumer product safety is a complex area requiring a systematic evidence-based approach to both product design and regulation. However, action in Victoria and Australia on dangerous and sub-optimal products is generally reactive and focussed on dealing with “problem products” or, even more narrowly, on single specific problems associated with a product.

There are several barriers to progress in product safety in Australia. These include data issues, jurisdictional barriers and the lack of a general Product Safety Directive (as instituted in Europe and currently under development in Canada). Current coding systems used in the health sector and coronial databases do not consistently identify product-related involvement in injury. The responsibility for preventing some common injuries related to consumer products is not clearly defined or accepted by government

departments, for example off-road motorcycle injuries and injuries associated with many aspects of home design and structures. Also, there is currently no mechanism for identifying emerging hazards associated with consumer products. This could be addressed by adopting legislation, similar to that in the United States, which requires manufacturers and importers to inform authorities of consumer complaints and other information relevant to the safety of their products.

Despite these barriers, VISAR, in co-operation with other bodies, has successfully advocated for a range of voluntary safety standards, and, in cases where voluntary standards and market forces have been ineffective in achieving compliance and injury reductions, the introduction of mandatory standards through regulation (Table 3).

VISAR data have been used to identify injury priorities and set injury reduction targets in national, state and local public health, injury prevention and community safety strategies and action plans. VISAR staff have provided data and injury prevention advice to inform policy development on a range of specific issues including pool fencing, child resistant cigarette lighters, gun control, motor vehicle exhaust gas suicide prevention, domestic violence early intervention protocols, and the development of product safety standards for furniture and equipment.

**Surveillance systems developments**

VISAR has recently updated and enhanced its databases. One of these enhancements was to apply geographical region data to VISAR death (ABS), admissions (VAED) and presentations (VEMD) data. This was accomplished by using the seven category Rural, Remote and Metropolitan Areas (RRMA) classification that was developed by the Department of Primary Industries and Energy and the (then) Commonwealth Department of Human Services and Health. VISAR then collapsed the more



specific categories into 3 broader ones. *Hazard* 46 (March 2001) provided an overview of injury in Victorian geographical regions.

Another enhancement was to add socio-economic status data to the injury data held for deaths (ABS), admissions (VAED) and presentations (VEMD). This allowed VISAR to undertake population analyses of injury by economic status. Findings from these analyses were published in *Hazard* edition 49 'Socio-Economic Status and Injury' (December 2001).

VISAR recently implemented a forecasting model where regular predictions are made utilising trend data in order to alert VISAR, relevant authorities and the community, of future trends in injury and emerging injury issues. The system has the capacity to predict trends in injury deaths (ABS), hospital admissions (VAED) and ED presentations (VEMD) for all categories of injury and on such factors as age, gender, cause and SES status.

Several methods for estimating injury morbidity have been applied to VISAR databases. Health outcome measures such as Disability Adjusted Life Years (DALYs) and Quality Adjusted Life Years (QALYs) have been applied to the hospital admissions data (VAED), and Years of Life Lost (YLLs) data have been applied to ABS deaths data.



**FREE ON-LINE ACCESS TO INJURY PREVENTION:**  
International multidisciplinary journal. Web-site includes full text articles, direct access to Medline, titles accepted for publication, e-letters. Check out this fantastic resource at [www.injuryprevention.com](http://www.injuryprevention.com)

## Database Descriptions

### • Australian Bureau of Statistics – Death Unit Record File (ABS – DURF)

Death data are derived from the ABS-DURF which consists of information supplied by State Registrars of Births, Deaths and Marriages. Each death registered in Australia is classified by the ABS according to the World Health Organisation (WHO) International Classification of Diseases (ICD) coding system.

### • Victorian Admitted Episodes Dataset (VAED)

The VAED contains information on admissions to Victorian hospitals over a 14-year period – July 1987 to June 2001. The data are collected by Health Computing Services Victoria under the direction of Human Services Victoria. Detailed information on hospital admissions, from admission to discharge, is collected. The information on the nature of injury is based on the diagnosis by physicians. MUARC has access to all records involving injury and poisoning.

### • Victorian Emergency Minimum Dataset (VEMD)

The electronic VEMD database records details of injuries treated at the emergency departments of 28 major public hospitals (see page 27). The total number of cases on the database to March 2002 was approximately 1,200,000. The injury variables collected include injury cause, location, activity, nature of main injury, body region, human intent and a narrative describing the injury event. VEMD hospitals represent approximately 80% of statewide emergency department presentations. The data provided to MUARC does not include all ED presentations, only injury specific cases. It is not possible, therefore, to analyse any VEMD data that may have been re-categorised to a non-injury grouping. A MUARC study found that the VEMD captured 82% of VEMD injury presentations.

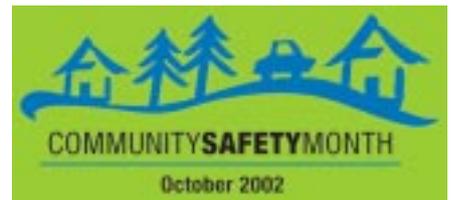
## Community Safety Month October 2002

thinkSAFE  
actSAFE  
feelSAFE  
beSAFE

This year Community Safety Week has been moved to the month of October and will have four foci:

Week 1	Oct 1-7	Crime Prevention Week
Week 2	Oct 8-14	Emergency Services Week
Week 3	Oct 15-21	Injury Prevention Week
Week 4	Oct 22-28	Workplace Safety Week

For updates and information and to register activities:  
[www.communitysafetymonth.com](http://www.communitysafetymonth.com)

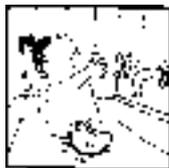


# Translation to prevention: 50 Achievements

Table 3

BACKGROUND AND PROBLEM IDENTIFICATION (HAZARD REFERENCE & YEAR OF PUBLICATION)	ACTION	RESPONSE
<p><b>ACHIEVEMENTS IN CHILD INJURY PREVENTION</b></p> <p><b>(1) Nursery products and furniture related injury</b></p> <p><i>Babywalkers</i> (Hazard editions 14 &amp; 16, 1993; 20, 1994; 25, 1995; 34 &amp; 37, 1998; and 44, 2000)</p> <p>Babywalkers are associated with considerable injury risk and their use may hinder a child's development (Cassell, et al., 1995). VISAR data indicate that there were at least 100 ED presentations for babywalker injuries in children 0-4 years in the period 1996-2000. The most frequently occurring injuries were superficial injuries to the head and face (56%) and intracranial (17%) injuries. Seven per cent of presentations were admitted to hospital. Injuries are generally associated with the extra reach and mobility babywalkers provide to infants, rather than defects in the product.</p> <p>In 1995 the Federal Minister for Consumer Affairs wrote to 350 retailers requesting the voluntary withdrawal of babywalkers from sale.</p> <p>In the United States (US), the voluntary industry Standard (ASTM F977-00) is credited with halving the number of babywalker injuries between 1992 and 1997.</p>	<p>VISAR has strongly advocated regulatory reform to prevent babywalker-associated injuries, highlighting the issue in seven editions of <i>Hazard</i>. In addition, VISAR has responded to 45 requests for babywalker-related injury information from government and child safety bodies and agencies, the media and the public. VISAR and MUARC played a pivotal role in keeping the issue of babywalker injuries on the agendas of federal and state agencies.</p> <p>In late 1995 VISAR surveyed babywalker retailers and established that more than half the respondents had removed babywalkers from sale in response to the Federal Minister's letter. However, a repeat survey in 1997/8 indicated that 78% of specialist stores and 38% of major retailers still sold babywalkers, although attempts were made to stock "safer" models.</p> <p>In response to these findings, VISAR recommended the development of a combined Australian and New Zealand (NZ) Standard, based on the US voluntary Standard, because it was apparent that the Minister's intervention and marketplace forces were insufficient to reduce sales of babywalkers.</p>	<p>In September 2000, NSW introduced a requirement that baby walkers sold in NSW must comply with the revised 1997 ASTM Standard from the US with a six months 'grace period' for compliance. Following the lead taken by NSW, a mandatory Australian Standard for baby walkers will be declared by regulation under the Trade Practices Act later this year. The new Standard will be modelled on the existing US Standard and will specify requirements for stability, automatic braking on steps and safe use warning labels. The additional cost per babywalker unit to fit all the mandatory safety requirements is approximately \$AU20.00 (Department of Treasury, 2001).</p> <p>The NZ government has developed a mandatory safety Standard for babywalkers, effective from March 2002. The NZ Standard is also based on the US ASTM with additional safety and product information requirements. Non-compliant retailers, manufacturers and importers may be subject to fines up to \$NZ100, 000 (SafeKids, 2001).</p>
<p><i>Cots</i> (Hazard editions 14, 1993; 37, 1998; and 44, 2000)</p> <p>Cots and their environs were associated with eleven of the fifteen nursery furniture-related child deaths in Victoria that occurred in the period 1985-1995 (Watson et al., 2000). All the cot-related deaths involved mechanical asphyxiation. Since 1995 there have been reports of several more deaths but data are not available. The potential injury risks are entrapment, strangulation, suffocation and falls.</p> <p>VISAR data shows 240 cot-related injury ED presentations for children aged 0-4 years in the period 1996-2000. Falls are the major mechanism of injury. Head and face (32%) and intracranial injuries (10%) predominate. Nine per cent of ED presentations are admitted to hospital.</p>	<p>VISAR provided data to inform the 1997 MUARC report on nursery furniture (Watson et al., 1997). The report recommended the introduction of a mandatory cot standard because the existing voluntary standard was not effective in reducing cot-related deaths because of poor compliance. This recommendation was supported by a number of other stakeholders including the Australian Consumers' Association (ACA), a long-term advocate of a mandatory cot standard.</p>	<p>The mandatory Australian/New Zealand Cot Standard (AS/NZS 2172-1995) came into effect on 30 June 1998. The Standard covers new and second-hand cots.</p> <p>Follow-up compliance surveys were conducted in the late 1990s in NSW and Queensland, and by the ACA (ACA, 2002). In QLD 17% of the cots investigated seriously breached the new Standard. The NSW compliance campaign aimed to educate suppliers of new and second-hand cots. Suppliers of new cots and second-hand nursery furniture showed high levels of compliance whereas suppliers of general second-hand household furniture and antique cots were generally unaware of the new requirements. Nine cots were tested by the ACA. Only one fully complied with the Standard; three cots failed more than one safety test.</p> <p>The industry body, the Infant and Nursery Product Association of Australia (INPA), cautions against publicity 'sensationalising' mixed results from compliance investigations for fear that consumers may revert to less safe alternatives such as placing sleeping babies in adult beds or prams. It should be noted that many of the problems with cot compliance were not directly related to safety.</p> <p>The mandatory cot Standard was amended in April 2001 to specifically include antique and collectable cots that are non-compliant. These cots must now be sold with a certificate and permanent signage warning that a child should not be placed in the cot.</p>

