

**F. No. ----/2017-CPHEEO
Government of India
Ministry of Housing and Urban Affairs
(CPHEEO)**

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Nirman Bhawan, New Delhi
Dated: 27th December, 2017

Minutes of Meeting

Sub: Meeting of sub-group of Technical Evaluation Committee (TEC) on 13 Dec 2017 in the office of Adviser-In-Charge of CPHEEO

The following TEC members participated

- Mr. V K Chaurasia, Member Secretary, TEC
- Mr. Rohit Kakkar, Member
- Mr. P. U. Asnani, Member
- Mr. N. B. Mazumdar, Member

Agenda of the meeting

The Sub group was created under directions of Dr R.A Mashelkar with an aim to quickly assess the potential of proposals, which had been put in category "B" (For further review) during the TEC meeting held on 30 October 2017 under the chairmanship of Dr. R. A. Mashelkar.

2. The proposals marked as Category "B" during that meeting were to be comprehensively reviewed by the designated sub-group of experts.
3. Accordingly, the sub-group had requested the proponents of these proposals to attend the meeting and brief the sub-committee on this day.
4. Brief description of the proposal along with Minutes of the deliberations which followed is given in Annexure-1 to this note.
5. It is proposed to obtain approval of Dr Mashelkar and thereafter process the cases for financial and technology assessment support.
6. It is also proposed to circulate the draft to other sub-committee members for their esteemed comments.

Sd/-

Rohit Kakkar
Dy. Adviser (PHE)

Annexure-1

Categorisation of the proposals evaluated by the sub-committee

No	Proposer	Claim	Observations of the Sub-Committee
1.	InNow India Pvt Ltd	<p><i>Odour control of solid waste</i></p> <p>The proponents claim that they have developed a patented bio-enzyme which can be mixed with water and sprayed on surface of any municipal garbage.</p> <p>It removes odour and also reduces the volume of the waste dump by 5-7%.</p> <p>Removal of odour is affected by sulphur dissipation</p> <p>It could be useful for odour management in dumps, if it works as claimed. There are a number of odour suppressors which are available in open market from both branded and unbranded concerns. Most are none to affect the nasal sensory system, however it is claimed that the bio-inoculum will react with the sulphur in waste- matter and get rid of it permanently by catalysing Sulphur-oxide formation.</p>	<p>The claim needs further detailed evaluation on the following concerns:</p> <p>a) The proponent claims that application of bio-inoculum at only 3g/ton will control the odour and reduce the volume of garbage up to 7%.</p> <p>b) Determination process needs to be developed on a standard waste of fixed composition and volume.</p> <p>c) The effect of turning of waste, volume, enhances aeration and the as in case of more quantity of bio-inoculum application will impact or not?</p> <p>d) The bio-innoculum is an important strain/ consortium of bacteria- how it react with Indian flora and fauna in medium to long term, needs to be ascertained.</p>
2.	InNow India Pvt Ltd	<p><i>Bio-catalyst for improved wastewater treatment</i></p>	<p>This is the same bio-innoculum which improves wastewater treatment</p>
3.	Sacheerome	<p><i>A spray/ capsule for improving Toilet aesthetics- gets rid of odour and also kills pathogens.</i></p> <p>M/s Sacheerome introduced itself as fragrance manufacturing firm which has developed a spray- able liquid solution consisting of various proprietary chemicals and plant extract ingredients, which when sprayed in a toilet unit considerably</p>	<p>The product appeared similar to many other commercially available in the market.</p> <p>The efficacy of the proprietary chemical plant extract is required to be ascertained on a standard test toilet, instantaneously with respect to another similar toilet space, which is not exposed to such conditions and also against other similar commercial products.</p>

		<p>reduces odour. It is claimed that the spray is also a bactericidal which reduces harmful pathogens present in toilet space.</p> <p>Another variant is a capsule, filled with the same proprietary liquid, which is to be opened and poured into the toilet pan.</p> <p>The agency also produced test results from NABL accredited laboratory which states that the spray reduces microbes on toilet surface by 99.9% and in the nearby area by 79.4%. Further “gas pollution” in toilets is reduced by 45.7%.</p>	<p>One critical concern was that, if the spray is able to kill toilet microbes to that extent, then it may be in the category of poisonous chemicals and as such appropriate human safety norms need to be developed by the proponents through the national virology institute.</p> <p>Meanwhile, as a “cosmetic” spray for toilet odour removal, the proponent is free to proceed and market their product including enlisting on GeM portal, without reference to this Committee provided they meet the relevant cosmetics release procedures of the country.</p>
4.	NEERI	<p><i>Phytorid Wastewater treatment</i></p> <p>NEERI has developed a technology named “Phytorid” in which the wastewater is made to pass a baffled arrangement through the roots of special selected plants. The output is claimed to provide water treated to acceptable level. The system is propagated as a simple, robust, maintenance free and cost effective to treat wastewater and enable reuse of the treated water.</p>	<p>The system developed by NEERI applied to a constructed wetland together with an up and down baffled tank reactor. It is preceded by a screen chamber and a baffled sedimentation tank to reduce settle-able solids.</p> <p>The key claimed feature was in space utilisation vis-a-vis the other non-mechanised treatment system, low operation and maintenance cost.</p> <p>Such “natural” systems are characterized by the amount of space saving vis-a-vis the conventional waste stabilization pond. In literature, the Constructed wetlands require about 5 square metres space per person wastewater treatment against this, Phytorid claims that only 0.16 sq metre of surface area per person is required to obtain the same efficiency in treatment</p> <p>The system being proposed also appeared similar to DEWATS developed by certain private entities in India.</p>
5.	Vision Earth care	<p><i>(SBT), Soil Bio Technology.</i></p> <p>It is a wastewater treatment</p>	<p>It was noted that the process is very similar to the trickling filter which is an effective method for treatment of</p>

