

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**LOK SABHA
UNSTARRED QUESTION NO. 376
TO BE ANSWERED ON 24.07.2024**

SAFETY MEASURES TO REDUCE TRAIN ACCIDENTS

376. DR. KALANIDHI VEERASWAMY:

Will the Minister of RAILWAYS be pleased to state:

- (a) the detailed statistics on train accidents during the last five years, categorized by type (derailments, collisions, etc.) and their causes;**
- (b) the details of the new safety measures implemented during the last few years to reduce train accidents, item-wise;**
- (c) whether the Railways has leveraged modern technology to enhance safety;**
- (d) if so, the details thereof;**
- (e) the current status of Indian Railways' emergency response system to handle major rail accidents;**
- (f) the details of the response time of Railways Emergency Rescue Team to reach the accident spot from time of the accident involving Coromandal Express in Balasore and the Kanchanjunga Express near Chatterhat Railway station in West Bengal;**
- (g) whether the number of cases of rail accidents is increasing despite of modern safety measures; and**
- (h) if so, the details thereof?**

ANSWER

**MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND
ELECTRONICS & INFORMATION TECHNOLOGY**

(SHRI ASHWINI VAISHNAW)

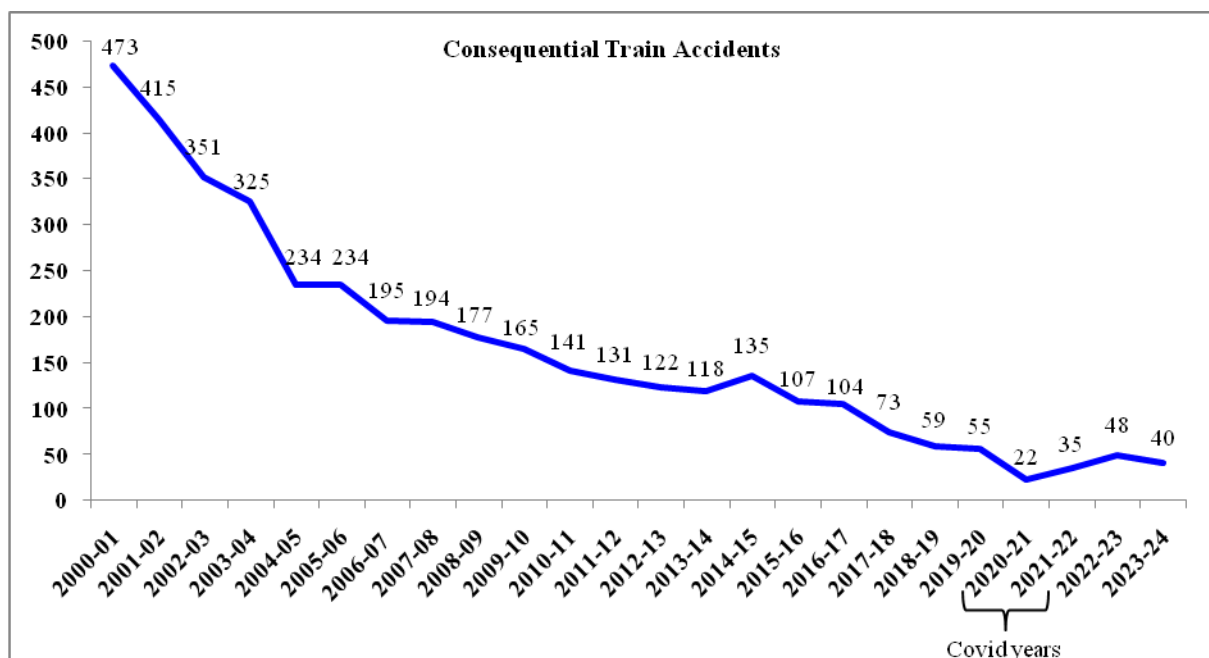
(a) to (h): A Statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (h) OF UNSTARRED QUESTION NO 376 BY DR. KALANIDHI VEERASWAMY TO BE ANSWERED IN LOK SABHA ON 24.07.2024 REGARDING SAFETY MEASURES TO REDUCE TRAIN ACCIDENTS

(a) to (h): As a consequence of various safety measures taken over the years, there has been a steep decline in the number of accidents. Consequential Train Accidents have reduced from 473 in 2000-01 to 40 in 2023-24 as shown in the graph below.

It may noted that the consequential train accidents during the period 2004-14 was 1711 (average 171 per annum), which has declined to 678 during the period 2014-24 (average 68 per annum).

Another important index showing improved safety in train operations is Accidents Per Million Train Kilometer (APMTKM) which has reduced from 0.65 in 2000-01 to 0.03 in 2023-24, indicating an improvement of more than 95% during the said period.



