IMPLEMENTATION OF WASTE WATER TREATMENT AT UPPAL LAKE, HYDERABAD

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Abstract-The purpose of study was to assess water quality of Uppal Lake, Hyderabad during 2016. Usually wastewater physiochemical analysis will involve collecting the wastewater in a central, segregated location and subjecting the wastewater to various physiochemical analysis processes. Most often, since large volumes of wastewater are involved, physiochemical analysis are carried out on continuously flowing wastewaters (continuous flow or "open" systems) rather than as "batch" or a series of periodic processes in which physiochemical analysis is carried out on parcels or "batches" of wastewaters. While most wastewater physiochemical analysis processes are continuous flow, certain operations, such as vacuum filtration, involving as it does, storage of sludge, the addition of chemicals, filtration and removal or disposal of the treated sludge, are routinely handled as periodic batch operations. Water quality test by physiochemical analysis, however, can also be organized or categorized by the nature of the physiochemical analysis operation. The objective of study was to study and process the water quality in Uppal lake, the lake water samples were collected from 4 sides randomly, the physico-chemical analyses were done by APHA method, in this research the Primary Sources Were Books and Articles and Secondary Sources Were Lake samples (water) collection – 4samples, Physico-chemical analysis, Results Compared with standards. The finding parameters definitely showed that Uppal lake is highly contaminated. Although there are some parameters which come under the tolerable range of the standards provided yet it is very important to be noticed that these parameters, are for Industrial effluents and Waste water, not for irrigation purpose but Uppal lake water from a long time is being used for Printing, Dying and most importantly for irrigation, which makes this water channel highly polluted. Overall findings indicated that wastewaters of the major industrial areas of Hyderabad city were not found good and should not be used for irrigation without prior treatment. Immediate action could be taken by the people at household level like they should try and find some other water sources for irrigation, filter plats should be installed in personal level etc. as environmental and engineering measures at community level would take a long time to be applied.

Key words- Hyderabad, Physiochemical Analysis, Waste Water, Uppal Lake.

1. INTRODUCTION

1.1 Lake Contaminations/Pollutions

Wastewater, likewise composed as waste water, is any water that has been antagonistically influenced in quality by anthropogenic impact. Wastewater can begin from a mix of household, modern, business or horticultural exercises, surface spillover or storm water, and from sewer inflow or penetration. Metropolitan wastewater is typically passed on in a joined sewer or clean sewer, and treated at a wastewater treatment plant. Treated wastewater is released into getting water by means of an emanating funnel. Wastewaters produced in regions without access to unified sewer frameworks depend on location wastewater frameworks. These commonly include a septic tank, channel field, and alternatively an on location treatment unit. The administration of wastewater fits in with the overall term sanitation, much the same as the administration of human excreta, strong waste and storm water (Judd, 2010). Sewage is a sort of wastewater that contains residential wastewater and is thusly polluted with excrement or pee from individuals' toilets, however the term sewage is additionally used to mean any kind of wastewater. Sewerage is the physical framework, including funnels, pumps, screens, channels and so forth used to pass on sewage from its cause to the point of consequent treatment or transfer.

1.2 Quality Indication

Any oxidizable material present in a vigorous regular conduit or in a mechanical wastewater will be oxidized both by biochemical (bacterial) or synthetic procedures. The outcome is that the oxygen substance of the water will be diminished. Essentially, the response for biochemical oxidation might be composed as: Oxidizable material + microorganisms + supplement + O₂ → CO₂ + H₂O + oxidized inorganics, for example, NO₃⁻ or SO₄²⁻ Oxygen utilization by lessening chemicals, for example, sulfides and nitrites is exemplified as takes after: S₂⁻ + 2 O₂ → SO₄²⁻ NO₂⁻ + ½ O₂ → NO₃⁻ Since every single regular conduit contain microorganisms and supplements, any waste mixes brought into such conduits will start biochemical responses, (for example, appeared previously). Those biochemical responses make what is measured in the research center as the biochemical oxygen request (BOD). Such chemicals are additionally subject to be separated utilizing solid oxidizing operators and these substance responses make what is measured in the lab as the synthetic oxygen request (COD). Both the BOD and COD tests are a measure of the relative oxygen-consumption impact of a waste contaminant (Hammer, 1986). Both have been broadly embraced as a measure of contamination

