

INTERNSHIP REPORT

BHACHELOR OF SCIENCE IN CHEMISTRY

BY

D. JEEVADHARSHINI

D. Jeeradharshini

REG NO: 41030009

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
SEMMANCHERI, CHENNAI-600119.

INTERNAL : J. Jeeradharshini

EXTERNAL :

HEAD OF THE DEPARTMENT
HEAD DEPARTMENT OF CHEMISTRY
SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
DEEMED UNIVERSITY
SEMMANCHERI, CHENNAI-600119

Jeeradharshini

ACKNOWLEDGEMENT

- I want to thank my advisers and everyone at the company for their patience and assistance during my on-site training. Thanks to their guidance, I was able to develop my industrial skills and learn about total dissolved solids & total suspended solids, mixed liquid suspended & total solids, phosphorus, ammoniacal nitrogen, chemical oxygen demand, bio chemical oxygen demand, chlorine and sulphate. These skills will help me to expand my resume and advance my career.

ABOUT COMPANY

- *Hiyoshi India Ecological Services Private Limited a 100% subsidiary company of Hiyoshi Corporation, Japan was established in the year 2011.*
- *To provide Hiyoshi's 70 years of acquired knowledge in the field of drinking water analysis, wastewater analysis, O&M of STP, solid waste etc. in Chennai.*
- *To be a place where the water test results provided are true and reliable which is extremely essential for environmental conservation.*
- *"Worldwide environmental problems are constantly changing. These problems have no borders and so it is important for all of us to come and work together irrespective of nationality, culture, race and collectively address the challenges that the entire world is facing so that we leave behind a cleaner environment."*

TOTAL DISSOLVED SOLID& SUSPENDED SOLIDS

- *TDS: Total dissolved solids (TDS) is a measure of the dissolved combined content of all inorganic and organic substances present in a liquid in molecular, ionized, or micro-granular (colloidal sol) suspended form. TDS are often measured in parts per million (ppm). TDS in water can be measured using a digital meter.*
- *PRINCIPLE:*
- *Take the empty weight of the filter paper and kept in oven for half an hour, then cool it in desiccator for 15 min.*
- *Filter the waste water sample by using that filter paper and kept the filtered sample in water bath till it evaporates completely.*
- *Again kept in a oven at 180 c then weight it to calculate the dissolved solids.*
- *TSS: Total suspended solids (TSS) are defined as solids in water that can be trapped by a filter. To measure TSS, the water sample is filtered through a pre-weighed filter. The residue retained on the filter is dried in an oven at 103-105°C until the weight of the filter no longer changes.*

MLSS & TOTAL SOLIDS, PHOSPHOROUS

- **MLSS:**
- Mixed liquid suspended solids (MLSS) is the concentration of suspended solids, in an aeration tank during the activated sludge process, which occurs during the treatment of waste water.
- **MLSS TOTAL SOLIDS:**
- Mixed Liquor Suspended Solids or MLSS in wastewater treatment is the measure of the total concentration of solids in an aeration tank. It includes non-biodegradable suspended matter, organic solids and microorganisms.
- **PHOSPHOROUS:**
- Phosphorus is a chemical element with the symbol p and atomic number 15.
- It can be determined by adding ammonical molybdate and stannous chloride forming blue colored complex, the absorbance of which is measured spectrophotometrically at 690 nm in uv/vis spectrophotometer. First series of known concentration is known as standard solutions and from there unknown concentration is calculated by comparing its absorbance with that of standard.

AMMONICAL NITROGEN, COD.

- AMMONICAL NITROGEN:
 - Ammonical nitrogen is a measure for the nitrogenous organic matter as ammonia, a toxic pollutant that can directly poison humans and upset the equilibrium of water ecology systems.
- COD:
 - The chemical oxygen demand (COD) test is commonly used to indirectly measure the amount of organic compounds in liquid waste. It is expressed in milligrams/grams per liter, which indicates the mass of oxygen consumed per liter of solution.
- APPARATUS & REAGENT REQUIRED:
 - COD digestion
 - Ferroin indicator
 - Sodium thio sulphate
 - Burette and standard flask
 - Waste water
 - Volumetric pipette

BOD. CHLORIDE

- **BOD:**

- Biochemical oxygen demand (BOD) represents the amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic (oxygen is present) conditions at a specified temperature. When you look at water in a lake the one thing you don't see is oxygen.

- **APPARATUS & REAGENT REQUIRED :**

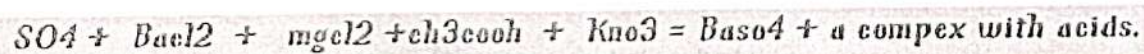
- BOD incubator
- BOD bottles
- Silver nitrate
- Starch indicator
- Standard flesh
- Volumetric pipette
- Sulphuric acid

- **CHLORIDE:**

- Chloride is a mineral naturally found in various foods, but our main dietary source is sodium chloride, otherwise known as table salt. Chloride carries an electric charge and therefore is classified as an electrolyte, along with sodium and potassium.
- **PRINCIPLE:** To determine the chlorine content in all water and waste water sample using argentometric method, potassium chromate can indicate the end point of the silver nitrate titration of chloride.

SULPHATE

- **SULPHATE:**
- Sulphate is basically a chemical compound that is composed of sulphur and oxygen atoms. Sulphate forms salts with a variety of elements, including potassium, sodium, calcium, magnesium and barium.
- Sulfates in consumer products are considered surfactants - or detergents - because they bind to oil, fat, grease, and dirt, removing them from the surface. Sulfates also produce a lather, which makes them appealing as ingredients in shampoo and soap.
- **PRINCIPLE:**
- At acidic Ph, SO_4 (sulphate) reacts with $BaCl_2$ to form $BaSO_4$ as the turbid compound.
- We are using buffer solution for this sulphate reagent. We are preparing the buffer solution by using CH_3COONa , $MgCl_2$, KNO_3 , & CH_3COOH .
- This buffer solution is used to stabilize the solution and resist any further changes in pH.



CONCLUSION

- From my internship, I was able to get a better understanding of how the waste water treatment industry works and how effective it is. I enjoyed working with the area and I got some different experience. However I still have a long way to go in understanding the chemical aspects of waste water treatment. overall, I found the industrial internship experience to be positive, and I am sure I will be able to use the skills learned in my career later.



HIYOSHI india
Ecological Services Pvt. Ltd.

Certificate of Training

This is to certify that

Ms. D. Jeevadharsini

Of

*Sathyabama Institute of Science and Technology (Deemed to
be University), Jeppiaar Nagar, Rajiv Gandhi Salai (OMR),
Sholinganallur, Chennai - 600 119, Tamilnadu, India*

*Successfully completed the "Internship" in the field of Water
and Wastewater analysis at Hiyoshi India Ecological
Services Pvt. Ltd., Chennai - 600 113, Tamilnadu, India
From 11th to 26th September 2023.*



M. D. J.
Dr. M. MANISAMY
Director