ABSTRACT
Sanitation is always regarded as a key of development intervention. Sanitation generally refers to the provision of facilities for disposal of human urine and faeces. It deals with maintenance of hygienic conditions through services such as collection and disposal of solid and liquid waste. Several deadly diseases because of lack of sanitation like diarrhea, dysentery, typhoid, malaria, filariasis dengue and schistosomiasis are the outcome of improper or lack of sanitation. Indian Railways has always been a possession which has made us proud as an Indian. Railways cover length and breadth of country through its rails. It has 1,14,500 km of total track and 7083 stations. It has come up as a fast growing and profit making organization. However it has been striving since many years to achieve complete sanitation in railways. Open defecation through railways, unclean toilets, choked basins, litters in boggies and along tracks are the causes that has compelled the environmental engineers to put a thought over sanitation in railways. This study aims to bring the topic in to focus so as to create the awareness that how important it is to maintain sanitation in railway premises and how environmental pollution can be controlled through railways. We have celebrated ‘2008’ as International Year of Sanitation. Similarly one of the targets set for the millennium development goal (MDG) by the members of United Nations is to ‘halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation’. In view of this target, we can contribute our big share by achieving complete sanitation in railways which is one of the most successful and largest organizations of India.

INTRODUCTION
Indian Railways amongst the various possession owned by our country that makes India and people of India proud all over the globe and also presently it is in news as a fast profit making organization. It has become topic of discussions and seminars in national and international management institutions and universities for its tremendous progress. Indian Railways operates the most extensive, most densely utilized train system in world. It covers about 104,000 km with 7083 stations. It carries 2.2 crore people and 2.5 million tones of goods daily. In short Indian Railways transport million of people every day through its wide network of thousands of trains all over India. However despite all these efforts, one thing which needs desperate and immediate notice is ‘sanitation in Indian Railway premises’. Indian Railways have taken various initiatives to launch Operation Cleanliness. This was followed by setting up of a Working Group to identify the problem areas and suggest remedial measures. Accordingly, mechanized cleaning processes at railway stations, mechanized cleaning in running trains, supply of special uniforms and protective gear to staff engaged in cleaning activities have been introduced at major stations and junctions. Besides, publicity campaigns and education of traveling public have been launched all over the railways. In addition, processes for modification of coaches by providing toilets of improved designs as well as toilets with controlled discharge facility, which open up only when the train is in motion, have been started to ensure that station areas do not get dirty. It is an important aspect for Indian Railways’ complete success. Therefore this paper aims to highlight the sanitation problem in railway premises and suggest the remedies to control environmental pollution to make the India healthy.

Sanitation in Indian Railway
The present condition of sanitation in railways is very poor. It is given almost last priority to sanitation in entire development of railways. The Comptroller and Auditor General report on ‘Cleanliness and Sanitation on Indian Railways’ have deplored many realistic problems which railways are facing related to cleanliness. The report is based on a survey across 329 stations across the country, including key ones in Mumbai, like Chhatrapati Shivaji Terminus, Mumbai Central, Dadar, Kalyan and Dombivli and clearly states that Indian Railways finding hard to deal with problems like Dilapidated drains, faulty design, incorrect gradients that lead to water stagnating, burning of garbage on platforms and lack of a waste disposal policy.

Amongst the various trains in India, Shatabdi and Rajdhani trains are known to be slightly cleaner and maintained trains, but this is not true. The toilets in these trains start smelling just after passing few stations. Many of us think that these trains serve best food with cleanest cutlery in use. But the picture is somewhat different, the cups used to serve tea are washed without soap and all in one go only. The blankets are passed on merely from one passenger to other without any dry cleaning. This is just a small example of the insanitation practiced in railways. However the condition may be even worse. The track side landscape in the course of various journeys is full of various types of litters and if keenly observed the astonishing fact is that not a single 1 m stretch of track side is free from litters or garbage. This is not only in case of metros but also in most remote countryside. The toilets in train are like small...
compartments with hole from which the human waste is disposed off openly on tracks. These toilets are fairly in constant use. Indian railways disposes of human excreta into open throughout the length and breadth of country through its toilets becoming the biggest mobile source of environmental pollution by transporting the various harmful, deadly disease causing micro organisms by spreading them on tracks, rivers, streams etc. And of course this way of disposal of vast quantity of human waste in open (open defecation) from trains so as to keep the trains clean is the most imperfect and dirty way. The photos 1 to 7 give the idea of the scenes normally observed in the every railway station premises in India. It’s like throwing the garbage of our house in neighbor’s house just to keep our house clean.

