



REGULATION IMPACT STATEMENT

PROTECTIVE HELMETS FOR PEDAL CYCLISTS

CONSUMER PRODUCT SAFETY STANDARD

(Trade Practices Act 1974)

**Consumer Affairs Division
Department of the Treasury**

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1. INTRODUCTION

1.1 *Background*

The Consumer Affairs Division of the Department of the Treasury has responsibility for the development of the mandatory consumer product safety standard for protective helmets for pedal cyclists under the *Trade Practices Act 1974* (the Act). The Australian Competition and Consumer Commission (ACCC) has responsibility for the enforcement of this law. Similar laws are in place in NSW, South Australia, and Western Australia.

The current standard is based on Australian Standard AS 2063.2-1990 "Lightweight Protective Helmets (for use in pedal cycling, horse riding and other activities requiring similar protection) Part 2-Helmets for Pedal Cyclists." Compliance with AS 2063.2 requires compliance with AS-2063.1-1986 and various parts of AS 2512 "Methods of Testing – Protective Helmets". These Standards ensure that cyclist's helmets have the ability to absorb impact, and to distribute impact from the localised area, as well as providing suitable ventilation and cautionary labelling.

Aside from a number of variations as provided for in the gazette notice (reproduced in Attachment A), the majority of the Australian Standard AS 2063.2 was adopted on 10 February 1992 as the mandatory standard for the purposes of the Act. In May 1996 Standards Australia (along with Standards New Zealand), revised the Australian standard. Joint Standard AS/NZS 2063:1996 Pedal cycle helmets was published.

1.2 *Helmet safety issues*

1.3.1 **Consumer assessment of helmet safety**

The level of safety a bicycle helmet provides is not a matter that is easily assessed by a person without technical knowledge. The safety of a bicycle helmet depends on a range of technical factors, many of which require recourse to laboratory testing facilities to ascertain.

Where adequate information is not readily available to consumers there is a form of market failure that can reduce consumer safety.

1.2.2 **The type of head injury and the role of helmets**

A helmet provides protection against lacerations and fractures to the head, such as to the facial and cranial regions actually covered by the helmet. A bicycle helmet is designed to protect against impact injuries to the head and brain, and would appear to provide little if any protection against certain other types of brain injury.

There is a range of issues relating to the effectiveness of helmets in head protection. Considerable research has been undertaken in this area. The issues range from arguments that there is insufficient head protection, through to arguments that helmets have an adverse affect on the head injury rate due to, amongst other things, the helmet exacerbating the extent of rotational brain injury.

The ability of a helmet to protect a head is divided into two specific areas:

- energy attenuation, which is the helmet's capacity to reduce the amount of energy in the impact by absorbing it; and
- load distribution, which is the ability of a helmet to spread the energy of an impact across a wide area.

Data relating head injury rates for bicyclists both with and without helmet protection has been variously interpreted as showing a positive, a negative and a neutral correlation between helmet use and injury.

1.2.3 Comparison of the safety of Australian and Overseas standards

There is a wide range of bicycle helmet standards around the world. The existing Australian Standard is considered more stringent than some others are. It specifies, for example, the order in which certain tests will be undertaken, and provides for both impact energy attenuation and load distribution tests. The Commonwealth is required to ensure that regulatory regimes do not impose unnecessary technical barriers to trade, such as by the setting of a standard that is beyond the standards normally adopted by our trading partners, unless it can be shown that there are genuine safety issues at stake.

1.2.4 Second hand helmets

Second-hand helmets present problems in terms of regulation including compliance and enforcement difficulties in respect of the mandatory standard. Possible approaches to the issue of second hand helmets are canvassed in attachment C.

2. SUMMARY OF TECHNICAL ISSUES

2.1 Analysis of the Safety of Bicycle Helmets

The safety of bicycle helmets has been a subject of debate over recent years. There are concerns expressed, notably by the medical profession, that bicycle helmets that comply with the Mandatory Standard do not provide sufficient protection to certain areas of the head, particularly to the face, upper jaw, and temple. Injuries to these areas can result in long term disfigurement.

Research has shown¹ that the most common impacts to the head in bicycle accidents occur in the region covered by the helmet, which corresponds to the forehead and temple on the wearer's head. Most of the impacts that result in brain injury occur in this region, an area in front of, and slightly above, the ear.

Until recently this area was poorly served by protective helmets, due to the fact that the test line on the helmet used in testing compliance was located at a height above it.

In addition, the regions of the helmet that lie close to the edges (i.e. below the test line) are the areas least able to effectively dissipate or absorb the forces of impact. Williams' 1991 research², in which helmets involved in accidents were analysed, showed that 63 per cent of the helmets he studied had sustained impacts below the test line. Standards Australia has revised its test line down and this has resulted in helmets being better equipped to deal with impacts closer to the lower edge. This change to the Australian Standard goes some of the way to meeting the concerns about coverage of the temporal region of the head.

¹ Martin Williams, "The protective performance of bicyclists' helmets in accidents, in *Accid. Anal. and Prev.*, Vol 23, No. 2/3, 1991 pp. 119-131

² Williams op cit p 121

2.2 Assessment of Overseas Standards

In the course of consultation the opinion was expressed in a number of submissions that if an overseas standard offered equal or better levels of protection then there should be no objection to it being recognised as appropriate for the Australian market. However, there was also a common fear expressed (due to the perception that the Australian Standard is at least as good as, if not better than all overseas standards) that admitting other standards may result in a decline in levels of safety.

