

## NOTE

## Preliminary Analysis of Waste Water from Soyabean Oil Factory

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The physico-chemical parameters of waste water of various manufacturing processes of edible oil (soyabean) industries of Pipariya (Hoshangabad) and Gadarwara (Narsinghpur) districts of Madhya Pradesh are analysed. The pollution parameters as pH, BOD, COD, TSS, oil and TDS have been observed in year 1998–99 for soyabean oil and other oilseeds. The flow variations and average flow pattern has also been noticed.

Pipariya (Hoshangabad) and Gadarwara (Narsinghpur) districts of Madhya Pradesh (India) are well known for oilseeds cropping. In Pipariya town there are soyabean plants while Gadarwara also has 2 or-3 edible oil industries. Manufacturing operation of oil has been done in 3 stages. Oil mill (crushing of oil-seeds), solvent extraction (extraction of oil from oilcakes by chemical process) and refining of impure oil from both units by chemical processes. Oil mills require very little water. Solvent extraction plant has more requirement of water because the process depends on cooling and separation of organic solvent layer and water layer. Refining of oil is done by chemical process by degumming using phosphoric acid, neutralisation with NaOH and bleaching<sup>1</sup>. Vegetable oil has triglyceride esters of glycerol and fatty acids of varying chain length. Waste water from the oil factories is generated from solvent extraction or refining.

Samples were collected from the industrial waste water stream by Grab method and analysed as prescribed by APHA<sup>2</sup> (1985) for pH, BOD, COD, TDS, oil, alkalinity or acidity, Chlorides total alkalinity or acidity are observed by developing graphs and observation of change in pH by adding acid or alkali.

Physico-chemical parameters of raw and untreated wastewater from different processes were observed. Improperly disposed wastewater affected the waterbodies, which were blackened and had specific foul smell. Wastewater mixing into water resources formed foam and thick scum on water surface.

In the manufacturing process in edible oil industries, the impurities of unsaturated fatty acids, non-glyceride, cephalin, raffinose, peptones, keratinoids are removed. Finally impurity goes into the water. It has been observed that amount of impurities differs from oil to oil, depends on efficiency process.

Wastewater from edible oil is easily biodegradable<sup>3</sup>. Flow of wastewater is about 0.2 to 1.2 cum/ton of oil produced. Higher concentration of soyabean plant wastewater may be constituted by higher quantities of composite wastewater which is reduced by dilution effect of washwater.

#### WASTEWATER EFFLUENT STREAMS AND ITS CHARACTERISTICS

S.N.	Type of waste water	Average daily flow	I	Parameters	SS-I Value	SS-II soyabean
1.	Alkali process	10,000 L (5000-13000)	pH, COD, BOD, TSS, TDS, oil and grease	pH colour	8.3-8.5 blackish	9.2-11.2 blackish
2.	Acid process	500 L (300-1500)	—do—	TSS BOD	2880 8,000	12,000 7,800
3.	Washwater	4000 L (2000-8000)	—do—	COD	14,864	15,260
4.	Solvent wastewater	18,000 L (4000-10000)	—do—	Oil	12,048	12,076

SS-I = Sampling Statioci No. 1—Pipariya; SS-II = Sample Staho No. 2—Gadarwara

#### REFERENCES

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2. American Public Health Association, Standard Methods for Examination of Water and Wastewater, 16th Edn., APHA, USA (1985).
3. S.P. Mahajan, Pollution Control in Process Industries, Tata McGraw-Hill Publ. Co. Ltd., New Delhi (1990).

(Received: 25 August 2000; Accepted: 17 February 2001)

AJC-2254