On the other hand environmental pollution through open defecation in villages of our country is being prevented by educating people. Millions of rupees is spent on advertising and providing funds to villagers for construction of latrines so that open defecation can be prevented and ultimately environmental pollution can be stopped. However Indian Railways have not even put a pinch of concern or thought over decades for prevention of open defecation despite of the railway ministries old promise that sanitation in railways is their foremost responsibility. The other garbage from pantry cars and tray loads of hot meals are also disposed off from the doors of bogeys and from small openings from the space between the bogeys openly on the tracks polluting the villages and fields on the way.

The dustbins of inadequate capacity (less than 8 liters) at the end of each bogey gets quickly filled up and overflows, spilling the trash on the floor and further causing the trash to be littered on the floor (Photo 8). In few trains, the rats also travel continuously as they get their food because of improper cleanliness in the compartment/bogey. The passengers have to protect their bags from the rats. The trains are cleaned up on particular stations however a big part of it blows on tracks, open spaces, rivers and streams and along the tracks causing spread of various microbes, earth polluting and water polluting matter all over the tracks and adjoining fields and water bodies. Mahatma Gandhi in his book "THIRD CLASS IN INDIAN RAILWAYS" written in 1917 revealed his experiences with the rail journey he took from Mumbai to Madras. In which, he had narrated about the cleanliness in railways. Not during the whole of the journey was the compartment once swept or cleaned. The result was that every time he walked on the floor or rather cut his way through the passengers seated on the floor, he has to wade through dirt. Today also the scenario has not changed much. The compartments are rather clean at starting station but during the journey, some beggar fellows cleaning the compartment floor and begging for money can be seen. This gives a very poor show of humanity. Cleaning of floors is actually the responsibility of railway administration. The toilet areas (around the seat) in the trains are mostly seen flooded with water and urine and nobody from both the passenger’s side and administration side are slightly concerned to clean the surface. Many times the basins in the bogeys are seen choked up full of used water, guthka & pan spits, used cigarettes, empty sachets floating on it and even after watching such condition of basin, passengers keep on using the basin, allowing the water to flow from basin to floor creating a very dirty picture. Stations suffer from problems like drains blocked by with weeds, stagnating refuse and silt, poor drain design with no links to main drains and poor maintenance. Public toilets at stations are in a deplorable condition with water-logging, leaking roofs, broken taps and tiles, broken pipes and stagnating waste. Many of the passengers find the toilets virtually unusable.

**Role of Government**

Actually railways have always considered sanitation as one of its major duties. Citizens Charter on Passenger Services of Indian Railways clearly has undertaken cleanliness as its commitment towards passengers. It states that “Every effort shall be made to keep railway premises clean and hygienic with provision of safaiwalas.” But fulfillment of this commitment has never been satisfactory. The Government of India has already published “Indian Railways Works Manual” which elaborates a complete chapter on ‘Maintenance of Sanitary & Hygienic Conditions in Station Buildings, Yards and Railway Colonies’, stating duties and directions to various authorities of railways regarding sanitation. Some of the clauses from this chapter are given here for the information of the readers.

### 3.1 Sanitary Arrangements in Stations and Colonies

For the sanitary arrangements in stations and colonies, the allocation of responsibilities of the Operating, Medical and Engineering departments are as laid down by the Administration and a copy of detailed instructions should be in the possession of the Assistant Engineer and concerned staff.

### 3.2 Railway Sanitation Committees

a) Railway Sanitation Committees are appointed at such important stations as decided by the General Manager to assist in the supervision and control of sanitary arrangements in station buildings, yards and residential colonies. The Committee functions not only as advisory body but as monitoring body also. The existence of such Committees shall not however relieve any department of the duties ordinarily devolving on that department.

b) At less important and way-side stations where Sanitation Committees do not exist, the Station Master shall be primarily responsible for maintaining sanitary and hygienic conditions in station yards, staff colonies and their surroundings.