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impact. The BOD test measures the oxygen interest of biodegradable toxins while the COD test measures the oxygen interest of oxidizable pollutants. The alleged 5-day BOD measures the measure of oxygen devoured by biochemical oxidation of waste contaminants in a 5-day period. The aggregate sum of oxygen devoured when the biochemical response is permitted to continue to finishing is known as the Ultimate BOD. Since the Ultimate BOD is so tedious, the 5-day BOD has been all around received as a measure of relative contamination impact. There are additionally a wide range of COD tests of which the 4-hour COD is likely the most well-known. There is no summed up connection between's the 5-day BOD and a definitive BOD. Essentially there is no summed up relationship in the middle of's BOD and COD. It is conceivable to grow such connections for particular waste contaminants in a particular wastewater stream however such relationships can't be summed up for use with whatever other waste contaminants or wastewater streams (Hammer, 1986). This is on account of the structure of any wastewater stream is distinctive. As an illustration a profluent comprising of an answer of straightforward sugars that may release from a candy store processing plant is liable to have natural segments that corrupt rapidly. In such a case, the 5-day BOD and a definitive BOD would be fundamentally the same since there would be almost no natural material left following 5 days. However, a last emanating of a sewage treatment works serving an extensive industrialized range may have a release where a definitive BOD was much more noteworthy than the 5-day BOD since a significant part of the effectively debased material would have been evacuated in the sewage treatment procedure and numerous modern procedures release hard to corrupt natural atoms. The research facility test methods for the deciding the above oxygen requests are point by point in numerous standard writings. American forms incorporate the "Standard Methods for the Examination of Water and Wastewater." (Drechsel et al., 2010). According to (Simate et al., 2011), The beer brewing process often generates large amounts of wastewater effluent and solid wastes that must be disposed off or treated in the least costly and safest way so as to meet the strict discharge regulations that are set by government entities to protect life (both human and animal) and the environment.

1.3 Water Pollution

Water contamination is the tainting of water bodies (e.g. lakes, streams, seas, aquifers and groundwater). This type of natural corruption happens when poisons are straightforwardly or in a roundabout way released into water bodies without satisfactory treatment to uproot hurtful mixes. Water contamination influences the whole biosphere – plants and living beings living in these waterways. In all cases the impact is harming to individual species and populace, as well as to the common natural groups. Water contamination is a noteworthy worldwide issue which requires continuous assessment and modification of water asset approach at all levels (global down to individual aquifers and wells). It has been recommended that water contamination is the main overall reason for passings and ailments, and that it represents the passings of more than 14,000 individuals every day. An expected 580 individuals in India pass on of water contamination related disease consistently (Tchobanoglous et al., 1991). Around 90 percent of the water in the urban communities of China is contaminated. Starting 2007, a large portion of a billion Chinese had no entrance to safe drinking water. Notwithstanding the intense issues of water contamination in creating nations, created nations additionally keep on battling with contamination issues. For instance, in the latest national report on water quality in the United States, 45 percent of evaluated stream miles, 47% of surveyed lake sections of land, and 32 percent of evaluated coves and estuarine square miles were named dirtied. The leader of China's national improvement office said in 2007 that one quarter the length of China's seven fundamental streams was so harmed the water hurt the skin. Water is regularly alluded to as dirtied when it is disabled by anthropogenic contaminants and either does not bolster a human use, for example, drinking water, or experiences a checked movement in its capacity to bolster its constituent biotic groups, for example, fish. Normal wonders, for example, volcanoes, green growth sprouts, tempests, and seismic tremors additionally cause significant changes in water quality and the environmental status of water (Olness, 1995). According to Özbek et al., 2002), Removal of phenolic compounds from rubber–textile wastewaters (RTWWs) by physico-chemical process was investigated by using four different types of coagulants ($\text{Al}_2(\text{SO}_4)_3$, $\text{Fe}_2(\text{SO}_4)_3$, FeSO_4 , FeCl_3) with or without lime ($\text{Ca}(\text{OH})_2$) addition, in jar-test experiments. The RTWWs of the present tire-cord fabric plant may contain seven different types of dipping solutions (DSs), which provide an adhesive property to the fabric. The optimum results were obtained by using 50% FeCl_3 solution and lime at various dosages at 23 °C, which satisfy the decision criterion of high treatment efficiency (TE) in removing the phenolic compounds, good settling rate (SR) of the flocs, and a reasonably low cost of treatment.

1.3.1 Causes for Water Pollution

The particular contaminants prompting contamination in water incorporate a wide range of chemicals, pathogens, and physical changes, for example, lifted temperature and staining. While a considerable lot of the chemicals and substances that are managed might be normally happening (calcium, sodium, iron, manganese, and so on.) the focus is regularly the key in figuring out what is a characteristic part of water and what is a contaminant. High groupings of normally happening substances can impactsly affect oceanic verdure. Oxygen-draining substances might be characteristic materials, for example, plant matter and also man-made chemicals. Other common and anthropogenic substances might bring about turbidity (darkness) which pieces light and upsets plant development, and stops up the gills of some fish species (Warren, 1971). A large portion of the synthetic substances are harmful. Pathogens can deliver waterborne sicknesses in either human or creature has.

