

Decision of the Ministry of Environment, Forest and Climate Change on issues pertaining to the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, as approved by the Competent Authority based on the recommendations of the 95th Meeting of the Technical Review Committee (TRC) held on 30th March, 2026.

PROCEEDINGS

95th Meeting of the Technical Review Committee (TRC) for discussion on issues pertaining to clarifications sought on Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, held on 30th March, 2026 through Online mode under the chairmanship of Shri Sudhir Srivastava.

Opening Remarks of the Chairman: The Chairman extended welcome to members and other participants and requested to start the proceeding as per the agenda adopted for this meeting.

Consideration of Proposals: The TRC considered the proposals as per agenda adopted for the meeting. The details of deliberations held and decisions taken in the meeting are as under:

Agenda.1. Amendment to Hazardous and other Waste (Management and Transboundary Movement) Rules, 2016 by Department of Chemicals and Petrochemicals (DCPC), Ministry of Chemicals and Fertilizers.

Department of Chemicals and Petrochemicals (DCPC) vide D.O. letter dated 27th January, 2025 and 03rd April, 2025 has inter-alia requested deletion of entry pertaining to Brine Sludge listed at S.No.16.3 of Schedule I (List of Processes generating hazardous wastes) under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. It was mentioned that this issue had been examined at their end through multiple stakeholder discussions.

2. It was further mentioned that the production of caustic soda and chlorine is listed in Schedule I of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (at S. No. 16) as excerpted below:

S. No.	Processes	Hazardous Waste
(1)	(2)	(3)
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge generated from mercury cell process 16.2 Residue or sludges and filter cakes 16.3 Brine sludge

3. The issue inter-alia was discussed in a meeting held in the Ministry on 30th May 2025, under the co-chairpersonship of the Secretary, Department of Chemicals and Petrochemicals (DCPC) and the Secretary, MoEF&CC. Concerned officers of MoEF&CC, DCPC and CPCB were present in the meeting. In the meeting, after division on the issue, it was decided that the matter would be referred to TRC for deliberations and suitable recommendations regarding deletion of entry at 16.3 of Schedule-I from the HOWM Rules, 2016.

4. In view of the above, matter was referred to the TRC for deliberations and suitable recommendations. Accordingly, the matter was discussed in 94th meeting of TRC held on 14th July, 2025. TRC after deliberation on the matter asked DCPC to provide latest

characterization details of Brine Sludge from the industry's stakeholders. The committee also recommended that samples may be collected/ drawn by CPCB from a suitable number of industries generating brine sludge and analyzed for parameters given in Schedule II of HOWM Rules, 2016. On receipt of the analysis result from CPCB, and requisite information from DCPC the matter will be reconsidered for further deliberation/discussion.

5. Thereafter, DCPC has provided the characterization details of Brine Sludge received from the industry's stakeholders. Further, CPCB, *vide* its communication dated 10th December, 2025, forwarded the analysis report in respect of brine sludge samples collected from six caustic soda manufacturing plants. CPCB has informed that the samples were analysed for the parameters (*viz* pH, Fluoride, Cu, Zn & heavy metals including As, Ba, Cr, Pb, Hg etc) as per Schedule-II of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 as amended from time to time. The analysis results of Brine sludge reveals that the concentration of all analysed parameters were found to be within the prescribed limits under the said Schedule of HOWM Rules, 2016 as amended from time to time.

In view of the above, the matter was placed before the TRC for deliberation/decision in the matter.

Deliberation:

- The Committee deliberated on the matter in detail. Shri W.B. Santosh, Director, DCPC also participated in the deliberations and express his views on the subject matter.
- CPCB informed that samples of brine sludge collected from six caustic soda manufacturing units were analysed as per Schedule-II of the HOWM Rules, 2016 as amended from time to time and all parameters were found within the prescribed limits. It was also clarified that, based on the analysis, the brine sludge does not exhibit hazardous characteristics.
- The Committee further discussed that at present the brine sludge is being disposed of through TSDF facilities and in case it is considered as non-hazardous and delisted from hazardous waste category, TSDFs may not accept such waste, which may create practical difficulties for industries. It was also observed that such waste cannot be disposed of indiscriminately and must be managed through an environmentally sound disposal mechanism such as secured landfill. The Committee also noted that the existing Consent to Operate (CTO) issued to the concerned industries classifies this waste as hazardous, and any change in classification would require corresponding amendment in CTO conditions by the concerned SPCBs/PCCs.

