ESV 2003 GOVERNMENT OF CANADA STATUS REPORT

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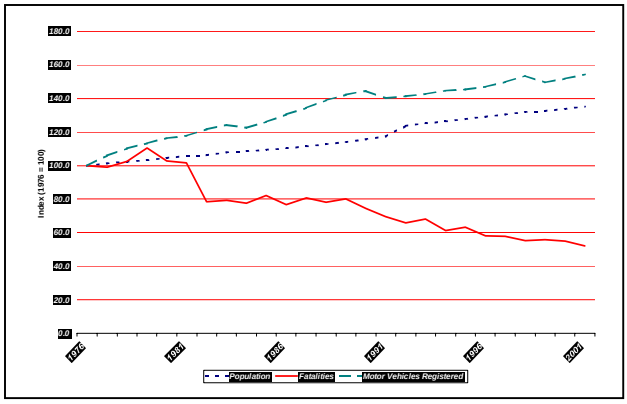
CANADIAN ROAD SAFETY SITUATION

In Canada, road safety is a responsibility that is shared among the federal and provincial/territorial governments. The federal government is primarily responsible for the safety of new vehicles and inter-provincial commercial carriers, while the provincial/territorial governments have jurisdiction over the operation and maintenance of motor vehicles, road infrastructure and the development and implementation of road safety programs.

Like many other developed countries, Canada's road safety record improved greatly during the past quarter century. During this period, fatalities resulting from motor vehicle traffic collisions decreased by almost 50%, while its population not only grew by approximately 35% but also became more mobile, as motor vehicle registrations grew by more than 50%.



Canada's Road Safety Vision 2010

Canada's national road safety plan has been in place since 1996. This initiative was launched in 1996 to address Canada's major road safety problems, with the view that a more focused approach to the development and implementation of safety initiatives would be the most successful strategy to make road travel in Canada safer. Called Road Safety Vision 2001 when it was first introduced, this national plan is supported by all levels of government as well as national public and private sector stakeholders with a strong interest in road safety. The goal of the vision is that Canada would have the safest roads in the world. The strategic objectives of this ambitious initiative are to raise awareness of road safety issues among the general public, to improve communication, cooperation and collaboration among road safety among road safety agencies, to enhance enforcement initiatives and to improve national data quality and collection practices.

The introduction of a broad range of initiatives during the 1996-2001 period, to support this national plan, has proven successful. Since 1996, traffic fatalities have decreased by 10%, serious injuries by 16% and the fatality rate as measured on deaths per registered vehicle basis by 15%.

In 2002, Road Safety Vision 2010 superseded Canada's inaugural national road safety plan. The successor plan retained the vision and strategic objectives of Road Safety Vision 2001, and also incorporated a national target for fatality and serious injury reductions (-30%) as well as several sub-targets aimed at curtailing the most serious collision-causing behaviors. In order to achieve the quantitative targets of the renewed vision, initiatives have been introduced that focus on increasing seat belt and proper child restraint use, and on reducing serious casualties involving drinking drivers; high-risk road users, young drivers, vulnerable road users, commercial vehicles, speed and intersections as well as rural roadways.

Canada currently ranks 5th among Organisation for Economic Cooperation and Development member countries when comparisons are made on a deaths per vehicle kilometre travelled basis (2001 figures).

COLLISION DATA

A programme of in-depth collision investigations is carried out by seven contracted research teams, based in universities across Canada, and by Transport Canada staff located in the National Capital Region. The work supports the Directorate's research and regulatory development programmes, actively monitors high-profile traffic safety incidents across Canada, and provides a mechanism for rapid response to such incidents.

Current activities comprise directed studies focused on several safety issues, and a programme of special collision investigations which captures incidents of interest which fall outside of the criteria for particular directed studies. On-going directed studies are investigations of air bag deployment crashes, moderately severe side impacts, and children in crashes. Special collision investigation topics include

school bus and motor coach crashes, advanced air bag systems, side air bag deployments, air bag or seat belt induced fatal and serious injuries, collisions involving event data recorders, heavy truck underrides, and collisions testing the crashworthiness of child restraints.