As part of the review exercise a comparison of the main standards in use around the world was undertaken. Critical safety features vary across the range of overseas safety standards, and the comparison provided some indication of the range and type of protection available from the differing standards. The comparison revealed a number of areas of divergence between the Australian Standard and the overseas standards. It also identified the least divergent (in comparison to the Australian Standard) of the available overseas standards.

Of all the overseas standards the standard promulgated by the Snell Memorial Foundation, known commonly as the Snell B95 and the US Consumer Product Safety Commission standard were the closest to the Australian Standard. The key differences between these two standards and the Australian Standard is shown in Table 1.

Table 1 Key differences between standards

Specification	Australian Standard	Snell B95	CPSC	Comment
Height of test line	New test line, lowest of the three standards	Lower test line until than CPSC. Higher than that in the new Australian Standard. Very similar at front and sides, at most only 12 – 17.9 mm higher across the rear.	Considerably higher than AS and Snell: 26 – 30 mm higher across the side and 17.5 to 25.5 mm higher at rear.	The height of the test line is critical to the testing of helmet performance. Snell B95 offers very similar test line to AS.
Load distribution test	Uses a kerbstone shaped anvil to test the ability of the helmet to spread a narrow impact across a given area. Precludes anvil touching the test head form	Tests with kerbstone anvil but does not measure the distribution of the load, only the ability of the helmet to absorb impact.	Tests with kerbstone anvil but does not measure the distribution of the load, only the ability of the helmet to absorb impact.	Effectively excludes some helmets in Australia. Not considered significant enough to warrant supporting in mandatory standard.
Sequence of testing	Impact prior to retention system (straps and buckles) tests.	Retention system prior to impact tests.	Retention system prior to impact tests.	Impacts may diminish strength of retention system. It is not clear whether this is a real-life safety concern.

The critical performance specifications that diverged from the Australian Standard were the location of the test line, and the provision of a load distribution test.

It was decided that the test line for the CPSC standard was too high to offer a comparable level of safety protection when compared with the Australian Standard. The Snell B95 standard on the other hand had a test line much closer to the AS.

3. THE PROBLEM TO BE ADDRESSED

The problem to be addressed centres on the following points:

- there is potential for the supply of substandard bicycle helmets that do not provide adequate head protection to cyclists in the event of an accident;
- there is no practical way for consumers to distinguish safe from unsafe helmets if both are available on the market;
- there is evidence that cyclists are subject to a greater risk of serious head injury if they are involved in an accident and are not wearing a helmet that meets relevant safety standards; and
- the current mandatory standard calls up Australian standard AS 2063.2 of 1990. This standard is out of date, and differs from the current standard in the following respects:
 - standards Australia has revised its test line to enable helmets to deal with impacts closer to the lower edge than was previously the case; and
 - the new standard utilises a larger range of headform sizes.

4. OBJECTIVE

The basis for Consumer Affairs Division's review of the mandatory standard is the need to ensure that such standards are up to date, relevant and able to address an identified safety hazard, while being set at a level which is reasonably necessary to prevent or reduce risk of injury.

5. IDENTIFICATION OF OPTIONS

Regulatory and non-regulatory options that have been examined for the purpose of addressing the identified problem are:

- leaving the current mandatory standard in place;
- revoking the existing mandatory standard, and allowing market forces, and legal remedies under the Act to be the mechanisms for providing sufficient levels of helmet safety;
- replacing the current mandatory standard with a labelling requirement such as that applied to cigarette packets; and
- declaring a new mandatory product safety standard for Bicycle helmets addressing the performance requirements that are necessary for helmet safety.

6. IMPACT ANALYSIS

6.1 GROUPS AFFECTED BY THE OPTIONS

The groups likely to be affected by these proposals are:

- Consumers (users of bicycle helmets)
- Industry (manufacturers, importers, and retailers); and
- Government.

6.2 Qualitative v Quantitative Analysis

The analysis in this paper is qualitative largely because of the impossibility of obtaining sufficient quantitative data in key areas, notably injury cost and the cost to industry of compliance.

6.3 ANALYSIS OF THE OPTIONS

6.3.1 Leaving the current mandatory standard in place

This would preserve the mandatory standard in its current form. While this would continue to provide the same level of consumer safety and protection that has been in place since 1992, it would not address a number of key issues that this review has identified. The standard does not address the latest developments in technology, and through not having the lower test line of the new version of the standard does not give adequate protection to the maxillo facial region of the head.

Costs and Benefits to Consumers

The major cost to consumers is that the existing mandatory standard does not provide sufficient protection in the maxillo-facial region of the head. A more recent Australian Standard that takes into account technical developments and knowledge has been published but this is not called up in the mandatory standard.

The major benefit to consumers of maintaining the current standard is that it provides the existing level of safety for cycle helmets compared to no mandatory safety standard at all.

Costs and Benefits to Industry

There are, considerable potential costs to industry in retaining the current standard. These are:

- the existing mandatory standard calls up an outdated version of the Australian Standard. This means that the standard does not adequately cover new developments in helmet technology;
- all new helmets in the Australian market are now tested to AS/NZS 2063:1996. Standards Australia has raised the possibility that such helmets may not comply with AS 2063.2: 1990. This means that safe and well designed helmets will not meet the mandatory standard, thus making their sale illegal;
- assuring compliance to the earlier standard as well as the current Australian Standard means additional testing costs; and
- the multi-part nature of the previous Australian Standard has proved a source of confusion.

The benefit to industry of keeping the current standard is that there would be no need for adjustment in order to become familiar with and respond to changes in regulation.

