NATPAC is continuing its activities to reduce the road accidents and related causalities. The rectification of the road related causes are to be done continuously which include improvement of black spots and accident prone locations, provision of service roads, improvement of junctions, provision of crash barriers, road signs and marking etc. Despite the concerted efforts taken by various departments, NGO's and NATPAC, the accident trends in the state shows a fluctuating rate. This issue of 'Safe Savari' reports three accident cases which occurred during the reporting period at Chathanoor (LPG Bullet tanker and Car), Kilimanoor (Car and Truck) and Kalavoor (Car and Truck). In all cases, negligence on the part of the driver is the primary cause of the accident which proves the need for increased awareness and enforcement.

Dr. B.G.Sreedevi

Accident Scenario in Kerala

Accident trends in the State are fluctuating despite a lot of effort from the various organization in imparting training on road safety measures. A quick look at the statistics during three consecutive years, viz 2013, 2014 and 2015 during January to March reveals this fact. During 2014 Pathanamthitta district registered the highest increase of 10.34 percentage in road accidents followed by Trivandrum (5.45%) and Kannur.
Kottayam has registered a marked increase in the accidents.

Trends in the road fatalities during January to March 2014 and 2015 compared to their respective previous year’s data reveals that in 2014 Wayanad district registered 100 percentage increase in fatalities compared to that of 2013. Pathanamthitta, Kannur and Kottayam also showed upward trend, but all other nine districts showed down trends in fatalities and Trivandrum showed no trend.

During 2015 eight districts in Kerala showed upward trend in fatalities with respect to 2014; two districts has no increase or decrease and only four districts showed decrease. Idukki district (47.37%) registered the highest percentage increase in fatality and the lowest by Kozhikode district (-27%).
ROAD SAFETY SEMINARS

NATPAC conducted two seminars with title "Pedestrian and Children and Road Safety " as requested by the Chairman National Human Rights and Social Justice Commission. First seminar was organized in NSS Upper Primary School, Kokkottela, Aryanadu on 14th February 2015 and the second was organized on 28th February 2015 at Government LP School, Andoorpacha, Urukunnu within Thenmala Grama Panchayat. Both programmes were inaugurated by Rony P.V, State Chairman National Human Rights Commission. Former programme was presided by Sri. T. Jayapalan Block Panchayat Member Aryanadu and the latter by Shri. K.Sasidharan President Thenmala Panchayat. About 100 persons including teachers, students and parents attended the programme. Classes were taken about the safety measures to be observed while using the road. Different risk factors faced by the pedestrian especially when crossing the road were explained with the aid of audio visual presentation. For the school children the topics included in the 'Safe Road to School' (SRS) was taken and Road Safety films were exhibited. Booklets and leaflets were also distributed to the participants.

ROAD SAFETY TRAINING

NATPAC apart from conducting research studies, planning and designing of roads, has now entered into a new area for providing specialized training to drivers on safe transportation of hazardous goods. Government has authorized NATPAC vide GO (RT) No. 138/2015/Tran dated 17.03.2015 as per the recommendation of Transport Commissioner to conduct training course to the drivers working in this area and those who are interested to transport hazardous goods.
Half day training program was conducted on Road Safety and handling accidents situation involving vehicles carrying hazardous materials on 6th February 2015 to 35 Police Personnel at Police Training College as part of their one month long in-service course conducted by Police Department. Leaflets on the hazardous materials and printed materials on class label, hazchem code etc were handed over to the participants. Short films on recent LPG truck accidents in Kerala and in other states were shown during the class.

**ROAD SAFETY AND YOUTH LEADERSHIP PROGRAMME**

NATPAC in association with Kerala State Youth Welfare Board organised a one day workshop for District Level Officers and Co-ordinators of Kerala State Youth Welfare Board on 24th March 2015 at District Panchayat hall, Pattom, Thiruvananthapuram. The programme was inaugurated by Shri. Radhakrishnan Nair, Member Secretary, KSYWB. Keynote address was delivered by Smt. B.G.Sreedevi, Director, NATPAC. One day training programme for Kerala State Youth Welfare Board, Panchayat level Coordinators in Kollam district was organized in Saraswathy hall, (Public library complex) Kollam on 27th March 2015. Sri. C.R Mahesh, Board member, KSYWB, inaugurated the function. Keynote address was delivered by Smt. B.G.Sreedevi, Director, NATPAC.

