PERFORMANCE STUDIES AND TREATMENT OF DAIRY WASTE WATER

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Abstract

Milk processing industry is one of the prime and vigorously developing branches of industry in the world. The main effect of milk processing industry on the nature is related to energy and water consumption, and waste and wastewater generation. Changes in production processes and products that result in improvement of environmental, economic and social act of creativities are an significant part of the general process towards more sustainable production. The purpose of this project is to establish the application of Cleaner Technology as sustainable production tools to recover the environmental productivity of milk processing industry. A number of possible resolutions to progress the environmental performance of milk processing industry, to decrease energy and resources consumption are analysed: replacement of cleaning agent in the milk reception bar for cleaning of milk tankers with the specific acidic detergent, addition of the automated washing system in the butter bar, application of water recycling system to collect water.

Key words : *Cleaner Technology, Milk Industry, Sustainable production*

1. INTRODUCTION

The modern creation has been consecutively behind developmental activities to an extent that has never been witnessed in human history before. This has led to the manipulation of accepted resources consequential in a substance of concern for the industries and public as well. In a world of developing population, growing urbanization, and therefore usage of a large number of natural sources has brought on the condition similarly. Therefore, many industries have partial the use of such resources by altering their process methods to reduce the impact on the environment. A lot of industrial wastes that are generated are of incredible consequence to attain the needs beneath this scheme of sustainability. This has given pathway for the rise of the Clean Technology. It helps the industries to choose for projects which will help in reducing the negative impact on the environment by process change. The Clean Technology is known as one of the Flexible Mechanisms that Changes in production & products the result in improvement of environmental, economic & social performance of enterprises towards more sustainable production. an expenditure which permits industrialized (Annex-I) countries with finance initiatives that lessen discharges in developing countries the usage of smooth technology.

2. STUDY AREA

Karnataka Milk Federation(RBK MILK Union Ltd) is an Indian company located in Budgumpa Road, Koppal Dist., Karnataka. The preliminary study of the process area is carried out at KMF(RBK MILK Union).

Fig1: Dairy Industries in Koppal

2.1. MISSION AND VISION OF COMPANY:

RBKMUL is committed to society economic development of its member milk producers by adopting advanced technology to make dairying a profitable business by the dedicated workmanship to provide best services to its associates and consumers thereby achieving the best position in the Karnataka.

Our-Values

- Honesty
- Quality
- Trust
- Discipline/Timeliness
- Transparency
- Impartial
- Savings
- Co-operative, Principle

3. LABORATORY WORK & ANALYSIS

3.1.Preliminary Analysis of Wastewater Sample

The collected water samples were tested for following parameters. It was noticed that pH, BOD, COD, TDS, TSS, TS, Chlorides, Sulphate were within BIS standard limits, while other parameters were out of limit range. Preliminary analysis gave us a quick look at what extend wastewater is polluted and to what extent treatment is to be given.

All the experiments were conducted by following standard procedures. pH of all samples were tested as soon as bought to laboratory,

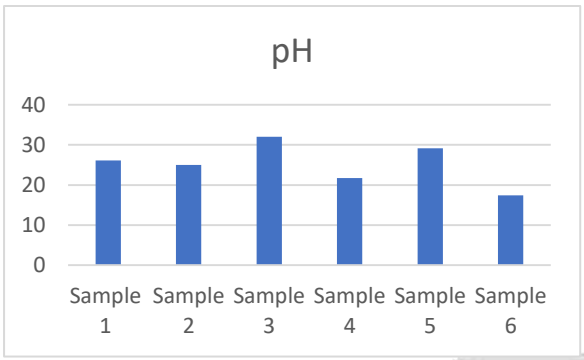
Table1: Result Analysis Chart of conducted experiment