Costs and Benefits to Government

The benefit to the Government of keeping the current standard is that enforcement costs will remain at the current level. The current costs of enforcement of the mandatory standard by the ACCC include regular surveys, which generally only comprise visual inspections. The cost of this is approximately \$1,000 per annum for salary costs. Updating of compliance and staff guidance material averages out at \$500 per annum. The benefit to Government is that this cost can be expected to remain more or less static if the current controls are left in place.

The major costs for Government in keeping the current standard are:

- the difficulties involved in enforcing a standard that is becoming increasingly irrelevant to the goods available on the market, given the ongoing technological development of bicycle helmets; and
- the fact that the existing mandatory standard is based on early 1990's technology, and does not provide sufficient protection in the maxillo-facial region of the head.³ This means that an opportunity to reduce this type of injury and its associated medical and social costs is being foregone.

6.3.2 *Revoking the mandatory standard and relying on market forces and powers under the Act*

Revoking the mandatory standard would have the consequence of allowing any type of bicycle helmet onto the Australian market.

In the absence of a mandatory product safety standard problems that arise with consumer goods such as bicycle helmets may be dealt with through Part V, Section 65F, or Part VA of the Act, as well as through the various State and Territory Consumer and Fair Trading legislation.

Section 65F of the Act provides the Minister responsible for Consumer Affairs with powers to recall goods which will or may cause injury, and Part VA confers statutory rights of action on the consumer against a corporation that supplies defective goods that have caused injury, loss or damage.

If the mandatory standard were revoked and the quality of bicycle helmets supplied on the market were left to market forces there are a number of possible outcomes these include:

- loss of assurance for consumers that helmets for sale in the market provide a sufficient level of safety; and
- self-regulation of the industry, including voluntary compliance with one or more relevant standards. This is not thought likely given the financial incentive for suppliers to supply products that do not meet any standard and provide little if any protection to consumers.

Costs and Benefits to Consumers

The costs to consumers of revoking the mandatory standard include:

- a loss of certainty that the helmet on sale is capable of performing in a safe manner;
- reliance on Section 65F and Part VA of the Act for maintaining consumer rights introduces an impediment to consumer certainty. These measures are retrospective, coming into effect only when consumer goods are already on the market. The result is that unless a defective or unsafe consumer good is brought to

³ For a longer discussion of this matter see attachment C.

the attention of the Minister responsible for Consumer Affairs before it is sold, legal redress is only available after injury, loss or damage has occurred. In the case of bicycle helmets, the potential injury, loss, or damage is significant; and

- the cost of injuries from helmets that do not provide an acceptable level of safety.

The possible benefit to consumers of revoking the mandatory standard is the potential for expanded consumer choice, along with a possible reduction in helmet prices because of increased competition. It is considered that these benefits are outweighed by the likely costs.

Costs and Benefits to Industry

If the mandatory safety standard for bicycle helmets were revoked, industry would reduce their cost of production, as helmets that do not meet safety standards will be manufactured.

The main costs to industry would be:

- the loss of a degree of certainty in respect of liability for damage, loss or injury attributable to faulty products, given that a mandated standard makes explicit the performance and design specifications considered to be necessary for safe consumer goods; and
- the potential for an increase in the incidence, and costs of, litigation.

The main benefit to industry lies in the ability to market helmets that do not currently comply with the Australian Standard. Helmets that do not comply with the standard tend to cost less to manufacture and therefore can represent more profit.

Costs and Benefits to Government

Revocation of the mandatory standard would have the cost saving benefit of not requiring enforcement from the ACCC. However, while these enforcement and other administrative costs may be saved, there will be additional Government costs incurred as a result of the added reliance on legal system for redress.

Also, there are the social and monetary costs associated with the expected increase in injuries to the public through the use of substandard helmets.

6.3.3 *Replacing the current mandatory standard with a labelling requirement*

A further suggestion is the use of an enhanced labelling requirement as a replacement for the current standard. This would be along the lines of the health warning on cigarette packets. This option is not considered feasible as:

- while it would, theoretically, be easy to label helmets that were safe i.e. met the Australian Standard the identification and labelling of unsafe helmets presents practical problems; and
- this proposal would need to be distinguished from certification to Australian standards, as mandatory certification is ultra vires the Act.

As this proposal is not considered feasible its costs and benefits have not been assessed further.

6.3.4 *New mandatory Standard*

In the consideration of any regulation the Commonwealth Government identifies the preferred form that such regulation ought to take, taking into account the fact that in this case the regulation needs to:

- resolve any coherency and clarity problems in the existing standard, which will facilitate the ease and transparency of compliance and enforcement;
- take account of trade harmonisation with New Zealand, in accordance with the Trans Tasman Mutual Recognition Arrangement, and with other countries recognising the broad aims of the World Trade Organisation of which Australia is a member;
- have widespread industry and consumer relevance, acceptance and support; and of stakeholders have taken in respect of the role that helmets play in injury prevention or causation.

Mandating the latest version of the Australian Standard AS/NZS 2063:1996 Pedal cycle helmets with amendments that allow the sale of helmets that comply with the Snell Memorial Foundation's 1995 Standard for protective headgear for use with bicycles (Snell B95) as the new consumer product safety standard under the Act will go much of the way to resolving the problems associated with the other options as outlined above.

Costs and Benefits to Consumers

The major cost to consumers of a new standard is the potential for helmets to become more expensive as the costs of manufacturing and testing could increase and this would be passed on to consumers. However, as industry is already manufacturing to the new standard, and there will be competition from overseas helmets, a cost increase is unlikely.