**ROAD SAFETY AWARENESS PROGRAM AND ROAD SAFETY AUDIT**

The program was conducted in Velloothuruthy Government UP School, Kottayam District on 10th March 2015. The activities were taken up as per the request received from the Head Mistress of the School. The road safety awareness program was inaugurated by Shri Binse Joseph, Sub Inspector of Police Chingavanam. Smt. Jameela PS, Head Mistress presided. Road safety Audit Report was prepared and the same was forwarded to the school authorities and KRSA.
One day training programme for Driving School Instructors was organised on 25th March 2015 at K.Karunakaran Transpark Akkulam. About 75 driving school instructors including lady instructors participated in the programme. Shri T.V Satheesh, Consultant, welcomed the gathering. Dr. G. Ravikumar, Division Head, NATPAC delivered the presidential address, Shri. Thulaseedharan Pillai, RTO, Trivandrum, did the inaugural address. Keynote address was delivered by Dr. B.G.Sreedevi, Director, NATPAC. After the inaugural session a pre assessment test in their knowledge, in Rules and Regulations and in Road safety was conducted. Classes on various road safety aspects including handling emergencies during driving were taken up by expert faculties. The participants well appreciated the program and the knowledge gained, and desired that the program should be extended for one more day.
ANALYSIS OF ROAD ACCIDENT CAUSATIVE FACTORS

1. Car Accident at Chathannoor

A head on collision of Car with fully loaded Liquefied Petroleum Gas (LPG) Bullet tanker trailer occurred near Chathannoor on 1st of January 2015 around 2.45am. Six Engineering students were killed, the students are of sixth semester Mechanical Production branch of Thangal Kunju Musaliar College of Engineering and Technology, Kollam. Students were returning from Varkala Beach. The car was driven in a rash and negligent manner. The fully loaded tanker trailer was on its way to the bottling plant at Parippally. The car in an attempt to overtake mini-tuck at the curve where the tanker was approaching from the opposite direction in a close reach. On a rash overtaking attempt, the car was rammed into the LPG tanker trailer. The chances of huge explosion was luckily averted as the trailer bullet was not capsized or leaked. Due to the severe impact of collision, the bodies got entangled in the mangled chassis and were disfigured beyond recognition. NATPAC team visited the accident site on 2nd, January 2015 and inspected the site and surrounding areas in detail. The team conducted a survey of the accident spot and victim vehicles, collected information from the eye witnesses, the trailer tanker driver and details from Civil Police Officers. By analysing the various possibilities that might have contributed to the accident, it was concluded that negligent driving manoeuvre of the car driver is the root cause behind this accident which resulted in the tragic accident.

NATPAC has given recommendation on imparting strict enforcement and periodic check-ups to all categories of vehicle drivers to build up a safety oriented road culture and ensure periodic check-ups and routine maintenance of every component in road infrastructure including street lighting, footpath, pavement markings, traffic signs, signals, speed cameras, vegetation removal and drain cleaning. Incorporate Medias to deliver safety tips and messages to public especially just prior to festival occasions as this can influence people. Construct raised footpaths on either side of carriageways at least on major road corridors.
On 11th March, 2015 around 5.45 pm a grievous accident occurred at Kilimanoor, Thiruvananthapuram on M.C. Road (SH 1), between car and truck. Resulting in the death of the car driver and seriously injuring his family members.

As part of the investigation and reconstruction of traffic accident, the team from NATPAC visited the accident site on 12th March, 2015 and inspected the site in detail. Local residents/roadside shop keepers were interviewed to know more about the accident.

From the investigation it was apparent that the car while going to Thiruvananthapuram, had strayed away from its left lane, crossing the centre line and rammed in to the container truck coming from the opposite direction in the right lane. The container truck was loaded and was moving uphill and had just manoeuvred a curve, which divulge the fact that it was not over speeding. The after crash photos indicate that the car was apparently travelling at a higher speed downhill. There were fresh tyre markings of the truck skidding indicating that the truck driver had applied the brakes seconds before the crash whereas there were no tyre marks of the car observed on the site. This explains the fact the car driver, just before the crash, had not applied the brakes indicating he had either dozed off while driving or had taken his eyes off the road.

NATPAC suggested remedial measures like providing center line by having double yellow-centerline markings with rumble strips between them along curves as well as straight road stretches at accident prone locations. This will alert the driver once he/she crosses the center line accidently and the pavement markings should be intact using thermoplastic strips, this will highlight the centre line to driver during night time and unfavourable climatic conditions.
3. Car Accident at Kalavoor

An accident occurred at Alappuzha – Ernakulam road stretch near Kalavoor, on National Highway 66, on 25th March 2015 at 6.35 am. Head on collision occurred between Maruti Wagon R car travelling towards Ernakulam direction and Ashok Leyland Hino Turbo truck travelling towards Alappuzha direction. The driver and passenger of the car died, and another passenger suffered grievous injury. No injury happened to the truck driver.

The team from NATPAC visited the accident site on 27th March, 2015 and inspected the site in detail. As per the spot analysis it was evident that the car came off from the designated traffic lane ie, left and hit the truck which was in right lane moving in the opposite direction. Truck driver suddenly applied handbrake, steered the vehicle abruptly to left side, and then to right side immediately after the collision. This maneuvering resulted in skidding and locking of the wheels of the truck. There is no defect in the geometric alignment of the road at the location where the accident occurred. The occupants in car have started the journey from Trivandrum at early morning at around 3.30am, considering travel time of three hours from Trivandrum to accident location at Alappuzha. The driver of the car might have napped for a second, which may have caused the vehicle to come off from its traffic lane and collided with the truck moving in the opposite direction.