One example of the benefits derived from the collision investigation programme is the change in the design and consequent collision performance of air bag systems in North America that have been seen over the past few years. Results from our detailed field data on air bag deployment collisions, in combination with information developed from an extensive in-house crash testing programme, have provided the impetus for depowering of air bag systems in North America to better optimize these supplemental restraint systems for belted occupants. These data have also supported the development of new crash testing procedures for incorporation into frontal occupant crash protection regulations, have assisted in the development of a national air bag deactivation programme, and have provided input into safety brochures and videotape presentations to enhance efforts to inform the public on means to minimize the risk of injury in air bag deployment crashes.

Transport Canada and four Canadian university-based collision investigation teams undertook a Pre-Crash Factors Pilot Study that spanned 18 months. The study involved the in-depth collision investigation, the collection of information on various vehicle systems, and comprehensive driver interviews. The objective of the Pilot Study is to develop and evaluate methods to investigate human, environmental and vehicle pre-crash factors in collisions and to assess whether various crash avoidance systems can prevent or reduce the severity of collisions. A total of 68 collisions were investigated and the analysis of the data collected is on-going. The department plans to publish the results of this pilot study as they become available.

Electronic Traffic Related Data Collection

In partnership with selected provincial governments and police agencies, Transport Canada is conducting a demonstration project of a computer and communications-based system called the Traffic and Criminal Software System (TRaCs). This software is designed for multi-jurisdictional use and was built in modules allowing for great flexibility. It has many potential uses including the automated on-site collection of all traffic collision data, ticketing and commercial vehicle inspection. The demonstration is designed to verify the flexibility of the software and its application within several police operated record management systems and computer assisted dispatch systems. The demonstration is intended to project provide a national focus for the development of uniform automated data collection performance standards. A successful demonstration project would result in improved efficiency, quality and timeliness of traffic collision data collection and would facilitate data interchange to develop national road safety programs.

RESEARCH ACTIVITIES IN ITS

Several recent activities in this program are noteworthy. Transport Canada completed a study investigating the impact of cognitive distraction on driver behaviour. Drivers drove on a city road while they carried out tasks (arithmetic problems) of varying cognitive complexity. A hands-free cell phone was used so that the drivers did not have to look away from the road or manually operate the phone. Visual scanning patterns were recorded using eye-tracking equipment and measures of vehicle control (braking) were recorded using instrumentation installed in the research vehicle. Significant changes in drivers' visual behaviour were observed as a result of cognitive distraction. Analyses revealed that while performing the demanding tasks drivers spent more of their time looking straight ahead. Less time was spent looking at the periphery and checking instruments and mirrors. Some drivers did not look at these areas at all when performing the demanding cognitive tasks. The data also indicated an increase in the incidence of hard braking associated with the demanding tasks, suggesting diminished safety margins. The results of this study indicate that even when in-vehicle devices are hands-free, significant changes in driver visual behaviour and vehicle control may result due to the cognitive distraction associated with their use. This study contributes to a better understanding of the ways in which drivers interact with new technologies in vehicles and the safety implications of those interactions.

Another study was conducted on our test-track to assess the impact of Adaptive Cruise Control (ACC) on driver behaviour. ACC is an enhanced version of conventional cruise control that allows drivers to follow a lead vehicle at a set distance. Results from this study suggest ACC can induce behavioural adaptation in potentially safety critical ways. Significant delays in response to a hazard detection task were observed when driving with the ACC

system engaged, yet driver performance on an in-vehicle display search task improved.

Fig. 1 Lead vehicle with polyurethane mock-up trailer used in research where driver must follow a lead vehicle.

Drivers can access many types of information (e.g., email, traffic information) from a variety of sources (e.g., cell phone, PDAs) while they drive. Speech-based interfaces are being developed for in-vehicle systems in response to concerns about the distraction that results from the use of visual/manual interfaces. In a joint research project with the National Highway Traffic Safety Administration (NHTSA), Transport Canada investigated the impact of interface type on driver visual behaviour and driving performance. Use of the manual interface was associated with long glance durations, on average, away from the road to the interior of the vehicle. Drivers using the speech-based system performed better on event detection, consistent with more heads-up time. There were, however, dangerously long off-road glances associated with both types of interface and driving performance deteriorated when any sort of in-vehicle task was carried out. The conclusions of the study indicated that although there may be some benefits associated with speech-based interfaces, there were safety concerns associated with both types of interface.