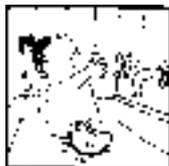




<p><b>High chairs</b> (<i>Hazard</i> editions 14, 1993; 37, 1998; and 44, 2000) VISAR data identified 301 high chair ED presentations in children aged 0-4 years for the period 1996-2000. Falls are the most common mechanism of injury and account for 81% of injury cases. The most frequently occurring injuries are head and face (48%) and intracranial (20%). Nine per cent of cases were admitted to hospital.</p> <p>Injuries commonly occur when children fall from the high chair because restraints are absent, not used or inadequate or adult supervision is insufficient. A small proportion of significant injury is due to entrapment of extremities and basic failure of the product (for example, collapse of the chair).</p> <p>MUARC research suggests that the use of a full 5-point safety harness would prevent around 80% of child falls from high chairs and that harnesses should be sold with high chairs (Watson &amp; Ozanne-Smith, 1993). The ABS Home Safety Survey conducted in 1998 reported that only 55% of high chairs in use in Victorian homes were fitted with harnesses (ABS, 1999).</p>	<p>High chair injury has been highlighted in three editions of <i>Hazard</i>. VISAR data on high chair injuries underpinned the 1997 MUARC report on nursery furniture injury (Watson, 1997). VISAR, and other agencies, advocated for the development of a standard for high chairs, including provisions for harnesses.</p>	<p>An Australian Standard for high chairs is being drafted (DR 99531). The objective of the proposed Standard is to specify functional, durability, stability and performance criteria related to safety in multipurpose and convertible high chairs for domestic use. Also included are requirements for a restraint system and marking requirements.</p> <p>It is anticipated that the draft Standard will be ready for public comment by October 2002 and implemented by October 2003.</p>
<p><b>Prams and strollers</b> (<i>Hazard</i> editions 14, 1993; 37, 1998; and 44, 2000)</p> <p>Injuries associated with prams and strollers are most common among children aged less than one year. Over the 5-year period 1996-2000 VISAR data indicate there were at least 598 ED presentations for pram and stroller injuries to children aged 0-4 years. Approximately three-quarters (73%) of injuries involving prams and strollers are caused by falls. Superficial (27%) and intracranial (20%) injuries predominate. Nearly one-half (47%) of presentations are for head and face injuries. Seven per cent of cases are admitted to hospital.</p> <p>One-quarter of pram-related fall injuries are attributed to the pram tipping over or rolling from one level to another, suggesting problems with stability. Design failures have caused a small number of deaths by asphyxiation.</p>	<p>VISAR reviewed pram and stroller injury in two editions of <i>Hazard</i>, including the discussion of in-depth investigations of pram- and stroller-related deaths.</p> <p>MUARC staff members were involved in the Coronial investigations of three deaths of children in pram/stroller units. In each incident the child was left sleeping in the unit and the cause of death was asphyxiation. These deaths were caused by failures of the headboard due to unsecured covering sleeves.</p>	<p>As a result of in-depth investigations of pram related deaths by MUARC staff for the Coroner, the existing Standard (AS/NZS 2088 'Safety of Prams and Strollers') was amended. The amendment aimed to overcome asphyxiation risk by prohibiting the use of loose fitting headboard covers and problems with stability.</p> <p>Additional action is required to remove prams with these design faults from use.</p>
<p><b>Bunk beds</b> (<i>Hazard</i> editions 11, 1992; 14, 1993; and 44, 2000)</p> <p>The risk of child injury related to bunk beds is more than five times higher than that for conventional beds, mainly because of the height of the upper bunk (Thompson, 1995). In the period 1996-2000, at least 927 Victorian children mostly in the 5-9 year age group were treated in EDs for bunk bed-related injury. Over the past decade in Australia there have been at least 2 deaths from asphyxia due to entrapment in the bunk structure.</p> <p>The major injury mechanisms associated with bunk bed injury ED presentations are falls (85%), head and limb entrapment and hanging by protrusions in the vicinity of the top bunk. The most common injuries are head and face injuries (29%), forearm and wrist injuries (20%) and intracranial injuries (10%). The injury hospitalisation rate is high, 15% of presentations are admitted to hospital.</p>	<p>VISAR first reported on bunk bed injury a decade ago in <i>Hazard</i> 11 (1992) and has continued to monitor and report these injuries. Early work by the South Australian (SA) Health Commission led to the development of a voluntary Standard for bunk beds, 'AS/NZ 4220:1994 Bunk Beds'.</p> <p>In 1997, VISAR supplied data to the MUARC review of bunk bed injury (Watson et al., 1997) that was used by the Consumer Affairs Division of the Commonwealth Department of Industry, Science and Tourism to develop the case for a mandatory Australian Standard for bunk beds. A subsequent Regulatory Impact Statement by the Department of the Treasury concluded that a mandatory Standard was required to ensure compliance by manufacturers. (Research undertaken by the Injury Prevention and Control Unit in SA had shown that manufacturers were producing bunks that complied with the voluntary Standard but were continuing to manufacture non-compliant models.)</p> <p>In the same time period, a marketplace survey conducted in 1997 by the Queensland Office of Fair Trading found that the most readily available bunk beds did not comply well with the voluntary Standard in the areas of gaps, hanging hazards and roll-out protection.</p>	<p>DHS (South Australia) initiatives strongly supported by VISAR, MUARC and agencies across Australia culminated in the development of a mandatory Standard for bunk beds.</p> <p>The Federal Trade Practices Act mandatory safety Standard (AS/NZS 4220:1994) is scheduled to come into force on November 1, 2002. The Standard requires that bunk beds supplied in Australia have guard rails on all sides of the top bunk, have no gaps in guard rails and other parts of the bed structure that pose an entrapment risk and no snag points that could hook children's clothing.</p>



(2) Unintentional poisoning in children			
<p><b>Child poisoning (1): child-resistant closures</b> (<i>Hazard</i> editions 1 &amp; 2, 1988; 4, 1989; 27, 1996; and 47, 2001).</p> <p>During 1988 VISAR data showed there was a problem with children accessing child-resistant closures (CRCs). This led VISAR to question the adequacy of the Australian Standard for CRCs.</p> <p>In 1996, VISAR again highlighted the ongoing problem of young children accessing agents that are packaged with CRCs, such as paracetamol. VISAR advocated the extension of requirements for CRCs to other agents commonly associated with child poisoning.</p>	<p>VISAR recommended improved CRC designs, which were failsafe and employed cognitive rather than mechanical methods of access.</p> <p>VISAR provided details of child poisoning cases in which children accessed drugs and poisons from packaging with CRCs to the Commonwealth Department of Health and Ageing, the Therapeutic Goods Administration (TGA), the Australian Pharmaceutical Manufacturers' Association, Standards Australia, the Ministry of Consumer Affairs, Kidsafe and the Victorian Poisons Information Centre.</p>	<p>The TGA has expressed its intention to monitor children's access to pharmaceutical products.</p>	<p>A new mandatory safety Standard for humidifiers (vaporisers: AS/NZS 3350.2:98:98) came into operation from July 1, 2000. This Standard supplements or modifies the corresponding clause in AS/NZS 3350.1. <i>Safety of household and similar electrical appliances</i>. The objective of this new Standard was to deal with electrical hazards that may occur during operation of a humidifier.</p> <p>The Standard specifically stipulates electrical requirements. There is little evidence, however, of any association between vaporiser units and electrical injuries. Although control of potential electrical hazards is important, the Standard does not directly address the two most important causes of vaporiser-related injury, burns and poisoning.</p> <p>The Standard requires labelling of a vaporiser if the temperature of the water or steam exceeds 60°C, with a warning indicating "hot steam" or "hot water". While this written warning may modify parental behaviour it provides inadequate protection for children aged less than 2 years, the highest risk group for injury. A common injury scenario is that children play with these units in bedrooms when supervision is at a minimum.</p>
<p><b>Child poisoning (2): Eucalyptus oil</b> (<i>Hazard</i> editions 27, 1996; 43, 2000; and 47, 2001)</p> <p>VISAR data indicated that eucalyptus oils essences and essential oils are major poisoning agents in ED presentations. The admission rate for these poisoning cases is high – 58% of presentations are admitted to hospital.</p>	<p>VISAR identified eucalyptus oil poisoning cases for a MUARC case series study to assess the circumstances of the poisoning event and the means of access of the child to the poison.</p> <p>The parents and carers of 109 young children who ingested eucalyptus oil were interviewed. Three-quarters of ingestions were accessed directly from the vaporiser unit. The unit was most commonly located in the bedroom (60%) and, in 75% of cases, was accessed at floor level (Day et al., 1997a).</p> <p>MUARC conducted a consultative workshop to identify potential design solutions. Placement of a physical barrier over the vaporiser well was proposed to prevent access to fluids and hence reducing the opportunity for ingestions or scalding. A potential barrier to this design change was the possibility that the covering of the well would cause condensation and may result in an electrical hazard.</p>	<p>A new mandatory safety Standard for humidifiers (vaporisers: AS/NZS 3350.2:98:98) came into operation from July 1, 2000. This Standard supplements or modifies the corresponding clause in AS/NZS 3350.1. <i>Safety of household and similar electrical appliances</i>. The objective of this new Standard was to deal with electrical hazards that may occur during operation of a humidifier.</p> <p>The Standard specifically stipulates electrical requirements. There is little evidence, however, of any association between vaporiser units and electrical injuries. Although control of potential electrical hazards is important, the Standard does not directly address the two most important causes of vaporiser-related injury, burns and poisoning.</p> <p>The Standard requires labelling of a vaporiser if the temperature of the water or steam exceeds 60°C, with a warning indicating "hot steam" or "hot water". While this written warning may modify parental behaviour it provides inadequate protection for children aged less than 2 years, the highest risk group for injury. A common injury scenario is that children play with these units in bedrooms when supervision is at a minimum.</p>	<p>The TGA has expressed its intention to monitor children's access to pharmaceutical products.</p>
<p><b>Child poisoning (3): Rodenticides</b> (<i>Hazard</i> editions 4, 1989; 27 &amp; 28, 1996; and 47, 2001)</p> <p>VISAR identified rodenticides as the leading single agent of non-pharmaceutical poisoning in ED presentations of young children. <i>Hazard</i> 28 reported that, annually, an average of 11 hospitalisations in Victoria and 2.3% of calls to the Victorian Poisons Information Centre were associated with children accessing rodenticides.</p>	<p>Access to rodenticides was investigated in the aforementioned follow-up case series study of child poisoning. The study found that 90% of the 118 rodenticide cases involved children ingesting dispersed granules or pellets, not packaged rodenticide.</p> <p>The study found that 90% of children accessed the rodenticide at the site where it was laid. In 20% of cases the rodenticide was accessed from cupboards and wardrobes. This indicates that placing rodenticides in seemingly 'out of the way' places is not an effective means of preventing child access.</p> <p>VISAR recommended that all rodenticides should be dispersed in enclosed child resistant containers (bait stations) that can still be accessed by rodents, to reduce the likelihood of child poisoning and the quantity of poison that can be accessed by children.</p> <p>Kidsafe, the RCH Safety Centre and other bodies included information from the study in advice given to parents and carers.</p>	<p>The TGA has expressed its intention to monitor children's access to pharmaceutical products.</p>	<p>A new mandatory safety Standard for humidifiers (vaporisers: AS/NZS 3350.2:98:98) came into operation from July 1, 2000. This Standard supplements or modifies the corresponding clause in AS/NZS 3350.1. <i>Safety of household and similar electrical appliances</i>. The objective of this new Standard was to deal with electrical hazards that may occur during operation of a humidifier.</p> <p>The Standard specifically stipulates electrical requirements. There is little evidence, however, of any association between vaporiser units and electrical injuries. Although control of potential electrical hazards is important, the Standard does not directly address the two most important causes of vaporiser-related injury, burns and poisoning.</p> <p>The Standard requires labelling of a vaporiser if the temperature of the water or steam exceeds 60°C, with a warning indicating "hot steam" or "hot water". While this written warning may modify parental behaviour it provides inadequate protection for children aged less than 2 years, the highest risk group for injury. A common injury scenario is that children play with these units in bedrooms when supervision is at a minimum.</p>



<p><b>Child poisoning (4): Paracetamol</b> (<i>Hazard</i> editions 4, 1989; 27, 1996; 39; 1999; and 47, 2001)</p> <p>Paracetamol is the leading single agent for poisoning presentations and admissions to hospitals in young children (0-4 years). In 2000, VISAR data showed that paracetamol poisoning accounted for 11% of all poisoning ED presentations in children aged 0-4 years. Sixteen per cent of these poisoning cases in young children were admitted to hospital.</p> <p>In addition, paracetamol is the third highest ranked agent for adult ED presentations and hospital admissions for poisoning.</p>	<p>Access to paracetamol by young children was determined through the previously mentioned case series study. The study found that over half (54%) of child paracetamol poisoning cases involved the liquid form. By contrast, adult overdoses were more likely to be associated with the tablet form.</p> <p>Kidsafe, the RCH Safety Centre and other bodies used the findings from the study to frame the advice they give to parents to prevent child access to paracetamol.</p> <p>VISAR recommended further investigation of the crusting which forms around the closure of liquid paracetamol products and other medications and its effect on the operation of CRCs. Other recommendations included placing a restriction on the allowable volume/pack size of paracetamol and limiting the sale of paracetamol products to pharmacies.</p> <p>VISAR also favoured the addition of an antidote, methionine or similar, to paracetamol to reduce medical intervention and the costs of treating overdoses. However, concerns have been expressed about the potential side effects of methionine and VISAR now recommends that further research is needed into any potential side effects of methionine or alternative antidotes to determine if there is a safe dosage, and the costs/benefits of including an antidote.</p>	<p>Child poisoning prevention is identified as a priority in national and Victorian Injury Prevention Action Plans. It is also the subject of current MUARC research, funded by the Victorian Department of Human Services (DHS).</p> <p>The Therapeutic Goods Administration commissioned a review of non-prescription analgesics in 1997. The report recommended a number of TGA policy changes with respect to restricting the strength and volumes of un compounded paracetamol oral liquids on the Australian Register of Therapeutic Goods; the more accurate calibration of doses on measuring spoons and other measures to ensure correct dosage; the repeal of the Order exempting dropper packs containing no more than 2g of paracetamol from having CRCs; a number of specific improvements to labelling and warning statements; and the development of guidelines on paracetamol and aspirin (Newgreen, 1998). The author recommended against the compulsory co-formulation of methionine with paracetamol preparations (Newgreen, 1998).</p> <p>Several of the recommendations came into effect very quickly including standardising the recommended dose to children and fine tuning of labels with regard to weight and dose tables. A follow-up review is in progress that aims to examine recent published literature especially in relation to British initiatives in the area of labelling (personal communication, David Newgreen).</p>
<p><b>Child poisoning (5): 'Big poisons for little persons' brochure</b></p>	<p>In 1997 MUARC developed and disseminated a poisoning prevention education brochure for parents and carers entitled 'Big Poisons for Little People'. The brochure based on research by MUARC and VISAR, included summary statistics on paracetamol, eucalyptus oil and rat bait poisoning and safety tips to prevent child poisoning.</p> <p>VISAR and MUARC distributed 100,000 brochures to the target audience - parents, carers and child health professionals.</p>	
<p><b>Child poisoning (6): Poisoning by 'over-the-counter' medications</b></p> <p>In 2001 VISAR worked collaboratively with the Victorian College of Pharmacy to investigate unintentional childhood poisoning (in 0-4 year olds) that is associated with over-the-counter (OTC) medications. This investigation found that 75% of the child poisoning cases (in which the medication involved was identified) involved OTC medications. OTC medication poisoning peaked in two year-olds. One-quarter of incidents required hospitalisation.</p> <p>The report recommended restricting the sale of toxic OTC medications to pharmacies, improved counselling of parents and carers about the risks of child poisoning by OTC medications, and a review of child resistant closure application and design.</p>	<p>This collaborative work has made a significant contribution in a previously under-investigated area of childhood poisoning. The findings from the research have been presented at an international conference and an article has been submitted to a peer-reviewed journal.</p>	

**ACHIEVEMENTS IN INJURY PREVENTION IN SPECIFIC SETTINGS**

**(1) Sport and active recreation related injury**

**Micro-scooters (Hazard 44, 2000)**

In mid-2000 VISAR noted the proliferation of the new "Razor" micro-scooters and searched the VEMD data for associated injuries. Projections made at that time indicated that we could expect 327 presentations to hospital EDs for scooter injuries in Victoria over the full 12-month period. The VISAR prediction was accurate to within one case.