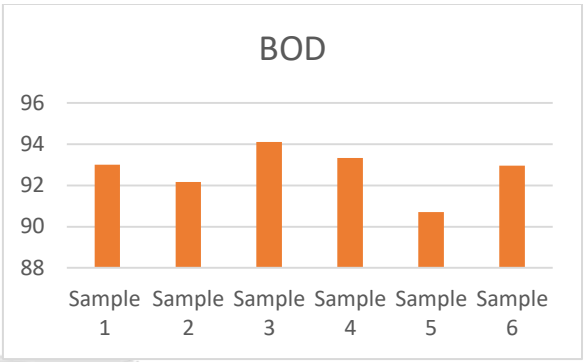
Table2: percentage of efficiency

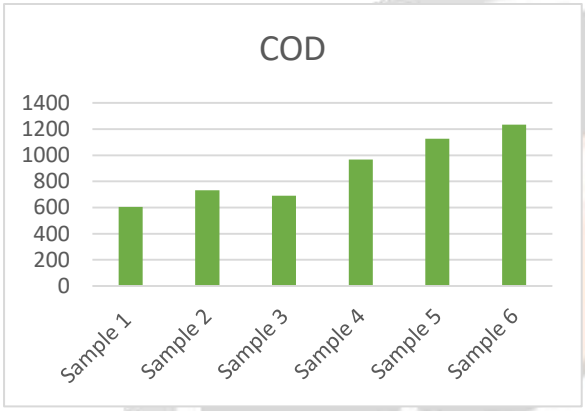
PARAMETER		PH	BOD	COD	TDS	TSS	TS	CHLORIDES	SUFATE
SAMPLE-1	INFLUENT	11.5	475	85	1780	1200	1980	400	700
	EFFLUENT	8.5	30	600	50	30	80	20	40
SAMPLE-2	INFLUENT	12	575	90	1870	1100	1970	540	800
	EFFLUENT	9	45	750	60	20	80	30	40
SAMPLE-3	INFLUENT	12.5	680	120	2000	1000	3000	440	840
	EFFLUENT	8.5	40	950	70	20	90	20	30
SAMPLE-4	INFLUENT	11.5	600	75	1650	1300	1950	380	740
	EFFLUENT	9	40	800	50	20	70	30	50
SAMPLE-5	INFLUENT	12	540	80	1750	1200	1950	410	800
	EFFLUENT	8.5	50	980	60	70	130	10	60
SAMPLE-6	INFLUENT	11.5	640	90	1700	1100	1800	510	750
	EFFLUENT	9.5	45	1200	70	40	110	20	60

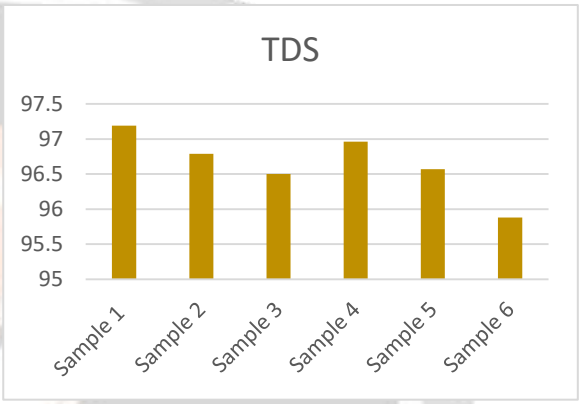
Parameter % of efficiency	Ph	BOD	COD	TDS	TSS	TS	CHLORIDES	SULFATE
Sample 1	26.08	93	605.88	97.19	95.95	95.05	95	94.28
Sample 2	25	92.17	733.33	96.79	98.18	95.93	94.4	95
Sample 3	32	94.11	691.66	96.5	98	97	95.45	96.42
Sample 4	21.73	93.33	966.66	96.96	98.46	96.41	92.10	93.24
Sample 5	29.16	90.70	1125	96.57	94.16	93.33	97.56	92.5
Sample 6	17.39	92.96	1233.33	95.88	96.36	93.88	96.07	92

