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# TRAFFIC ACCIDENT RESEARCH UNIT



## COMPULSORY WEARING OF SEAT BELTS A FEASIBILITY STUDY



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The Traffic Accident Research Unit was established within the Department of Motor Transport, New South Wales, in May 1969 to provide a scientific approach into traffic accident prevention.

The Unit brings together a team of medical practitioners, scientists, statisticians, psychologists, sociologists and engineers engaged full time on research into all facets of road accident causation.

This paper is one of a number which report on their research and is published for the information of all those interested in the prevention of traffic accidents.

A handwritten signature in dark ink, appearing to read "D. R. Coleman". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Commissioner.

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✓ RSTR

# COMPULSORY WEARING OF SEAT BELTS

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### ABSTRACT

An analysis is made of the questions to be resolved in the event of a decision at Government level to introduce compulsory wearing of seat belts by vehicle occupants generally. Consequently, the arguments for and against compulsion itself are not discussed, neither is the efficacy of belts in the reduction of injuries. The factors examined are not applicable to New South Wales only; they operate in all similar communities.

Exemptions are suggested on grounds of medical and other personal characteristics such as age, occupational factors, and the unsuitability of existing belts for particular vehicle types.

A two-year timetable for the compulsory retro-fitting of seat belts (as an essential pre-requisite) is suggested, it being implicit that the programme as a whole can be deferred to suit a commencing date later than that proposed.

Intensified public education is suggested in order to counter firmly-held but unfounded objections and so that greater voluntary compliance with any compulsory-wearing law may be encouraged. Closer consultation with seat belt manufacturers to eliminate features inimical to increased seat belt usage is proposed.

## INTRODUCTION

1. At its meeting on 10th November, 1970, the Cabinet Standing Committee on Road Safety, after reviewing generalized arguments for and against resorting to legal compulsion to fit and wear seat belts in vehicles generally, accepted in principle that there is a case for so doing and asked the Commissioner for Motor Transport to submit a detailed proposition.

2. This document is the result. In view of the decision made at Standing Committee level, it does not canvass arguments which justify or oppose the *principle* of compulsion. Its purpose is to make an objective review of the facts and to suggest means, without resolving all points of engineering detail, for achieving the Committee's aim to the maximum extent possible in the shortest practicable time. Nevertheless, because compulsion with respect to the wearing of seat belts is almost without precedent anywhere in the world and is the subject of strong feelings on the part of some persons who see compulsion as curtailment of personal liberty, this appraisal is presented in a good deal of detail. This can contribute to a more informed public opinion and thus to a better level of acceptance of and compliance with the proposed new law. The only instance in which what might be called the moral or philosophical implications of compulsion are touched on is when dealing with the cases for and against particular exemptions.

## OUTLINE

3. The information herein reviews in sequence -

- (a) the legal steps required. It is submitted that the Motor Traffic Act gives adequate power to provide for the matter by Regulations under that Act, and that this method is appropriate;
- (b) decisions necessary as to the persons and vehicles to be affected including the question whether any exemptions need to be considered on the grounds of -
  - (i) human factors (age, medical conditions etc.);
  - (ii) circumstances connected with certain occupations;
  - (iii) vehicle factors;
  - (iv) any other ground;
- (c) machinery for granting such exemptions as may be decided on;

- (d) the types of belts to be accepted;
- (e) whether the requirement should take effect on a common date or series of dates, this being governed largely by the capacity of industry to supply and install the total number of belts required for "retro-fitting" (i.e. installations in vehicles already on the road which do not have belts). The number of such vehicles and belts is estimated, account being taken of the fact that new cars and car-derivatives have, since 1st January, 1969, been required by law to have front seat belts fitted, and that a corresponding requirement as regards rear seats will operate as from 1st January, 1971.

#### QUESTIONS TO BE RESOLVED

4. Preparation of a plan to give effect to the Standing Committee's decision (or Cabinet endorsement thereof, if that is envisaged) requires decisions on the following points -

- (a) whether the requirement should apply - subject to any exemptions decided on as foreshadowed in paragraph 3(b) - in respect of -
  - (i) *drivers only* or, in addition, to all or some *occupants other than drivers*;
  - (ii) *all vehicles* or *certain types* of vehicle only.
- (b) what seat belts (by type, make, standard etc.) should be accepted as adequate for the purposes of the proposed new Regulation.

5. Decisions having been made as to the persons and vehicles to be subject to the new Regulation and the belts which will be acceptable, the next matter to be resolved is whether the requirement should apply as from a date common to all the persons and vehicles to be subject to it, or as from different dates for different groups of vehicles and persons. If (as is almost automatically the case if compulsion is to begin to apply at the earliest possible date) a series of stages is inescapable, those stages, and a date suitable to each, need to be determined.

6. Paragraphs 11-39 (and Appendices "A", "B" and "C" which summarise them) suggest what should be the scope of the requirement and propose answers to other matters raised in Paragraph 4. If these are adopted the substance of the necessary Regulation becomes largely self-evident.