The benefits to consumers of a new mandatory standard are:

- calling up the latest version of the Australian Standard means that the safety specifications applicable to helmets in the Australian market are up to date and relevant to the most recent developments in bicycle helmet technology. The latest standard offers a higher level of consumer safety than has been available to date, particularly because of the new test line. This helps to avoid the potentially costly side effects, such as injuries and loss of life, associated with bicycle accidents; and
- allowing helmets that comply with the Snell B95 to be sold in Australia means additional choice in the helmet market, and the possibility of a reduction in costs, given that Snell compliant helmets are likely to be tested for the larger market of the United States, which means a lower cost of testing per helmet.

Costs and Benefits to Industry

The costs to industry in this new mandatory standard are:

- the potential for a rise in the numbers of helmets being imported as a result of allowing sale of Snell compliant helmets. This may pose a threat to the local manufacturers, who may not be able to compete with imports.
- some compliance costs for suppliers in proving that their helmets imported or domestic comply with the mandatory standard.

The chief benefits to industry of a new mandatory standard are:

- the potential for reduced costs by ending the need to test to two versions of the Australian standard;
- the enhanced level of safety offered by the new standard will allow firms to continue to promote the safety of their products and use the standard as a benchmark for manufacture. The exclusion from the market of helmets that do not comply with the safety standard can only enhance the reputation for safety of compliant products; and
- the opportunity for helmets that comply with the Snell B95 to be sold in Australia thus increasing the range of helmets that they can market.

Costs and Benefits to Government

The costs to government of the new standard largely consist of enforcement costs. These are unlikely to change significantly.

The benefits are:

- the economic benefits that flow from the increased efficiencies arising from steps taken towards decreasing barriers to trade and increasing competition;
- ongoing savings to public health budgets from decreased medical and hospitalisation costs; and
- a reduction in the associated social costs of injuries.

Finally, a study by Paul Hansen and Paul Scuffham into the cost-effectiveness of bicycle helmet laws⁴ concluded that overall the benefits of helmet laws far outweighed their costs for children and young people.

Restrictions on competition

The adoption of the new version of the Australian standard has some potential to create a technical barrier to trade because of its particular requirements, which have the potential to restrict imports to those that meet the Australian standard alone.

Given that the Australian standard is being amended to allow bicycle helmets that comply with the US Snell standard to be sold in Australia, it is not considered that the new mandatory standard represents a massive barrier to trade. Most bicycle helmets produced worldwide are likely to be tested for compliance to allow sales in the United States market.

With respect to the implications for Trans Tasman Mutual Recognition, New Zealand intends moving to harmonise their requirements with Australia's as soon as the new mandatory standard is implemented.

7. PROPOSED GOVERNMENT ACTION

7.1 *Title of Regulatory Proposal*

Consumer Product Safety Standard for Protective Helmets for Pedal Cyclists.

⁴ Paul Hansen, and Paul A. Scuffham, "The cost-effectiveness of compulsory bicycle helmet laws in New Zealand", in *Australian Journal of Public Health*, Vol. 19, No. 5, pp. 450-4, 1995.

7.2 *Objectives of Government action*

The objectives of the proposed revised Consumer Product Safety Standard are:

- to reduce the risk of serious head injury and death as a result of bicycle related accidents;
- to exclude from the Australian market bicycle helmets that do not offer adequate levels of head protection from impact in the event of an accident;
- to ensure appropriate marking and labelling for the care, fitting and use of bicycle helmets, thereby facilitating the maximum possible effectiveness of Government action; and
- to ensure that the standard is performance based and does not unduly impede the flow of goods between Australia and other nations, paying due heed to relevant safety considerations.

7.3 *Purpose of the standard*

The main purpose of the proposed standard is to set minimum safety requirements relating to the testing and performance of protective helmets for pedal cyclists. This will be in line with the principles established by the Council of Australian Governments (COAG). The standard therefore will set the minimum performance requirements necessary for meeting the identified safety needs of the user. Bicycle helmets have certain defining characteristics:

- consumers are generally unable to assess the likely effectiveness of the helmet at the time of purchase;
- the helmet is purchased in anticipation that when it is needed it will provide the wearer with a reasonable level of head protection in the case of accident, given that accident circumstances can vary widely and have a variety of effects; and
- the helmet must be able to perform to an acceptable level in tests of impact absorption, and impact load distribution while remaining on the head.

The proposed standard will ensure that these characteristics are maintained in helmets available as consumer goods in Australia.

7.4 *Outline of the proposed standard*

It is proposed that a new mandatory consumer product safety standard for protective helmets for pedal cycles be declared under Section 65E(1) of the *Trade Practices Act 1974*.

The Joint Australian and New Zealand Standard⁵ AS/NZS 2063:1996, *Pedal cycle helmets*, subject to certain variations, will be gazetted as the new consumer product safety standard.

In recognition of Australia's international trade harmonisation obligations under the World Trade Organisation it is appropriate that attention be paid to the standards that are in use in other countries. This particularly applies to those standards that are recognised as being of sufficient quality as to not be significantly divergent from the Australian Standard. It is considered that the *1995 Standard for protective headgear for use with bicycles* (known as Snell B95) an internationally recognised standard promulgated by the Snell Memorial Foundation in the United

⁵ Hereafter referred to simply as the Australian Standard, AS 2063, unless a date is specified, in which case that specific edition is being referred to.

States of America fulfils these requirements. Accordingly it is intended to amend certain of the requirements of the Australian standard to allow helmets that comply with Snell B95 to be sold in Australia.

