ಫ್ಯಾಕ್ಸ್ / Fax : 080-25586321
ಈಮೇಲ್ / E-mail : ho@kspcb.gov.in
ವೆಬ್‌ಸೈಟ್ / Website : http://kspcb.gov.in

☎ 25581383, 25589112
25588151, 25588270
25588142, 25586520

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ.49, ಚರ್ಚ್‌ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ, ಭಾರತ
"Parisara Bhavana", 1st to 5th Floor, # 49, Church Street, Bengaluru - 560 001, Karnataka, INDIA

ಸಂಖ್ಯೆ. ಕರಾಮಾನಿಮಂ/393ನೇ ತಾ.ಸ.ಸಮಿತಿ/ಮುಪಅ/2018-19 4842 ದಿನಾಂಕ: 19 DEC 2018

ಜ್ಞಾಪನಾ ಪತ್ರ

ತಾಂತ್ರಿಕ ಸಲಹಾ ಸಮಿತಿ ಸಭೆಯ ನಡವಳಿ

ರವಾನಿಸಲಾಗಿದೆ

ವಿಷಯ: ದಿನಾಂಕ: 12.12.2018 ರಂದು ನಡೆದ 393ನೇ ತಾಂತ್ರಿಕ ಸಲಹಾ ಸಮಿತಿ ಸಭೆಯ ನಡವಳಿ.

<*><*><*>

ದಿನಾಂಕ: 12.12.2018 ರಂದು ನಡೆದ 393ನೇ ತಾಂತ್ರಿಕ ಸಲಹಾ ಸಮಿತಿ ಸಭೆಯ ನಡವಳಿಯ ಉದ್ಧರಣ (Extract) ವನ್ನು ಈ ಕೆಳಗೆ ಪುನರ್ ರೂಪಿಸಲಾಗಿದೆ. ಇದರ ಬಗ್ಗೆ ತಕ್ಷಣ ಕ್ರಮ ಜರುಗಿಸುವಂತೆ ತಿಳಿಸಿದೆ.

ITEM NO: 393:02

Studies of Impact of using lime sludge generated by the Mysore Paper Mills Limited on quality of Soil, Ground water and Crops, Carried out for seeking Exemption of Installation of Rotary Lime Kiln.

*****

The CPCB/ KSPCB have directed the industry to install Rotary Lime Kiln for handling lime sludge generated from the process of pulp making to reuse partially. As the installation of Rotary Lime Kiln involves funding and only 50 to 60% of the lime sludge is usable, the industrial authorities have looked for alternate ways of disposing the entire lime sludge for useful purpose.

Since the lime sludge contains mainly calcium carbonate and it is in line with the requirement of agricultural lime, it was decided by the industry authorities to use as an alternate replacement agricultural lime. Hence, a study was taken up during 2008 by UAHS, Shimoga., with the following objectives:

1. To check the effect of lime sludge on the quality of soil expressed by The quality of by
   physical, chemical, and biological properties.
2. The quality of ground water expressed by its chemical properties.
3. The crop quality expressed by the yield and elemental composition.

Now, UAHS has submitted a final report of the project and it was opined to deliberate the same in the TAC. Hence, the authorities were called for TAC meeting along with UAHS scientists on 12.12.2018.

During the presentation, the Managing Director has informed that The consent capacity of unit is 37,000 tonnes per annum of Writing and Printing paper, 75,000 Tonnes per annum of Newsprint paper & Sugarmill of 2500 Tonnes cane crush/day. Paper Machines - 4nos. There are four machines to produce different types of papers

and the details are as below:

1.	PM I	1937 (Kraft Paper)	20 TPD
2.	PM II	1952 (All varieties of WPP)	20 TPD
3.	PM III	1965 (All varieties of WPP)	60 TPD
4.	PM IV	1981 (Newsprint / WPP)	250 TPD

They also have a Sugar Mill of capacity 2500 TCD. Further, he has stated that, at present the industry is not working and is referred to BIFR.