### EXEMPTIONS - GENERAL CONSIDERATIONS

7. Given that the object is to maximise the wearing of approved belts, the policy approach to considering whether to provide for any exemptions at all in the proposed new Regulation must be that the requirement shall apply except where there is clear evidence that it would impose an unreasonable requirement.

8. It is thus necessary to consider objections to belts which are based not on the general arguments as to preserving the traditional liberties of persons, the cost and inconvenience of fitting and wearing belts, or the (largely unfounded) belief that belts can cause a death in rare instances. These arguments are disposed of by a decision at Government level that compulsion is necessary to secure the greatest good for the greatest number, that society is entitled to protect individuals from their own foolishness, and that it is superficial for the individual to assert that his own death or incapacity because of accident affects only himself.

9. The objections to be considered in this appraisal may thus be reduced to those of a more particular nature which are applicable to individual persons (or groups of persons) and to particular vehicles or vehicle-types. With respect to *persons* these centre mainly on age, physical condition, psychological fears and, to an extent, the working conditions of people in occupations which require use of motor vehicles and the difficulty any driver can have in, for example, reversing while wearing a belt. With respect to *vehicles*, objections to be evaluated concern such matters as the difficulty of fitting belts in some types of vehicles and loss of access to particular controls in others if a belt is properly worn. To some extent human and vehicle factors interact with the properties of different types of belts.

### MACHINERY PROVISIONS FOR CONFERRING EXEMPTION

10. (a) Persons. As later paragraphs will show, a variety of circumstances seem to warrant exemption. The number of persons who would be entitled to exemption can only be guessed at but it is clear that it would be such that, if a system of individual "exemption certificates" (like drivers' licences, for example) were adopted a very substantial clerical workload would fall on (presumably) the Department of Motor Transport. A system of individual permits would certainly be burdensome to the persons affected also. Therefore, exemptions should be expressed in the proposed Regulation itself so as to eliminate (or at least reduce to a minimum) the need for individual exemption documents. This approach has been adopted in these proposals.

(b) Vehicles. Exemptions necessary in respect to particular groups of vehicles (of which solo motor cycles is an example) can be provided for in the proposed new Regulation itself but it would seem desirable for the vehicle registering authority (the Commissioner for Motor Transport) to have power to grant exemption (on specified grounds) with respect to individual vehicles.

#### CLASSES OF PERSONS TO BE SUBJECT TO NEW REGULATION

11. Occupants of vehicles divide into drivers and persons other than drivers. With some types of vehicle - motor cycles and buses, for example - the feasibility of providing seat belt protection for occupants, irrespective of type, is governed largely by the characteristics of the vehicles. These instances are therefore dealt with separately in the section of this paper dealing with vehicle factors (starting at paragraph 34). For the moment, therefore, occupants can be taken to refer to persons travelling in, on, or upon vehicles other than motor cycles and buses.

12. On the basis of general public discussion of the question (and also a deliberate survey of public attitudes to seat belts conducted by the Traffic Accident Research Unit and now in the final stages of editing for publication) the following six matters can be taken as a comprehensive (and probably exhaustive) list of objections based on the *physical or psychological characteristics of occupants* -

- (a) available seat belts are unsuitable for children, particularly infants;
- (b) some persons of advanced age are unable, because of diminished alertness, failing eyesight, arthritic joints and other conditions associated with their age, to cope with fastening, adjusting and unfastening belts. Moreover, many elderly people resent or are embarrassed by assistance or have irrational objections - again often attributable to advancing age - to precautions younger people take more seriously. Legal compulsion in such cases could result in irrational but nevertheless obstinate refusal to travel by car with consequent loss of pleasure or convenience;
- (c) persons who have recently undergone surgery to some area of the torso or are recovering from fracture of, say, the collarbone would experience pain from even the normal pressure of a properly adjusted belt. More seriously, such persons could incur actual injury (e.g. rupture of the wound) at the site of the surgery through the application via the belt of moderate deceleration forces;



- (d) pregnant women fear injury to the unborn child by belt pressure from braking, or even its death if subjected to more severe deceleration forces produced by a collision;
- (e) some persons have a genuine, involuntary and deep-seated fear of being enclosed or confined by a retraining device;
- (f) certain types of medical conditions may make it impossible or inadvisable for particular individuals to wear a belt. These may be temporary or permanent.
- (g) available belts are unsuitable to some persons with abnormal skeletal structure such as dwarfs and hunchbacks, to the particularly obese and, to a lesser extent, abnormally tall persons.

