

# Safer road transportation of hazardous material in India: TransAPELL in practice

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## Summary

*In India, with its vast geographical area, large consumer market and extensive chemicals industry, safety is of the greatest concern to industry and the government. Since its first Awareness and Preparedness for Emergencies at Local Level (APELL) programme was launched in 1992, India has taken great strides towards making the transportation and handling of hazardous material safer. This article highlights activities and projects carried out to address the most pressing safety issues in this area.*

## Résumé

*Compte tenu de l'immensité du territoire, de l'ampleur du marché grand public et de l'importance de l'industrie chimique, la sécurité est en Inde l'une des préoccupations majeures de l'industrie et du gouvernement. Depuis le lancement en 1992 du premier programme de sensibilisation et de prévention des accidents industriels à l'échelle locale (APELL), l'Inde a fait d'énormes progrès dans le domaine de la sûreté du transport et de la manipulation des matières dangereuses. L'article présente les activités et les projets mis en œuvre pour s'attaquer aux problèmes de sûreté, particulièrement pressants dans ce domaine.*

## Resumen

*Debido a la enorme extensión geográfica, el importante número de consumidores y la gran industria química de la India, la seguridad constituye una de las principales preocupaciones del gobierno y los industriales del país. Desde el lanzamiento del Programa de Concienciación para Emergencias a Nivel Local (APELL) en el año 1992, la India ha tomado medidas de gran envergadura para contar con más seguridad en el transporte y el manejo de materiales peligrosos. Este artículo destaca las actividades y proyectos realizados con el objetivo de atender los temas de seguridad más apremiantes en dicho sector.*

UNEP's APELL programme is designed to:

- ◆ create or increase public awareness of possible hazards within a community;
- ◆ stimulate the development of cooperative plans to respond to any emergency that might occur;
- ◆ encourage accident prevention.<sup>1</sup>

When the National Safety Council of India (NSCI) agreed to host an APELL programme in 1992, one of the main considerations was the situation prevailing in the aftermath of the 1984 Bhopal disaster. Bhopal was followed by a number of incidents across India involving hazardous materials. NSCI was well-suited for this responsibility, in view of its 38 years of experience promoting voluntary health, safety and environmental activities with a range of services, and its all-India network of 6000 members, 28 Action Centres and 14 Chapters.

Considering India's vast size, a strategy with a two-track approach was conceived at the outset. This approach comprised:

- ◆ development of awareness at the national level;
- ◆ need-based, in-depth implementation of APELL activities at selected high-risk industrial areas in different regions.

Transport of hazardous materials and TransAPELL

As a result of seminars and workshops organized for six high-risk industrial areas,<sup>2</sup> it was recognized that attention needed to be focused on the transportation of hazardous material (Trans-Hazmat). India's first TransAPELL workshop was held in June 2000, in collaboration with UNEP and the Bharat Petroleum Corporation (BPC), a Fortune 500 company. The workshop was inaugurated by the Maharashtra State Crisis Group Chairman.

Twelve unanimous recommendations by the TransAPELL workshop were accepted by the State Crisis Group. Four of these recommendations established priorities:

- ◆ NSCI should play a key role in Trans-Hazmat, as a catalyst and coordinator at the national level;
- ◆ A demonstration project should be undertaken in the Chembur-Trombay area of Mumbai, with international support;
- ◆ A training module on Trans-Hazmat should be developed for highway traffic police, and training should be carried out;
- ◆ A suitable community awareness strategy should be developed.

In 2002 a project on "Development and Operation of the National APELL Centre (NAC)" was begun. It provided an opportunity to implement the recommendations of the TransAPELL workshop, addressing the key issues of strengthening off-site emergency preparedness and developing capabilities and a network to meet long-term APELL objectives.

The Road Transport Safety Initiative Realizing that Trans-Hazmat cannot be effectively addressed without also addressing some basic road transport safety issues, NSCI launched a Road Transport Safety (RTS) Initiative targeting all industrial goods, hazardous and non-hazardous. A majority of large companies that generate high goods traffic moved by transporters are NSCI members. NSCI is well-placed to influence transporters in collaboration with these companies.

Such a programme, with its wide scope and socio-economic implications, requires sustained inputs. These inputs have been successfully mobilized by UNEP, USAID/WEC (World Environment Center) and NSCI, which collaborated in the project.

A three-member Project Team led by the author (as Project Director), with secretarial support, has been provided by NSCI since the project's beginning. Each of the six high-risk industrial areas furnished a coordinator during the first phase. NSCI Chapters, Factory Inspectorates and Major Accident Hazard (MAH) units<sup>4</sup> also furnished in-kind facilities in the local areas

In the first phase, the services of 25 international and 74 national resource persons were used. In addition, eight technical persons were sent to the United States for study tours/training. Sixty-eight technical publications, 14 videos and copies of CAMEO (Computer-Aided Management of Emergency Operations) software were received for capacity building. Many technical experts have been involved in the project's two other phases.