The UAHS scientists have presented the following salient features of the project:

1. The project was initiated by selecting the locations and the different crops at different locations covering Shimoga, Chikmaglur and Davengere districts, with acidic soil.
2. Initially 19 locations were identified and 43 soil samples, 17 ground water samples were collected for analysis at different intervals.
3. The lime sludge samples were digested with dilute HCL for chemical content of calcium and heavy metals. The analysis report has revealed the presence of calcium carbonate to an extent of 9.068% and heavy metal content within the stipulated standard, applicable to Soil.
4. Soil samples were also analyzed to know the quantity of lime sludge required to be applied for the soil based on 45% calcium saturation with exchangeable calcium and cation exchange capacity.
5. After a detailed study, it was reported that liming the soil based on the lime requirement will neutralize the soil acidity and also supply nutrition to the crop. The application of lime at higher rate than necessary may create over liming problem, structural deterioration, reduce phosphate availability and induce Zn, B and Mg deficiency.
6. Half an acre of land was identified in each location and the lime sludge was applied before rainy season or 2- 3 weeks before sowing or planting of crops is mixed with the soil.
7. They have also given the estimation of Lime requirement and it was 1000kg of $CaCO_3$ requirement per Hectare of land. Hence, as per the model calculation followed for arriving at quantity of lime sludge application to soil to achieve 45% of CEC was 550.37 Kgs. Hence, the lime sludge required per 0.5 acres for different locations and for different crops varies between 148.86 Kgs to 335.35 Kgs.

They have also submitted the conclusion of the proposed project as follows:

1. The solid lime sludge from the MPM Ltd. has calcium content to the extent of 34.02% (83.05 % of $CaCO_3$) and the heavy metal content is well within the

permissible limits. Therefore, lime sludge from the MPM Ltd. is a useful liming material for crop production under acid soil conditions.

2. The usage of lime sludge on soils has positive effect on soil properties. The influence was best observed for soil pH, Ca and Mg and micronutrients.
3. The heavy metal content of soils under crops due to application of lime sludge were well within the permissible limits.
4. The lime sludge application has no effect on ground water properties and the heavy metal contents in ground waters are well within the permissible limits.
5. A positive effect of lime application on increase in crop yields was observed with a small increase in crop yields. The heavy metal contents in crop samples were also within the permissible limits.
6. Higher and comparable yields of crops can be obtained by the use of lime sludge in comparison to agricultural lime stone.

They have made the following recommendation based on the study as follows:

1. Due to positive effects in increasing the crop yields with no deleterious effects on soils, ground waters and crops, the lime sludge from MPM Ltd. can be used as an alternate to agricultural lime.
2. Lime sludge with less than 10 % moisture content can be recommended at the rate of 120 per cent of agricultural lime depending on the Ca content of lime sludge.
3. Lime sludge application to acid soils should be made 10 to 15 days prior to sowing or transplanting of agricultural crops for proper mixing and reaction in the soils. For perennial crops (horticultural crops) and forest plantation, lime sludge is applied either as broadcasting and band application or spot application and mixed in the soil and provided with irrigation.
4. As the area under acid soils is 3.31 M ha in Karnataka with major area coming under high rainfall areas of Chikkamagaluru, Dakshina Kannada, Udupi, Shivamogga, Kodagu districts and also in red soil areas of Hassan, the lime sludge produced from MPM Limited (35000 Mt./ year on dry weight basis with less than 10 % moisture for proper handling during bagging and application) can be continuously used for crop production.
5. Repeated application of lime sludge is required every year based on soil test due to removal of basic cations causing low soil pH (soil acidity) after every rains

Finally, after detailed deliberation, the committee has sought the following details from the industry:

1. Mass balance and material balance of sulphur should be submitted.
2. Submit the predicted details of water quality analysis and soil analysis over a period of 10 years time after the application of lime sludge continuously.
3. Industry shall carry out the soil and ground water status in the area where the dumping is already being done since last 30-40 years.

4. Details of lime sludge required for application on continual basis and the extent of area required keeping in view of operation of industry for next 50 years shall be submitted.
5. There is a requirement of lime sludge by the farmers for soil stabilization. Industry shall submit the quantity of demand which is required every year viz. A. Viz., the quantity of generation from the industry taking into consideration of maximum production capacity shall be submitted.
6. Details of heavy metal content both in the soil as well as in the ground water over a period of time shall be submitted.
7. Cation exchange capacity will be changed due to biological activity. Hence, the quantitative analysis of influence of biological activity on CEC shall be submitted.
8. It was also suggested to use recent scientific models for prediction of impact of lime sludge on different scenarios at different locations, over a period of time and details shall be submitted to the Board.
9. It was also suggested to check the data of the application of lime sludge on the plant with respect to the control. The details shall be submitted.
10. It is also suggested to give the samples of soil, ground water and plant tissues to the other NABL accredited laboratory for analysis (preferably with ICP-MS), to validate the data. The details shall be submitted.
11. Submit the technical report for claiming exemption for establishment of Rotary Lime Kiln shall be submitted.
12. Explore the possibility of sending the lime sludge to cement mill for further treatment.