13. Objection (a) is clearly applicable to passengers only. So is (b) when it is remembered that an elderly person as described would scarcely be fit or licensed to drive a vehicle. The others (c) to (g) inclusive can all apply to passengers as well as to drivers. Except for (a) and (g), which are based on the unsuitability of belts *currently* on the market for the persons in these categories, all can be set aside, at least logically, by the broad argument of public policy which is the basis for compulsion and was touched on earlier (paragraph 8) and also by the argument that the new law will not debar persons in these groups from motoring but will simply stipulate that, in order to do so, they must comply with conditions that society (per medium of the Government) has been obliged to impose in the overall interest of the community. However each of these objections is open to individual examination and decision, perhaps on the lines indicated in respect of each one in turn in the next six paragraphs.

14. (a) Babies. Infants too young to sit erect unaided are unsuited to seat belts, and are frequently carried by adults seated in the vehicle. Devices especially designed for babies under 1 year are being developed but at present none can be recommended.

(b) Pre-school children and toddlers. Children up to three years are also unsuited to seat belts and children of four and five years of age, whilst sometimes being suited to belts, are better suited to the special child harnesses now being developed with the assistance of T.A.R.U. to meet Australian Standard E46. Pre-school children are often taken to kindergarten seated four or five to a nominally three occupant bench seat; and an individual belt is not available to each. The alternative is for two children to share a lap belt but this is often inadvisable and cannot be accepted as a satisfactory permanent solution. Until suitable devices are available in sufficient numbers, it is not practicable to legislate for seat belts for passengers up to the age of six years.

(c) Children of six years and over. Such children could generally wear a lap belt provided that the belt had sufficient adjustment. They could alternatively wear the lap section of a lap/sash belt in cases where the lap section is attached by a locking adjuster to the buckle tongue; in other cases the webbing runs freely through the tongue and the lap section should never in such belts be worn without the upper torso restraint. In many cars children can safely wear an adult harness or entire combination belt. No ideal rule about children of any age can however be made in the present state of the art.

(d) It is proposed that the rule for children will for the present merely exempt children up to their sixth birthday.

15. Elderly Persons (a) The difficulties traced out in paragraph 12(b) about elderly persons present very real problems in practice and the unfortunate result from a humanitarian viewpoint can be that some old people, opposed or indifferent to seat belts, would deprive themselves of the pleasure they get from a car outing rather than put up with the nuisance involved in what they regard as an unnecessary new-fangled idea.

(b) It is unrealistic to contemplate a system of exemption certificates for elderly persons. Such a system would be cumbersome to administer and a nuisance to persons of advancing years but a more serious practical difficulty to the individual persons affected is that some people, living in nursing homes for example, can be taken on outings at short notice by members of service clubs (or other people other than friends or relatives) and would be debarred if a permit had not been obtained in advance.

(c) In the result, drivers (such as sons of elderly women taking them for a drive at the weekend) would try to persuade the old persons to disregard the law rather than forego an outing. Most old people are law abiding and the conflict between conscience and desire to go for a drive with the family is easy to foresee.

(d) As a matter of pure principle it is wrong to distinguish between old and young persons in considering whether to grant exemptions because of irrational or emotional objections. On the other hand, the general situation of the elderly has a particular poignancy and it seems unreasonable to insist on refusing to recognise this simply to preserve a principle intact. The reduction in the overall wearing rate would be small since exemptions would apply only to elderly *passengers* who perform only a tiny part of the overall passenger-mile total. Moreover, some old people will wear belts voluntarily.

(e) It is therefore proposed that the reasonable course is to exclude the elderly from the proposed new law and leave the wearing of seat belts by them, except as drivers, on a voluntary basis. This distinction between drivers and passengers is based on the view that a person over 70 who is fit to drive is capable of overcoming objections to seat belts, peculiar to the aged, as described earlier in this paragraph. The rule for elderly persons would thus provide that -

- (i) a *driver* shall not be exempt from the requirement merely on the ground of age,
- (ii) an *occupant other than a driver* will not be compelled to wear a seat belt in any circumstances (position occupied; type of belt available) if he has attained the age of 70 years,
- (iii) application for special exemption as an *occupant other than a driver* may be made by (or on behalf of) a person under the age of 70 on the grounds of disabilities arising from his age and the Commissioner for Motor Transport may grant or refuse such application.

16. Post-Surgery conditions (a) This is a source of understandable apprehension even if some patients do tend to magnify the problem of pain or possibility of injury. It would be unrealistic to contend that a person in so delicate a state should not travel by car; such journeys are commonplace when returning home from hospital or during recuperation. The circumstances which justify exemption in the first place or would determine the duration would be difficult to classify and then define with the precision necessary to spell them out effectively in the law. Moreover, there would be real problems in establishing proof necessary to deal with infringements. As stated before (paragraph 10) it is most desirable for administrative and other reasons to eliminate or reduce to the absolute minimum the need to provide for individual exemption documents. This is especially so on the ground of post-operative conditions since exemptions would usually have a short duration and be the subject of application at short notice.