Telematics devices are becoming increasingly popular in vehicles and their functionality is expanding. While these technologies have great potential to assist drivers, lack of consideration of the human factors in design can lead to impaired driving performance and increased risk of collision. Transport Canada is concerned with the potential adverse consequences of in-vehicle telematics and is exploring intervention strategies for limiting the potential risk of crashes associated with their use. Transport Canada will be consulting with industry on their own efforts to deal with this problem and invite the industry and public to comment on these issues and provide feedback on alternative approaches for reducing driver distraction.

CRASHWORTHINESS RESEARCH

Frontal Crash protection

Transport Canada continues to monitor the crash performance of advanced airbag systems for mid-sized male and small female occupants in full frontal rigid barrier (FFRB) tests as well as for small females in offset deformable (OFDB) tests. In the spring of 2001, multi-point sensing in the thorax of the small female was introduced. Four IRTRACC sensors positioned in the upper and lower left and right quadrants of the chest now supplement the standard rotary potentiometer at the sternum to provide a more complete measure of chest deflection. These data together with the belt load measures allow for a better characterization of the loading mechanism that occur during combined loading from the seatbelt and the airbag. Multi-point sensing for the Hybrid III male ATD will begin in the spring of 2003.

The frontal crash protection research programme has been expanded to include rear seat occupants in FFRB tests conducted at 48 km/h and 56 km/h. The effectiveness of three-point belts installed in the centre rear seating position of late model vehicles are being evaluated with the Hybrid III male and THOR the new advanced frontal male dummy developed by the NHTSA. In January 2003, Transport Canada, in cooperation with the NHTSA, initiated a research programme to evaluate forward facing child restraints and booster seats in FFRB crash tests. The programme will examine the influence of child seat harness configurations; LATCH and tether anchorages; booster seat tether anchorages and the effect of seating position in the vehicle on ATD injury responses. The Hybrid III 3-year old, 6-year-old and the new Hybrid III 10-year-old child dummies are included in the programme.

Side Impact Crash Protection

The side impact crash protection programme has continued to evolve and contribute to a continuously increasing database of barrier-to-car and car-to-car tests. Since June 1999, Transport Canada has conducted approximately 23 barrier-to-car tests with the new IIHS side impact barrier, developed by the Insurance Institute for Highway Safety; 25 SUV-to-car crash tests; and 9 car-to-car collisions, in addition to a number of tests conducted with the existing FMVSS/CMVSS 214 barrier, EEVC barrier or modifications thereof. The SIDIIs, has been the dummy of choice for the driver and rear occupant positions. Accident data from Canada, the US,

Europe and other regions have shown that females tend to be over represented in intersection crashes involving serious injury. The SIDIIS is a side impact ATD, representative of a small female or teenager and has proven to be sensitive enough to discriminate between armrest configurations while demonstrating good durability in severe test conditions. SIDIIs responses were instrumental in identifying limitations in first generation roof mounted airbag technologies, which as recent tests show, are now being addressed by manufacturers.

Satisfied that the IIHS barrier is an acceptable representation of striking vehicles that cause serious injuries in field, Transport Canada has expanded the side impact programme to begin exploring safety interventions. For example, the effects of lowering the IIHS barrier to engage the bullet vehicle sill and structural reinforcement of the B-pillar in the target vehicle are being investigated.

The monitoring of new side airbag technologies has continued to be an important element of the side impact protection programme. The test experience gained by Transport Canada has contributed to the evaluation and revision of the recommended TWG OOP Procedures, released in August 2000. The new revisions, recently published by the IIHS, are expected to simplify test set up and improve test repeatability.

