

# Study of Waste Management System of Tobacco Industry

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**Abstract:** Tobacco companies use their enormous wealth and influence both locally and globally to market their deadly products which creates a large amount of harmful waste. Hence tobacco industry is included in red category industry, many different solid and liquid waste are emitted from this industry the liquid waste emitted from this industry can be reused, treated and disposed off. In this paper we are going to study the waste management system for the malpani group of tobacco industry.

**Keywords:** Tobacco industry, liquid waste, solid waste, hazardous waste management.

## 1. Introduction

The tobacco industry is one of the most profitable industries in the world. Tobacco companies use their enormous wealth and influence both locally and globally to market their deadly products. Even as advocacy groups and policy makers work to combat the tobacco industry's influence, new and manipulative tactics are used by tobacco companies and their allies to circumvent tobacco control efforts. It is important for tobacco control advocates to know which companies are present in their country, how and where they operate, the types and quantity of products sold, and marketing tactics used to sell tobacco products. By being informed about all aspects of the tobacco industry within a country, advocates are better equipped to fight for effective tobacco control policies. Tobacco is an agricultural product which is mainly used for cigarettes production. Today's tobacco products manufacturing includes many chemical additions, to provide a better taste. Since every brand has its own secret flavour, it is almost impossible to know exact composition of these products. Tobacco wastewater quantities are generated during tobacco processing and cigarettes making. Results of many investigations show that the most important sources of the toxic contaminant in

tobacco wastewater are nicotine, flavoring chemicals containing glycogen and alcohol, absorbable organic halogens (AOX), and pesticides from tobacco leaves. The tobacco industry damages the environment in many ways, and in ways that go far beyond the effects of the smoke that cigarettes put into the air when they are smoked. The harmful impact of the tobacco industry on deforestation, climate change, litter, and forest fires is enormous and growing. The manufacturing of tobacco products also produces an immense amount of waste. In 1995, the global tobacco industry produced an estimated 2.3 billion kilograms of manufacturing waste and 209 million kilograms of chemical waste. Layering processes have been used over the years. The methods to be carried in the tobacco industry are area of study, sampling of industrial waste water effluent and sample preparation, physicochemical analysis, heavy metal analysis, technique microbiological analysis. Malpani Group is well diversified business house active in Renewable energy, FMCG products, Amusement and Water Park, Real estate, Hotels etc. Malpani Group's success story is no ordinary one. Our unceasing commitment to the satisfaction of our customers as well as the society by way of sharing the rewards with all has been and always will be the secret to our phenomenal growth. Our activities have given the small town of Sangamner as well as its surrounding areas a new modern face. Along with developing the infrastructure of Sangamner, we have managed to create social awareness, encourage education as well as inspire the people to dream big and aspire more without disturbing the rural roots. Malpani Group is glad to have played an active role in the transformation of Sangamner and in putting it on the industrial map of the world. We are committed to drawing upon the wisdom of past generations while utilising the innovation and enthusiasm of present generation in scaling greater heights than ever before. The Malpani Group's association with tobacco industry goes back to 9th of July 1894. Today, the distinctive green paper packed tobacco

sachets of 'GaiChhapJarda' command an enviable brand loyalty. The group realized the criticality of backward integration and invested heavily in it. Evolving and expanding over the years, it has become India's strongest brand of chewing tobacco. Various units are available in tobacco manufacturing industry. The layout of the industry is shown below which shows the different areas which are used for various purposes. Which includes the processes i.e. from drying of the tobacco to the tobacco packing. One sewage and effluent treatment plant is also available in the industry. The drying of the tobacco is done firstly then the processing is done on the tobacco. In this process a drier is required and coal; is used in it for the drying purpose. This coal burning emits high amount of the gaseous pollutants, Such as SOX and NOX emission is occurred. For solving this problem coal should be replaced. After drying the processing of the tobacco is to be carried out. After that pouch printing is also carried in the industry. The printing of the pouches is also done in the same place in different section. The ink washing area is also situated near the pouch printing area. At last the packing of the tobacco is done with the label of malpani. The schematic diagram for the same is shown below. The Raw Material used in this industry is the Unmanufactured Tobacco which is dried and then used. For the Printing of the tobacco pouches the various types of the Raw Material to be used are as follows a) Wrapper Paper b) Brown Paper c) Water Base Ink ( White, Green, Red, Blue & Black ). As the tobacco pouches after manufacturing are also packed with tobacco in the same industry, the material to be used for the sticking purpose is glue. The Raw Material for the glue is a) Tapioca Powder b) Yellow Dextrine Powder and c) Tamrind Powder. The Surrounding of Industry is Only Farmer Do Farming & other two side Kolhar- ghoti and Pune- Nashik Highway exist at present. In this Factory Primises thick plantation is to be done, 46 % Plantation is done to total open space area. The water to be used the plantation of the trees is the same water which is obtained from the industry. And hence no treatment for the water is to be required. But the water coming out of the packing industry requires to be treated as it contains various chemical products. The waste product coming out of the glue industry is also a major problem to be solve along with the gaseous pollutant problem. In this Factory only Tobacco packing, pouch making & printing activity is to be done.