(b) A solution which would minimise the problem of defining in the law the relevant medical conditions and deciding the duration of the exemption appropriate to each, avoid the need for individual exemption certificates and, at the same time, provide a deterrent to abuse would be to incorporate in the proposed new Regulation a general provision to confer exemption on any person who produces to a member of the Police Force a certificate from a doctor that the wearing of a seat belt, for a period specified by the doctor, is inadvisable on medical grounds. This principle of individual exemption on medical grounds

on production of a medical certificate has been carried through into later paragraphs (17, 18 and 19) about other types of psychological or physiological conditions.

17. Pregnant Women (a) Scientific evidence on this aspect is limited. There is some evidence that intra-uterine death may occur in the later stages of pregnancy when women who are wearing seat belts are involved in collisions as occupants of cars. Some experimental evidence indicates that death of the unborn child in these circumstances results from the effect on it of very rapid deceleration and not from force applied to the abdomen by the seat belt. The evidence also indicates that if an impact is of sufficient force to kill an unborn child the collision would be of such severity that the mother would probably be killed *unless* she was wearing a seat belt.

(b) It is thus incorrect to assert that a pregnant woman who wears a seat belt will actually cause the death of her unborn child if a crash occurs.

(c) Nevertheless, the possibility will remain that, given the appropriate stage of pregnancy and an impact of adequate force, a mother wearing a seat belt in a crash will survive while the baby will die. It is easy to imagine the deep psychological distress and guilt feelings of a woman who, in such circumstances, feels responsible for the death of the unborn child.

(d) The answer is that the facts indicate that a woman who wears a seat belt and survives while her baby dies does not sacrifice her unborn child's life in order to survive herself. *She simply avoids the futile sacrifice of her own life as well.* Furthermore, by wearing a seat belt she may contribute to the baby's future well-being by preventing her own death or minimising her own injuries. Moreover, it is inherent in the concept of State compulsion to wear seat belts that the decision by a person whether or not to protect himself against death or serious injury has been taken out of his own hands. While it has been proposed that this principle be departed from in the cases of elderly passengers (paragraph 15) such a departure is not thought to be justifiable here if only on the further ground that many pregnant women will already have other children dependant on them.

(e) In all probability, public acceptance of a requirement that pregnant women wear seat belts will depend to a very great extent on convincing all concerned that the available evidence shows that, for the foregoing reasons, such a provision is in the best interests of the mother and the unborn child. The necessity for effective public education (as proposed in paragraphs 43 - 48) is important to the subject as a whole but is particularly so with respect to pregnancy.

(f) On the basis of the foregoing it is proposed that pregnancy itself - but not complications arising from pregnancy in respect to which a doctor has given a certificate as provided for in paragraph 16 (b) - will not be prescribed in the Regulation as conferring a general exemption. A provision proposed later (paragraph 19) whereby persons would not be compelled to wear belts if they can demonstrate to the Police that it is impracticable to do so because of problems arising from, inter alia, their size would meet the situation of the woman in the later stages of pregnancy for whom the length of her seat belt is insufficient.

(g) Whilst it has had no influence on arriving at the foregoing it is reasonable to state that a general exemption for pregnant women would be open to extensive evasion and abuse, even if the Regulation were written so as to provide that the exemption applied only towards the end of the term.

18. Fears of being "restrained". Deep-seated horror of particular experiences - the genuine "phobias" of various kinds - are quite irrational, and modifying them is a long process which is often only partially successful. Exemption on this ground could be obtained in individual cases per medium of the medical certificate procedure described in paragraph 16 (b).

19. Dwarfs and persons who are deformed, grossly obese, exceptionally tall or have other permanent physical characteristics which are obstacles to wearing a belt. The common feature of this category is that the characteristics are permanent variations from "normal" anatomy. The variations themselves cover a wide range in nature and degree. It is thought that rather than call up a requirement for a medical certificate as is proposed (with respect to post-surgery conditions, for example) where consultation with a doctor would no doubt be taking place for the purposes of treatment, the proposed Regulation could allow a general exemption applicable to any person (whether driver or passenger) who can demonstrate to a member of the Police Force that his size, build, deformity or other physical characteristic makes it impracticable for him to wear a seat belt.

20. Appendix "A" hereto summarises the effect of the proposals set out in the foregoing paragraphs 14 to 19 inclusive.

#### QUESTION OF EXEMPTING PERSONS IN PARTICULAR OCCUPATIONS INVOLVING VEHICLE USE

21. The contention to be examined here is that persons who use vehicles that are or can be equipped with satisfactory seat belts would be subjected to quite unreasonable inconvenience if compelled either to put a belt on and take

it off very frequently (because the nature of their work requires them to stop, enter and leave their vehicles at very frequent intervals) or to alter their methods to reduce the frequency of stops.

22. The instances most frequently cited are of milk-men and bread-carters but other examples in the broad category of callers from door-to-door can be readily envisaged - garbage collectors, dry-cleaners' collection and delivery agents, insurance representatives, collectors of disused goods for charities and a whole range of canvassers.