Dummy Development

Transport Canada, in co-operation with the Occupant Safety Research Partnership (OSRP) and the WorldSID Task Group has been actively participating in dummy evaluation programmes. Biofidelity tests including body drop and pendulum impacts have been completed for the ES-2 and WorldSID prototype and pre-production side impact dummies. Two full-scale barrier-to-car tests were completed to compare in-vehicle performance of the WorldSID and ES-2 dummies.

Improvements in Test Capabilities

In the spring of 2003 Transport Canada plans to acquire a load-sensing barrier. This acquisition will assist Transport Canada in gaining a better understanding of structural changes in emerging vehicle fleets and contribute to IHRA frontal compatibility research efforts.

Achieving or surpassing the targets of Road Safety Vision 2010 would reduce Canada's annual traffic toll to fewer than 2,100 by 2010 and would save more than 5,000 lives during the timeframe of this initiative.

Coach And School Bus Seat Program

A regulatory development and research program is being conducted to determine the effectiveness of different bus occupant protection systems. This activity may lead to the development of standards to increase the safety of those vehicles. Coach and school buses will be studied. Testing will involve 3-point belt equipped coach seats from Europe and Australia and newly developed school bus seats incorporating passive protection and 3-point belts. Large coach windows tend to break during a rollover exposing the passengers to possible ejections. The program will also look at occupant retention through window design and glazing.

The current crash protection for school bus occupants is a passive safety based on closely spaced high backed seats that are designed to absorb energy during a collision. Canada has in place regulations that require rigorous testing of school bus seats for this passive protection. The challenge facing Canada is developing a test that will combine the performance benefits of passive safety with the increased load strength requirements of seatbelt anchorages.

The 3-point belt equipped coach and school bus seats are going to be tested on an acceleration sled and by using static pulls. The sled test will involve various seating configurations with restrained and unrestrained dummies. The static pull testing will be simulating the forces determined during the sled tests.

CRASH AVOIDANCE RESEARCH

Vehicle Systems Database

A vehicle systems database is being assembled for model years 2002 and 2003; this database will contain information on the fitment or availability of equipment (such as night vision or advanced air bag) or systems (such as adaptive cruise control, traction control or yaw stability control) for all passenger cars, multipurpose passenger vehicles and pickup trucks manufactured or imported for sale in Canada. We plan to update this database yearly as new vehicles become available. These data will be combined with collision data to analyze the effectiveness of various technologies in reducing the number or severity of injuries.

Taxonomy and Target Groups

A taxonomy (classification scheme) to characterize and quantify subsets of crashes (or target groups) is now available for calendar years 1993 to 2001. The

project is intended to provide objective first-order estimates for target groups that can then be combined with data on estimated effectiveness, performance, and costs to produce cost-benefit estimates of individual safety measures. Work is currently underway to estimate the size of target groups for various technical countermeasures (such as Night Vision and ACC) as well as identify the type of additional data needed to firm up these estimates.

Speeding by Heavy Freight Vehicle (GVW higher than 8850 kg)

A study based on existing literature and speed data for various highways across Canada was completed to determine the number of heavy commercial vehicles that exceed the speed limit, the number of crashes where their speed was a contributing factor and the quantity of CO2 attributable to speeding. Also, the study reviewed some of the countermeasures available to control vehicle speed.

The speed data show that, although 50% of heavy freight vehicles exceed the speed limit when travelling on rural roads, only 10 to 20% of them exceed the speed limit by more than 10 km/h. In the case of passenger vehicles, the data show that over 60% of them exceed the speed limit, 16 to 50% of them by more than 20 km/h. Speeding by commercial vehicle drivers is a contributing factor in 15 to 35 fatal collisions per year and in 315 to 455 injury-producing collisions per year.

The study estimates that reducing vehicle speed to the posted speed limit would save some 1.2 billion litres of fuel annually (all vehicle types), this being split almost equally between passenger vehicles and heavy freight vehicles. This would reduce the production of greenhouse gases by an estimated 3.1 megatonnes annually.

Rollover (Light-Duty Vehicles)

A study to estimate the number of collisions where a light-duty vehicle (GVW lower than 4536 kg) rolled over was completed; the study showed that there are approximately 25,000 such collisions per year and that these result in the death of approximately 500 persons and in bodily injury to another 15,000 to 17,000 persons per year. The data also show that light trucks and vans (a vehicle category which includes pickup trucks, passenger and cargo vans, and sport-utility vehicles) roll over more frequently than automobiles. About 80% of these collisions are single-vehicle collisions.