7.4.1 Schedule

- continue to define the particulars of goods as in current mandatory standard including the exclusion of toy helmets, specification for the labelling of toy helmets, and addressing the issue of BMX helmets.

7.4.2 Variations to AS 2063: 1996:

- continue necessary variations from existing mandatory standard, such as delete clause 1 (dealt with in particulars of goods)
- maintain the variation for BMX helmets; and
- amend the load distribution test so that it tests the ability of the helmet to absorb impact only.

8. CONSULTATION

The review process commenced in December 1997 with the sending of initial requests for information to safety organisations. This was followed in April 1998 by a mail out to industry, consumer and government organisations seeking broad comment on the general terms of the review. Comments received from this initial mail out were combined with other material obtained through a variety of sources into a Preliminary Impact Analysis (PIA), setting out the range of options that were being considered by the Commonwealth in its revision of the existing mandatory standard. The PIA was circulated to an expanded mailing list, and sought answers to key issues facing the review. Comments arising out of the circulation were taken into account in the Commonwealth's decision making process, and are reflected in this Regulation Impact Statement. A summary of responses received to the discussion paper and the PIA is below.

There has been widespread consultation with relevant stakeholders during the development of this regulatory proposal. These stakeholders include industry organisations, local and international manufacturers, distributors, retailers, consumer groups, medical experts in academia, international and local organisations responsible for voluntary standards, and State, Territory and overseas governments.

8.1 Views of manufacturers and wholesalers

- they considered the mandatory standard should continue; and
- they would welcome overseas standards providing they did not impose unreasonable changes to current compliance.

8.2 Views of retailers

- it is not feasible for consumers to judge the product safety of an item where judgement requires specialised knowledge; and
- overseas standards are only acceptable where they are equal to or exceed Australian standards.

8.3 Views of medical authorities

- mandatory requirements are necessary, but must be backed by effective but gentle enforcement;
- there are behaviour-related user compliance problems that put individual users at risk; and
- the use of overseas standards usually results in a diminishing of Australian standards, and any shift towards harmonisation needs to be strictly monitored.

8.4 Views of State Consumer Affairs organisations

- they are in support of the standard being updated to reference AS/NZS 2063:1996;
- they doubt the effectiveness of self-regulation;
- they consider that there is little likelihood of total industry commitment to voluntary compliance; and
- low industry compliance costs will result in higher personal and social injury costs.

8.5 Views of the Australian Competition and Consumer Commission

- voluntary compliance is an unproven alternative;
- a current Australian Standard is preferable to an older Australian Standard;
- consumer education is not an alternative to a standard;
- effective enforcement requires that there be no ambiguities in the standard; and
- a transition period will be needed to allow time for industry to adjust.

8.6 Views of safety organisations

Kidsafe Australia

The mandatory standard should be maintained because:

- the standard is designed to prevent severe injury;
- it is impossible to know whether a helmet will perform in advance of an accident;
- there is no marketplace method of ensuring consumer is able to distinguish between effective and ineffective helmets;
- consumer expectations that a personal safety product is safe to use; and
- the high level of inefficiency and waste in relying on marketplace remedies to repair damage after the event of death or long term crippling injury.

8.7 Views of Bicycle organisations

Bicycle Federation of Australia.

- an adequate range of sizes of helmets has to be available. It is a mistake to compensate for a badly fitted helmet by adding thick pads, and tests ought to be carried out on varied head sizes compensated for with extra padding; and
- more detailed instructions ought to be mandated.

Cyclists Rights Action Group (CRAG).

CRAG is concerned with State and Territory laws requiring the wearing of helmets by bicyclists.

- they argue that Commonwealth endorsement of a helmet standard carries a high level of importance because of the existence of mandatory helmet wearing;
- they challenge the effectiveness of helmets under the current standards; and
- they consider that the Commonwealth should ensure that helmets provide the sufficient protection from injury in order to validate the existing mandatory helmet wearing regime in Australia.

9. IMPLEMENTATION AND REVIEW

It is intended to have the new mandatory standard implemented by gazette notice. This action should take place by June this year. It is intended that AS 2063.2-1990 will be called up under the gazette notice for a period of twelve months. This will allow existing stocks of helmets to be sold, and industry and consumers to adjust. As with all mandatory product standards under the Act, Consumer Affairs Division will review these requirements within five years of the date of their implementation, unless circumstances warrant its earlier review.

Attachment A The text of the Current Mandatory Standard for Helmets for Pedal Cyclists

Commonwealth of Australia Gazette

No. GN 8, 26 February 1992

COMMONWEALTH OF AUSTRALIA

Trade Practices Act 1974

CONSUMER PRODUCT SAFETY STANDARD

Consumer Protection Notice No. 1 of 1992

**CONSUMER PRODUCT SAFETY STANDARD PROTECTIVE HELMETS FOR
PEDAL CYCLISTS**

I, MICHAEL CARTER TATE, Minister of State for Justice and Consumer Affairs, in pursuance of section 65E of the *Trade Practices Act 1974*, hereby:

(a) Amend the consumer product safety standard in respect of protective helmets for pedal cyclists declared by notice dated 21 July 1989 published in Gazette No. GN 30 of 9 August 1989 by:

- (i) adding after the word "cyclists" where first occurring in Division 1 of the Schedule to the notice, "manufactured in, or imported into, Australia before 9 April 1992, but";
- (ii) deleting paragraph (i) of Division I of the Schedule to the notice and substituting "(i) protective helmets of a size too small to be reasonably fitted to the Headform A defined in Australian Standard AS 2512.1 - 1984 published by the Standards Association of Australia on 6 April 1984;" and
- (iii) deleting paragraph (a) of Division 3 of the Schedule to the notice: and

(b) declare that, in respect of goods of a kind specified in Division 1 of the Schedule to this notice, The Standard approved by the Standards Association of Australia specified in Division 2 of the Schedule, as varied by the variations in Division 3 of the Schedule, is a consumer product safety standard for the purposes of section 65C of the *Trade Practices Act 1974*.