VISAR undertook a letter writing campaign alerting various State and Federal Ministers of Transport and Ministers of Consumer Affairs across Australia of the projected epidemic of scooter-related injuries.

Simultaneously, VISAR provided various journalists and other injury prevention organisations with data on scooter injuries to children. VISAR staff members were involved in newspapers, radio, and TV interviews.

A number of retailers acted on the safety messages promoted by VISAR and other agencies such as Kidsafe and included promotion of protective equipment, such as helmets, in their advertising.

Many government Ministers and Opposition Shadow Ministers responded to the letter campaign, including the Deputy Prime Minister and the Shadow Minister for Regional Development, Infrastructure, Transport, Regional Services and Population.

The Australian Transport Council (ATC), under the direction of the Deputy Prime Minister, issued media statements warning parents of the dangers of scooters and reminding them that legislation required that children over 12 years of age must wear helmets when riding scooters. The ATC agreed to examine possibilities for national legislation on scooter safety.

These media statements and others from various State ministers received media coverage, as did injury incidents involving children.

Anecdotal evidence suggests that since the end of 2000 micro-scooter sales have decreased, with a concomitant slowing in the growth of scooter injuries. Throughout 2000, VEMD data showed that injuries were increasing by 20% each month on the previous month. Through 2001, scooter injuries grew by only 7% per month. It is possible that the recent reduction in scooter injuries signals that scooter riding is a passing fad. However, the active campaign VISAR undertook in partnership with government ministers and the media probably played a role.

**Bicycle helmets (Hazard editions 2, 1988; 6, 1990; 7 & 8, 1991; 10, 1992; 31, 1997; 34, 1998; and 44, 2000).**

From July 1 1990 all Victorian bicyclists were required by law to wear an approved helmet.

ABS data shows 152 deaths of bicyclists on Victorian public roads in the 10-year period 1987 to 1996. Over the decade, the death rate ranged between 0.6 per 100,000 and 0.2 per 100,000. Bicycle-related death rates on public roads dropped substantially in the two years after helmet legislation came into force.

Bicycle-related hospital admissions were decreasing prior to the mandatory helmet wearing legislation (probably reflecting the increase in voluntary helmet wearing). Admission rates after 1990 remain lower than rates in the pre-compulsory helmet-wearing era.

VISAR has reviewed injury to bicyclists in a number of editions of *Hazard* providing updates on BMX injuries, falls from bicycles and head injury to cyclists.

The 6<sup>th</sup> edition of *Hazard* included an analysis of Victorian data that showed a marked decrease in the proportion of cyclists with head injuries after the introduction of compulsory helmet wearing legislation. This was the first international report of hard evidence supporting the effectiveness of compulsory bicycle helmet legislation and was used to assist the introduction of similar legislation in other Australian states and countries.

VAED hospital admissions data indicate that in 1989 (the pre-legislation year) intracranial injuries comprised 28% of all-age bicycle-related admissions whereas in 1999 the proportion of intracranial injuries declined to 19%. However, caution should be exercised in attributing this decrease to helmet wearing alone (Carr et al., 1997).

Further exposure studies are needed to determine current helmet wearing rates in Victoria.

**Trampolines (Hazard editions 13, 1992; 42 & 44, 2000; and 48, 2001)**

VISAR ED data for the 7-year period 1995-2001 indicate that there were at least 2,585 trampoline-related injuries to children, 369 cases per year.

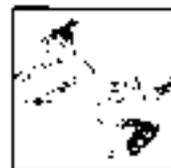
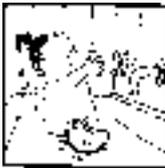
Over three-quarters (78%) of child trampoline injuries occur in the home. The most common mechanism of trampoline injury is falls (73%). Fractures (39%) and sprains/strains (23%) are the most common types of injury. The most common sites of injury are the upper limb (43%, mostly elbow, forearm and wrist injuries), lower limb (22%, mostly ankle and lower leg) and head/face (15.5%). Seventeen per cent of presentations are admitted to hospital.

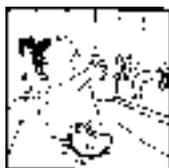
VISAR has monitored trampoline injury for a decade, first reporting data in *Hazard* edition 13. More recently, VISAR supplied data to a review of trampoline injury by MUARC that was funded by the DHS (Victoria) and DHAC (Murphy, 2000). The review made the case for an Australian Standard.

Although there have been calls for a ban on the sale of trampolines for recreational use, the MUARC review proposed the development of a voluntary Australian Standard to facilitate the adoption of the design, behavioural and environmental changes that are required to reduce trampoline injury.

Following strong advocacy from MUARC, VISAR, the Queensland Minister for Fair Trading and other key stakeholders including trampoline manufacturers, Standards Australia initiated the development of a Standard for trampolines (DR 01348) in 2001. A VISAR staff member serves on the Standards Committee.

The objective of the Standard is to minimise the risk associated with the use of trampolines by establishing procedures for assembly and installation, specifying design criteria of components, and establishing requirements for labelling and provision of safety information. The draft Standard is currently on release for public comment.

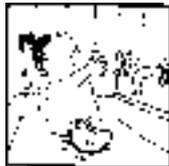




<p><b>Playground falls</b> (<i>Hazard</i> editions 3, 1989; 10, 1992; 14 &amp; 16, 1993; 25, 1995; 29, 1996; 44, 2000; and 48, 2001)</p> <p>Playground-related injuries are common and serious childhood events. They represent approximately 6% of all childhood injuries in Victoria. Playground equipment-related injuries account for over 3,000 presentations to hospital EDs annually in Victoria, with 22% of presentations admitted to hospital.</p> <p>The average annual admission rate for falls from playground equipment is 11.4/100,000 children in Victoria. The 12-year trend (1987/8 to 1998/9) in hospitalised playground falls among children in Victoria has shown a statistically significant increase for all playground equipment falls, and arm fractures.</p> <p>The peak age for hospitalisation is 5-9 years and 56% of injured children are male. The major mechanism of injury is a fall from playground equipment. Upper limb fractures account for 74% of hospital admissions.</p>	<p>Eight editions of <i>Hazard</i>, numerous VISAR information requests and significant work by MUARC have been dedicated to the issue of playground falls.</p> <p>Studies by VISAR/MUARC and other groups have identified the primary risk factors for playground injury. They include the height of the equipment from which the child falls and the characteristics of surfacing onto which they land. A current NH&amp;MRC-funded MUARC study is addressing the specific risk and protective factors for arm fracture, the most common playground fall injury.</p>	<p>Parts of the Australian Standard on playground equipment (AS 1924.2 – 1981) are in the process of revision. The sections under revision cover safety requirements for rocking equipment (DR 02340), swings (DR 02345), slides (DR 02346), runways (DR 02347) and carousels (DR 02348). The Draft, based on the European Standard, but with existing Australian height limits, is open for public comment until August 2002. The results of current MUARC research may prompt further revisions.</p> <p>MUARC has sought funding to continue its program of research into playground fall injuries to inform international standards and guidelines.</p>
<p><b>Playground falls: study on risk factors for arm fracture</b></p> <p>Public health research in playground injury has focused almost exclusively on epidemiological methods. Few studies have applied multi-disciplinary methods to injury prevention, combining biomechanics, medicine and epidemiology.</p> <p>Although there are some descriptions of the clinical aspects of arm fracture, none has linked the injury outcome to the biomechanics of the cause. This information could be used to determine the mechanism of injury and further guide prevention strategies.</p>	<p>The aim of the current MUARC playground falls study is to further investigate the role of fall height and playground surface impact in arm fracture. To date, over 430 children have been included in the case control study. Findings from the study will be available at the end of 2002.</p>	<p>Preliminary results presented to the 6<sup>th</sup> World Conference on Injury Prevention and Control (held in Montreal in May 2002) have important implications for some aspects of Australian and international standards and will be published shortly.</p>
<p><b>Exercise bikes (cycles)</b> (<i>Hazard</i> editions 5, 1990 and 9, 1991)</p> <p>The growth of a culture of health and fitness in Australian society has resulted in increased purchase and use of home exercise equipment. The safety of children is not always considered when this equipment is designed.</p> <p>VISAR data for 1995-2001 indicate that there were at least 140 exercise cycle-related ED presentations over the 7-year period. Eighty-two per cent of cases were children aged 0-14 years [children aged 0-4 years (42%), 5-9 years (29%) and 10-14 years (11%)]. Injuries to children included open wounds (44%), superficial injuries (11%), fractures (12%), sprains and strains (7%) and traumatic amputations (8%).</p> <p>Approximately one third of child exercise cycle injuries were to the foot, including toes (33%) and a further one-third to the hand including fingers (32%). The major mechanisms of child injuries were cutting/piercing (19%), struck by/collision with (14%) and falls (14%). The hospital admission rate for children was high (24%), indicating the severity of exercise cycle-related injury in children.</p>	<p>VISAR highlighted the dangers of exercise bikes in <i>Hazard</i> 5 and in the <i>Medical Journal of Australia</i> (Perks, et al., 1991).</p> <p>The <i>MJA</i> article reported on a retrospective study of VISAR and clinical records on 18 children with finger injuries from exercise bicycles. Almost 90% of the injured children were aged under five years, 10 were aged less than two years. Five times as many boys as girls were injured.</p> <p>Identified design hazards included the wheel, the chain, the sprocket wheel and entrapment of fingers or feet in the wheel spokes. Recommendations for injury prevention included design modifications and education of parents about the risks for children playing near exercise bikes.</p>	<p>Following the publication of the <i>MJA</i> article the Federal Minister for Justice and Consumer Affairs issued a national media release that warned parents of the dangers associated with exercise bicycles. The Minister went further by issuing a <i>warning notice about possible hazardous goods</i> (Consumer Protection Notice No. 18 of 1991) under the Trade Practices Act 1974, describing possible risks of finger and limb entrapment injuries caused by unguarded sprockets, chains and spoked wheels of home exercise bikes.</p> <p>The safety campaign continued with the release of the Injury Surveillance Bulletin (Nos. 37 &amp; 38, Sept – Oct 1991) from the South Australian Health Commission that called for an Australian standard for exercise cycles.</p> <p>A Standard for exercise cycles in domestic use (AS4092-1993), which specifies isolation guarding for moving parts and other safety requirements, was subsequently developed and released in 1993. It was gazetted as a mandatory Standard under the Trade Practices Act in 1997.</p>



<p><b>In-line skating (Hazard editions 15, 1993; 31, 1997; 44, 2000)</b></p> <p>VISAR data show that the number of ED presentations for in-line skating (roller blading) injury has increased markedly since 1990 when the first ED presentations were recorded. In the latest 3-year period (1999-2001), 965 ED presentations were recorded, an average of 322 per year.</p> <p>One-half of these presentations were for fractures to the forearm and wrist. Research has shown that the non-use of wrist guards accounts for 87% of all wrist injuries in in-line skating (Schreiber et al., 1996).</p>	<p>In 1998 MUARC undertook an observational study to determine local Personal Protective Equipment (PPE) use at four different skate settings, and to compare local results with reported international rates of PPE use (Sherker &amp; Cassell, 2001).</p> <p>Two thirds of the 490 observed in-line skaters wore none of the recommended PPE (wrist guards, elbow and kneepads and helmets) and only 2% wore all four pieces of PPE. Wrist guards were worn by only 26% of skaters, kneepads by 24%, elbow pads by 7% and helmets by 6%. Additional findings indicate that younger skaters are least likely to wear any PPE, trail skaters are more likely to wear PPE than skaters at other locations, and the use of PPE is influenced by group norms. The MUARC study concluded that PPE use among in-line skaters in Victoria is lower than that reported overseas.</p> <p>These findings highlight the need to better promote the use of wrist guards, elbow and kneepads and helmets to skaters of all ages and abilities.</p>	<p>VISAR will continue to monitor and report on injuries associated with in-line skating and will seek opportunities to work in partnership with in-line skating bodies, organisers and sponsors of skating events, skating venue owners and managers, skating equipment manufacturers and hirers to promote PPE use and reduce injuries associated with in-line skating.</p> <p>MUARC and the Royal Children's Hospital (Centre for Adolescent Health) are planning a study to determine the barriers and facilitators to the uptake and use of wrist-guards by child and adolescent skaters.</p>
<p><b>Wrist guards: do they impair wrist function? (VISAR applied research project)</b></p> <p>Wrist guards are an effective item of protective equipment designed to protect against wrist injury, particularly fracture, in the event of a fall onto an outstretched hand. They are recommended for use by in-line skaters and snowboarders because falls onto an outstretched arm are the most common injury mechanism in these recreational activities.</p> <p>VISAR reported a 15-fold increase in micro-scooter injury among Victorian children in the year 2000 (Stokes &amp; Corbo, 2001). Although the pattern and mechanism of fall injury in scooter riders is similar to that seen in in-line skaters, we are unsure whether wristguards are an appropriate countermeasure to injury because they may interfere with grip and scooter control.</p>	<p>Scooter riders need to securely grip the handlebars to control the device and wristguards may interfere with grip and hand/finger dexterity. There is no current evidence of the efficacy of wristguards in recreational activities that demand good grip strength and dexterous use of the wrist to grip handlebars, rackets or sticks.</p> <p>VISAR is conducting an experimental wristguard study that aims to assess the effect of wristguards on grip strength and dexterity under a variety of performance conditions. The study will involve a sample of children and adults. It is envisaged that the findings will inform prevention strategies, and clarify whether design modifications to wrist guards are required.</p>	
<p><b>Boxing</b></p> <p>In Victoria there have been two boxing-related deaths in the past 10 years from more than 4000 professional fights (Scott et al., 2001).</p> <p>VISAR data indicates that there were at least 102 boxing-related ED presentations in the 5-year period 1996-2000. The most common injuries were fractures (36%) and sprains and strains (23%). The most frequently injured body sites were the upper extremity (46% mostly to the hand, fingers and wrist) and the head &amp; face (32%, mostly lacerations). Seven per cent of presentations were admitted to hospital. The most common mechanism of injury was striking or being struck by a person.</p> <p>There is good evidence that repeated brain injury causes chronic brain damage. However, the risk factors for chronic traumatic brain injury in boxers have not been conclusively established.</p>	<p>In 2001 VISAR provided data on boxing injuries for a MUARC/Deakin University study 'Counting injuries out of boxing' (Scott et al., 2001). The Victorian Minister for Sports and Recreation commissioned the review on behalf of, and in association with, the Sport and Recreation Ministers' Council Standing Committee on Recreation and Sport.</p> <p>VISAR hospital ED presentations data (supplemented by data from Queensland, UK and The Netherlands) were used to provide an overview of injuries in boxing and inform recommendations for prevention.</p>	<p>Recommendations from the report are currently under consideration by relevant government departments.</p>



**Strategic advice on non-combat injury prevention in the Australian Defence Force (ADF)**

In the ADF, injuries in physical activity (basic training, organised and unorganised physical training and sport and active recreation activities) are associated with a high number of working days lost, hospitalisations, sick days, light duty days and reduced deployability. In 2001, the Australian Defence Force commissioned MUARC to provide evidence-based strategic directions and advice to reduce injury among ADF personnel during physical activity, whilst optimising participation.