ತಾಂತ್ರಿಕ ಸಲಹಾ ಸಮಿತಿಯ ಸಮಾವೇಶಕರು,
ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳ, ಬೆಂಗಳೂರು.

ಇವರಿಗೆ,
17ನೇ ಪ್ರವರ್ಗ,
ಕೇಂದ್ರ ಕಛೇರಿ.

ಫ್ಯಾಕ್ಸ್ / Fax : 080-25586321
ಈಮೇಲ್ / E-mail : ho@kspcb.gov.in
ವೆಬ್‌ಸೈಟ್ / Website : http://kspcb.gov.in

25581383, 25589112
25588151, 25588270
25588142, 25586520

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ.49, ಚರ್ಚ್‌ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ, ಭಾರತ
"Parisara Bhavana", 1st to 5th Floor, # 49, Church Street, Bengaluru - 560 001, Karnataka, INDIA

KSPCB/CEO-2/NEIABNG/393 TAC/2018-19 4842 DATE: 19 DEC 2018

KARNATAKASTATE POLLUTION CONTROL BOARD

PROCEEDINGS OF THE 393RD MEETING OF THE TECHNICAL ADVISORY COMMITTEE OF KSPCB HELD ON 12.12.2018 IN THE BOARD MEETING HALL, 3RD FLOOR, "PARISARA BHAVANA", CHURCH STREET, BANGALORE - 560001.

Members Present:

1.	Sri B.N. Ramesh Kumar, Chief Environmental Officer -2, KSPCB, Bangalore – 560 001.	Member Convener (Opted as Chairman)
2.	Dr. H.N. Chanakya, Scientist, Centre for Sustainable Technology, Indian Institute of Science (IISC), Bengaluru – 560 012	Invitee
3.	Dr. B.S. Jaiprakash, Vice President, Academy of Certified Hazardous Material Manager, India Chapter, Bangalore Institute of Technology, K.R. Road, Bengaluru.	Invitee
4.	Drugs Controller, Karnataka Drugs Control Department, Drugs Controllers Office, Palace Road, Bangalore - 560001	Invitee
5.	Director of Factories, Department of Factories, Boilere, Industrial Safety and Health.	Invitee
Officers of the Board present		
1.	Dr. A. Ramesh, Senior Environmental Officer, Board Office.	
2.	Smt. Viji Karhikeyan, Senior Environmental Officer, Board Office.	
3.	Sri. M.N. Yoganand, Environmental Officer, Board Office.	
4.	Sri Shanmugappa, Environmental Officer, Board Office	
5.	Sri. Sridhar R., Environmental Officer, Board Office.	
6.	Dr. D. R. Ravi, Deputy Environmental Officer, Board Office.	
7.	Sri. Majnunatha L, Deputy Environmental Officer, Regional Office, Mysore-I	

Members Absent with Intimation:

1.	Sri Manojkumar, IFS., Member Secretary, Karnataka State Pollution Control Board, Bangalore -01.	Chairman
2.	Sri M. Venkataram, Board Member, KSPCB, No.1250, Paduvana Road, 3rd Cross, 1st Phase, Kuvempu Nagar, Mysore -570023.	Co-Chairman

Industry Representatives		
Sl.No	**Name & Address**	**Designation of the industry representatives**
1.	Sri. R Girish, IAS,	Managing Director, M/s. Mysore Paper Mills Limited
2.	Sri. Ravindranath D P	Chief Operating Officer, M/s. Mysore Paper Mills Limited
3.	Dr. H. K. Viranna	UAHS, Shimoga
4.	DR. B. C. Dhananjaya	Asst. Professor, UAHS, Shimoga