An analysis of the contributing factors was performed for fatal, single-vehicle, rollover collisions. This analysis showed that alcohol consumption, speeding and slippery roads are more often reported as contributing factors in rollover collisions than in collisions not involving a rollover. The analysis also showed that, in the case of light truck and vans, road defect and/or construction was a contributing factor more often in collisions involving rollover than in collisions without rollover.

The department plans to review more recent collision data that are now available to determine trends and to attempt to segregate the light truck and vans category into its individual components. At the same time, a project is being undertaken to test vehicles with advanced yaw control systems to gather information on the effectiveness of these systems in preventing vehicle loss of control, which can lead to rollovers.

Rollover (Heavy Freight Vehicles)

A study was initiated to gather data on the rollover propensity of heavy vehicles; tanker and flatbed trailers are of particular interest. A tilt-table is used to measure the angle at which the vehicle would have rolled over

The purpose of the study is to gather some basic data on vehicle characteristics as it pertains to rollover; this data could form the basis for regulatory actions in the future.

Light-Duty Vehicle ABS

Testing of the ABS on various vehicle models continues; a total of 14 vehicles have now been tested. Vehicles range in size from a compact passenger vehicle to pickup truck and includes models available in the North American market as well as some European and Japanese models currently not available in North America.

Testing in the winter showed that, on loose snow, the braking distance is increased by 30% with summer tires and 61% with winter tires when ABS is present

compared to the braking distance when ABS is not present. On packed snow, ABS increased the braking distance by 44% with summer tires and 47% with winter tires. On gravel roads and on paved roads covered with sand, ABS increased the braking distance by 35%.

Transport Canada plans to continue testing new vehicle models as they become available. These data will help determine whether the performance of ABS should be subject of a regulation.

New Technology Evaluation

Studies were performed on an OEM Adaptive Cruise Control (ACC) system using a laser radar under various weather conditions. Although the system appeared to function well most of the time, we noted that the shape of the preceding vehicle tended to affect the performance of the ACC. The ACC had difficulty detecting dirty vehicles, the dirt apparently weakening the reflected laser radar signal. Inclement weather, such as rain or snow, also affected the performance of the ACC.

The evaluation of low-speed, obstacle detection system (such as parking assistance systems) continued. OEM and after-market products were evaluated in laboratory-like conditions and in actual use. False positives continue to be an issue, the systems sometimes detecting snow on the road as a potential obstacle.

We plan to continue the evaluation of these systems as they become available, both in laboratory and in actual use conditions, under various weather conditions and traffic patterns.

School Bus Crash Avoidance Study Initiatives

In an effort to minimize the threat to the safety of children when vehicles illegally pass stopped school buses, various pre-stop warning light systems have been evaluated. The school bus driver activates the pre-stop warning lights about 100 metres before stopping to load or disembark passengers. The study showed that the 8-light system (one red and one yellow light mounted at each corner of the roof of the bus, both in the front and the rear) performed better than the 4 red lights in providing this warning. The results of the study will be presented to the Canadian National School Bus committee with a recommendation that 8-light system be made standard across Canada.

A survey of Canadian local school authorities, bus fleet operators and US state directors of pupil transportation was completed to document the in-service experience with pedestrian protection systems on school buses. This survey is now complete and a report will be released shortly. The survey found the crossing control arm to be the most popular system and is installed on approximately half of the North American school bus fleet. The survey also found that electronic and intelligent devices such as sensors or cameras are not widely used.

Finally, an advanced pedestrian detection system evaluation project has been defined and will be carried-out over the next 18 months. A group of experts will validate an evaluation grid previously developed. Using the grid, the two most promising detection systems will be subjected to laboratory-type tests and, if successful, be deployed in the field for further testing.