**Injury countermeasure reviews for specific sports**

Injuries in sport and active recreation are a major cause of injury morbidity in children and young adults and contribute significantly to health care costs.

Available data suggests that there are between 20,000 and 30,000 hospital ED presentations for sport and active recreation injury each year in Victoria. Sports and active recreation activities with the highest frequencies of ED presentations are (in rank order): Australian football, bicycle riding, motor/trail/mini bike riding, basketball, soccer, playing on play equipment, netball, in-line skating and skateboarding, horse-riding, cricket, hockey and swimming.

**(2) Home injury**

**Hot tap water scalds** (*Hazard* editions 3, 1989; 12, 1992; 25, 1995; 32, 1997)

Hot tap water is one of the most common causes of scalds to children (and older people). VISAR data shows 1,990 ED presentations for scalds in children 0-4 years in the period 1996-2000. Six per cent of cases ( $n=118$ ) were associated with the temperature of bath and shower tap water.

The severity of bath and shower scalds, and their preventability were the major motivations for action on this issue. US experience showed that regulating the temperature of domestic hot water reduced the risk of child scald injuries.

VISAR sports injury data were used to compare the pattern of sports injury in the ADF to the general population and to inform recommendations on strategies and measures to reduce injury in sport and active recreation in the ADF.

VISAR provided data on ED presentations for sports injury to research teams from MUARC and Deakin University School of Health Sciences undertaking a series of reviews on the epidemiology and prevention of injury in specific sports. The review series was funded by Sport and Recreation, Victoria and covered: aerobics; alpine skiing; Australian Football; baseball; basketball; cricket; cross-country skiing; golf; gymnastics; hockey; horse-related; in-line skating; lawn bowls; netball; running; snowboarding; soccer; softball; squash; tennis; volleyball and rugby union.

In addition to the full reports, the researchers produced fact sheets for sports participants distributed through sports associations and the internet. Since July 1998, in excess of 13,000 fact sheets were downloaded from the MUARC site. In addition, Sport and Recreation, Victoria distributed 19,496 fact sheets in the period January 2001 to end-May 2002. The fact sheets are available from Sports and Recreation Victoria at: [http://www.sport.vic.gov.au/dir017/srvsite.nsf/pages/research\\_injury](http://www.sport.vic.gov.au/dir017/srvsite.nsf/pages/research_injury)

VISAR data analysis provided support for the Victorian campaign to highlight the severity and preventability of bath and shower scalds in young children and the case for the regulation of tap water temperature at bathroom outlets.

VISAR strongly supported the media and advocacy campaign led by Kidsafe in Victoria (following the lead of NSW Health on this issue) to reduce the delivery temperature of domestic hot water to 50°C.

Both the ADF and MUARC posted the report on their websites in 2002 ([www.general.monash.edu.au/muarc/sport/sport.htm](http://www.general.monash.edu.au/muarc/sport/sport.htm)) The ADF has already implemented some recommendations from the report:

- Promotion, within the ADF, of the fact that participation should be increased, not reduced, to achieve reductions in injury rates and improvements in general health of personnel and their availability for deployment.
- Upgrading of the ADF injury surveillance systems
- Establishment of strategic-level collaboration on injury prevention in the ADF
- Focused efforts to fill gaps in the evidence-base for injury countermeasures for physical activity and sport.

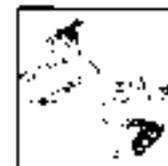
The results will be presented at the 'Defence Health Symposium 2002' to be held in July.

MUARC and other interested parties are currently exploring mechanisms for updating and disseminating information on the prevention of sport and active recreation injuries as and when new knowledge becomes available.

The Australian Building Code (1994) was changed to require that all new hot water installations shall, at the outlet of all sanitary fixtures used primarily for personal hygiene purposes, deliver hot water not exceeding 50 deg Celsius in residential buildings and 43.5 deg Celsius in early childhood centres, primary and secondary schools and nursing homes or similar facilities for aged, sick or disabled persons. (The National Plumbing and Drainage Code AS3500.4-1994)

MUARC, in conjunction with the ABS and the Department of Human Services, has monitored self-reported data on household tap water temperature over time. Victorian surveys report that the proportion of households with young children that have hot water delivered 'on tap' that would scald at its hottest temperature dropped from 79% in 1992 to 72% in 1998. The same surveys show a small increase in Melbourne households with young children that have adjustable hot water thermostats, from 65% in 1992 to 68% in 1998.

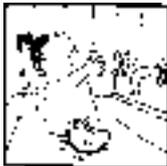
The full benefit of regulatory changes should be seen over the longer term.



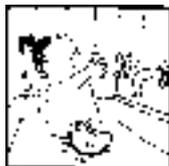
<p><b>Hot drink scalds: spill-resistant tea and coffee mugs</b> (Hazard editions 3, 1989; 11 &amp; 12, 1992; 25, 1995)</p> <p>In 1992 VISAR identified that the major cause of scald injuries to children was hot drinks being pulled over or knocked onto young children. These scalds often occur when the child accesses the cup or mug from a bench or table. The contents of the mug usually spill downwards over the child's face, chest and arms.</p> <p>VISAR ED data for the period 1996-2000 indicate that 24% of the reported 1,990 scalds to young children (aged 0-4 years) were associated with hot drinks. Ninety per cent of these injuries occur in the home. The peak age group involved is toddlers in their second year of life.</p> <p>More than twelve years have elapsed since VISAR identified this cause of thermal injury among young children and recommended the development of an acceptable spill-resistant mug. Over this period more than 1,200 young children have been admitted to Victorian hospitals for scalds from hot tea, coffee and other beverages.</p>	<p>Hazard 12 noted that a significant proportion of hot beverage scalds in young children could be prevented if parents and caregivers used spill-resistant tea and coffee mugs. VISAR has expended a lot of staff time and effort on getting an attractive and well-designed spill-resistant tea and coffee mug onto the Australian market.</p> <p>VISAR research has identified four essential design features of the spill-resistant mug: a sip through lid or alternative mechanism to reduce spill rate; a wide and stable, slip-resistant base to prevent tip-overs; fail-safeness; and shatterproof material (on floor contact).</p>	<p>VISAR has collected numerous samples of mugs, several of which were produced in the United States for commuter drinking. None of these samples were suitable and efforts were then made to develop a prototype with the hope of encouraging manufacture. This option proved prohibitively expensive.</p> <p>The ongoing research program included a pilot of the acceptability of spill-resistant mugs among day care staff, using a commonly available commuter mug. Findings on the level of acceptability were positive.</p> <p>In 2002, MUARC will complete performance testing of a mug that recently came onto the market (with funds from the Victorian Department of Human Services).</p>
<p><b>Fire-related burns: smoke alarms</b></p> <p>In 1997 there were sixteen child deaths in Australia (six in Victoria) caused by fire, flames, burns and scalds (7% of child injury deaths). Children aged 0-4 years were most at risk from fire/flames/burns, accounting for thirteen deaths (77%) in this category.</p> <p>At least six of these deaths involved house fires. In house fires, very young children are particularly vulnerable because they depend on adults for assistance to escape the fire.</p> <p>One of the most important risk factors for house fire-related death is the absence of a smoke alarm (Runyan et al., 1993). US research showed that smoke alarm campaigns that raise general fire safety awareness as well as alarm coverage are effective in reducing fire-related injury and mortality (Mallonee et al., 1996). A case-control study conducted in Melbourne in 1998 showed that houses without smoke alarms carry more than five times the risk of fatal and injurious fires than houses with smoke alarms (Begg et al., 1998).</p>	<p>VISAR and MUARC gave strong support to the campaign (led by the MFB) to regulate for the compulsory installation of smoke alarms (preferably hard wired) in domestic dwellings in Victoria. Pending the full coverage of Victorian homes by hard-wired smoke alarms, VISAR continues to advocate for the installation of long-life (10-year) smoke alarms (powered by single purpose lithium batteries) in preference to the conventional battery operated smoke alarm.</p> <p>MUARC has monitored smoke alarm uptake programs in specific community-based injury prevention programs and through statewide surveys (the latter in conjunction with the ABS and Department of Human Services). In 1992, 32% of Melbourne households reported having smoke alarms installed compared with 84% of households in 1998.</p>	<p>The Victorian government passed legislation in 1991 and 1996 requiring the installation of 240V hard wired smoke alarms with back-up battery in all new homes and substantially renovated dwellings and, from February 1999, the installation of smoke alarms (hard wired or battery operated) in all existing flats, units and homes.</p> <p>Future compliance efforts need to be directed towards ensuring that installed smoke alarms are always functional.</p>



<p><b>Home drowning: pool fencing</b> (<i>Hazard</i> editions 2, 1988; 5, 1990; 7, 1991; 30, 1997; and 34, 1998)</p> <p>Drowning is the most common cause of injury death in young children (aged 1-4 years) in Australia.</p> <p>VEMD data indicate that in the calendar year 2000, 64 children aged less than 15 years drowned or nearly drowned in Victoria, up from 53 in 1999 and 42 in 1998. Trend data show that we can expect 74 child drowning and near drowning cases in 2001, rising to 86 cases in 2002. (VAED data for 2001 is not yet available.)</p> <p>Much work has been done in recent years to prevent child drowning, including parent and carer education, media campaigns and regulation. Despite these efforts, pools and baths still account for 50% and 12%, respectively, of drowning in young children.</p> <p>Pool fencing that conforms to the Australian Standard (AS 1926) is the most effective means of preventing drowning of young children. The risk of drowning in an unfenced pool is 3.7 times that of drowning in a fenced pool. Further, the chance of drowning in a 3 sided fenced pool is 5.8 times that of drowning in a pool with isolation fencing (Thomson &amp; Rivara, 2002).</p>	<p>VISAR has a long history of active advocacy on drowning prevention, regularly highlighting the issue in <i>Hazard</i>. VISAR supplied information on the pattern of child drowning and prevention measures to advocacy groups and government bodies to underpin the development and implementation of pool fencing standards and regulations in Victoria and other states.</p> <p>In 1998, VISAR surveyed local councils to investigate the enforcement of pool fencing legislation at the local government level and to examine their processes and the barriers to enforcement (Ashby, et al., 1998). In addition, VISAR surveyed a sample of real estate agents to determine their role in facilitating the adoption of pool fencing requirements.</p> <p>The VISAR study found there was wide variation in the enforcement of pool legislation by councils and there was potential for improving compliance of pools if regulation fencing was enforced when properties were put up for sale.</p>	<p>From July 1 1997 Victorian law requires all existing residential swimming pools and spas have safety barriers to prevent unsupervised access by young children. A barrier refers to a fence, wall, gate or screen as well as locks, latches or other device on doors, gates and windows.</p> <p>Currently, the Victorian Building Commission is attempting to document the location of private pools in all Victorian municipalities with a view to implementing measures to improve compliance with pool fencing regulations.</p>
<p><b>Cutting and piercing injury (1): domestic architectural glass</b> (<i>Hazard</i> editions 7, 1991; 22 &amp; 25, 1995; and 32, 1997).</p> <p>In the six-year period 1996-2000 VISAR data shows 4,284 ED presentations for glass-related injury in domestic dwellings, mostly involving window (67%) and door (15%) glass.</p> <p>An earlier in-depth analysis of ED data for 1996-7 (<math>n=995</math> cases) showed that two-thirds of the child cases of domestic glass injury (<math>n=505</math> cases) were males, most commonly in the 1-3 year age group. Over three-quarters (76%) of the child injuries were lacerations, mostly to the face, scalp and lower arm. The most frequent mechanisms of injury were falls (24%), glass collapse/caving in (8%), horseplay (5%) and fighting/quarrelling (4%).</p> <p>There were 490 adult glass-related injury cases in 1996-7, over one-half of which occurred in males aged 15-29 years. The most common mechanisms of glass-related injury in this age group was falls (24%) and fights (21%). Lacerations accounted for 83% of adult domestic glass-related injuries.</p>	<p>VISAR has responded to a number of information requests, especially related to media reports of deaths and serious injury associated with domestic glass.</p> <p>VISAR and MUARC played strong advocacy roles for the adoption of the Australian Standard (AS 1288 -1989) for glass in buildings, including residential buildings, into Victoria's Building Code. The aim was to mandate the use of safety (toughened) glazing material, in place of ordinary annealed glass, in situations where glass is likely to be subject to breakage due to wind loading or human impact.</p>	<p>In 1991 (AS 1288 - 1989) "Glass in Buildings – Selection and Installation" was adopted into the Building Code. This Standard requires that safety glazing materials, toughened glass, laminated glass or organic glass is used in buildings in situations where annealed glass was previously acceptable. Annealed glass breaks with relatively low impact into jagged pieces, whereas, toughened glazing materials generally break less readily into small particles that have blunt edges.</p>
<p><b>Cutting and piercing injury (2): performance of safety glass</b></p> <p>The glass industry and a number of government departments have expressed concerns about the occurrence of severe injury involving safety glass.</p>	<p>MUARC hosted a national workshop on safety glass injuries in mid 2002. Potential research collaborators, glass manufacturers and regulators participated in the workshop, which aimed to identify a research agenda for preventing safety glass-related injuries, and potential funding sources for research.</p>	<p>Industry has agreed to partner MUARC on research to identify the size and nature of the safety glass-related injury problem and the reasons for the failure of safety glass.</p>