Recommendation: The Committee after deliberation recommended that, as per the analysis of brine sludge samples carried out by CPCB, the brine sludge does not exhibit hazardous characteristics as required under Schedule-II of the HOWM Rules, 2016 as amended from time to time. Accordingly, the brine sludge may be considered as non-hazardous waste and the entry at S.No. 16.3 of Schedule-I may be deleted through appropriate amendment in the HOWM Rules, 2016.

Further, Committee also recommended that the concerned industries should obtain necessary amendment in their Consent to Operate (CTO) from the respective SPCBs/PCCs, incorporating a suitable disposal pathway such as secured landfill. Till such time the CTO is amended, the existing practice of disposal of brine sludge waste through TSDF/ secured landfill shall continue.

Agenda.2. Crumb rubber modifier (CRM) to be blended in bitumen for use in road construction in view of the recommendation given in circular Economy Report on „Tyre and Rubber Recycling Industry“ and subsequent Circular Economy Action Plan Finalized by NITI Aayog.

Circular Economy Report on ‘Tyre and Rubber Recycling’ submitted to NITI Aayog by MoEFCC inter-alia recommends use of Crumb Rubber Modified Bitumen (CRMB) in road construction.

2. A representation was received from Material Recycling Association of India (MRAI) for promoting use of CRMB recovered from waste tyres for building Green Roads. The matter was initiated in 76th TRC held on 24.01.2023 & then deliberated in 78th TRC held on 17.05.2023. Ministry after discussing the matter in Technical Review Committee (TRC) constituted in the Ministry, had issued an Advisory on 07.06.2023 to Chief Secretaries of All States/UTs and Secretary, Ministry of Road, Transport and Highways (MoRTH) that CRMB may be used in road construction by all the agencies wherever it is feasible, practicable, meet the quality standards and also keeping in view the cost effectiveness of the material and also to achieve the goal of Circular Economy. MoRTH was also requested vide OM dated 07.06.2023 to further examine the practical issues in consultation with all stakeholders and identify and initiate steps for a wider use of CRMB.

3. The issue of mixing of certain percentage of Crumb Rubber Modifier (CRM) with bitumen to promote CRMB in road construction was raised at several forum. Therefore, Ministry referred the matter to TRC for discussion and recommendation as appropriate for mandating blending of certain percentage of Crumb Rubber Modifier in bitumen. Subsequently, a reference received from Secretary, Ministry of Road, Transport and Highways (MoRTH) vide DO letter dated 17th February 2025 inter-alia alia suggested that a certain percentage of crumb rubber modifier (CRM) should be mixed with bitumen for sale. The suggested mandates would ensure a consistent supply of CRMB and meet the demands of road construction. The same was also referred to TRC.

4. The matter was discussed by TRC in its 91st, 92nd & 93rd meeting held on 28.01.2025; 28.02.2025 and 27.03.2025 respectively. TRC in its 94th TRC held on 14th July, 2025, has carefully considered this subject opined that the recommendations of MoRTH for mandatory mixing of certain percentage of Crumb Rubber Modifier (CRM) with bitumen has to be considered from all aspects including the environment and sustainability perspective. In view of the strong recommendations of the MoRTH, the committee recommends that the producers of bitumen may be given minimum annual CRM utilization mandate of 3-5% of their total annual bitumen production in a phased manner starting from FY 2026-27 at the refinery level for production of crumb rubber modified bitumen (CRMB) as per BIS standards i.e. for FY 2026- 27 – 3%, for FY 2027-28 – 4% and for FY 2028-29 and onwards – 5%. However, before making such statutory provisions, MoRTH and MoPNG may be consulted by the Ministry.