REGULATORY INITIATIVES
CMVSS 208

While most air bag deployments protect occupants from serious injury in frontal impacts, some cause major, even fatal, injuries. Particularly at risk are short-statured drivers who sit near the steering wheel and front seat passengers who are close to the air bag module at the time of deployment. In Canada, there have been 10 confirmed air bag-induced fatalities involving 6 adults and 4 children.

Transport Canada published a Notice of Intent in the *Canada Gazette* Part I on June 30, 2001, to amend Canada's requirements governing occupant protection in frontal impact. The Notice proposed adopting most of the new requirements that the U.S. introduced in May 2000, but with three key differences.

Where the U.S. mandates five crash tests, two of which must be conducted with unbelted dummies and three of which must be done with belted dummies, Canada proposed to mandate only the three belted

tests. The reason was that Canada's rate of seat belt use is significantly greater than that of the U.S. (90% compared to about 70%) and the emphasis is on the protection of the belted occupants.

In view of Canada's high rate of seat belt use, the Notice proposed adopting more stringent chest protection criteria than the U.S. in order to reduce the risk of chest injury by the shoulder strap of the seat belt and the airbag in a frontal collision.

Finally, the Notice proposed a different testing protocol for one of the U.S. out-of-position tests because Transport Canada's research indicated that this protocol more closely replicates the worst-case scenario.

Transport Canada recently issued a comprehensive discussion paper on the rationale and benefit/cost regarding possible amendments to CMVSS 208 and held a workshop with the motor vehicle manufacturers and importers to discuss the paper.

If Canada decides to amend section 208 of the *Motor Vehicle Safety Regulations*, a formal proposal will be published in the *Canada Gazette* Part I this summer, with publication of the final amendment in the *Canada Gazette* Part II to follow.

Rear Impact Guard – MVSR 223

A proposed regulation governing the installation of rear impact guards on trailers was published in Part 1 of the Canada Gazette on October 5, 2002. While the dimensional requirements remain consistent with the existing U.S. regulations (FMVSS 223/224), the strength and energy absorption requirements for the proposed guard are significantly higher. Research has shown that these criteria will have the effect of reducing the amount of vehicle underride and passenger compartment intrusion in the event of a rear impact, and is expected to save more than two lives every year.

The proposed regulation is undergoing a final review based on comments received from interested stakeholders. The main concerns include the competitive disadvantage that result from a regulation that is not harmonized with the United States, and the new energy absorption criteria that is unique to the Canadian proposal. Despite these comments, there appears to be a general consensus with respect to the benefits of a stronger guard.

The Department has strived to balance the safety of the occupants of small vehicles and industry concerns while maintaining close harmony with the existing requirements for U.S. trailers. In this effort, the Department is continuing to work closely with industry to design a generic guard that would assure compliance to the proposed regulation, thereby eliminating compliance testing for trailers so-equipped and reducing manufacturers' costs.

It is expected that the final regulation be published before the end of summer of 2003.

Universal Anchorages for Children's Restraint System – CMVSS 210.2 and the Restraint Systems Safety Regulations

The effectiveness of properly used children's restraint systems is well recognized. Unfortunately users may encounter difficulties in installing the restraint system into the vehicle or the child into the restraint correctly. To minimize improper installation of restraint systems in vehicles, Transport Canada finalized a new requirement for the installation of universal lower anchorages in vehicles and of compatible connectors on infant and child restraints. The final regulations were published in the Canada Gazette Part II on June 19 2002 and came into force on September 1 2002. It is estimated that approximately 12 fatalities and 294 injuries to children from birth to 5 years of age will be prevented each year by this countermeasure.

The universal anchorages and compatible connectors requirements complement the top tether anchorage regulation. Canada first introduced the tether anchorage requirements in 1989. More recently, , the Department upgraded the original requirements to include user-ready tether anchorages for passenger cars built after September 1, 1999 and light trucks and multi-purpose passenger vehicles since September 1 2000 user-ready tether anchorages.

Coach And School Bus Occupant Protection Review

The current crash protection for school bus occupants in Canada is a passive safety approach based on closely spaced high backed seats that are designed to absorb energy during a collision. Canada has in place regulations that require rigorous testing of school bus seats for this passive protection.