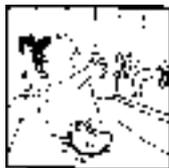
<p><b>Door jams: finger protectors</b> (<i>Hazard</i> editions 10, 1992; 14 &amp; 16, 1993; and 25, 1995)</p> <p>In 1989 VISAR identified that finger jam injuries were common in children aged less than 5 years. In the previous year 143 ED child presentations were recorded for finger jam crushes, fractures or amputations. A follow up study on a sample of these cases found that the mechanism in more than 60% of cases involving young children involved the hinge side of the door (Ozanne-Smith et al. 1993).</p> <p>Later research by VISAR into home injuries (<i>Hazard</i> 14) and injuries in child care settings (<i>Hazard</i> 16) found that finger jam injuries are frequent and severe in both settings.</p>	<p>VISAR assisted the development of a 'finger safe guard' which shields the hinge side of the door. The manufacturer, ATP Fabrications, and the Child Safety Centre Shop at the Royal Children's Hospital (RCH) sell the guard.</p> <p>Between 1993 and 1995 VISAR heavily promoted the finger safe door guard, raising community and government awareness of the problem and solution. VISAR promoted the installation of door guards in childcare settings anticipating that this may encourage parents to install them in the home setting.</p>	<p>The RCH Child Safety Centre has taken the lead in promoting the device to childcare centres seeking government accreditation. In recent years their use has been promoted through the inclusion of finger safe guards in the Kidsafe and Archicentre Home Safety Checklist.</p> <p>Since July 1996 approximately 4,500 guards have been sold through the Child Safety Centre Shop or direct from the manufacturer.</p>
<p><b>Do-It-Yourself home maintenance injury (1)</b> (<i>Hazard</i> editions 22, 1995; 28, 1996; 41, 1999)</p> <p>Australians are enthusiastic Do-It-Yourselfers, with almost 80% of Victorian households keeping home maintenance equipment (ABS, 1999). However, injuries from Do-It-Yourself (DIY) maintenance activities account for an average of 14 deaths, 355 hospital admissions and several thousand ED presentations annually in Victoria.</p> <p>The mechanism of most DIY deaths and hospital admission is falls from ladders. Ladders rank third behind grinders and welders as the mechanism for non-hospitalised DIY injuries. Other common causes of moderate-to-severe DIY injuries are power saws, lawn mowers and activities associated with vehicle maintenance. The most frequently injured body site is the upper limb. Males are over-represented in DIY injury cases.</p> <p>Trend analyses for eleven years of Victorian public hospitalisations, 1987 to 1998, indicate statistically significant increases in rates of hospital admission for a number of DIY categories including falls from ladders, injuries from both powered and other hand tools, woodworking machinery and powered lawn mowers.</p>	<p>Since 1995 MUARC and VISAR have raised the issue of DIY home injuries in reports, journal articles and several editions of <i>Hazard</i>.</p> <p>VISAR has serviced 72 requests for information on DIY home injuries, including staff participation in 17 radio interviews. VISAR intends to support exploratory research into preventing DIY injury in key at-risk groups such as older community dwellers (see below).</p>	<p>VISAR continues to play a key role in community awareness raising via a brochure intervention (see below), presentations to community groups such as Rotary and PROBIS, industry presentations, and by providing commentary in the media on these issues. Most recently VISAR have been called on to provide comment on the role lifestyle TV programs and magazines play in the increasing number of DIY injuries being treated in Victorian hospitals.</p>
<p><b>DIY injury (2): awareness raising intervention</b> (<i>Hazard</i> editions 36, 1998; 41, 1999)</p> <p>There are a number of contributing factors to DIY injury scenarios including the cost of tradesmen, pride in doing one's own DIY tasks, over-estimation of one's abilities and under-estimation of the task at hand (Speed &amp; Dickson, 2000).</p>	<p>In order to raise awareness of the risks associated with DIY maintenance tasks VISAR data were utilised in the preparation of a series of three MUARC brochures aimed at preventing injury during DIY home maintenance tasks. With sponsorship from Esso Australia Ltd, brochures on preventing DIY injuries were developed and disseminated to three groups: home handypersons; retailers of DIY equipment; and workplace managers. Innovative strategies aimed at preventing injuries among customers and workers were suggested for the latter two groups.</p>	<p>Substantial support for the MUARC brochure intervention was obtained from a number of key stakeholders who assisted with brochure development, distribution and advertisement. Mitre 10, Home Hardware, Thrifty Link stores and DIY equipment hire outlets promoted the safety brochure to their staff and customers. In addition, the Victorian WorkCover Authority (VWA) and the Hire and Rental Association of Australia Ltd supported initiatives to get DIY prevention information to workplace managers and hiring firms. The VWA and CHOICE included the brochure on their web pages.</p> <p>MUARC developed important networks through which future DIY, and other, interventions can be progressed. In all, 120,000 home handypersons brochures, 15,000 Workplace Managers brochures and 12,000 Retailers brochures were distributed. The impact of the brochures on behaviour change was not evaluated. VISAR will continue to monitor trends in DIY injury and initiate and participate in injury reduction measures when new opportunities for action arise. MUARC collaborated with ABS and DHS to collect baseline exposure data to DIY activities from the 1998 Victorian Household Safety Survey.</p>



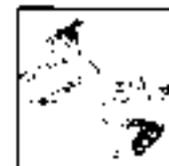
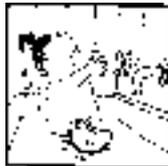
<p><b>DIY injury (3): DIY injury in older persons</b></p> <p>VISAR data indicate that people aged 60 years and older are over-represented in serious DIY injuries. They account for 58% of deaths and 31% of hospitalisations for DIY injury. Older people feature prominently in ladder-related DIY injury cases at all levels of severity, and gardening and saw-related injury hospitalisations. Older people are at higher risk of fractures and head injuries and are hospitalised for longer periods compared to their younger counterparts.</p>	<p>MUARC is addressing this issue by piloting a research strategy to determine why older persons undertake high-risk DIY maintenance activities, to investigate lower-risk alternatives and to determine whether these alternatives are feasible.</p> <p>It is suggested that the factors associated with DIY injury (including the reasons for undertaking DIY activity) and the potential solutions are different in older and younger populations. These issues will also be explored in the pilot. It is expected that the pilot study will be conducted mid 2002.</p> <p>The case series study will also function as a validation study of this subset of VISAR data.</p>	<p>A number of injury prevention measures, including design solutions, will be recommended from the case series study and associated investigations.</p>
<p><b>Falls from heights in the domestic setting</b></p> <p>VISAR provided data for this MUARC-funded developmental research project which aims to investigate falls from heights in the domestic setting in more depth and to explore design solutions.</p> <p>VISAR data show that falls from heights greater than one metre constitute 10% of all falls. Forty-five per cent of these fall injury cases occur in the home environment. Between 1996 and 2000 25,410 falls from heights in and around domestic dwellings (excluding stairs) were identified in Victorian ED presentations data. Roofs and ladders are commonly implicated. Thirty-six percent of falls from heights result in fractures.</p>	<p>MUARC is currently conducting a follow-up case series study of injured persons to specifically define the mechanisms of injury, their reasons for undertaking the DIY task involved, and the circumstances of their falls.</p>	<p>The MUARC report will be released in 2002. Kidsafe is consulting with DHAC on the implementation of a home safety accreditation scheme.</p>
<p><b>Home Safety Accreditation System: Feasibility study of a home design safety accreditation system</b></p> <p>In Victoria, about 42% of all medically treated unintentional child injury and 32% of all adult unintentional injury occur in the home. On the basis of these proportions, it is estimated that almost 694,000 injuries occur annually in the home in Australia. Of these, some 272,000 occur in children aged less than 15 years and 422,000 in adults.</p> <p>At least 30% of child home injuries and 26% of adult home injuries are associated with structures, fixtures and other features incorporated into the home (Routley &amp; Ashby, 1997). Each year in Australia, therefore, an estimated 191,000 home injuries are associated with structural features of the home (81,000 in children and 110,000 in adults).</p>	<p>Kidsafe Australia commissioned MUARC to explore the feasibility of a home safety design accreditation scheme. The project was funded by Commonwealth Department of Health and Aged Care (DHAC). VISAR data were used in the MUARC review of the home safety features proposed for the safety accreditation scheme. Potential inclusions were assessed on injury prevention effectiveness, acceptability to the homeowner and cost-effectiveness.</p> <p>The MUARC report provided information and advice on the core and optional safety features that should be considered for inclusion in a home safety design accreditation scheme. Based on the premise that initial efforts in home safety should be directed at preventing fatal and severe injury, the report listed the following as essential features of a 'child safe' house:</p> <ul style="list-style-type: none"> <li>- Complete isolation fencing of swimming pools and outdoor spas in accordance with the Australian Standard</li> <li>- Smoke alarms, preferably hard-wired or 10-year single purpose lithium battery operated alarms (to reduce maintenance &amp; battery removal for other uses)</li> <li>- Two pathways out of every room in the home (including accessible windows) for egress in the event of a fire</li> <li>- Electrical safety switches</li> <li>- Regulation of domestic hot water temperature to 50°C at delivery points</li> <li>- Separation of driveway and garage from children's play areas or circular driveway to minimise the need for reversing vehicles</li> <li>- Window guards or security stays (that can be released by an adult in case of fire) on all accessible windows above ground floor height</li> <li>- Cupboards with child resistant catches in the kitchen, bathroom and laundry for storage of chemicals and medications, and lockable storage in garden shed and garage for toxic and flammable materials</li> </ul>	<p>The MUARC report will be released in 2002. Kidsafe is consulting with DHAC on the implementation of a home safety accreditation scheme.</p>



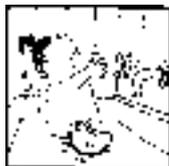
<p><b>(3) Farm injury</b></p>	<p><b>Tractor rollover injury</b> (<i>Hazard</i> editions 24, 1995; 33, 1997; and 47, 2001)</p> <p>Tractors are a prominent cause of farm work-related deaths in Victoria and Australia. Over the period 1992-1996, tractors were associated with 61% of farm work-related fatalities among adults in Victoria, of which one third were rollover events (Day, 1999).</p> <p>In the event of a rollover, the most effective form of protection is the Rollover Protective Structure (ROPS) combined with seat belt use. ROPS are structural components, either a rollbar device or crushproof cab, that provide an umbrella of safety in the event of a rollover.</p> <p>A regulation requiring ROPS on tractors manufactured in, or imported into, Victoria from 1 July 1981 was introduced in 1985 (with limited exemptions such as operation in an orchard). The regulation was later amended, effective from November 1998, to make ROPS compulsory on all tractors weighing more than 560kg, including pre-1981 tractors (with limited exemptions for tractors operating in and around orchards and buildings where it is not practicable for ROPS to be used).</p> <p>Subsequently, the Victorian WorkCover Authority (VWA), motivated by the continuing prominence of tractor rollover deaths in Victoria, the demonstrated effectiveness of ROPS internationally and the formal support of the Victorian Farmers Federation (VFF), developed and implemented a strategy to increase the level of ROPS fitment to tractors in Victoria. The strategy included a combination of publicity, a ROPS rebate scheme, and regulatory amendment and enforcement.</p>	<p>To assist tractor owners to comply with the new regulation, a ROPS rebate scheme was funded by the VWA and administered under contract by the VFF in 1997/98. The ROPS rebate scheme was implemented to facilitate fitment of ROPS to previously unprotected tractors. A rebate of \$150 was available to owners of pre-1981 tractors to fit a ROPS provided it met the Australian Standard 1636.</p> <p>MUARC was funded by the VWA to evaluate the 1997/98 ROPS rebate scheme. The results of the evaluation showed scheme reduced the number of unprotected tractors in Victoria by 70% from an estimated 17,420 to 5,290. The proportion of unprotected tractors in Victoria is now approximately 7%, compared with an estimated 24% at the commencement of the scheme (Day &amp; Rechnittzer, 1999).</p> <p>MUARC concluded that the cumulative effect of awareness and education campaigns, rebate schemes and regulation has culminated in the achievement and maintenance of the lowest tractor rollover death rate in Victoria's history.</p>	<p>From June 2001, the VWA began a compliance campaign targeting the remaining 5,000 tractors in Victoria without ROPS. Some 20 VWA officers will visit at least 1,000 farms in a six-month period to inspect tractors. Failure to comply with the regulations could result in prosecution and fines of up to \$40,000 (Victorian WorkCover Authority, 2001).</p>	<p>The next challenge in preventing machinery-related deaths on farms is to reduce the risk of run-over events.</p> <p>VISAR supplied data to the MUARC study that quantified and described the extent of machinery injury on farms in Victoria and identified the types of non-tractor machinery associated with fatal and non-fatal injuries.</p> <p>VISAR also identified injury cases for the subsequent case series study of non-fatal farm machinery trauma incidents. This in-depth research explored the circumstances of these incidents in more detail and the factors contributing to their occurrence.</p> <p>The study showed that almost all machinery-related deaths among children on farms would have been prevented if children were not carried as passengers on tractors. Adequate provision for the safety of child passengers is not a design feature of most current tractors in Australia.</p> <p>The fitting of ROPS has significantly reduced the numbers of rollover adult tractor related deaths in Victoria.</p>
	<p><b>Farm machinery trauma</b></p> <p>Machinery is a leading cause of fatal and serious farm injury. Each year in Victoria there are six adult work-related deaths and one child death, 80 hospital admissions and an estimated 210 ED presentations for machinery injury on farms.</p> <p>The tractor is the most common item of machinery involved in farm machinery trauma. Tractors are associated with all child deaths, 70% of the adult work-related deaths, and an estimated 70% of hospital admissions. In the five years 1992 to 1997, rollovers and run-overs accounted for 57% and 17% of the adult work related tractor deaths respectively, with the relative contribution shifting to run overs in hospital admissions (43% and 25% respectively).</p>			