23. In essence, the nature of the situation of these people, and numerous others also (like doctors making home calls, servicemen attending to household appliances, van salesmen and so on) is the same. The only difference is the *degree* of inconvenience, with the milk-man, perhaps, experiencing the most.

24. It follows that *if any exemptions at all are to be allowed on this ground* (the principle of spelling them out in the Regulations wherever possible rather than issuing individual exemption certificates being adhered to) the problem is to select the point at which the undeniable inconvenience of repeatedly doing-up and undoing the seat belt passes from unreasonable to reasonable.

25. (a) Any such determination will be entirely subjective. Even so, the circumstances surrounding each occupation will differ so widely in nature or degree that it will be impracticable to find a single criterion by which to determine a line of demarcation even subjectively.

(b) Milk-men, for example, can submit that their delivery rounds involve stops every two or three hundred feet, and that they cannot increase the distance because their goods are too heavy to carry any distance. However this does not hold good of milk-men whose runs service predominantly flats and home units, particularly multi-storey blocks. In these cases the milk-man may return to his vehicle only every 15 or 20 minutes. Some use hand-carts to increase the number of customers they serve per stop. Garbage collectors can submit that only one of the crew (the driver) sits in the vehicle whilst the collectors are usually moving back and forth between the lorry and the kerbside, riding on the vehicle (and then usually in a standing position on a step or running board) only when the vehicle travels between groups of houses. Collectors of cast-off clothing or waste paper for charities can assert that they call at every (or almost every) house in a street and can soon build up too bulky a load to carry more than a short distance. The result is that they have to keep their vehicle nearby or drive slowly along the street stopping at "stockpiles". In either event, frequent stops and movements into and out of the vehicle are necessary. Parking station attendants can contend that taking cars to and from positions on public

streets for clients involves very short distances and that clients will complain at delays caused by use of seat belts by the attendants.

26. It is submitted that, having accepted the principle that use of a protective measure - the seat belt - must be made compulsory for the overall benefit of the community, a Government must accept that persons will be inconvenienced, to a greater or lesser degree depending on the circumstances, in attaining that objective. In the long term, inconvenience can be significantly reduced only by improvements in the design of restraint systems. It is probably over-optimistic to expect a material advance while these systems are of the seat belt type but possibilities for bringing about improvements in design are mentioned in paragraphs 43 and 44.

27. The available options are therefore -

- (a) to provide for individual exemption documents obtainable only on application supported by adequate facts;
- (b) to make no concession at all;
- (c) to find some criterion common to all "stop and start" occupations involving the use of motor vehicles which would not seriously detract from the 100% wearing rate which is the aim of a policy of compulsion.

28. For many obvious reasons, option (a) is most undesirable. The second possibility (while consistent with the fundamental principle that compulsion is necessary and methods must be adapted to fit in with it) seems unreasonable if a compromise can be devised which will achieve most, if not all, of what complete compliance with a no-concessions rule would.

29. The best possibility lies in the fact that vehicles used by persons at the maximum end of any "inconvenience" scale that could be applied to occupations under discussion stop very frequently and, therefore, travel at low speeds and for fairly short distances between stops. A criterion based on low speed or short distance is open to objections even from a safety viewpoint. A seat belt can reduce the chance of death or serious injury in a single-vehicle crash even at a low speed, and this protection is more necessary where a slow-moving vehicle is struck by one moving more quickly - at an intersection, for example.

30. Nevertheless, it has been concluded that a criterion based on speed or distance or both provides the best solution available, and it is thought that the proposed new Regulation should provide that any person whose work necessitates him entering and leaving his vehicle at frequent intervals should be exempted whenever he is actually performing such work *and* his vehicle

is travelling at less than 15 m.p.h. Objection to this could possibly be raised on the score of enforcement but any such objection would not be an adequate one since it could apply only in borderline situations. Of particular value is that an explicit speed effectively dispels any mistaken idea that people in particular occupations are exempt *at all times*.

31. It is not thought that to allow exemption for milk-men and other door-to-door callers travelling at less than 15 m.p.h. would automatically make a case to exempt all motorists travelling in that speed range. The answer is that, if adopted to meet the special situation of door-to-door callers during a particular phase of their work, a speed criterion was selected because no other workable line of demarcation could be devised.

#### REVERSING

32. It is generally agreed that it is difficult with many vehicles to drive safely in reverse gear whilst wearing a belt. This often arises when parking or reversing out of a driveway onto a public street. A similar speed criterion (15 m.p.h.) is probably adequate in the abstract but seems incongruous from a practical point of view. It is suggested that the proposed new Regulation cover the situation by an exemption applicable to all driving in reverse gear.