## 2. MATERIALS AND METHODS

**2.1. Area Study:** The study was carried out at a Tobacco Company. The industrial area utilizes a lot of fresh water per day. However, specific amount of water used was not documented. The effluent discharge, treated and untreated is released into neighbouring environment. This has

created health hazards for local population. Hence there is a need to treat this water before it is being discharged in the surrounding environment. The study showed that the is coming from the packing industry which contains ink, also from the glue manufacturing industry as well and from the tobacco manufacturing plant.

### **2.2. Sampling of the Industrial waste water effluent and Sample Preparation:**

The industrial waste water effluent samples (number of samples collected,  $n=4$ ) were collected randomly from all discharge points of the tobacco company malpani group of industries. And after this the various tests were performed on this waste water to check the characteristics of it. Following point shows the various physiochemical tests to be performed on the waste water.

**2.3. Physiochemical Analysis:** The analyses were carried out according to recommended ISO methods. These values are presented as the mean of three individual values measured.

Among which the chemical analyses include the following parameters which are to be tested.

**a. pH:** The PH is the activity of Hydrogen ions in the water and expressed by negative logarithm to the base 10 of the  $H^+$  ion activity in moles/L. pH is measure with help of portable pH meter on site of sample collection. The pH meter is the first calibrated by using buffer solution having pH 4.7 and 9.2.

**b. Temperature:** Temperature is measure with help of Digital thermometer on site of sample collection.

**c. Dissolve oxygen:** The determination of dissolved oxygen present in River is very important, because aquatic life of river is depend upon DO and minimum 4 ppm DO is required to survival of aquatic life. To ensure this, DO tests are performed. DO test is measure on site of sample collection with the help of Digital Dissolve Oxygen Meter. Because of on-site measurement of DO gives the accurate result and if DO is measure after some time period then because of temperature changes and atmospheric changes DO get changed.

**d. BOD (Biological Oxygen Demand):** Biological Oxygen Demand (BOD) is a measure of the oxygen used by microorganisms to decompose this waste. If there is a large quantity of organic waste in the water supply, there will also be a lot of bacteria present working to decompose this waste.

The dilution method was followed to determine the BOD after three days at  $27^{\circ}C$ . For the same dilution water was prepared with the addition of nutrients namely phosphate buffer, magnesium Sulphate, calcium chloride and ferric chloride. The diluted sample was transferred to BOD

bottles of 300 ml capacity. After determining initial dissolved oxygen (DO), final DO was estimated from the bottles kept for incubation period for three days.

**e. COD (Chemical Oxygen Demand):**Chemical oxygen demand is related to biochemical oxygen demand (BOD), another standard test for assaying the oxygen demanding strength of waste waters. However, biochemical oxygen demand only measures the amount of oxygen consumed by microbial oxidation and is most relevant to waters rich in organic matter.

**f. Total Suspended Solids:**

Total suspended solids are those solids which are retained by the filter of 1 micro m pores, and they are, therefore, also called as non-filterable solids. Their quantity can be determined by passing a known volume of sewage sample through a glass fiber filter apparatus and weighing the dry residue left.

**g. Turbidity:**

Determine turbidity as soon as possible after the sample is taken. Gently agitate all samples before examination to ensure a representative measurement. Sample preservation is not practical, begin analysis promptly. Refrigerate or cool to 4°C, to minimize microbiological decomposition of solids, if storage is required. For best results, measure turbidity immediately without altering the original sample conditions such as temperature or pH. Turbidity is measure with the help of Digital turbidity meter. This calibrated with the help of standard NTU. The analyses were carried out according to recommended ISO methods. These values are presented as the mean of three individual values measured.

**4.RESULTS AND DISCUSSION**

Two types of the waste is generated the non-hazardous waste is treated as the Paper solid waste cutting on M/C in small pieces & sell to Parties. The Ink Empty contaminated drum use for Recycling mannar. The Used Oil sell to the authorize parties. STP & ETP sludge used as manure for generation per Month. Details of HW Waste Ink Sludge, Khal Sludge & Cotton Waste. For the Month Sept-2016

FFPI - Sangamer	Pigment (Gal) - 20 Kg/M	2400 Kg	141.67	2591 kg/M	CHWTS WF
	Thick(Dry) - 30 kg/M				
Total	50Kg/M	2400 Kg/M	141.67 Kg/M		

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**Author Profile**



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Loacati on	Waste Printi ng ink Sludge Kg/Month	Wasta ge kh al Sludge kg/M onth	Cotto n Waste Kg/M onth	Total / Mon th	Diposal Facility



**2. Dr. Sunil Bhimrao Thakare** has obtained PG degree from Amravati University and doctoral degree from Sant Gadge Baba Amravati University. He has published 13 research papers in national conference and 9 research papers in International conference and also he has published 10 research papers in National journal and 2 research paper in International journal. He was a recipient of “Best Lecture” award from Indian Water Works Association in – 42<sup>nd</sup> Annual Convention held at Jodhpur , on 29<sup>th</sup> January 2010..