THE SCHEDULE

Division 1: Particulars of Goods

Protective helmets for pedal cyclists manufactured in, or imported into, Australia on or after 9 April 1992, but not including the following:

(a) protective helmets of a size too small to be reasonably fitted to the Headform A defined in Australian Standard AS 2512.1 - 1984 published by the Standards Association of Australia on 6 April 1984:

(b) helmets for use as toys, which cannot be reasonably mistaken for protective helmets for pedal cyclists;

(c) helmets for use as toys which may be reasonably mistaken for protective helmets for pedal cyclists, if the words "Warning: toy helmet only do not use as safety headgear", are marked clearly and legibly in a conspicuous position both:

- (i) on the helmet or on a label attached to the helmet at the time of supply to the consumer; and
- (ii) on the principal outer display face of any packaging in which the helmet is supplied to the consumer.

with the word "Warning" in capital letters not less than 5 mm high, and the remaining words in letters not less than 2.5 mm high; and

(d) helmets designed and constructed principally for use by cyclists engaged in competitive racing (other than BMX helmets), if the words "Warning: racing headgear only inadequate impact protection for normal road use" are marked clearly and legibly in a conspicuous position both:

- (i) on the helmet or on a label attached to the helmet at the time of supply to the consumer. and
- (ii) on the principal outer display face of any packaging in which the helmet is supplied to the consumer,

with the word "Warning" in capital letters not less than 5 mm high, and the remaining words in letters not less than 2.5 mm high.

Division 2: The Standard

Australian Standard AS 2063.2 - 1990, "Lightweight protective helmets (for use in pedal cycling, horse riding and other activities requiring similar protection) Part 2 - Helmets for pedal cyclists", published by the Standards Association of Australia on 9 April 1990, as amended by Amendment No. 1 of 20 August 1990 and Amendment No. 2 of 15 April 1991.

Division 3: Variations

The Standard specified in Division 2 of this notice is varied by:

- (a) deleting clause 1; and
- (b) deleting clause 3 and substituting:

"3 BASIC PERFORMANCE REQUIREMENTS. Helmets for pedal cyclists, other than BMX helmets, shall comply with AS 2063.1, but need not comply with provisions regarding:

- (a) hard shell;
- (b) ventilation openings;
- (c) resistance to penetration; or
- (d) type testing.

3A BMX HELMETS. Helmets designed and constructed principally for use by cyclists engaged in BMX competition racing shall comply with AS 2063.2 but need not comply with clause 4 of AS 2063.2. Such helmets shall comply with AS 2063.1, but need not comply with clause 7.3.2 of AS 2063.1 or with those provisions of AS 2063.1 regarding ventilation openings or type testing."

Dated this tenth day of

February 1992.

[signed]

MICHAEL CARTER TATE

Minister of State for Justice and Consumer Affairs

Attachment B: addressing problems associated with second hand helmets

As previously mentioned, second hand helmets present problems in terms of compliance and enforcement under the mandatory standard. It is unlikely that a second hand helmet purchaser would be able to ascertain the safety of the helmet simply by viewing it, unless the helmet had already sustained some degree of damage. Furthermore, it is possible that older helmets offering lesser levels of safety, and helmets that would not comply with the mandatory standard could be offered for sale second-hand.

In terms of compliance it is not possible to test second hand helmets as helmet testing currently depends upon tests being conducted on samples of a production batch of helmets. Also, current methods of helmet testing destroy the helmets being tested.

It is also noted that a number of standards recommend a useful life for a helmet of around five years, and recommend replacement after that period of time. This is due partly to the need to ensure that the performance of the helmet materials is not unduly affected by the passage of time.

Given these circumstances it may be of benefit to the safety of Australian consumers to address the issue of second-hand bicycle helmets.

Banning the sale of second hand helmets

It is possible for a ban or compulsory recall of second hand bicycle helmets to be brought in, if it can be proved that they will or may cause injury under s.65C (5) of the Act. However, to achieve a ban on second hand helmets, a definition would be required as to what second hand actually means, and resources devoted to the enforcement. Possible issues with this would include whether the supply of helmets in hire schemes constitutes sale. There is potential to seriously disadvantage the bicycle hire sector. The major costs to governments would be in the enforcement of such a ban.

The costs of this proposal have not been assessed but are likely to be extremely large. Although the size of the market may be small the number of potential outlets is enormous. As mostly individuals, not companies sell second hand helmets any regulatory action would need to be at State and Territory level as well as at Federal level.

Education campaign

Under this option an education campaign discouraging the use of second hand bicycle helmets would be developed.

The major advantages of an education campaign are

- an education campaign has the potential to reach a much wider audience than are currently aware of the problems with second hand helmets; and
- it avoids some of the problems with respect to banning the product from the market, notably the need to prove that second hand helmets "will or may cause injury."

A possible disadvantage of this approach is the cost, which can be large. However a small and simple type of education campaign consisting of leaflets aimed at consumers and retailers can be put together for approximately \$3,000. A leaflet campaign has the potential to reach a wider audience than are currently aware of the problem. The co-operation of retailers and manufacturers would be needed to ensure that the leaflets are prominently displayed.