NATPAC suggested that Awareness programs for alerting consequence of such drowsy driving habits could be carried out by the concerned agencies through audio-visual media (Radio, Television, Theatre, LED display boards, Variable Message Signs), social media (Facebook, Twitter, Instagram), paper media (Pamphlets, Newspaper) etc. Retro reflective studs/cats’ eye or rumble strips or profiled line marking applied longitudinally as an edge line and centerline can be effective in reducing run-off-the-road and head-on accidents to certain extent, particularly crashes related to driver fatigue and by enforcing speed restriction measures in form of speed radar cameras, vehicle mounted speed interceptor, traffic calming measures at intersections along the straight road stretch of National Highway-66. Road signs and markings should be periodically monitored and well maintained and ITS applications such as Driver drowsiness detection and Lane departure warning systems should be implemented to prevent accidents caused by the drowsy driver.

After Remains of Wagon R Car
Two Basic Principles of Road Safety Audit (RSA):

- **Prevention is better than Cure**: While efforts to reduce the accidents on existing roads through systematic accident investigation procedures must be sustained, *safety audit seeks to minimize the risk of accidents occurring as a result of changes to the highway.*

- **Drive, Ride, Walk in Safety**: The emphasis on the mode of travel on the roads should highlight the needs of the more vulnerable road users. *In a safety audit, the road scene should be visualised through the eyes of all the different categories of road users.*

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**Number of Road Accidents and Fatalities Registered in Kerala During 2013, 2014 and 2015**

<table>
<thead>
<tr>
<th>Districts</th>
<th>2013 (Jan-Mar)</th>
<th>2014 (Jan-Mar)</th>
<th>2015 (Jan-Mar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Accidents Reported</td>
<td>Persons Died</td>
<td>Total Accidents Reported</td>
</tr>
<tr>
<td>Thiruvananthapuram</td>
<td>1210</td>
<td>136</td>
<td>1276</td>
</tr>
<tr>
<td>Kollam</td>
<td>793</td>
<td>117</td>
<td>720</td>
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<tr>
<td>Pathanamthitta</td>
<td>358</td>
<td>33</td>
<td>395</td>
</tr>
<tr>
<td>Alappuzha</td>
<td>741</td>
<td>102</td>
<td>747</td>
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<tr>
<td>Kottayam</td>
<td>711</td>
<td>74</td>
<td>709</td>
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<tr>
<td>Ernakulam</td>
<td>1469</td>
<td>137</td>
<td>1436</td>
</tr>
<tr>
<td>Idukki</td>
<td>248</td>
<td>25</td>
<td>245</td>
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<tr>
<td>Thrissur</td>
<td>1007</td>
<td>129</td>
<td>1033</td>
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<tr>
<td>Palakkad</td>
<td>575</td>
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<td>526</td>
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<td>Malappuram</td>
<td>710</td>
<td>92</td>
<td>708</td>
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<td>Kozhikode</td>
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<td>Wayanad</td>
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<td>154</td>
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<tr>
<td>Kannur</td>
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<td>51</td>
<td>486</td>
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<tr>
<td>Kasargode</td>
<td>209</td>
<td>32</td>
<td>215</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>9370</strong></td>
<td><strong>1147</strong></td>
<td><strong>9349</strong></td>
</tr>
</tbody>
</table>
The most effective way of managing accident risk is through the development of a 'safety culture'. A safety culture is 'the ideas and beliefs shared by all members of an organisation about accidents and the risk of their happening'.

**If Roads are Safe; lives are Safe**

Comfortable and safe driving and good road user behaviour occur when; vehicles are operating well below a stressful processing and decision-making rate and above a minimum level of arousal. This is a critical component in the development and maintenance of a safe road environment.

The **purpose of Road Safety Audit** is to ensure that all road schemes should function as safely as possible, which means that the road users will be exposed to minimal risks of accidents, on new roads as well as on existing roads.

**Specific Aims of RSA:**

- Minimize the risk of accidents likely to occur/occurring on the project facility and to minimize their severity.
- Minimize the risk of accidents likely to occur/occurring on adjacent roads i.e., to avoid creating accidents elsewhere on the network.
- Recognise the importance of safety in highway design to meet the needs and perceptions of all types of road users; and to achieve a balance between needs of different road user types where they may be in conflict with one another.
- Reduce long-term costs of a project facility, bearing in mind that unsafe designs may be expensive or even impossible to correct at a later stage.
- Increase awareness about safe design practices among all those involved in the planning, design, construction and maintenance of roads.

**Source:** Manual on Road Safety Audit *(IRC: SP: 88-2010)*
WHY ACCIDENTS?

Lack of Pedestrian Facilities
Lack of Medians
Poorly Maintained Shoulder of Inadequate Width and Strength
Inadequate/ Low Medians
Unscientific Parking
Over Speeding