Safety is accorded the highest priority on Indian Railways. The various safety measures taken to enhance safety in train operations including those leveraging modern technology are as under:-

1. Rashtriya Rail Sanraksha Kosh (RRSK) has been introduced in 2017-18 for replacement/renewal/up-gradation of critical safety assets, with a corpus of Rs 1 lakh crores for five years i.e. till 2021-22. In 2022-23, the Govt. extended the currency of RRSK for another period of five years with Gross Budgetary Support (GBS) of Rs 45,000 crores.

Period	Allocation in RRSK (Rs in Cr)	Expenditure in RRSK (Rs in Cr)	Remarks
2017-18 to 2021-22	1,00,000	1,08,743	
2022-23 to 2026-27	45,000	26,702 (Till 2023-24)	RRSK extended for another five years

Total expenditure on safety works

Period	Expenditure on safety works (Rs in cr)
2004-05 to 2013-14	70,273
2014-15 to 2023-24	1,77,332 (2.52 times)

2. Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,589 stations up to 30.06.2024 to eliminate accident due to human failure.

3. Interlocking of Level Crossing (LC) Gates has been provided at 11,048 level Crossing Gates up to 30.06.2024 for enhancing safety at LC gates.

- 4. Complete Track Circuiting of stations to enhance safety by verification of track occupancy by electrical means has been provided at 6,609 stations up to 30.06.2024.**
- 5. Kavach is a highly technology intensive system, which requires safety certification of highest order. Kavach was adopted as a National ATP system in July 2020. Kavach has so far been deployed on 1465 Route km and 144 locomotives (including Electric Multiple Unit rakes) on South Central Railway. Kavach is provided progressively in phased manner.**
- 6. Axle counters for Automatic clearance of Block Section, BPAC (Block Proving Axle Counter) are provided to ensure complete arrival of train without manual intervention before granting line clear to receive next train and to reduce human element. These systems have been provided on 6079 Block Sections upto 30.06.2024.**
- 7. A project for provision of Long Term Evolution (LTE) based Mobile Train Radio Communication system has been approved for 34,803 Rkms over Indian Railways.**
- 8. The project for provision of Tunnel Communication has been taken up in various zonal Railways.**
- 9. Emergency talk-back system and Emergency Alarm Systems have been provided in Vande Bharat Train sets.**
- 10. CCTVs have been provided in all Vande Bharat Express coaches. Till date more than 9572 coaches are equipped with CCTV.**
- 11. Detailed instructions on issues related with safety of Signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.**

- 12. System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.**
- 13. All locomotives are equipped with Vigilance Control Devices (VCD) to improve alertness of Loco Pilots.**
- 14. Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to alert the crew about the signal ahead when visibility is low due to foggy weather.**
- 15. A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.**
- 16. Modern track structure consisting of 60kg, 90 Ultimate Tensile Strength (UTS) rails, Prestressed Concrete Sleeper (PSC) Normal/Wide base sleepers with elastic fastening, fanshaped layout turnout on PSC sleepers, Steel Channel/H-beam Sleepers on girder bridges is used while carrying out primary track renewals.**
- 17. Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.**
- 18. Maximizing supply of 130m/260m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby improving safety.**
- 19. Ultrasonic Flaw Detection (USFD) testing of rails to detect flaws and timely removal of defective rails.**
- 20. Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.**

- 21. Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).**
- 22. Patrolling of railway tracks to look out for weld/rail fractures.**
- 23. The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.**
- 24. Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.**
- 25. Web based online monitoring system of track assets viz. Track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.**
- 26. Detailed instructions on issues related with safety of Track e.g. integrated block, corridor block, worksite safety, monsoon precautions etc. have been issued.**
- 27. Preventive maintenance of railway assets (Coaches & Wagons) is undertaken to ensure safe train operations.**
- 28. Replacement of conventional ICF design coaches with LHB design coaches is being done.**
- 29. All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.**
- 30. Safety of Railway Bridges is ensured through regular inspection of Bridges. The requirement of repair/rehabilitation of Bridges is taken up based upon the conditions assessed during these inspections.**
- 31. Indian Railways has displayed Statutory “Fire Notices” for widespread passenger information in all coaches. Fire posters are provided in every coach so as to educate and alert passengers regarding various Do’s and Don’ts to prevent fire. These include messages regarding not carrying any**

inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.

32. Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.

33. Regular counselling and training of staff is undertaken.

34. Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30.11.2023, wherein work of integrated maintenance/ repair/ replacement of assets is planned up to 52 weeks in advance on rolling basis and executed as per plan.

