

Treatment of Waste water from Paint Industry

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Introduction to Paint Industry

Paint industry uses varied raw material such as resins, solvents, drying oils, pigments and extenders. The major waste generated by the paint manufacturing industry are empty raw material packages containing trace elements, equipment cleaning wastes and spills.

Waste-Water Generation from Paint Industry

waste-waters from the paint manufacturing industries generally tend to be alkaline, contain some oil and grease and Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Suspended Solids (SS). The waste-waters can be assumed to contain small amounts of the products.

The BOD and COD values give only a gross measure of organics in the wastes. Some of the organic and inorganic compounds used in the manufacturing operations are classified as toxic and hazardous.

Chromium, copper, lead, zinc, ethyl benzene, di-(2-ethylhexyl) phthalate, tetrachloroethylene and toluene were found in high concentrations.

Waste-Water Characteristics of Paint Industry:

Source	Characteristics					
	PH	SS (mg / l)	BOD (mg / l)	COD (mg / l)	Oil & Grease (mg / l)	Phenolics (mg / l)
Caustic Cleaning	8.5 to 13.5	200 to 600	475 to 2400	1100- 3800	32-150	12.5
Resin House	3.2 to 6.3	240 to 400	225 to 60,000	240 to 78,000	14-25	6 and 86
Stiff Paints		400 to 700	380 to 980	1215 to 6000	252	6.4 to 100
Combined Waste-Water	6.5 – 10.5	220 - 1200	1700 - 3100	300 - 5700	22 - 138	18 - 55

Reduction of Waste-Water from Paint Industry:

Unnecessary use of water not only adds to the quantity of effluent and the cost of treating it, but also increases the wastage of heat, power and/or product in the effluent.

Steps that can be taken to reduce the generation of waste-water are discussed below:

Good Housekeeping:

- The cooling water is usually uncontaminated and thus, should be collected and reused.
- Accidental spills and leakages should be reduced to a minimum through proper maintenance of equipment and training of personnel.
- In case of caustic cleaning, instead of washing away the caustic solution, it can be collected, stored and used for further cleaning.
- Waste-water volume can also be reduced through reuse of rinse water for preparation of alkali solution.

Recovery of Wastes:

- In case of oil paints, solvents are added in grinders which are closed units, therefore, loss of solvents through evaporation is considerably reduced.
- High temperature is maintained in resin and varnish manufacture, resulting in evaporation of solvents added.

Treatability Aspects of Waste-Water:

- Combined effluent from paint industries can be satisfactorily treated using the usually physico-chemical and/or biological treatment methods. The treatment consists of coagulant addition and adjustment of pH to an optimum level for maximum precipitation, the precipitated material is removed by gravity separation, either on batch basis or in a continuous flow tank.
- Even after this treatment if some toxic pollutants remain, biological treatment can reduce their concentration. Some of the organics which remain in the supernatant after physico-chemical treatment are biodegradable and can be removed through biological treatment.

Recommended Treatment System:

The following minimum steps are recommended for waste-water treatment:

1. Adjustment of pH.
2. Removal of oil and grease.
3. Removal of suspended solid.
4. Removal of toxic substance.

The proposed waste-water treatment system should be supported by segregation, reduction, generation and recycling of waste-water. Thus dyes are substances capable of colouring fabrics in such a manner that the colour cannot be removed by rubbing or washing. Every coloured substance is not a dye. For example, azobenzene is of orange red colour, but it is not a dye, because it is not capable of colouring the fibre.

Reference:

<http://www.environmentalpollution.in>