33. Appendix "B" hereto summarises exemptions based on the foregoing paragraphs 21 to 32 inclusive.

#### CLASSES OF VEHICLES TO BE SUBJECT TO THE PROPOSED NEW REGULATION

34. General Complexities. The proposal for compulsory *wearing* of seat belts results in entry into extensive areas of completely unexplored territory with respect to the compulsory *fitting* of belts as the obvious pre-requisite. That new and complex questions are thus produced is confirmed by the fact that Federal bodies (whose work it is to formulate standards for the design of vehicles and their equipment) have spent a good deal of time selecting vehicles to be compulsorily fitted with seat belts as original equipment and, in this context, have so far been able to deal only with the less complex cases of passenger cars and their derivatives.

35. Trailers. Exclusion of vehicles which are not self-propelled such as box, boat or special-purpose trailers, caravans and the trailer portions of articulated vehicles is self-evident. This is mentioned mainly for the sake of completeness but also to point up the fact that some rarer types of more specialised vehicles which are *not* self-propelled do have seating accommodation



for one or more operators. Illustrations are certain pavement-laying or line-making machines used in road maintenance. The question is whether such machines can or should be equipped with seat belts and the persons thereon required to wear them at all times. These vehicles and other items of plant are discussed in paragraph 38(b). A matter that needs to be kept in mind in respect to trailers (from the viewpoint of legal drafting) is that holiday and other caravans have seats but their use while the vehicle is moving is illegal in New South Wales. Consequently provision of belts in these vehicles does not arise.

36. Simplified grouping possible. Despite the enormous variety of motor vehicle types that remains after trailers are excluded (and it may be noted that the coding system for the registration records of the Department of Motor Transport provides for over 400) they can be grouped, for seat belt purposes, into categories as follows -

- (i) passenger cars, station waggons and other passenger-car derivatives, that is utilities and panel vans with a driver's compartment and seating accommodation substantially the same as in a sedan;
- (ii) motor cycles;
- (iii) lorries other than panel vans and utilities as in (i). In this connection it needs to be noted that the wide range of lorry types is not accounted for solely by differences in the goods-carrying areas. There are many variations in cabin construction and layout which are important in the context of seat belts;
- (iv) ambulances;
- (v) buses;
- (vi) tractors, implements and "plant" such as mobile cranes, fork lift trucks, road rollers, road graders, bulldozers and agricultural machinery like harvesters and so on.

37. General approach to exempting particular vehicles. Whether or not particular vehicles should be fitted with seat belts depends mainly on engineering considerations, coupled with knowledge of what happens to the human body during crashes in these vehicles. It is proposed that passenger seats in omnibuses, for instance, be at present exempt for two main reasons: first, because the construction of most buses does not allow for the satisfactory mounting of seat belts (in particular, the sash portion); and, second, because it has been found that when the only protection provided is a lap belt in a forward-facing seat, a passenger's face, head, neck and upper torso are susceptible to severe injury on impact

against the back of the seat in front of him. These injuries are likely to be more severe than if the whole body is unrestrained. Plant, implements and tractors are normally propelled at slow speeds, and moreover, their operators may require a degree of mobility which is not permitted by the use of a seat belt. Manufacturers of seat belts must be expected to rise to the challenge presented by unusual vehicles or special design requirements. Nevertheless, instances will arise in which it is simply not feasible to fit a seat belt to a given vehicle (one which is not in a category covered by a provision for general exemption), and the Commissioner will need authority to grant exemption in these particular cases.

38. Specific Proposals. (a) Appendix "C" sets out proposed requirements as to the fitting of belts to various categories of vehicles as itemised in paragraph 36.

(b) This Appendix indicates also those vehicles already on the road in New South Wales with respect to which the *existing* law already prescribes compulsory fitting of belts. One point of significance of this information is that it affects the time seat belt manufacturers and suppliers need to complete retro-fitting. The other is that the proposed new Regulation can introduce *immediate* compulsory wearing in the substantial number of vehicles to which compulsory fitting applies now or will very shortly. These comprise all cars and car derivatives (which broadly means station waggon, panel vans and utilities) first registered since 1st January, 1969, (in regard to front seats) or to be first registered on or after 1st January, 1971, (in regard to rear seats).

39. Vehicles Voluntarily Fitted with Belts. (a) A second class of vehicle already fitted with belts exists. These are vehicles to which owners (or makers) have *voluntarily* fitted belts. Mainly, these are numerous cars and station waggon plus smaller numbers of panel vans and utilities first registered before 1st January, 1969. There may also be some post-January 1969 lorries other than car derivatives fitted with belts voluntarily.

(b) Belts and anchorages in pre-January 1969 vehicles may or may not comply with Australian Standard E35 which is the standard of legal acceptability for belts in N.S.W. Despite this, there is no sufficient *technical* reason for omitting from the proposed new law about compulsory wearing a provision to require the wearing of belts fitted voluntarily.