### 3.3 Constitution of Sanitation Committees
The constitution of each Sanitation Committee and its functions shall be as prescribed by the General Manager. The meetings will be convened by the Chairman of the Committee at specified intervals.

3.4 Record of Minutes of Meetings -
Minutes should be recorded in a Minutes-Book kept at the station in the custody of the Station Manager/Station Master unless otherwise prescribed. Copies of minutes of meetings should be sent to the Chief Medical Officer, Divisional Officers, Members of the Committee, the Assistant Engineer and the supervisors concerned. The Chief- Medical Officer/Chief Medical Superintendent will take up various matters at the appropriate level with the Departments.

3.5 Inspections by Sanitation Committees-
The Committees will carry out inspection of the premises before/after the meeting. The inspection will be directed with regard to sanitary and hygienic conditions of the following items:-
- Conservancy - The adequacy and cleanliness of latrines, receptacles, dustbins, incinerators, trenching-grounds, septic tanks, effluent disposal beds, soapiest, sumps, disposal of flood and sullage water, the adequacy and condition of conservancy equipment's
- Drinking water supply arrangements - Reservoirs, filter beds, wells, drinking water tanks and their protection from pollution.
- Quarters - The stabling of cattle, use by occupants of any quarters leading to unsanitary conditions detrimental to the health and well being of the occupants.
- The sanitary conditions of compounds, court-yards and surroundings of quarters, excavation of earth from any part of the surroundings of quarters whereby flood or waste water may accumulate, the growth of excessive vegetation and of creepers liable to damage the structure of buildings.
- Shops - Cleanliness of licensed shops; the proper storage of meat, grain and other foodstuff; the cleanliness of chopping blocks and implements in butchers' stalls, efficient protection against flies and the prompt and proper disposal of blood, hides, offal and other refuse.
- Presence of stray dogs and of vicious and diseased animals.
- Presence of any other nuisance, such as rats or conditions detrimental to the health and well being of residents.

Every subject dealt with at meetings should be recorded by the Committee and expeditious action should be taken by departments concerned. In subsequent meetings compliance on items of earlier meetings should be pursued by the members.

3.6 Conservancy Work- Conservancy work is classified as - (i) indoor conservancy and (ii) outdoor conservancy.
- Indoor conservancy

This comprises the cleaning of indoor sanitary installations, the collection of refuse generated in the individual quarters like floor sweeping, domestic refuse etc. and transporting it into the refuse bins. This is the responsibility of the occupants of quarters.
- Outdoor conservancy

This comprises cleaning of colony area, railway yards etc.

The responsibility for "Outdoor Conservancy" will devolve on the Medical, Engineering or Operating Department as per the Railway Board's instructions and shall include jobs like cleaning of drain, sewers, septic tanks, storm water drains, soak pits, dust bins etc.

3.7 Sanitary Protection of Installation
a) Reservoirs/Ponds:
- The reservoir/ponds should be fenced to prevent any outside or unauthorized use.
- The water in the reservoir shall not be used for any unauthorized purposes like bathing, washing clothes, cleaning of utensils etc.
- The water shall be periodically treated with bleaching powder or a disinfecting agent.

b) Overhead Tanks:
- The tanks should be cleaned and lime applied on walls as per laid down schedule.
- The water shall be regularly disinfected.

c) Protection of wells used for drinking:
- The exposed area of wells outside and inside shall be plastered to a sufficient depth to prevent percolation of water into the well through the staining at shallow depths.
- Parapets should be sufficiently high to prevent entry of spilled-water and water flowing at ground level. The top of staining should be edge-finished (triangular shape) to avoid buckets or vessels being kept thereon.
- There should be a paved platform around the parapet of the wells, with a drain to lead the spill-water sufficiently away.
- The ground around the well for a radius of at least 50m should be kept thoroughly clean to guard against pollution.
- No bathing or washing of clothes should be permitted near a well supplying drinking water. Devices for drawing water should be such as to prevent pollution.
- Open wells should be cleaned when necessary, preferably during dry season. The sides should be scrapped to clear moss and other vegetation growth. De-silting of wells should be done as necessary. Quick lime should then be applied to the sides and bottom of the well (wherever dry). This work should be carried out by the Section Engineer (works) and a report sent to the Assistant Engineer.
Disinfections Measures

3.8 Precautions against Infectious Diseases and Disinfections Measures
Infectious disease may be combated on the following lines:
- Ensuring hygienic water supply;
- Efficient disposal of sewage;
- Extermination of flies, mosquitoes etc.;
- Isolation of suspected infectious cases and of contacts;
- Protective inoculations and vaccinations;
- Measures against collection of decaying refuse or carcasses of animals within railway limits or in the vicinity and disposal by burning in an incinerator or by trenching refuse & decaying matter.