A further possibility would be an extra label on helmets pointing out that secondhand helmets may be dangerous, along the lines of a health warning. This could be developed in conjunction with industry and the ACCC.

Attachment C Analysis of technical issues

Analysis of the Safety of Bicycle Helmets

There has been some debate on the impact of bicycle helmets on the safety of the helmet wearer. There are concerns expressed, mainly by the medical profession, that bicycle helmets that comply with the Australian Standard do not provide sufficient protection to certain areas of the head, particularly the facial, temporal and maxillary regions. Injuries to the facial and maxillary regions can result in long term disfigurement, but it is injury to the temporal region, which have the greatest potential to be serious.

As previously mentioned⁶ Williams' 1991 research shows that most head injuries incurred during bicycle accidents occur in the anterior/lateral region of the helmet. This corresponds to the forehead and temporal regions of the head, with most of the impacts that result in brain injury occurring in the temporal region, in front of and slightly above the ear.

Until recently this area has been poorly served by bicycle helmets, largely due to the fact that the test line used in testing compliance with standards was located above it. This means that the helmet is not tested in respect of its performance under impacts to this zone. In addition, the regions of the helmet that are close to the edges (i.e. below the test line) are structurally the areas least able to effectively dissipate or absorb the forces of impact.

Sixty three per cent of the helmets Williams studied suffered impacts below the test line, with fifty one per cent of those impacts below the line being concentrated in the front and temporal regions. The impacts below the test line were at an average distance of thirty-nine millimetres below the line. This issue has been partially addressed by virtue of the fact that Standards Australia has now revised its test line down to a height approximately 20 mm lower than that had been previously. This should mean in practice that helmets will be tested 20 mm closer to the edge, and thereby be certified to handle impacts closer to the edge than was previously the case.

While this change does not address possible design changes that might extend the amount of facial and maxillary protection, it does meet the concerns about coverage of the temporal region of the head.

Assessment of Overseas Standards

The Commonwealth Government is concerned that its regulations do not impose unnecessary barriers to trade by setting standards that make it difficult for overseas manufacturers to comply. Especially if the higher levels of stringency demanded do not maintain commensurate levels of consumer protection. If there are any overseas standards that can offer an equivalent level of consumer safety then it is appropriate that the Commonwealth examine the practicalities of recognising such a standard in the mandatory consumer product safety standard under the Act.

In the course of consultation there were a number of submissions that stated that if an overseas standard offered equal or better levels of protection there should be no objection to its recognition as appropriate for the Australian market. However, there was also a common fear expressed that admitting other standards could result in a decline in safety levels. In order to assess the appropriateness of other standards a comparison of the main standards in use around the world was undertaken. Critical safety features, in terms of both the construction and testing of pedal cycle helmets, vary across the range of overseas safety standards.

The comparison provided some indication of the range and type of protection available from the differing standards. There are a number of differences between the Australian Standard and the overseas standards, and it is necessary to identify the comparative protection levels that are afforded by these differences. There were three particular differences identified in the

⁶ See section 2.1 above

consultation process. It is the responsibility of the Commonwealth to assess how critical these issues are to the maintenance of consumer safety.

The comparison of standards also identified the least different (in comparison to the Australian Standard) of the available overseas standards. These were the 'B95' standard that is promulgated by the Snell Memorial Foundation, and the Consumer Product Safety Commission (CPSC) standard. Both these standards come out of the United States of America. The CPSC standard was recently mandated in the US, and the Snell B95 has been updated to ensure that Snell certified helmets also comply with the CPSC. These are both being used as indices against which the Australian Standard is measured, and as possible standards that might be considered as appropriate to the Australian market. Most other standards around the world offer a degree of head protection, but they specify the protection or the testing process and test performance in varying terms. Most standards deal with similar issues, the most important being construction, coverage, retention system durability and strength, and the means for testing a helmet's performance. One critical aspect of helmet performance is the extent of coverage of the head that the helmet provides. This is loosely equated with the test line that is specified in a standard for the purpose of conducting the impact tests. The test line is set in relation to a given location on the headform that is used in the test, regardless of whether the helmet extends below that test line.

Standards Australia has recently revised its helmet testing standards, and one of these revisions provides for one of the lowest test lines in the world. Much of the research has drawn attention to the fact that the temporal region of the skull is the most critical zone requiring protection in accidents, and that the test line typically does not adequately cover the region. The recently amended Australian Standard *AS 2512.1:1998 Methods of testing protective helmets Method 1: Definitions and headforms* has had the affect of lowering the test line by approximately 20 mm, which is a significant advance in improving the chances of bicyclists surviving impacts in that zone.

It is considered that the level of the test line is a significant aspect of a helmet safety standard. Based on test line alone the next nearest standard that is appropriate to the Australian market (because it offers only minimal deviation from the Australian test line) is the Snell B95. The test line specified in the CPSC standard is so significantly different that it represents an appreciable departure from the safety offered by the Australian and Snell B95 standards. For adult helmets, the difference between the CPSC and AS test lines is between 1 and 4 mm across the front of the helmet. On the side of the helmet the test lines in the CPSC standard are between 26 and 30 mm higher and across the back of the helmet the differences are between 17.5 and 25.5mm. The Snell helmet test lines are considerable closer to the AS, being between 1 and 4.2 mm higher across the front, between 7 and 9.9 mm higher along the side and between 12 and 17.9 mm higher to the rear. Indeed until the new AS 2512.1 came into effect the Snell standard had a test line lower than the Australian Standard.