(c) Compulsion to wear belts fitted voluntarily would bring about a further *immediate* increase in the overall wearing rate and would not weaken proposals for retro-fitting pre-1969 vehicles with "approved" belts - the argument being that a belt other than an "approved" belt (assuming it to be less effective than an "approved" belt) affords at least some protection until a more effective belt is installed pursuant to the retrofit provision of the new Regulation. The argument that compulsion as to wearing is unnecessary if belts have been fitted voluntarily has little strength. The vehicle may have changed hands after installation of the belts. Observations show that many such belts are not worn in practice.

#### CONCLUSIONS

40. On the basis of the foregoing it is considered that effect can be given to a decision by the Government to legislate for the universal compulsory wearing (and, where not so far provided for in existing law, compulsory fitting) of seat belts subject to the exclusions or limitations spelt out in -

- (a) Appendix "A" which sets out exemptions thought to be reasonable on what may broadly be termed medical grounds.
- (b) Appendix "B" which summarises exemptions thought to be justified by, first, the circumstances surrounding work which requires persons (usually drivers) to enter and alight from vehicles very frequently and, secondly, the common difficulty of reversing while wearing a belt.
- (c) Appendix "C" which -
  - (i) specifies the types of belts proposed to be prescribed as compulsory equipment for particular types of vehicles, and the dates by which such belts would have to be fitted; and
  - (ii) indicates by notes the reasons for proposing the general exemptions specified therein.

#### ADDITIONAL OBSERVATIONS

41. The foregoing paragraphs 1 - 40 and the supporting Appendices are thought to meet the requirement by the Cabinet Standing Committee to be presented with a statement of ways and means for giving effect to a decision for the universal compulsory fitting and wearing of seat belts.

42. However, it is considered appropriate to offer additional observations on the subject of measures aimed at contributing significantly to public acceptance of the new law by individuals as distinct from the general community, and thereby producing a high level of *voluntary* compliance with the law.

43. These measures boil down to, first, the urgent need to convince individuals of the necessity to wear seat belts and, second, to bring about elimination by manufacturers of as many as possible of the characteristics of present-day belts which irritate or inconvenience people to the point that they cannot be bothered wearing them. Any reluctance by makers to improve belts because compulsion will guarantee an expanded market should be diminished by continuance of consultation with industry which is already normal practice, and may be further offset by competition between makers for a larger share of sales. As a last resort belts which are not improved to incorporate advances as quickly as is reasonable can cease to be "approved" belts for the purposes of the relevant Regulations.

44. The facts on which to base campaigns with these aims are available from the special study of public attitudes to seat belts carried out as a research project of the Traffic Accident Research Unit. As stated earlier this work is almost ready for presentation but, for obvious reasons, as a research report rather than a ready-made public relations campaign directed to motorists and seat belt manufacturers.

45. There are a number of deeply-felt misconceptions about the use of seat belts which will require countering. For instance, a great many people fear being trapped by the belt within a burning car. For one thing, fire after a car crash is a rare event; for another, the risk of entrapment and subsequent incineration inside a burning car is directly related to the degree of injury suffered by the occupants, and thus their own capacity to make a speedy escape from the vehicle. The chance of injury, and the related risk of entrapment through incapacity or unconsciousness, is far lower if a seat belt is worn. Similar arguments can be employed to answer those who fear drowning through entrapment in a seat belt; these accidents are very rare, and the chance of level-headed and quick escape is higher if a seat belt has been worn and injury thereby minimised. Rescue attempts will not be hampered because, even if the occupant is unconscious, he will be upright in his seat and thus easily accessible.

46. Although a substantial initial impact will be needed such an educative campaign will be a continuing requirement and perhaps should be integrated with the "staging" approach to compulsory wearing proposed in this paper. Consequently, design and complete preparation of a public relations campaign is not a pre-requisite to gazettal of the new Regulation based on the conclusions herein.

47. If it is accepted by the Cabinet Standing Committee that stepped-up action to educate users and makers of seat belts is necessary to support a decision by the Government to introduce universal compulsory wearing of seat belts, preparation of the outline for such a campaign can be undertaken as a matter of urgency. It does not follow that the educative value of the research referred to should be availed of only if compulsory wearing is adopted. It is equally germane to voluntary wearing and its use by the Government in that context would be advocated in any event.

48. In case it might be thought that such a campaign might merely duplicate campaigns previously conducted it needs to be stressed that the study mentioned in paragraph 44 has identified the specific objections of particular groups in the community and a campaign aimed directly at those problem areas (and therefore much less costly) is what is envisaged.

## APPENDIX "A"

Proposed exemptions related to personal factors (such as age or illness and other medical conditions).

NOTE: No exemptions are proposed on personal grounds except as provided for in this Appendix. See Appendix "B" re exemptions related to particular occupations and driving manoeuvres and Appendix "C" re conditions applicable to vehicles.