5.	Sri. Karuna Karan M. Udupi	Asst. General Manager, M/s. Mysore Paper Mills Limited
6.	Sri. Chandrakumar K L	Technical Asst. KIADB
7.	Sri. Mohan Kumar J N	ADO, KIADB
8.	Sri. Hemanath C R	Senior Environmental Engineer
9.	Sri. D P Chakravarthy	M. D., M/s. Jio Chitra Industries
10.	S L Sanjay	M/s. Jio Chitra Industries
11.	Sri. Ravi Sales	Director, ETPA
12	Sri. P. Chow Reddy	V. P. Product Development.
13.	Sri. V L. Manjunath	VP Design
14	Dr. Rangaraj	Aqua Engineers and Consultants
15	Sri. S Narayan	Aqua Engineers and Consultants
16	Sri. Avijit Tripaty	J D Engineering
17	Sri. Lubodh Tyagi	J D Engineering
18	Sri. Aloke Karan	J D Engineering
19	Sri. Jagadeesh K. H.	Commissioner, Mysore City Corporation
20	Sri. D. R. Suresh	Deputy Commissioner, Mysore City Corporation
21	Dr. S C Suresh	Asst. Director, Mysore City Corporation

The Chairman of the TAC was attending the Legislative Assembly session at Belagavi, hence as per the instruction, Srei B.N Ramesh Kumar, CEO, Member Convenor presided the meeting.

ITEM NO: 393:01: Read & Confirmation of the Earlier Meeting

The proceedings of 392nd TAC meeting was read and discussed. The committee confirms the proceedings without any changes.

ITEM NO: 393:02

Studies of Impact of using lime sludge generated by the Mysore Paper Mills Limited on quality of Soil, Ground water and Crops, Carried out for seeking Exemption of Installation of Rotary Lime Kiln.

*****

The CPCB/ KSPCB have directed the industry to install Rotary Lime Kiln for handling lime sludge generated from the process of pulp making to reuse partially. As the installation of Rotary Lime Kiln involves funding and only 50 to 60% of the lime sludge is usable, the industrial authorities have looked for alternate ways of disposing the entire lime sludge for useful purpose.

Since the lime sludge contains mainly calcium carbonate and it is in line with the requirement of agricultural lime, it was decided by the industry authorities to use as an alternate replacement agricultural lime. Hence, a study was taken up during 2008 by UAHS, Shimoga., with the following objectives:

1. To check the effect of lime sludge on the quality of soil expressed by The quality of by physical, chemical, and biological properties.
2. The quality of ground water expressed by its chemical properties.
3. The crop quality expressed by the yield and elemental composition.

Now, UAHS has submitted a final report of the project and it was opined to deliberate the same in the TAC. Hence, the authorities were called for TAC meeting along with UAHS scientists on 12.12.2018.

During the presentation, the Managing Director has informed that The consent capacity of

unit is 37,000 tonnes per annum of Writing and Printing paper, 75,000 Tonnes per annum of Newsprint paper & Sugarmill of 2500 Tonnes cane crush/day. Paper Machines - 4nos. There are four machines to produce different types of papers and the details are as below:

1.	PM I	1937 (Kraft Paper)	20 TPD
2.	PM II	1952 (All varieties of WPP)	20 TPD
3.	PM III	1965 (All varieties of WPP)	60 TPD
4.	PM IV	1981 (Newsprint / WPP)	250 TPD

They also have a Sugar Mill of capacity 2500 TCD. Further, he has stated that, at present the industry is not working and is referred to BIFR.

The UAHS scientists have presented the following salient features of the project:

1. The project was initiated by selecting the locations and the different crops at different locations covering Shimoga, Chikmaglur and Davengere districts, with acidic soil.
2. Initially 19 locations were identified and 43 soil samples, 17 ground water samples were collected for analysis at different intervals.
3. The lime sludge samples were digested with dilute HCL for chemical content of calcium and heavy metals. The analysis report has revealed the presence of calcium carbonate to an extent of 9.068% and heavy metal content within the stipulated standard, applicable to Soil.
4. Soil samples were also analyzed to know the quantity of lime sludge required to be applied for the soil based on 45% calcium saturation with exchangeable calcium and cation exchange capacity.
5. After a detailed study, it was reported that liming the soil based on the lime requirement will neutralize the soil acidity and also supply nutrition to the crop. The application of lime at higher rate than necessary may create over liming problem, structural deterioration, reduce phosphate availability and induce Zn, B and Mg deficiency.
6. Half an acre of land was identified in each location and the lime sludge was applied before rainy season or 2- 3 weeks before sowing or planting of crops is mixed with the soil.
7. They have also given the estimation of Lime requirement and it was 1000kg of $CaCO_3$ requirement per Hectare of land. Hence, as per the model calculation followed for arriving at quantity of lime sludge application to soil to achieve 45% of CEC was 550.37 Kgs. Hence, the lime sludge required per 0.5 acres for different locations and for different crops varies between 148.86 Kgs to 335.35 Kgs.