<p><b>(4) Community-based injury prevention</b></p> <p><b>Community based injury prevention</b></p> <p>VISAR provides local injury data to many communities to assist their injury prevention efforts. VISAR data were also used in the evaluations of two major community injury prevention programs, conducted in the Shire of Bulla and the Latrobe Valley.</p>	<p>In the Latrobe Valley pre- and post- intervention evaluation, significant injury rate reductions were observed in some of the targeted injuries compared to non-targeted injuries.</p> <p>The Shire of Bulla study was not able to identify any significant reductions in hospital treated injuries compared with statewide injury rates and those of a comparison community over six years of implementation. Household surveys showed an apparent reduction in minor injuries, mostly those not requiring medical attention.</p> <p>Both of these evaluations have been published in the peer-reviewed scientific literature (Day <i>et al.</i>, 2001; Ozanne-Smith <i>et al.</i>, 2002) and in comprehensive reports (Day <i>et al.</i>, 1997b; Ozanne-Smith <i>et al.</i>, 1994; Ozanne-Smith <i>et al.</i>, 1998).</p>	<p>VISAR data on dog bite injury were utilised by the Bureau of Animal Welfare to support the ongoing Victorian Government's <i>Responsible Pet Ownership</i> campaign.</p> <p>VISAR and other key stakeholders such as the Royal Children's Hospital (whose successful <i>'Dogs N Kids'</i> program is now in its fifth year) have contributed to a statistically significant reduction in the hospitalised dog bite rate among children aged under 5 in Victoria.</p> <p>Household surveys conducted by the ABS in collaboration with DHS and MUARC show a corresponding decline of dog ownership in household with children aged less than 5 years between 1992 and 1998 (ABS, 1999)</p>
<p><b>ACHIEVEMENTS IN INJURY PREVENTION POLICY, STANDARDS, REGULATION AND LEGISLATION</b></p>		
<p><b>Dog bite injury prevention – promotion, publicity and debate</b> (Hazard editions 3, 1989; 12, 1992; 25, 1995; 26, 1996; and 34, 1998)</p> <p>Dog bite injury is a serious public health issue and of great community concern. Almost since its establishment in 1988, VISAR has publicised the frequency of dog bite injuries and their prevention.</p> <p>Children under 5 years of age are the population most at risk of serious dog bite injury. Despite significant progress in reducing the dog bite injury rate in this age group, young children continue to be hospitalised for dog bite injuries and the risk of dog bites remains a subject of community concern and media coverage.</p>	<p>To date, VISAR has highlighted dog bite prevention in five Hazard articles, five conference presentations and a peer reviewed journal article. VISAR has also serviced over 220 information requests on the issue of dog bite. The release of Hazard 26 was timed to coincide with the introduction of new legislation in Victoria on Domestic Animals.</p> <p>VISAR continues to provide an evidence base to support dog bite prevention efforts. Hazard 34 reported barriers to the enforcement of the Victorian legislation (see below). The VISAR webpage provides updates on surveillance data on dog bite, as it becomes available. Also, VISAR is a key stakeholder in a Victorian research and development strategy aimed at understanding and preventing dog aggression to humans (see below).</p>	<p>Workshop participants devised a research and development plan, which focuses on rigorous evaluation of existing strategies, in-depth investigation of bite incidents, and examination of dog/person relationships.</p> <p>VISAR will continue to play an active role in the development of the research strategies and work collaboratively with other stakeholders to better understand and prevent dog aggression to humans.</p>
<p><b>Dog Aggression Strategy, Victoria</b></p> <p>In November 2001 VISAR staff were invited to present at, and participate in, a Victorian workshop on <i>'Dog aggression to humans'</i>. The objective of this workshop was to establish a coordinated research, development and education project in Victoria aimed at reducing the incidence of dog bite in the community. This strategy involves a large number of key stakeholders including: VISAR; Monash and Melbourne Universities; RSPCA; Bureau of Animal Welfare; Veterinary Associations; Petcare Information and Advisory Services; Local Government; Victorian Canine Association; the Lost Dogs' Home; and others.</p> <p><b>Enforcement of dog bite legislation</b> (Hazard edition 34, 1998)</p> <p>New legislation was introduced in Victoria in April 1996 to provide a framework for dealing with dogs that have bitten and injured persons and those that may injure.</p> <p>This legislation is enforced at the local government level. Individual councils make decisions about registration fees, the public areas of the municipality where animals will be allowed, at what times and under what form of control or restraint. The Domestic Feral and Nuisance Animals Act (1999) includes procedures which councils can use to prosecute owners, seize dogs and deal with offending dogs in the event of an attack.</p>	<p>In 1998 VISAR surveyed local government departments to examine processes and barriers to the enforcement of this legislation. The response of councils to the legislation varied reflecting the different levels of staff and other resources dedicated to enforcement of the Act. Respondents indicated that public apathy and lack of knowledge of the requirements placed on dog owners under that Act are significant barriers to the enforcement of the legislation at local government level (Ashby, <i>et al.</i>, 1998).</p> <p>The results of the VISAR survey highlight the need for an adequate enforcement workforce and innovative strategies to spread the messages on responsible dog ownership.</p>	<p>The Victorian Government's <i>'Responsible Pet Ownership Program'</i> and community studies by the Bureau of Animal Welfare seek to spread the message of responsible dog ownership. VISAR will continue to provide these and other bodies with surveillance data and other support to achieve injury reduction outcomes.</p>



<p><b>Fireworks</b> (<i>Hazard</i> edition 47, 2001)</p> <p>Government controls restricting the sale and use of fireworks in Victoria were introduced forty years ago (Explosives Act 1960). These regulations were made in response to submissions by the medical profession on the high number and severity of fireworks-related injuries.</p> <p>The Victorian regulations were amended and extended in 1972 in the Explosives (Fireworks Prohibition) order 1982 (No 1/1982).</p> <p>Current restrictions on the sale and use of fireworks in Victoria are made under the Dangerous Goods Act (1985). The Victorian Workcover Authority (VWA) has responsibility for policing this legislation and prosecuting breaches.</p>	<p>In <i>Hazard</i> 47, VISAR examined the effectiveness of government legislation and control of fireworks. Regulation and enforcement is a state government responsibility.</p>	<p>The three MUARC reports on injury and fires related to fireworks in Victoria conclude that the Victorian regulations are generally effective, although some illegal fireworks enter Victoria because of the less onerous restrictions and safety requirements that operate in other Australian states and territories (Abdulwahid &amp; Ozanne-Smith, 1998, 1999 &amp; 2000). Following the recent fireworks-related death of a schoolboy in Victoria (the first in this state since 1983), WorkSafe Victoria expressed concern about the apparent increase in illegal imports of fireworks to Victoria from the ACT, NT and South Australia where fireworks laws are more relaxed.</p>
<p><b>Firearms legislative reform</b></p> <p>In May 1996, shortly after the shooting deaths of 35 people at Port Arthur, Tasmania, the Australian Police Ministers' Council reached agreement on uniform firearms laws for all states and territories that restricted the sale and possession of certain firearms.</p>	<p>Based on VISAR data sources, MUARC provided firearm-related injury data to State and Commonwealth Ministers that formed part of the evidence base for the implementation of tighter uniform firearm laws. MUARC analysis of trend data demonstrated the positive effect of earlier restrictive legislation introduced in Victoria in 1988, following two massacre episodes. Significant reductions in firearm deaths were shown between the preceding and subsequent six years, for firearm suicides, homicides and unintentional firearm related deaths.</p>	<p>Part of the government's response was a national gun buy-back program which resulted in the purchase and destruction of 640,400 guns (Chapman, 1998). The full effect of the uniform laws, which ban all handguns and semi-automatic firearms (with few exceptions), is expected to be evident in death data over the next few years.</p>
<p><b>Motor vehicle exhaust gas and suicide: sensor and tailpipe modification</b> (<i>Hazard</i> editions 11, 1992; 20, 1994; 25, 1995; 41, 1999)</p> <p><i>Hazard</i> 20 highlighted that the inhalation of carbon monoxide (CO) from motor vehicle exhaust gas is a common suicide method in Australia, ranking second behind hanging in recent years. In 1994 there were 98 cases in Victoria, and 447 cases across Australia, of exhaust gas suicide. In 2000, the most recent year of ABS death data, the number of cases of suicide by exhaust gas had increased to 125 in Victoria and 538 in Australia. There is no overall decline in suicide by this method despite Australian design rules that lowered the permitted levels of CO emission from car exhausts in 1986 and again in 1997.</p>	<p>MUARC has published a number of epidemiological studies describing the problem and monitoring the relationship between the year of manufacture of vehicles, the prevailing environmental regulations on exhaust gasses and the suicide rates by this method (Routley, 1998; Routley &amp; Ozanne-Smith 1998). These reports recommended a number of preventive measures that would limit access to this means of suicide including tailpipe modifications and in-cabin CO sensors with engine cut-off device.</p> <p>A current MUARC study aims to identify the extent of involvement of new motor vehicles (that meet more stringent air quality regulations) in car exhaust gas suicides. If unsafe levels of CO emissions are found in these new vehicles then other solutions may have to be considered such as cabin gas sensors and automated engine cut-off.</p> <p>Nonetheless, the MUARC recommendation for the implementation of re-designed (suicide resistant) tailpipes should be adopted because of the number of older cars in current use in Victoria. The re-designed tailpipe should be retrofitted in older vehicles at routine replacement or when fleet vehicles enter the used car market.</p>	<p>VISAR published design specifications of the suicide-resistant tailpipes (developed by Jerry Moller in South Australia) in order to put the design modification in the public domain (Moller, 1999).</p> <p>MUARC has worked to place this issue on the political agenda at national and state levels and also participated in a national committee established to progress prevention of motor vehicle exhaust suicide convened by the Australian Medical Association.</p> <p>Early in 2002, the Department of Health and Ageing showed renewed interest in the strategy of preventing access to the means of suicide and held a workshop of key stakeholders including MUARC.</p> <p>VicRoads and MUARC will undertake on-road performance trials of the new tailpipe designs, contingent on the availability of external funds. Since 1992, when VISAR first reported the problem of motor vehicle exhaust suicide and potential solutions, an additional 5,000 Australians used CO emissions from car exhausts to commit suicide.</p>
<p><b>Shopping trolley-related injury</b> (<i>Hazard</i> editions 22 &amp; 25, 1995; and 42, 2000)</p> <p>According to VISAR data, shopping trolleys were associated with at least 418 child and adult EID presentations in the 7-year period 1995-2001.</p> <p>Sixty-three per cent of cases were children aged 0-4 years. The most common injuries were superficial (20%), open wounds (20%) and intracranial (18%). One-third of injury was to the head and face, and the remainder was fairly evenly distributed across body sites. Most injuries in 0-4 year olds (75%) were associated with falls.</p>	<p>In <i>Hazard</i> 22 (1995) VISAR recommended the use of adjustable shoulder harnesses in shopping trolleys to restrict children's movements and prevent falls from trolleys.</p>	<p>From 1995 supermarket chains trialed the use of child restraints in trolleys. However, the initial focus was on providing reclining 'baby capsule' seats, even though injury data showed that injury cases peaked in the 1-3 year age group.</p> <p>In January 1999, Standards Australia published a new Standard for shopping trolleys (AS/NZS 3847.1:1999). It requires that any shopping trolley with provision to seat a child should have "an integral means of restraining a child in the child carrying facility". Although the Standard is voluntary, industry support for the introduction of safety restraints in shopping trolleys is increasing. Recent designs have overcome some of the retailers' earlier objections. The new restraints are durable, easily fitted and cleaned, weather and theft resistant and easily adjusted. Implementation in Victorian supermarkets is now widespread.</p>