3.9 Disinfections of Quarters
The supervisors responsible for the disinfections of quarters should keep a suitable stock of necessary materials, obtaining them from the Divisional Medical Officer.

Role of Passengers
Keeping railways clean is not the responsibility of railway administration alone. It can be said that we are more responsible for insanitation than the railway administration. Passengers have always neglected the administration attempt to maintain sanitation by violating rules made for cleanliness. The Platforms are full with slogans like “Keep the platform clean”, “Please help to keep the platform Clean” but they are always ignored and never given attention. In spite of all these efforts of administration, railway platforms are full of litters, plastics, paper, spit etc. Citizens Charter on Passenger Services of Indian Railways clearly has stated that it expects complete cooperation of general public to maintain cleanliness. Both the passengers and administration are equally responsible towards cleanliness of railways. Now the time has come that passengers of railways realize this, sanitation in railways will no more be problem.

Remedies
- Habits that create insanitation and portrait to others an example to behave in same manner should be strictly discouraged. Minute changes in habits of passengers can help a lot in maintaining sanitation in railways.
- A crew of workers properly trained and equipped with modern cleaning tools should be appointed for each long run train for constantly managing waste by proper collection of waste, cleaning of toilets, basins, floors etc, supervision to passengers for maintaining cleanliness and storing waste in proper manner for its appropriate disposal.
- The capacity of dustbins provided at the end of each bogey should be increased and they should be monitored regularly on each station, if it is overflowing, should be immediately emptied.
- Nobody is aware that all the trash collected from railways goes where. Many times sack of rag pickers can be the final destination of plastics, paper etc. However safe disposal of waste from railways (human excreta, pantry waste, paper, plastics, food material etc) is necessary to prevent environmental pollution, for this some sought of low cost treatment facility can be installed at a junction from which long run trains pass so that waste from the trains can be emptied over at that junction and proceeded for safe disposal to these treatment facilities.
- The solid waste may be collected from dustbins of trains at a junction, put them in polythene bags, seal their mouths and handed over to local Municipal Corporation for its safe disposal.
- The great Gandhian Civil Engineer Shri Ishwarbhai Patel, winner of prestigious Padmashri award for his lifetime of work in sanitation was the one who showed his concern towards protecting environment from open defecation decades ago. He developed a mechanism that instead of falling directly to tracks, waste should be captured in holding tank and should be released only when the train reaches low speeds. Such controlled discharge techniques may be implemented.
- The sweepers, cleaners, station masters, engineers in charge should be strictly given instructions to maintain sanitation in bogeys, platforms, adjoining tracks etc. The pantry cars should be very careful in this respect. They should not only serve the food but also see that the waste food is properly disposed off and throwing it out off the doors and windows of the bogey on open tracks is not its safe disposal.
• A complete list of rules should be made by administration to maintain cleanliness for passengers and displayed in each bogey and on platforms. Passengers should be strictly made to follow the rules and regulations laid by administration either by conferring monetary fine or punishments even for slightest unsanitary habit like spitting in trains or on platforms.

• Railways have to form a policy on waste management and to assess the quantum of waste generated in railway premises properly. This will enhance the effectiveness of existing mechanism of collection and disposal of wastes.

• Passengers should know that they have complete right to place their grievances with the administration and Railway Administration is liable to reply to the complainant within 90 days, where detailed enquiries are not required to be made and within 120 days, in case of complaints where detailed enquiries are warranted.
CONCLUDING REMARKS
Sanitation in Railways has become a need of time and an important aspect for Indian Railway’s complete success. New concepts like modular toilets need to be introduced. Sanitation in Railways though a mammoth task can be achieved only by mutual cooperation of railway administration and passengers both. It should be clearly understood that unless passengers share equal responsibility with the administration the goal of achieving complete sanitation in railways is hard to achieve.

REFERENCES
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