All expenses for international inputs were directly paid by USAID, which also reimbursed US\$ 86,000 in expenses incurred in India during the first phase. UNEP met the expenses of the experts it had provided. NSCI paid the salaries of the Project Team. It also mobilized the ex-gratia services of local coordinators and national resource persons, as well as funding of about US\$ 15,000. There was nominal funding of US\$ 15,000 from UNEP for the NAC. NSCI is managing the project using its own resources.

Achievements of the Road Transport Safety Initiative

Workshops, seminars and training courses were organized at the national and local levels. The following achievements were crucial in laying the foundation for further work:

#### Awareness

The APELL Process was previously unknown. Its usefulness is now well-appreciated.

#### Crisis Groups

Crisis Groups on the APELL model have been set up at the national, state, district and local levels.<sup>3</sup> This is a major achievement. These groups are legally responsible for strengthening Hazmat Emergency Preparedness and Community Awareness in cooperation with MAH units, authorities, public response services and the community.

#### Testing of emergency plans

A clearer understanding and competence have been developed with respect to the system for testing emergency plans, the stages involved and tools used. Table-top exercises have been particularly useful.

#### Capacity building

NSCI capabilities have been strengthened in areas including risk assessment; emergency plan development, review and testing; and use of CAMEO software. These capabilities are being used for sustained APELL activities.

#### Issues identified

The following issues have been identified:

- ◆ Trans-Hazmat;
- ◆ community awareness;
- ◆ development of integrated off-site emergency plans;
- ◆ strengthening the capabilities of public emergency response services;
- ◆ development of a Hazmat Emergency Medical Response System.

Demonstration project: cooperation between NSCI and other key players at Chembour-Trombay

The Chembur-Trombay area of northeast Greater Mumbai is spread over 10 square kilometers. It has a large population and overcrowded roads. Close to the Eastern Express railway and the Mumbai-Pune-Bangalore highways, it is bounded by the port of Mumbai. There is a cluster of industrial units, including two oil refineries, a fertilizer complex, a nuclear complex, a power station, and chemical and petrochemical complexes.

In addition to rail transportation, an average of 300 tank lorries per day carry oil products by road. A total of 3 million metric tonnes of these products per month is moved by rail and road. Large volumes of Hazmat products from other industrial units are also moved.

NSCI worked closely with leading industries in the area through the Mutual Aid and Response Group (MARG), the District/Local Crisis Group, the Directorate of Industrial Safety and Health

(the enforcement authority for Maharashtra), the Chembur Fire Brigade and leading industrial units. Our collaborator, the BPC, has a refinery in the area. A UNEP expert participated in some meetings with key players.

The MARG formed by the area's leading industrial units to share their resources has regular interactions with the Mumbai Fire Brigade, the police, civil defence and municipal authorities, and other MARGs of Greater Mumbai.

The following achievements are due to the combined efforts of NSCI and other key players:

1. An off-site emergency plan for the area, developed according to statutory requirements, was promulgated in 2003;
2. A special hospital with a burn care ward was recently set up in the area with the support of MARG members. It is open to general public;
3. BPC and HPC have reduced Trans-Hazmat by road by installing pipelines. BPC's Mumbai-Manmad pipeline transports 40% of its products. HPC's Pune, Santacruz and Wadala pipelines transport 70% of its products;
4. The railway and the Bombay Municipal Corporation have developed a well-defined pay-and-park area for overnight parking of tank lorries. Traffic congestion due to irregular parking of tank lorries was a serious hazard for years. The problem defied solution in the absence of determined, coordinated action;
5. Emergency escape routes have recently been identified and ways to activate them have been formulated;
6. To ease traffic congestion, State transport authorities have placed restrictions on movements of containers during peak hours;
7. A MARG website ([www.aegisindia.com/safety](http://www.aegisindia.com/safety)) has been launched and is accessible by the public;
8. To meet the shortage of trained Hazmat drivers, approved training centres have been set up by BPC, HPC and others to facilitate three-day training.<sup>5</sup> This training is provided at low cost at convenient times;
9. Hazmat training programmes for traffic police and awareness seminars for the community are conducted regularly.

Case study: Trans-Hazmat response at Mumbai

A recent case study gives an idea of Trans-Hazmat emergency preparedness in this area.