5. Accordingly, as per the recommendation of TRC and approval of competent authority in the Ministry, draft amendment in Waste Tyre EPR Rules was sent to MoRTH and MoP&NG for their comments/suggestions in August, 2025. Thereafter, MoRTH vide OM dated 18.08.2025 and MoP&NG vide OM dated 17.11.2025 provided the following inputs/suggestions:-

Inputs/comments of MoRTH	Inputs/comments of MoP&NG
<ul style="list-style-type: none"> • MOEF&CC may estimate the annual availability of quality CRM produced from End-of- Life Truck Tyre i.e. passing 	<ul style="list-style-type: none"> • That CRMB exhibits poor compatibility between Crumb Rubber and Bitumen, necessitating its use within 6-8 hours of

<p>100% from 600 micron sieve, which is suitable for blending into bitumen to produce CRMB. Considering the same as well as other valued reuse of CRM, the % of mandation may be decided.</p> <ul style="list-style-type: none"> • The producers of bitumen may be given annual CRM utilisation mandate of 0.5-1.0% of their total bitumen production in a phased manner starting from FY 2026-27 at the refinery level for production of crumb rubber modified bitumen (CRMB) as per BIS standards i.e. for FY 2026-27-0.5%, for FY 2027-28-0.75% and for FY 2028-29 and onwards-1.0%. 	<p>production. In some instances, it has also been observed that customers do not accept CRMB products from Refinery, as the mixing process needs to be constantly monitored to achieve the desired composition. Moreover, the longer setting time causes extended blockage of National Highways. Additionally, CRMB is not price competitive. Hence, it is recommended that CRMB production facilities be located near the application sites. Prolonged storage or transportation leads to the settling of rubber particles, rendering the product unsuitable for use.</p> <ul style="list-style-type: none"> • Considering the extremely short shelf life (6-8 hours) of CRMB, it is advisable to install CRMB production facilities near consumption centres rather than at Refineries. Refineries may supply the required grade of base bitumen to these CRMB production units, It is also informed that with the existing infrastructure, OMCs will not be able to meet the proposed mandate for FY 2026- 27, which requires annual CRM utilization equivalent to 3% of total bitumen production
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6. It was observed that comments received from MoRTH and MoP&NG is not fully aligned with the recommendation given by TRC and draft notification shared by the Ministry after approval of competent authority. Therefore, Ministry again referred the matter to TRC for further deliberation/discussion and recommendation as appropriate.

In view of the above, the matter is placed before the TRC for deliberation/decision in the matter.

Deliberation:

- Shri Bidur Kant Jha, Director, MoRTH and Shri V.C. Choudhary, Deputy Secretary, MoP&NG also joined the meeting and participated in the deliberations. The Committee was apprised that the proposal relates to promotion of use of Crumb Rubber Modifier (CRM) derived from waste tyres for blending with bitumen in road construction in line with Circular Economy recommendations.
- It was noted that earlier TRC had recommended a phased mandate of 3–5% CRM utilization; however, comments received from MoRTH and MoP&NG were not aligned with the said recommendation.
- The Committee deliberated on the concerns raised by MoP&NG, including issues related to short shelf life (6–8 hours) of CRMB, challenges in storage and transportation, lack of price competitiveness, and limitations in existing refinery infrastructure.
- The Committee also noted the suggestions of MoRTH, wherein lower blending levels of 0.5–1% were proposed and emphasis was placed on deciding the mandate based on

availability and practical considerations, along with production near consumption centres instead of refineries.

- Further, Shri V.C. Choudhary, Deputy Secretary, MoP&NG requested Committee to share the comments received from MoRTH for examination and reconciliation of their views.
- The Committee observed that there is a divergence of views among stakeholders. Therefore, further consultation is required to reconcile technical, economic and implementation aspects.

Recommendation: The Committee after deliberation recommended that the comments received from MoRTH may be shared with MoP&NG for further examination and reconciliation of views. On receipt of the requisite inputs/comments from MoP&NG the matter will be reconsidered for further deliberation/discussion.