		<p>technique which uses a media consisting of various selected material through which the wastewater is conveyed under gravity resulting in purification.</p> <p>The agency claims that the requisite microorganisms get generated from earthworms which populate the media and there is no need for any aeration.</p> <p>The proponents also brought out that a large number of plants are already running successfully in the country.</p>	<p>wastewater, but which has since been discarded due to inherent maintenance problems.</p> <p>In the present case, it was observed that SBT promotes use of brickbats, rocks and other hetero sized material as filter media, which will normally affect the uniform percolation rate expected in filter media.</p> <p>It was suspected, that the size of the plant cannot be smaller than a trickling filter, whose design parameters are laid out in CPHEEO Manuals and other literature.</p> <p>Further, this technique where the biomass is maintained by bacteria originating from earthworms, though novel, is suspect to various situations which will affect the uniformity of treatment.</p>
6.	Institute of Chemical Technology Mumbai, and BPCL, Mumbai	A catalyst has been developed by the proponents which allows pyrolysis of MSW at considerably low temperature (150°C) and through a modification of the Fischer-Tropsch Process, converts it into useable bio-oil (Methanol).	The process has been under review by the Department of Bio-technology, Government of India for many years and has passed pilot scale experimentation stage and now is ready for small scale commercialisation.
7.	Panchtatva technologists and services	Setting up of food waste to biogas cum composting plant	This technology is similar to normal anaerobic digestion system.
8.	Anna University, Center for Environmental Studies (CES)	<p>Quick Certification Protocol of MSW Compost</p> <p>It is proposed to develop a mathematical model based on pilot scale testing to correlate the Volatile Organic Carbon (VOC) as a</p>	<p>The FCO norms requires certain parameters to be met for any aerobically/anaerobically digested MSW to be considered as Compost. Testing for these parameters requires certain time.</p> <p>VOC and TOC are easily determinable and thus if they can be used to ascertain</p>

		percentage of Total Organic Carbon in compost as an indicator of compost quality and to validate it through various statistical models such as ANOVA.	chemical quality of compost then it enable sale/ purchase of compost by small entities across the country
9.	In since	Sewer Network Design software	The proponents have developed an exhaustive software for sewer network design and validation. The review of such commercial products does not fall in the scope of the TEC
10.	NIT, Durgapur	<i>Nano Membrane based system for water treatment of water for removal of Arsenic.</i> This proposes to pump arsenic affected groundwater through a Nano Membrane	This process developed by the proponent from NIT Durgapur seems to be simple and workable, however the cost estimate is felt to be on the higher side. However, the agency may resubmit a revised cost estimate to setup a treatment unit on an existing groundwater extraction pumping system for a small community.
11.	IIT Bombay & NEERI Nagpur	Improved Composting for recycling of bio-degradable organic waste.	There is a vast variety of proponent proposals for composting through various means. Some of them appear to be more practical and technically possible as against others. Though MoHUA will not support the current proposal by professor from IIT Bombay, since it is a lab scale experimentation, It however, may support the proponent to set up a facility for testing and certifying various home/ community level composting processes (for efficiency vs expenditure) as are currently available in the country.
12.	Sustainable technologies & Environmental	<i>Heterogeneous catalytic conversion</i> It is claimed that the proponents have developed a proprietary catalyst	The proponents intimated that they have set up two plants for conversion of plastics into fuel. The claim requires a field visit and

	Projects Pvt. Limited	<p>“Poly Crack” which catalyses conversion of waste plastic into fuels through random De-Polymerization carried out in a specially designed Reactor in the absence of oxygen and in the presence of a catalyst. The maximum reaction temperature is 350⁰C. The plastics are converted completely into value added fuel products.</p>	<p>the sub-committee proposed that</p> <ul style="list-style-type: none">a) Dr. Mazumdar to visit Motibaghand b) Mr. Asnani to visit Mumbai
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