Class of Person	Proposal	Precis of Reason
1. Child	<p>Complete exemption for child who has not attained six years of age.</p> <p>NOTE: Over that age must wear either adult belt (or approved child restraint when available).</p>	No suitable restraint system currently available for child up to this age.
2. Adult over 70	<p>Complete exemption as <u>passenger</u>.</p> <p>NOTE: No exemption (on ground of age only) as <u>driver</u>.</p>	<p>If averse to wearing belt or unable to manage one, likely to have less flexible attitude than younger person and may be denied pleasure or convenience of car trips as result. (Re driver: if sufficiently fit and alert to drive has no case for exemption on ground of senility etc.)</p>
3. Pregnant woman	<p>No general exemption but see Items 4(a) and (b) re individual exemption on production of medical certificate or demonstrating to Policeman inability to wear seat belt.</p>	<p>Fears of miscarriage resulting from belt pressure unfounded. Evidence is that intra-uterine deaths in crashes result from effects of <u>deceleration</u> and not pressure of belt.</p>
4. Person unable to wear belt because of recent surgery; bone fracture; deformity; unusual build or size; or other "medical" condition	<p>Individually exempted by -</p> <p>(a) production to policeman of medical certificate from a doctor; or</p> <p>(b) demonstrating to policeman that -</p> <p>(i) as passenger, unable to wear belt properly</p> <p>(ii) as driver, unable to drive vehicle safely while wearing belt because of build, size etc.</p>	<p>Exemption under (a) would apply to persons who, in the opinion of a doctor, are unable to wear a belt because of some transient or permanent condition - recovering from surgery to torso or fracture of collarbone; genuine horror of being restrained; complication associated with pregnancy etc.</p> <p>Exemption under (b) does away with need for medical certificates for persons clearly unable to wear a belt and drive safely because of build or size (dwarfs; exceptionally obese or tall persons; women in later stages of pregnancy, etc.)</p>



# APPENDIX "C"

## Summary of requirements, fitment of seat belts to motor vehicles.

NOTES: (1) Seating position defined as in Australian Design Rules for Motor Vehicle Safety (paragraph 5.2.1 of Rule 5A).

(2) Each seat belt shall comply with relevant provisions of Australian Design Rule 4 except that an overseas national standard specification equivalent to AS E35 (the prevailing Australian standard for seat belts) shall be accepted.

Each seat belt anchorage provided for each seat belt shall comply with relevant provisions of Australian Design Rule 5.

The term "lap/sash" includes "full-harness" belts.

Type of Vehicle	Seat Position	Effective Date	Type of Seat Belt	Notes
A. PASSENGER CARS AND PASSENGER CAR DERIVATIVES				
(i) First registered 1.1.69 or later	Front	1 January 1971	Lap/sash adjacent to side wall, lap or lap/sash otherwise	Vehicles in this category include sedans, open cars, station wagons, panel vans and light utilities.
(ii) First registered 1.1.71 or later	Rear	1 January 1971	Lap/sash adjacent to side wall, lap or lap/sash otherwise	
(iii) First registered 1.1.65 or later	(a) Front	1 July 1971	Lap/sash adjacent to side wall, lap or lap/sash otherwise	The New South Wales law has contained provisions to this effect since immediately prior to 1.1.69.
	(b) Rear	1 January 1972	Lap or lap/sash	
(iv) First registered 1.1.60 or later	(a) Front	1 January 1972	Lap/sash adjacent to side wall, lap or lap/sash otherwise	Separate dates permit retro-fitting to be done in two stages, if desired.
	(b) Rear	1 July 1972	Lap or lap/sash	
(v) Remainder	Front and rear	1 January 1973	Lap or lap/sash	Separate dates permit retro-fitting to be done in two stages, if desired.

Lap belt acceptable in front seat because of special fitting problems in some older cars.

Completes installation of belts in all vehicles to which compulsory fitting will apply.



## Appendix "C" (con't)

Type of Vehicle	Seat Position	Effective Date	Type of Seat Belt	Notes
<b>B. MOTOR CYCLES</b>				
(i) Solo		Exempt		
(ii) Passenger-carrying sidecar	Sidecar	1 January 1972	Lap or lap/sash.	
<b>C. GOODS-CARRYING COMMERCIAL VEHICLES (other than those in category A) and AMBULANCES</b>				
	According to schedule for category A where applicable; applies only to seats within permanently enclosed cabin	According to schedule for category A	Lap or lap/sash.	Lap belts acceptable in lorries because of - (a) lack of suitable position for upper anchorage of sash portion in some cases; (b) sash unduly restricts movement necessary for driving e.g. when steering.
<b>D. OMNIBUSES</b>				
	Driver only	According to schedule for category A	Lap or lap/sash.	(a) Lap belt acceptable for driver for same reasons as for lorries - see previous item. (b) Belts not prescribed for passenger seats because at present no suitable anchorages in most vehicles.
<b>E. IMPLEMENTS, PLANT, TRACTORS</b>				
		Exempt		(a) Special difficulties with anchorages. (b) Belts may impair mobility of operators.