Agenda.3. Request for withdrawal of distance criteria for setting up of Treatment, Storage and Disposal Facility (TSDF) - Representation from Jigani Industries Association, Bengaluru and Kanara Chamber of Commerce & Industry (KCCI), Mangaluru.

Jigani Industries Association, Bengaluru and Kanara Chamber of Commerce & Industry (KCCI), Mangaluru vide their letters dated 21.04.2025 and 22.04.2025 respectively have requested for withdrawal of distance criteria for setting up of Treatment, Storage, and Disposal Facility for hazardous waste. It is mentioned that Micro, Small and Medium Enterprises (MSMEs) are facing significant financial and logistical challenges due to the limited number and remote location of Treatment, Storage, and Disposal Facilities (TSDFs) leading to high operational costs, greater environmental risks, and compliance difficulties.

2. The Ministry O.M. dated 20.06.2013 and 29.08.2016 mandates a minimum distance of 400 km between new and existing common TSDFs for hazardous wastes. This restriction has prevented the establishment of additional TSDFs particularly in industrially underserved regions and further restricted the development of essential infrastructure and created a compliance and cost burden for industries across Karnataka. Many states like Gujarat, Maharashtra, U.P. W.B. and Rajasthan, multiple TSDFs operate within 400 km of each other, enabling better waste management without compromising environmental safety.

3. In light of above, it is requested to withdraw or revise O.M. dated 20.06.2013 and 29.08.2016 and approve or allow for the establishment of new TSDF facility in Central Karnataka to cater to Coastal and Central districts.

4. The matter was discussed in 94th TRC meeting held on 14th July, 2025, after deliberation the committee recommends CPCB to consult with all SPCBs and ask them to make assessment of the residual capacities of the current TSDFs, give their views on adequacy of TSDF facilities and appropriateness of their charges, future projection of generation of hazardous wastes and need for new TSDF facilities and other details. The committee also recommended prioritizing states like Karnataka and Haryana from where specific representations have come. In view of the aforesaid, the Committee felt that the matter may be taken after the receipt of requisite inputs/ information.

5. Thereafter, CPCB forwarded the compiled inputs received from various SPCBs including Gujarat, Maharashtra, Haryana, Himachal Pradesh, Andhra Pradesh, Kerala and Punjab regarding the distance criteria for setting up of TSDFs, which indicate that the adequacy and availability of TSDF facilities vary across the States.

In view of the above, the matter is placed before the TRC for deliberation/decision in the matter.

Deliberation:

- The Committee was apprised that representations had been received from industry associations highlighting difficulties in implementation of the existing distance criteria for siting of TSDFs, particularly due to high transportation cost, limited availability of facilities and operational challenges faced by industries, especially MSMEs.
- It was noted that CPCB had compiled inputs from various SPCBs, which indicated that adequacy and availability of TSDF facilities vary across States. In industrially developed States, due to clustering of industries and increasing hazardous waste generation, there is a requirement for more than one TSDF within closer proximity, making it difficult to adhere to the prescribed distance criteria.
- The Committee further observed that in several States, multiple TSDFs are already operating within shorter distances and such arrangements have facilitated better waste management without compromising environmental safeguards. It was also discussed that future industrial growth is likely to further increase hazardous waste generation, necessitating additional TSDF facilities.
- The Committee deliberated that a uniform “one-size-fits-all” distance criteria may not be practical across all States due to variations in industrial density, waste generation patterns and regional requirements. Accordingly, flexibility in siting of TSDFs was considered necessary.