The details of Safety related works undertaken by Railways are tabulated below:-

SN	Item	2004-05 to 2013-14	2014-15 to 2023-24	2014-24 vs 2004-14
	Track Maintenance			
1.	Expenditure on Track Renewal (Rs. in Cr.)	47,018	1,09,659	2.33 times
2.	Rail Renewal Primary (Track Km)	32,260	43,335	1.34 times
3.	Use of high-quality rails (60 Kg) (Km)	57,450	1,23,717	2.15 times
4.	Longer Rail Panels (260m) (Km)	9,917	68,233	6.88 times
5.	USFD (Ultra Sonic Flaw detection) Testing of Rails (Track km)	20,19,630	26,52,291	1.31 times
6.	USFD (Ultra Sonic Flaw detection) Testing of Welds (Nos.)	79,43,940	1,73,06,046	2.17 times
7.	New Track KM added (Track km)	14,985	31,180	2.08 times
8.	Weld failures (Nos.)	In 2013-14: 3699	In 2023-24: 481	87% reduction
9.	Rail fractures (Nos.)	In 2013-14: 2548	In 2023-24: 383	85% reduction
10	Thick Web Switches (Nos.)	Nil	21,127	

11	Track Machines (Nos.)	As on 31.03.14 = 748	As on 31.03.24 = 1,661	122% increase
Level Crossing Gate Elimination				
1.	Elimination of Unmanned Level Crossing Gates (Nos.)	As on 31.03.14: 8948	As on 31.03.24: Nil (All eliminated by 31.01.19)	100% reduction
2.	Elimination of Manned Level Crossing Gates (Nos.)	1,137	7,075	6.21 Times
3.	Road over Bridges (RoBs)/ Road under Bridges (RUBs) (Nos.)	4,148	11,945	2.88 Times
4.	Expenditure on LC Elimination	5,726	36,699	6.40 Times
Bridge Rehabilitation				
1.	Expenditure on Bridge Rehabilitation (Rs. in Cr.)	3,919	8,008	2 Times
Signalling Works				
1.	Electronic Interlocking (Stations)	837	2,964	3.52 times
2.	Automatic Block Signaling (Km)	1,486	2,497	1.67 times
3.	Fog Pass Safety Devices (Nos.)	As on 31.03.14: 90	As on 31.03.24: 19,742	219 times
Rolling Stock				
1.	Manufacture of LHB Coaches (Nos.)	2,337	36,933	15.80 times
2.	Provision of Fire and Smoke Detection System in AC coaches (Nos. of Coaches)	0	19,271	
3.	Provision of Fire Detection and Suppression System in Pantry and Power Cars (Nos. of Coaches)	0	2,991	
4.	Provision of Fire Extinguishers in Non -AC coaches (Nos. of Coaches)	0	66,840	

Budget allocation				
1	Gross Budgetary Support for Railway Investment (Rs. in Cr.)	1,56,739	8,25,967	5.3 times
2	Expenditure on safety related works (Rs. in Cr.)	70,273	1,77,332	2.52 times

Indian Railways has well laid down system of emergency preparedness and readiness with well defined protocol in place to respond in case of any accident in a quick and effective manner as under :-

- **In case of major train accidents/incidents, the first response is from the railway staff on-board the train. They are given training in handling such emergencies.**
- **Immediately on receipt of information regarding a major train accident, Indian Railways responds immediately utilizing its own setup, equipment, doctors, and staff.**
- **Indian Railways coordinates with the state government and the district administration as well as the State and National Disaster Response Forces to start carrying out rescue and relief immediately.**
- **The initial focus is on saving lives, attending to the injured and providing succor to stranded passengers, and then to restore traffic movement.**
- **Indian Railways has a network of Accident Relief Trains (ARTs), High capacity 140T Breakdown diesel-hydraulic cranes and Accident Relief Medical Vans (ARMVs) placed at identified locations which cover the entire rail network.**

- **In addition, Portable Medical Kits have also been provided at identified locations to render immediate medical support.**
- **Additional equipment like road vehicles, cranes, earthmovers, ambulances etc are also requisitioned from local resources for immediate attention to such accidents.**
- **Roles of every officer and staff in case of an accident are laid down and they are appropriately trained and empowered to discharge their duties.**

The Railways response with respect to relief and rescue operation has been very quick and efficient in both the accidents. The first Self Propelled Accident Relief Medical Van (SPARMV) in the case of Coromandal Express turned out within the stipulated response time from Bhadrak. The NDRF and RAF teams also quickly arrived at the site for rescue operations within 2 hours.

Similarly, in the case of Kanchanjunga Express accident, the first Self Propelled Accident Relief Medical Van (SPARMV) turned out within the stipulated response time from New Jalpaiguri. The NDRF and Civil Defence etc. arrived at the site for rescue operations in approx. 2 hours.