These differences do not necessarily equate with the amount of the head that is covered, but the extent to which impact tests are conducted on the test helmets. The ability of the helmet to attenuate the energy of an impact is compromised by the closeness of the impact to the edge of the helmet. The lower the test line the more likely it is that a helmet has been tested on impact sites closer to the edge. It is therefore more likely that a helmet that passes will offer as much protection as is practicable in the more vulnerable temporal zones that correspond to the lower test line.

The Snell test line is sufficiently close to the Australian Standard test line to warrant it being considered capable of providing an overall level of safety that is equivalent to the Australian Standard, assuming other critical safety and performance specifications are adequately met.

In terms of the other critical specifications, the Australian Standard is the only standard, other than the standard that is promulgated by the Swedish Consumer Agency Konsumentverket, that

contains a load distribution test. The Australian test uses a kerb-shaped anvil and in addition to specifying the maximum loading in the test it also requires that the anvil shall not contact the surface of the headform.

The load distribution test of the Australian Standards was seen by a number of respondents as being a high point that distinguishes the Australian from overseas standards. The small anvil impact was recognised as imitating a number of real life obstacles that may be involved in bicycle crashes, including kerbs, signage, and protrusions and pillars on motor vehicles. However, a supplier of US-manufactured helmets objected that this particular test has failed 'high performance' helmets that are approved elsewhere in the world. The company suggests that the importation of these helmets would be likely to increase the overall number of cyclists wearing helmets, presumably appealing to non-wearers on the grounds of aesthetics. In addition there is a current trend in helmets for an increase in the amount of ventilation, and this has been directly related to the failure of helmets on the load distribution tests in the Australian Standard.

Williams⁷ has identified a problem with actual accident impact sites in relation to the height of the test line, and research by Andrew McIntosh et al has identified the failure of soft shell helmets to maintain structural integrity. Other than these, the Commonwealth has been unable to find any bicycle helmet accident data or research that assesses the influence of the specific design attributes of a helmet to the type and level of injury sustained. In a literature search undertaken in the course of the review, no analysis of accident data other than the Williams study differentiated to any finer detail than whether the accident victim was wearing a helmet or not. Likewise no analysis was found that examined the type of solid object that impacted the helmet. Therefore it is not possible at this stage to provide real life evidence that the load distribution test (with its provision for penetration of the helmet) is necessary for the safety of the helmet user.

Indeed, research has shown that by far the most common surface that a bicycle helmet impacts on in the event of an accident is a flat surface. Likewise, the Commonwealth is unable to assess whether the load distribution test does not contribute to the safety of a helmet. The case has not been made that the load distribution test is a significant enough divergence in Australian Standard to warrant establishing a regulatory regime that includes that test.

The Australian Standard also requires that the impact energy attenuation and load distribution tests are performed prior to the retention system test, specifically recognising that damage incurred in the earlier tests may affect the results of the retention system test. If this occurs and the final test fails that failure is considered in the Australian Standard to be a valid result. The fact that this order of tests is not specified in other standards could mean that helmets certified to other standards may not be offering the same level of safety as helmets that comply with the Australian Standard. If this were to be the case one could expect different accident injury data from the United States of America. However, notwithstanding the fact that accident reporting and analysis does not necessarily differentiate between types of helmet there is no way of knowing whether the helmet that complies in a given sequence of tests might also comply with the tests conducted in the reverse order.

It is not necessarily the case that the order of testing is critical to the real-life safety performance of helmets, and, as with the load distribution test discussed above, there is no accident data evidence that would either support or undermine the argument for order of testing. The Commonwealth has not been able to locate any research that identifies the sequence of damage to a helmet in a crash situation.

Both the Snell B95 standard and the CPSC standard in fact specify an order in reverse to that which the Australian Standard specifies - retention system tests prior to impact management

⁷ Williams op cit p.129

tests. There is no bicycle accident data that compares the accident performance of helmets tested to these standards against the performance of helmets tested to the Australian Standard where the influence of the sequence of testing is identified in the accident outcomes.

It is also accepted that given the enormous range of variables involved in such an analysis it is unlikely that accident data will ever be able to provide any guidance. As a consequence it is therefore considered that the sequence of tests is not a sufficiently critical divergence in the Australian Standard to warrant that specification alone sufficient to exclude a helmet from consideration as appropriate for the Australian market.

Attachment D Glossary of Technical Terms**Medical Terms**

adnexae	Conjoined, or associated parts.
angular acceleration	see rotation
anterior	To the front
axon	Long nerve fibre that conducts impulses away from the cell body of the neurone
diffuse axonal injury (DAI)	Injury caused to axons in the brain that is not limited to a specific location but arises as a result of the brain moving inside the skull. DAI is not solely caused by rotation of the head.
head injury	A wide range of injuries to the head that may or may not include brain injury.
impact	A direct blow to the head that does not impart head rotation.
impact attenuation	The action of the helmet to absorb the energy of an impact and reduce its effect on the head.
impact injury	Injury to the brain or head caused by a direct blow that does not cause the head to rotate.
impulse	see rotation
intracerebral	Within the brain.
lateral	To the side
linear impact	see impact
maxilla	The chief bone in the upper jaw
maxillary, maxillo-	The upper jaw area
rotation	Movement of the head about its own axis, such that the head rotates.
rotational injury	Injury to the brain caused through rotation of the head
sequelae	Subsequent effects (or sequels) to a medical condition.
temporal,	The area of the head, in front of the ears and behind the forehead also known as the temple.
translation impact	see impact

Helmet Testing Terms

anvil	The hard object that is used to strike the helmet during helmet testing
headform	A rigid head-shaped object used in testing helmets