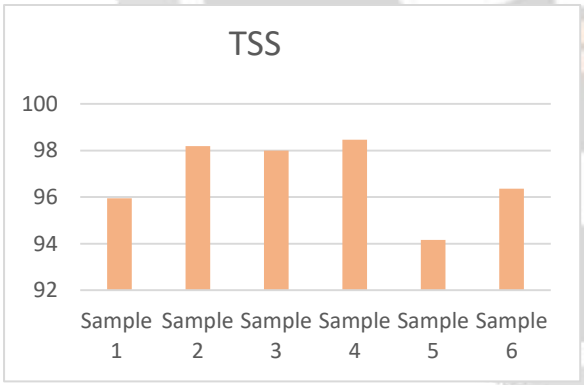
3.1 Graph representing the laboratory obtained values of parameters

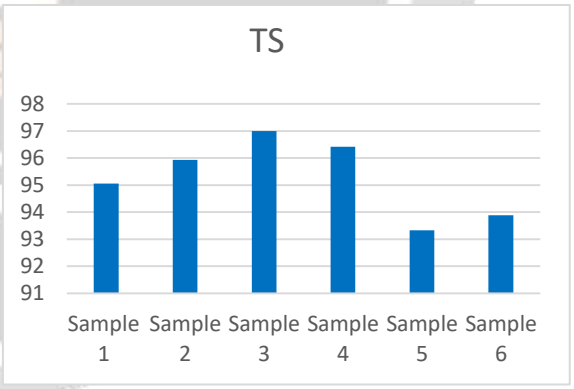


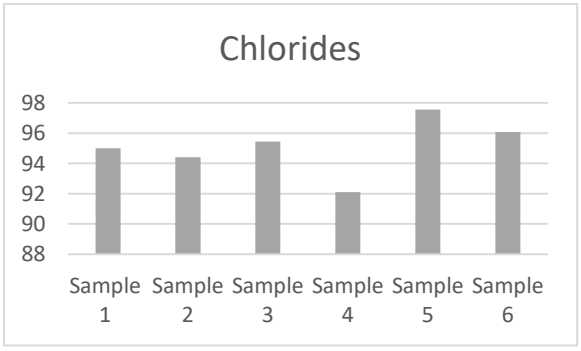


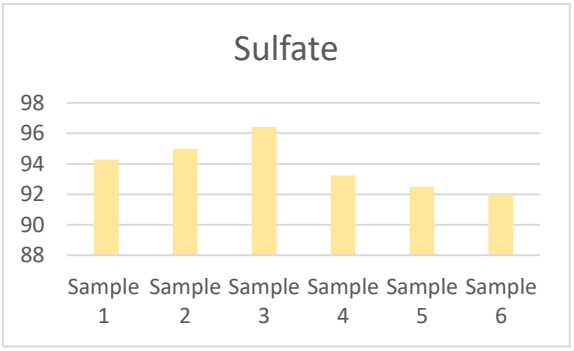












4. DISCUSSION

The wastewater sample was collected at temperature 28 - 38°C by considering sampling temperature every time as it also plays a major role in properties of parameters .summarizes the range of values determined in laboratory and standard value limits by CPCB for effluent disposal into inland surface waters.

COD is increasing in effluent concentration due to making of ghee products , High or low pH in effluent affects quality of cleanness of water and rate of biological reaction.

Dairy industries usually show high TDS & TSS values due to processing of milk and there by products

Many dairy plants have technologies in place for recovering wastewater and/or for reuse in the dairy plant, Fats, milk solids and minerals can also be recovered from wastewater and recycled – either at the dairy plant or offsite.

BOD. pH , Chlorides, Sulfate obtained values from samples are within limit and so process methods are efficient

5. CONCLUSION

Performance of treatment plant is well below the efficient it may be required improved treatment plant needs innovative techniques to treat this wastewater

Alternative method can be used to recovering wastewater and/or for reuse in the dairy plant.

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