At 11.30 pm on 27 January 2004, a tank lorry carrying 20 tonnes of benzene loaded at the BPC refinery overturned at a traffic signal in Sion, a suburb of Mumbai about 20 kilometres from the refinery. The benzene started to leak and the lorry caught fire.<sup>6</sup>

The response by traffic police and the Mumbai Fire Brigade was prompt and effective. Occupants of nearby buildings affected by the intense heat were evacuated without panic or injuries. Only the driver, who jumped out, was injured. At 3.30 a.m. the Mumbai Fire Brigade asked the refinery to supply foam for use in fire-fighting. This request was met without delay. The product was allowed to burn under controlled conditions. The fire was extinguished by 11.30 a.m. and the burned lorry

was towed to nearby open ground.

The handling of this incident received prominent and positive media coverage.

Case study: experience with a Hazmat van at Patalganga-Rasayani

One of our objectives is to study and promote a proven arrangement/approach. Accordingly, we identified and analyzed a successful Trans-Hazmat emergency response experience in the Patalganga-Rasayani Industrial Area. Subsequently we published a case study and recommended that this approach be used at the national level.

This area is about 40 kilometres from Mumbai. It is located between two national highways. There is a cluster of hazardous units. In August 1996 these units jointly established an Emergency Response Centre with a well-equipped Hazmat van. As of December 2003, the van had successfully responded to 84 Trans-Hazmat calls involving 27 different chemicals. Based on an analysis of this experience, 15 observations/recommendations have been made. The most important are:

- ◆ The product transported by many Hazmat tank lorries frequently changes. However, the required EIP (Emergency Information Panel) is not changed, as it is permanently painted on. The use of suitable stickers has been recommended.
- ◆ Many Hazmat drivers carry a set of Tremcards (Transport Emergency Cards) for all the products transported at different times. Drivers should carry only one Tremcard, for the specific product being transported.

Experience shows that initial information given to the Hazmat van by traffic police can be incomplete and sometimes misleading. The number of traffic police personnel is large. They are often transferred. Their proper training in communicating an incident information summary remains an issue.

It is heartening that about two years ago the oil companies jointly established Trans-Hazmat vans at about ten strategic locations across India.

Other important achievements

#### Commitment by transporters

To build on the achievements of the Chembur-Trombay demonstration project and experience at Patalganga-Rasayani, seminars developed under our RTS Initiative were held in these two areas in May 2004. BPC continued to be our collaborator at Chembur-Trombay. Reliance Industries Ltd. (also a Fortune 500 company) was enlisted as our collaborator at Patalganga-Rasayani.

As an outcome, 47 transporters from Chembur-Trombay and 66 from Patalganga-Rasayani issued press releases expressing their commitment to improve road safety. Future action points were also identified.<sup>7</sup>

#### Training of traffic police

A one-day training module has been developed. All senior officers of the Maharashtra Highway Traffic Police have been trained. About 200 traffic police constables have also been trained. While MARGs regularly conduct such training, there is a need to institutionalize it in police training institutes.

### Community awareness

A strategy has been developed and published. Programmes are being carried out by MARGs.

### Current comprehensive activities

Two comprehensive activities are being implemented to develop off-site emergency plans, provide training to Local Crisis Groups, enforcement officials and MAH units, and give guidance on testing of plans.

It is also planned to establish an APELL Sub-Centre in Tuticorin. The Trans-Hazmat experiences will be implemented in two districts: one in Tuticorin, south India, and the other in Haldia, West Bengal

The NAC newsletter, specific case studies, information sheets and our regular periodicals are being used to propagate lessons learned at the national level.<sup>8</sup> These lessons will also be discussed

at our National Conference in 2005 in New Delhi.

### Notes

1. For UNEP's APELL programme (including TransAPELL), see [www.uneptie.org/pc/apell](http://www.uneptie.org/pc/apell).
2. The Manali-Ennore Industrial Area near Chennai, southern India; the Thane-Belapur Industrial Area near Mumbai, western India; Cochin, southern India; Kanpur, northern India; Haldia, eastern India; Vadodara, western India.
3. Under India's Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, notified in 1996 under the Environment (Protection) Act, 1986.
4. MAHs are statutorily identified.
5. Under the Central Motor Vehicle Rules, 1989.
6. Benzene is a clear, colourless liquid used in production of plastics, paints, rubber and resins. It is

highly flammable. Inhaling benzene can also have harmful health effects.

7. Their combined fleet strength was 2000 and 3000 vehicles, respectively.

8. Publications developed, published and disseminated at the national level include: a list of approved Hazmat Driver Training Centres under the CMV Rules, 1989 (copies available from different States); NAC newsletter, begun in June 2002 (two issues have been published and 7000 copies have been mailed to key APELL Partners, including members of Crisis Groups and NSCI members); information sheet giving a résumé of important statutory provisions on Trans-Hazmat under different legislation, based on feedback from the traffic police officers' workshop; case study on the Hazmat emergency response van, based on successful experience in the Patalganga-Rasayani area. ◆