They have also submitted the conclusion of the proposed project as follows:

1. The solid lime sludge from the MPM Ltd. has calcium content to the extent of 34.02% (83.05 % of $CaCO_3$) and the heavy metal content is well within the permissible limits. Therefore, lime sludge from the MPM Ltd. is a useful liming material for crop production under acid soil conditions.
2. The usage of lime sludge on soils has positive effect on soil properties. The influence was best observed for soil pH, Ca and Mg and micronutrients.
3. The heavy metal content of soils under crops due to application of lime sludge were well within the permissible limits.
4. The lime sludge application has no effect on ground water properties and the heavy metal contents in ground waters are well within the permissible limits.
5. A positive effect of lime application on increase in crop yields was observed with a small increase in crop yields. The heavy metal contents in crop samples were also within the permissible limits.
6. Higher and comparable yields of crops can be obtained by the use of lime sludge in comparison to agricultural lime stone.

They have made the following recommendation based on the study as follows:

1. Due to positive effects in increasing the crop yields with no deleterious effects on soils, ground waters and crops, the lime sludge from MPM Ltd. can be used as an alternate to agricultural lime.
2. Lime sludge with less than 10 % moisture content can be recommended at the rate of 120 per cent of agricultural lime depending on the Ca content of lime sludge.
3. Lime sludge application to acid soils should be made 10 to 15 days prior to sowing or transplanting of agricultural crops for proper mixing and reaction in the soils. For perennial crops (horticultural crops) and forest plantation, lime sludge is applied either as broadcasting and band application or spot application and mixed in the soil and provided with irrigation.
4. As the area under acid soils is 3.31 M ha in Karnataka with major area coming under high rainfall areas of Chikkamagaluru, Dakshina Kannada, Udupi, Shivamogga, Kodagu districts and also in red soil areas of Hassan, the lime sludge produced from MPM Limited (35000 Mt./ year on dry weight basis with less than 10 % moisture for proper handling during bagging and application) can be continuously used for crop production.
5. Repeated application of lime sludge is required every year based on soil test due to removal of basic cations causing low soil pH (soil acidity) after every rains

Finally, after detailed deliberation, the committee has sought the following details from the industry:

1. Mass balance and material balance of sulphur should be submitted.
2. Submit the predicted details of water quality analysis and soil analysis over a period of 10 years time after the application of lime sludge continuously.
3. Industry shall carry out the soil and ground water status in the area where the dumping is already being done since last 30-40 years.
4. Details of lime sludge required for application on continual basis and the extent of area required keeping in view of operation of industry for next 50 years shall be submitted.
5. There is a requirement of lime sludge by the farmers for soil stabilization. Industry shall submit the quantity of demand which is required every year viz. A. Viz., the quantity of generation from the industry taking into consideration of maximum production capacity shall be submitted.
6. Details of heavy metal content both in the soil as well as in the ground water over a period of time shall be submitted.
7. Cation exchange capacity will be changed due to biological activity. Hence, the quantitative analysis of influence of biological activity on CEC shall be submitted.
8. It was also suggested to use recent scientific models for prediction of impact of lime sludge on different scenarios at different locations, over a period of time and details shall be submitted to the Board.
9. It was also suggested to check the data of the application of lime sludge on the plant with respect to the control. The details shall be submitted.
10. It is also suggested to give the samples of soil, ground water and plant tissues to the other NABL accredited laboratory for analysis (preferably with ICP-MS), to validate the data. The details shall be submitted.
11. Submit the technical report for claiming exemption for establishment of Rotary Lime Kiln shall be submitted.
12. Explore the possibility of sending the lime sludge to cement mill for further treatment.

ITEM NO:393:03

Assessment of Environmental Impacts in and around Kolhar Industrial Area, Bidar District, Karnataka.