<p><b>Child-resistant cigarette lighters</b> (<i>Hazard</i> editions 12, 1992; 21, 1994; 25, 1995; and 29, 1996)</p> <p>Disposable cigarette lighters contribute to house fires and are associated with fire-related deaths, serious burn injuries and significant property damage.</p>	<p>VISAR supplied data on burn injury cases in which disposable cigarette lighters were implicated to the Federal Bureau of Consumer Affairs, the Victorian Coroner, cigarette lighter manufacturers and distributors and safety organisations.</p>	<p>The Victorian Coroner, following an investigation of the fire-related deaths of twin 2-year-old boys, recommended that state and federal governments give consideration to the proposal that only child resistant cigarette lighters be available for sale in Victoria. Consequently, the issue of child resistant cigarette lighters was placed on the agenda of the September 1996 meeting of the Ministerial Council of Consumer Affairs, with the support of the Victorian Attorney General.</p> <p>VISAR consulted the US Consumer Product Safety Commission and provided full documentation to the Ministerial Council of the US case for implementing a mandatory safety standard for cigarette lighters in 1993. The documentation included the results of regulatory impact studies and benefit/cost estimates.</p> <p>Since March 1997 the importation of non child-resistant lighters into Australia is banned and since July 1997 it is unlawful (under the Trade Practices Act) to sell them. This result represents the culmination of the work of VISAR and other key players including the Metropolitan Fire Brigade, Coronial Services, Kidsafe and other safety organisations.</p> <p>Compliance surveys are conducted annually by the ACCC. Results from the disposable cigarette lighter surveys indicate improved compliance over time with the latest survey (2002) reporting high compliance (personal communication, ACCC).</p>
<p><b>ISO/IEC Guide 50 Safety Aspects – Guidelines for child safety</b></p> <p>In 1996, the then Director of VISAR, Professor Joan Ozanne-Smith, was invited to represent Australia on the ISO/IEC Guide 50 working group.</p>	<p>VISAR, through Professor Ozanne-Smith, made a substantial contribution to the iterative process of drafting this guide, which involved extensive international consultation. The guide provides detailed information on child development and hazards to children for use in the preparation of standards for products that have some exposure to children. In 1999, the Guide received the approval of 36 countries, including Australia. Publication is expected in 2002.</p>	<p>A substantial advocacy program will be required in Australia to ensure that Guide 50 is accepted and effectively used. This type of guide is particularly important because, unlike other developed countries, Australia lacks a general product safety directive or other means to ensure the uptake of voluntary standards.</p>
<p><b>Cost of Injury</b></p> <p>VISAR data informed the first cost of injury study in Victoria and Australia conducted by MUARC in 1996.</p> <p>The study estimated that total lifetime cost of injury sustained in 1993/4 was \$2,583 million consisting of: direct costs of \$759 million; indirect costs including mortality costs of \$813 million; and total morbidity costs of \$1,011 million (Watson &amp; Ozanne-Smith, 1997).</p>	<p>The cost of injury study has been utilised for many purposes. It has been used as the basis for Australian cost estimates (Moller, 1998), for describing the cost of many specific injury problems and for estimating the benefits/cost ratios for potential interventions.</p>	<p>An accessible cost and consequences of injury model is needed to provide up-to-date estimates when new epidemiological and cost data become available. A good cost model should have the capacity to be interrogated on criteria such as mechanism of injury, product involvement, age of injured persons, location of injury and activity at the time of injury.</p>



**ACHIEVEMENTS IN OTHER AREAS**

**Escalator-related injury (Hazard 24, 1995)**

In the six-year period 1996-2001, VISAR data indicated there were at least 211 ED presentations for escalator-related injuries. The most frequently occurring injuries were open wounds (38%), superficial injuries (19%), fractures (14%) and sprain/strain (12%). The most commonly injured body sites were the head/face (25%), hand, including fingers (10%), lower leg (10%) and knee (10%). The major mechanism of injury was falls (76%). Injury cases were fairly evenly spread across age groups with small peaks in 0-4 and 80+ age groups. Twenty per cent of cases were admitted to hospital.

Investigations of injuries related to the public use of escalators conducted by the Health and Safety Organisation (H&SO) Victoria, supported by VISAR data, show a number of common injury scenarios. These include: children riding on the escalator without adult supervision; users not holding onto the handrail of the escalator; users not standing between the yellow lines; users walking on the escalator; and mishaps involving the transfer of prams and trolleys onto the steps of the escalator.

**Needlestick injuries in hospitals (Hazard 11, 1992; 17, 1993; 25, 1995)**

Needlestick injuries carry the risk of blood-borne transmission of Hepatitis B and C and HIV. In the 5-year period 1996-2000, 3,650 needlestick injury cases presenting to Victorian EDs. More than half (54%) of the injured persons were hospital workers.

**Drug misuse: Temazepam injections**

In 2000, the Victorian Department of Human Services (DHS) approached VISAR to provide evidence for cases of injury from the injection of the contents of temazepam capsules. It was thought that injected temazepam was being used as a substitute for heroin in the recent heroin 'drought' period.

VISAR investigated this issue and provided data for the period 1996 to March 2001.

At the time of the first VISAR data review in 1995, escalator safety strips were being introduced in Australia. The safety strip is a brush device fixed by screws to the skirts of the escalator, running the entire length, with the intention of discouraging users from standing too close to the moving edge of the escalator. Should users stand too close to the edge, the safety strip brushes against their foot and warns them to step away from the edge of the escalator.

In Hazard 17, VISAR recommended a holistic approach to the needlestick injury problem in hospitals that included the education of health care workers and the development and promotion of safety products including retractable syringes.

The data supplied by VISAR were utilised by DHS in a discussion paper that led to the Department's *Temazepam Injection Prevention Initiative*. This initiative included the development of information and education materials that were distributed to all Victorian GPs and pharmacists, and to injecting drug users.

In order to address the problem nationally the matter was referred to the Australian Health Ministers Council, and from there, to the Australian Pharmaceutical Advisory Conference.

In 1995, at the time of the data review, some Victorian and Queensland shopping centres were beginning to install safety strips. These devices can now be found in the underground Melbourne rail stations.

Becton Dickinson, the world's largest manufacturer of needles and syringes, adopted such an approach and invested heavily in research and development of safety engineered products and education programs to minimise the risk from hypodermic products.

VISAR has collected a range of designs of retractable syringes from manufacturers. According to manufacturers, the marginal extra cost of some designs, over existing designs, would be minimal if substantial markets were available.

The subcommittee of the Australian Pharmaceutical Advisory Conference (APAC) advised the Pharmaceutical Benefits Advisory Committee (PBAC) to recommend that temazepam capsules be classified as an authority-only prescription drug. The Commonwealth Government accepted this recommendation and temazepam capsules became 'authority-only' on the PBS benefit schedule on May 1, 2002. The prescription of Temazepam tablets remains unrestricted. The DHS website contains information on the risks of injecting temazepam: ([www.drugs.vic.gov.au/temazepam](http://www.drugs.vic.gov.au/temazepam))

## Acknowledgments

With the exception of short periods of funding from the Victorian Department of Human Services and the National Better Health Program, VicHealth has provided the core funding for VISS and VISAR. This support is gratefully acknowledged. Many people and organisations contribute to *Hazard*, including the hospital emergency departments, which supply data, the Department of Human Services for hospital admissions data, the authors and the editorial board. Jocelyn Bell is responsible for illustrations in almost all editions and Denis Crowley for printer liaison. MUARC and VISAR acknowledge these contributions with gratitude.

## References

- Abdulwadud, O., & Ozanne-Smith, J. (2000). Deaths and hospitalisation from fireworks injuries. *Injury Control and Promotion*. Vol. 7(3): 187-193.
- Abdulwadud, O., & Ozanne-Smith, J. (1999). Fires involving fireworks in Victoria. *Fire Australia*.
- Abdulwadud, O., & Ozanne-Smith, J. (1998). Injuries associated with fireworks in Victoria: an epidemiological overview. *Injury Prevention*. Vol 4:272-275.
- Altmann, A.E., Imberger, A.L., & Ozanne-Smith, J. (1997). Consumer product involvement in injuries. Monash University Accident Research Centre (unpublished).
- Ashby, K., Routley, V., & Stathakis, V. (1998). Enforcing legislative and regulatory injury prevention strategies. *Hazard* Edition 34. Victorian Injury Surveillance and Applied Research System. Monash University Accident Research Centre.
- Ashby, K. (1995). Shopping trolleys. *Hazard* Edition 22. Victorian Injury Surveillance and Applied Research System. Monash University Accident Research Centre.
- Australian Bureau of Statistics. (1999). Safety in the Home Victoria: October 1998.
- Australian Consumers Association (2002). Cots – Still not safe. CHOICE. January/February.
- Begg, S., Jolley, D., & Ozanne-Smith, J. (1998). Where there's smoke ... An evaluation of the effect of domestic smoke alarms on residential fire related morbidity and mortality in Melbourne. Paper presented at the 2nd National Conference on Injury Prevention and Control, Melbourne, Australia.
- Campbell, D., & Oates, R. (1992). Childhood poisoning - a changing profile with scope for prevention. *Medical Journal of Australia*, Vol. 156: 238-240.
- Carr, D., Skalova, M., & Cameron, MH. (1997). Evaluation of the bicycle helmet wearing law in Victoria during its first four years. Monash University Accident Research Centre, Report no. 76.
- Cassell, E., Routley, V., & Ozanne-Smith, J. (1995). Translating injury surveillance to prevention: an update. *Hazard* Edition 25. Victorian Injury Surveillance and Applied Research System. Monash University Accident Research Centre.
- Chapman, S. (1998). Over our dead bodies: Port Arthur and Australia's fight for gun control. Sydney. Pluto Press.
- Clarke, A., & Walton, W. (1979). Effect of safety packaging on aspirin ingestion by children. *Pediatrics*, Vol 63: 687-693.
- Day, L., Ozanne-Smith, J., Cassell, E., et al. (2001). Evaluation of the Latrobe Valley Better Health Injury Prevention Program. *Injury Prevention*. 7: 66-69.
- Day, L., Ozanne-Smith, J., Parsons, BJ., et al. (1997a). Eucalyptus oil poisoning among young children: mechanisms of access and the potential for prevention. *Australian and New Zealand Journal of Public Health* Vol. 21(3):297-302.
- Day, L., Ozanne-Smith, J., Cassell, E., et al. (1997b). Latrobe Valley Better Health Project, Monash University Accident Research Centre, Report no. 114
- Day, L. (1999). Farm work related fatalities among adults in Victoria, Australia: the human cost of agriculture. *Accident Analysis and Prevention*. Vol 31: 153-159.
- Day, L., & Rechnitzer, G. (1999). Evaluation of the Tractor Rollover Protective Structure Rebate Scheme 1997/98. Monash University Accident Research Centre, Report No. 155.
- Department of the Treasury. (2001). Draft Regulation Impact Statement : Proposed safety standard for babywalkers. Consumer Affairs Division, Department of the Treasury.
- Speed, M., & Dickson, J. (2000). Consumer knowledge of tool and DIY safety. Report commissioned by the Consumer Affairs Directorate, Department of Trade and Industry, London.
- Hoy, J., Day, L., Tibballs, J., et al. (1999). Unintentional poisoning hospitalisations among young children in Victoria. *Injury Prevention*. Vol.5(1):31-35.s
- Lacroix, J., Gaudreault, P., & Gauthier, M. (1989). Admission to a pediatric intensive care unit for poisoning: A review of 105 cases. *Critical Care Medicine* Vol. 17(8): 748-750.
- Mallonee, S., Istre G. R., Rosenberg M., et al. (1996) Surveillance and prevention of residential fire injuries. *New England Journal of Medicine* Vol. 335: 27-31
- Melis, K., & Bochner, A. (1990). Acute poisoning in a children's hospital: an 8 year experience. *Acta Clinica Biologica – Supplementum* Vol. 13:98-100.
- Moller, J. (1999). Towards reducing motor vehicle exhaust gas suicide. *Hazard* Edition 41. Victorian Injury Surveillance and Applied Research System. Monash University Accident Research Centre.
- Moller, J. (1998) Cost of injury. Published on NISU website [www.nisu.flinders.edu.au/pubs/injcost/injcost.html](http://www.nisu.flinders.edu.au/pubs/injcost/injcost.html)
- Morris, L., & Klinberg, R. (1986). A survey of aspirin use and Reye's syndrome awareness among parents. *American Journal of Public Health* Vol. 76:1422-1424.
- Murphy C. (2002). Trampoline injury prevention – a critical review and case for an Australian Standard. Monash University Accident Research Centre Report.
- Newgreen, D.B. (1998) Review of non-prescription analgesics. Report prepared for the Therapeutic Goods Administration.
- Ozanne-Smith, J., Day, L., Stathakis, V., et al. (2002). Controlled evaluation of a community-based injury prevention program in Australia. *Injury Prevention*; 2002; 8:18-22.
- Ozanne-Smith, J. (1992). Finger jam injuries to children in doors in child accident and injury prevention research in other than road accidents: Part 2 (unpublished). Monash University Accident Research Centre.
- Ozanne-Smith, J., Day, L., Parsons, B., et al. (2001). Childhood poisoning: access and prevention. *Journal of Paediatrics and Child Health*, Vol. 37: 262-265.
- Ozanne-Smith, J., & Scott, G. (2000). Barriers to childhood poisoning prevention. Paper presented at the 5th World Conference on Injury Prevention and Control, New Delhi, India.
- Ozanne-Smith, J., Routley, V., Scott, I., et al. (2001). National Public Health Partnership Public Health Planning and Practice Framework Trial: Pharmaceutical poisoning to 0-19 year olds. Monash University Accident Research Centre.
- Ozanne-Smith, J., & Watson, W. (1991). A review of product-related fires, Monash University Accident Research Centre, Report No. 23.
- Ozanne-Smith, J. (1995). 'Principles of injury prevention' in *Injury Research and Prevention: a text*. Ed.
- Ozanne-Smith, J. & Williams, F. Monash University Accident Research Centre, Clayton.
- Ozanne-Smith, J., Sherrard, J., Brumen, I. A., et al. (1994). Community based injury prevention evaluation report: Shire of Bulla Safe Living Program, Monash University Accident Research Centre, Report no. 66



Ozanne-Smith, J., Watt, G., Day, L.M., et al. (1998). Community based injury prevention: The Safe Living Program (1990/96), Monash University Accident Research Centre, Report no. 131

Parsons, B., Day, L., Ozanne-Smith, J., et al. (1996). Rodenticide poisoning among young children: Mechanisms of access and the potential for prevention. *Australian and New Zealand Journal of Public Health* Vol. 20(5): 488-492.