Recommendation: The Committee after deliberation recommended that, the existing distance criteria for siting of TSDFs prescribed under O.M. dated 20.06.2013 and 29.08.2016 may be reviewed/revise, and a flexible, case-to-case basis approach may be adopted instead of a uniform distance requirement. Committee further recommended that for establishment of new TSDFs, a Committee comprising representatives of the concerned SPCB/PCC, CPCB and State Government/Industry Department may assess the need based on local conditions such as industrial density, hazardous waste generation and existing capacity, and make recommendations accordingly. Either the state Industries Department / SPCB/PCC may then set-up the TSDFs, themselves, or through a public private partnership, following strictly the siting and design criteria prescribed by CPCB and after obtaining environmental clearance as necessary. Further, as TSDFs often operate as local monopolies, the SPCB/PCC should ensure that the charges are reasonable, so that industry is not overburdened with excessive charges, which may weaken compliance incentive.

The Committee also recommended that the Ministry may take appropriate action for revision of the aforesaid O.Ms based on the above recommendations.’’.

NOTE: The competent authority has desired that the matter may require further examination in light of the recent changes to the siting criteria under the amended Uniform Consent Guidelines, as well as the extant CPCB guidelines applicable to TSDFs.

Agenda.4. Representation from Petroleum Re-refiners Association of India (PRAI) for amendment in Rule 3.(39) in Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 as amended from time to time w.r.t definition of “waste oil”- reg.

Petroleum Re-refiners Association of India (PRAI) in their representation stated that in the re-refining process, distillation is employed to recover useful lubricants from the used oils. In India this by-product is regulated as a Hazardous waste. World over bottom residues are blended with Asphalt for road making. Apart from this there are numerous other uses including blending with fuel. To which this by-product can be utilized, leading country to save huge amount of foreign exchange and in the process, help conserve finite resources. In view of finding a way for disposal of this by-product they got bottom residue tested for hazardous content and have submitted following in favour of use of bottom residue: (i) In all the test reports the by-products meets the specification as laid out in Part B of Schedule V of HOWM Rules, 2016. (ii) The test report of Rubber board, whose test report too indicates that the bottom residue can safely (REACH Compliant), be used for Rubber goods making as non-hazardous products. In view, PRAI has proposed the following change in the definition of ‘waste oil’:

Existing Rule 3.(39)	Suggested Rule 3.(39) after change
<p>“Waste Oil” means any oil which includes spills of crude oil, emulsions, tank bottom sludge and slop oil generated from petroleum refineries, installations or ships and can be used as fuel in furnaces for energy recovery, if it meets the specifications laid down in Part – B of Schedule V either as such or after reprocessing</p>	<p>“Waste Oil” means any oil which includes spills of crude oil, emulsions, tank bottom sludge, bottom residues from re-refineries and slop oil generated from petroleum refineries, installations or ships and can be used as fuel in furnaces for energy recovery, or any other uses if meets “End Product Specification, and if it meets the specifications laid down in Part-B of Schedule-V either as such or after reprocessing</p>

Deliberation:

- The Committee heard the views of the representative of the Petroleum Re-refiners Association of India (PRAI) regarding inclusion of bottom residue generated from re-refining process within the definition of “waste oil”. It was explained that the bottom residue is a heavy fraction/by-product generated during recycling of used lubricating oil and is presently classified as hazardous waste, which restricts its utilization.
- It was further submitted that the said residue can be utilized in applications such as bitumen blending, fuel use and other industrial purposes, and that certain test reports indicate that the material meets prescribed specifications and may not pose significant environmental risk.
- The Committee, however, sought detailed clarification regarding the exact composition of the residue, its chemical characteristics, presence of contaminants and whether any hazardous constituents are present. The Committee also enquired about the quantity of residue generated, which was indicated to be a significant proportion (around 10% of processed oil) and therefore requires appropriate management and utilization.

- Further, the Committee asked for documentary evidence and technical studies supporting safe utilization, including validation by recognized institutions, compliance with standards and evidence of usage in other countries. It was observed that the documents submitted were largely indicative and did not clearly establish the composition and safe end-use of the residue.

Recommendation: The Committee after deliberation recommended that Petroleum Re-refiners Association of India (PRAI) may submit detailed information including composition analysis, quantity of generation, supporting technical reports and documentary evidence of utilization of bottom residues from re-refineries, including international best practices. On receipt of the requisite inputs/comments from PRAI the matter will be reconsidered for further deliberation/discussion.