A regulatory development and research program is being conducted to determine the effectiveness of different occupant protection systems for both coaches and school buses. This activity may lead to the development of standards to increase the safety of

those vehicles. The first phase of this program, a survey of the international situation with respect to occupant protection in buses, has been completed. The study report, entitled "*Evaluation of Occupant Protection in Buses* TP 14006" dated June 2002 is available in Both French and English on the Department's website at www.tc.gc.ca/roadsafety/tp/tp14006.

The second phase of the program, which is currently underway, involves testing of 3-point belt equipped coach seats from Europe and Australia and newly developed school bus seats incorporating passive protection with 3-point belts. The 3-point belt equipped coach and school bus seats will be tested on an acceleration sled and by using static pulls. The sled tests will involve various seating configurations with restrained and unrestrained anthropometric test devices. The static pull tests will be completed applying the same forces measured during the sled tests.

The third phase of the program, planned for completion by late 2004, will focus on glazing designs, including glazing retention as a result of occupant loading and issues surrounding the use of windows as emergency exit requirements.

Three-Wheeled Vehicles and Enclosed Motorcycles

The Department proposed an amendment in 2002 to introduce two new vehicle classes to address the unique characteristics of vehicles designed to travel on three wheels and for enclosed motorcycles. Two new regulations were proposed specific to these new vehicle classes to address the minimum stability requirements for three-wheeled vehicles and the fuel system integrity requirements.

Currently, most three-wheeled vehicles and enclosed motorcycles would have to be classified and regulated as a passenger car. This classification has essentially eliminated these vehicles from the Canadian market. There has been a renewed interest in developing three wheeled passenger vehicles that will provide a safer alternative to motorcycle transportation while providing environmental benefits. These new vehicle classes and regulations were developed following a review of current world safety regulations including those in Australia, Europe and the United States. For example, the proposed motorcycle fuel system integrity requirement provides the manufacture the alternative of meeting either the European Directive 97/24/EC, "Fuel Tanks for Two and Three-Wheel Motor Vehicles" or the Society of Automotive Engineers SAE J1242, "Fuel and Lubricant Tanks for Motorcycles".

It is expected that these new vehicle classes will allow the industry to provide Canadians an innovative, safe and efficient means of transportation.

Current Status – Side Impact Memorandum of Understanding

While side air bags have the potential to reduce injuries to properly restrained occupants - both adults and children - in side impact collisions, the Department was concerned that Out-Of-Position (OOP) occupants could be at increased risk should a collision occur. Thus, in February of 2001, the Department and the automotive manufacturers signed a Memorandum of Understanding (MOU) which set out the general terms and conditions with regard to side-impact protection applicable to passenger cars, multipurpose passenger vehicles, trucks and buses with a gross vehicle weight rating of 2,722 kg (6,000 lbs) or less.

The MOU was based on the extensive research, testing and collision investigation of side impacts and side air bags that the Department had completed. The MOU includes four requirements:

- That vehicles built during or after the 2002 model year, meet the requirements of either the U.S. Federal Motor Vehicle Safety Standard 214, "Side Impact Protection," or United Nations ECE Regulation No. 95, "Uniform Provisions Concerning Approval of Vehicles With Regard to the Protection of the Occupants in the Event of a Lateral Collision"; and
- Vehicles meeting the requirements of United Nations ECE Regulation No. 95 will maintain or, where possible, improve rear seat occupant side-impact protection; and
- That vehicles which incorporate side air bag systems be designed according to the "Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags" dated August 8, 2000; and,
- Upon request the manufacturer will identify to the Department each new model vehicle equipped with side air bag systems designed according to the recommended procedures and upon request provide data demonstrating that future side air bag

systems have been designed according to the recommended procedures.

This is the first occasion in which Transport Canada has used an MOU to introduce new requirements. This non-regulatory program was achieved through the collaborative efforts of industry and government. As part of the MOU the manufacturers agreed to introduce these requirements as soon as was feasible for each manufacturer, but at the very latest, future systems designed according to these procedures were to be integrated into vehicle programs with design commitment or "design freeze" dates occurring approximately 18 months after the date of execution of this MOU.