Perks, A.G., Penny, M., & Mutimer, K.L. (1991) Finger injuries to children involving exercise bicycles. *Medical Journal of Australia*. Vol. 155(6): 368-70.

Petrodou, E., Poluchronopoulou, A., Kouri, N., et al., (1997). Unintentional childhood poisoning in Athens: a mirror of consumerism? *Journal of Toxicology - Clinical Toxicology*, Vol.35(6):669-675.

Repetto, M. (1997). Epidemiology of poisoning due to pharmacological products, Poison Control Centre, Seville, Spain. *European Journal of Epidemiology*. Vol.13(3):353-356.

Rodgers, G. (1996). The safety effects of child-resistant packaging for oral prescription drugs. Two decades of experience. *Journal of the American Medical Association*, Vol.275(21), 1661-1665.

Routley, V. (1998). Motor vehicle exhaust gassing suicides in Australia: Epidemiology and prevention. Monash University Accident Research Centre, Report No. 136.

Routley, V., & Ashby, K. (1997). Safe home design. Hazard Edition 32. Victorian Injury Surveillance and Applied Research System. Monash University Accident Research Centre.

Routley, V., & Ozanne-Smith, J. (1998). Impact of catalytic converters on exhaust gassing suicides. *Medical Journal of Australia*, Vol.168(2):65-67.

Runyan, C., Bandiwala, S., Linzer, M., et al. (1993). Risk factors for fatal residential fires. *New England Journal of Medicine*. Vol.327, 859-863.

Safekids (2001). Baby walker standard. Safekids News. Child injury prevention. Vol. 15. Aotearoa, New Zealand.

Scherz, R., Latham, G.H., & Stracener, C.E. (1969). Child-resistant containers can prevent poisoning. *Pediatrics* Vol.43:84-87.

Schieber, R.A., Branche-Dorey, C.M., Ryan, G.W., et al. (1996) Risk factors for injuries from in-line skating and the effectiveness of safety gear. *The New England Journal of Medicine*. Vol. 335(22):1630-1635.

Scott, I., Finch, C., Ozanne-Smith, J., et al. (2001) Counting injuries out of boxing. Monash University Accident Research Centre.

Sherker, S., & Cassell, E. (2001) Personal Protective Equipment use in in-line skaters in Victoria, *Australian and New Zealand Journal of Public Health*. Vol. 25: 179-84.

Sherrard, J., Lenne, M., Cassell, E., et al. (2001). Strategic direction and advice for increasing safe participation in physical activity in the Australian Defence Force: a report for the Defence Health Service. Monash University Accident Research Centre, Melbourne.

Speed, M., & Dickson, J. (2000) Consumer knowledge of tool and DIY safety. Report commissioned by the UK Department of Trade and Industry.

Stathakis V.Z. (1999). Hospitalised injuries in Victoria, July 1992-June 1998. Monash University Accident Research Centre. Report No. 160.

Stokes, M. & Corbo, M. (2001). Scooter injuries to children (Letter) *Injury Prevention*. Vol7(2):166

Thompson, P. (1995) Bunk Beds: Classical example of a prevention strategy in Injury Research and Prevention: a text. Eds. Ozanne-Smith, J. & Williams, F. Monash University Accident Research Centre, Clayton

Thompson D.C., Rivara F.P. (2002). Pool fencing for preventing drowning in children (Cochrane Review). In: The Cochrane Library, Issue 2. Oxford: Update Software.

Victorian WorkCover Authority. (2001). "How many more deaths? Rollover tractor blitz to save lives." Press Release, May 18, 2001.

Waldman, H. (1993). The poisoning of our children. *Journal of Dentistry for Children*, Vol. 27: 132-135.

Walton, W. W. (1982). An evaluation of the Poison Prevention Packaging Act. *Pediatrics*, Vol. 69:363-370.

Watson, W., Day, L., Ozanne-Smith, J., et al. (1999). Consumer product-related injuries in older persons. Monash University Accident Research Centre, Report No.162.

Watson, W L & Ozanne-Smith, J (1993). The use of safety restraints with nursery furniture. *Journal of Paediatrics & Child Health*, Vol.29:228-232.

Watson, W. & Ozanne-Smith, J. (1995). Consumer product related injury in Australia: Hospital and medical costs to government. Monash University Accident Research Centre, Report No. 83.

Watson, W., Ozanne-Smith, J., Begg, S., et al. (1997). Injuries associated with nursery furniture and bunk beds. Monash University Accident Research Centre, Report No.123.

Watson, W., & Ozanne-Smith, J. (1997) The cost of injury to Victoria. Monash University Accident Research Centre, Report No. 124.

Watson, W., Ozanne-Smith, J., & Lough, J. (2000). Consumer product-related injury to children. Monash University Accident Research Centre, Report No.168.

Watson, W., Staines, C., & Ozanne-Smith, J. (2002) Feasibility study: home safety rating appraisal project – "Which safety features?". Monash University Accident Research Centre. Report to Kidsafe Australia.

Wiseman, H., Guest, K., Murray, V.S., et al. (1987). Accidental poisoning in childhood: a multicentre survey. 2. The role of packaging in accidents involving medications. *Human Toxicology*, 6:303-314.

Yamamoto, L., Wiebe, R., & Mathews, W. (1991). Toxic exposures and ingestions in Honolulu: I. A prospective pediatric ED cohort; II. A prospective poison centre cohort. *Pediatric Emergency Care*, Vol.7(3):414-148.

## Mobility & Safety of Older People Conference

26th - 27th August 2002

SHERATON TOWERS  
887GATE, WELBORNE

Keeping Older Road Users Mobile and Safe

CONFERENCE ORGANISER  
26th AUGUST 2002  
Monash University Accident Research Centre

Conference Manager:  
Ms Irene Thavarajah  
Conference Management Office  
Phone +61 3 9905 1344  
Fax +61 3 9905 1343  
Email:  
irene.thavarajah@adm.monash.edu.au

[http://www.monash.edu.au/oce/older\\_mobility](http://www.monash.edu.au/oce/older_mobility)

RACV TAC RUMBA vic roads Victoria



# - INDEX -

Subject	Edition	Pages
Babywalkers, update .....	16,20,25,34	1-4,12-13,7-8,7-8
Baseball .....	30	10-12
Bunkbeds .....	11	12
Bicycles		
- Bicycle related .....	6,34,44	1-8,8-12,10-11
- BMX bikes .....	31,44	9-11,7-8
- Cyclist head injury study .....	2,7,8,10	2,8,13,9
Burns		
- Scalds .....	3,25	1-4,4-6
- Burns prevention .....	12	1-11
Chainsaws .....	22	13-17
Child care settings .....	16	5-11
Client survey results .....	28	13
Data base use, interpretation & example of form .....	2	2-5
Deaths from injury (Victoria) .....	11,38	1-11,1-13
Dishwasher machine detergents - Update .....	18	11
DIY maintenance injuries .....	41	1-12
Dog bites, dog related injuries .....	3,12,25,26,34	5-6,12,13,7-13,2-5
Domestic architectural glass .....	7,22,25	9-10,1-5,12
Domestic Violence .....	21,30	1-9,3-4
Drowning/near drowning, including updates .....	2,5,7,30,34	3,1-4,7,6-9,5-7
Elastic Luggage Straps .....	43	2-6
Escalator .....	24	9-13
Exercise bicycles, update .....	5,9	6,13-14
Falls - Child, Older Persons .....	44,45,48	1-17,1-15,1-12
Farm .....	30,33	4,1-13
Finger jam .....	10,14,16,25	5,5-6,9-10,9-10
Fireworks .....	47	2-7
Geographic regions of injury .....	46	1-17
Home .....	14,32	1-16, 1-13
Horse related .....	7,23	1-6,1-13
ICD-10 AM coding developments .....	43	8-13
Infants - injuries in the first year of life .....	8	7-12
Injury surveillance developments .....	30	1-5
Intentional .....	13	6-11
Latrobe Valley - The first 3 months, Injury surveillance & prevention in L-V .....	9, March 1992, Feb 1994	9-13, 1-8, 1-14
Lawn mowers .....	22	5-9
Martial arts .....	11	12
Motor vehicle related injuries, non-traffic .....	20	1-9
Needlestick injuries .....	11,17,25	12,8,10-11
Nursery furniture .....	37,44	1-13,11-13
Older people .....	19	1-13
Off-street parking areas .....	20	10-11
Playground equipment .....	3,10,14,16,25,29,44	7-9,4,8,8-9,13,1-12,13-14
Poisons		
- Domestic chemical and plant poisoning .....	28	1-7
- Drug safety and poisons control .....	4	1-9
- Dishwasher detergent, update .....	10,6	9-10,9
- Early Childhood, Child Resistant Closures .....	27,2,47	1-14,3,11-15
- Adult overview .....	39	1-17
Power saws .....	28	8-13
Roller Blades .....	15,25,31,44	11-13,12,12,8
School .....	10	1-8
Shopping trolleys .....	22,25,42	10-12,8-9,12
Skateboard .....	2,31	1-2,3-7
Smoking Related .....	21,25,29,44	10-12,6-7,8
Socio-economic status and injury .....	49	1-17
Sports		
- Child sports, Adult sports .....	8,9,44,15	1-6,1-8,15-16,1-10
Suicide - motor vehicle exhaust gas .....	11,20,25,41	5-6,2-4,3-4,13
Tractor .....	24,47	1-8,8-10
Trail bikes .....	31	7-9
Trampolines .....	13,42	1-5,1-11
Trends in road traffic fatality and injury in Victoria .....	36	1-13
Vapouriser units .....	43	7-8
Venomous bites and stings .....	35	1-13
VISS: How it works, progress .....	1,26	1-8,1-5
A decade of Victorian injury surveillance .....	40	1-17
Work Related .....	17,18	1-13,1-10



# VISAR Executive /Editorial Board

**Dr Ian Johnston**, Monash University Accident Research Centre  
**Professor Joan Ozanne-Smith**, Monash University Accident Research Centre  
**Ms Erin Cassell**, Monash University Accident Research Centre  
**Professor Peter Cameron**, Royal Melbourne Hospital  
Guest Editors: **Ms Pam Albany**, NSW Health  
**Mr. Ian Scott**, Injury Prevention Consultant, Melbourne

## VISAR Staff

**Director:** Ms Erin Cassell  
**Co-ordinator:** Ms Karen Ashby  
**Research Assistant:** Ms Angela Clapperton  
**Medico/Clerical Support Officer:** Ms Christine Chesterman

## General Acknowledgements

### Participating Hospitals

<i>From October 1995</i>	<i>From November 1995</i>
Austin & Repatriation Medical Centre	Dandenong Hospital
Ballarat Base Hospital	
The Bendigo Hospital Campus	<i>From December 1995</i>
Box Hill Hospital	Royal Victorian Eye & Ear Hospital
Echuca Base Hospital	Frankston Hospital
The Geelong Hospital	
Goulburn Valley Base Hospital	<i>From January 1996</i>
Maroondah Hospital	Latrobe Regional Hospital
Mildura Base Hospital	
The Northern Hospital	<i>From July 1996</i>
Royal Children's Hospital	Alfred Hospital
St Vincents Public Hospital	Monash Medical Centre
Wangaratta Base Hospital	
Warrnambool & District Base Hospital	<i>From September 1996</i>
Western Hospital - Footscray	Angliss Hospital
Western Hospital - Sunshine	
Williamstown Hospital	<i>From January 1997</i>
Wimmera Base Hospital	Royal Melbourne Hospital
	<i>From January 1999</i>
	Werribee Mercy Hospital
	<i>From December 2000</i>
	Rosebud Hospital

### Coronial Services

Access to coronial data and links with the development of the Coronial's Services statistical database are valued by VISAR.

### National Injury Surveillance Unit

The advice & technical back-up provided by NISU is of fundamental importance to VISAR.

## How to Access

### VISAR Data:

VISAR collects and analyses information on injury problems to underpin the development of prevention strategies and their implementation. VISAR analyses are publicly available for teaching, research and prevention purposes. Requests for information should be directed to the VISAR Co-ordinator or the Director by contacting them at the VISAR office.

### Contact VISAR at:

MUARC - Accident Research Centre  
PO Box 70A  
Monash University  
Victoria, 3800

#### Phone:

Enquiries (03) 9905 1805  
Co-ordinator (03) 9905 1805  
Director (03) 9905 1857  
Fax (03) 9905 1809

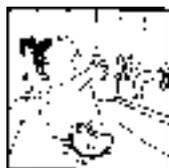
#### Email:

[visar.enquire@general.monash.edu.au](mailto:visar.enquire@general.monash.edu.au)



All issues of *Hazard* and other information and publications of the Monash University Accident Research Centre can be found on our internet home page:

<http://www.general.monash.edu.au/muarc/visar>



# Project Funded by Victorian Health Promotion Foundation

*VISAR is a project of the Monash University Accident Research Centre.*



*Hazard was produced by the Victorian Injury Surveillance and Applied Research System (VISAR)  
with the layout assistance of Glenda Cairns, Monash University Accident Research Centre.  
Illustrations by Jocelyn Bell\*.*

ISSN-1320-0593

*Printed by Work & Turner Pty Ltd, Tullamarine*

**\*Copyright clause:** Copyright for all creative property as commissioned including sketches, remains under the exclusive ownership of Jocelyn Bell.