Adjustment of water's physical science incorporates acidity (change in pH), electrical conductivity, temperature, and eutrophication. Eutrophication is an expansion in the centralization of synthetic supplements in a biological community to a degree that increments in the essential efficiency of the environment. Contingent upon the level of eutrophication, ensuing negative ecological impacts, for example, anoxia (oxygen consumption) and serious decreases in water quality might happen, influencing fish and other creature populaces. According to (Westerhoff, et al., 2011), Titanium dioxide nanoparticles increasingly will be used in commercial products and have a high likelihood of entering municipal sewage that flows to centralized wastewater treatment plants (WWTPs). According to (Avella, et al., 2011), Biological wastewater treatment plants (WWTP) are complex systems to assess. Many parameters are recorded daily in WWTP to monitor and control the treatment process, providing huge amounts of registered data. According to (Lokhande, et al., 2011), The present research work deals with the study of some of the important physico-chemical parameters of industrial waste water effluents collected from Talaja industrial belt of Mumbai. The study reveals that engineering, paper mill, fine chemical, dyes, paint, pharmaceutical, petrochemical and textile industries are some of the major industries responsible for polluting the surrounding aquatic environment. According to (El-Abbassi, et al., 2011), Olive mill wastewater (OMW) is an important environmental pollution problem, especially in the Mediterranean, which is the main olive oil production region worldwide. Environmental impact of OMW is related to its high organic load and particularly to the phytotoxic and antibacterial action of its phenolic content.

1.3.1.1 Pathogens

Disease causing microorganisms are alluded to as pathogens. Despite the fact that by far most of microscopic organisms are either safe or gainful, a couple of pathogenic microbes can bring about infection. Coliform microscopic organisms, which are not a genuine reason for sickness, are generally utilized as a bacterial marker of water contamination. Different microorganisms now and then found in surface waters that have brought about human wellbeing issues include: *Burkholderia pseudomallei*, *Cryptosporidium parvum*, *Giardia lamblia*, *Salmonella*, *Norovirus* and different infections, Parasitic worms including the *Schistosoma* sort. Elevated amounts of pathogens might come about because of on location sanitation frameworks (septic tanks, pit toilets) or insufficiently treated sewage releases. This can be created by a sewage plant composed with not as much as optional treatment (more run of the mill in less-created nations). In created nations, more established urban areas with maturing framework might have flawed sewage gathering frameworks (channels, pumps, valves), which can bring about clean sewer floods. A few urban areas likewise have joined sewers, which might release untreated sewage amid downpour storms. Pathogen releases might likewise be brought on by inadequately overseen domesticated animals operations (Sartor, et al., 1974). According to (Hanumantha et al., 2011), Phytoremediation is the use of algae for the removal or biotransformation of pollutants from wastewater. According to (Gautam, et al., 2007), Hospital effluents are loaded with pathogenic microorganisms, partially metabolized pharmaceutical substances, radioactive elements, and other toxic substances. Such effluents if not treated properly can damage the natural environment and create a biological imbalance. According to (Moosvi, et al., 2007), his study was to treat the wastewater collected from equalization tank of Common Effluent Treatment Plant (CETP), which was a mixture of waste coming from 525 small-scale industries manufacturing textile and dyestuff intermediate, pigments and pharmaceuticals. Initially a pretreatment using ferric chloride and lime was carried out to increase the biodegradability (BOD_5/COD) of the effluent, which showed color removal of 74% and COD reduction of 75% at a concentration of 10 and 4 g/L. respectively.

1.3.1.2 Thermal Pollution

Thermal contamination is the ascent or fall in the temperature of a characteristic waterway brought about by human impact. Warm contamination, dissimilar to concoction contamination, results in an adjustment in the physical properties of water. A typical reason for warm contamination is the utilization of water as a coolant by force plants and mechanical producers. Lifted water temperatures diminish oxygen levels, which can murder fish and modify natural way of life creation, decrease species biodiversity, and foster intrusion by new thermophilic species. Urban spillover might likewise hoist temperature in surface waters. Warm contamination can likewise be brought about by the arrival of exceptionally chilly water from the base of repositories into hotter waterways. According to (Ahn, et al., 2010), Domestic wastewater treatment was examined under two different temperatures ($23 \pm 3^\circ\text{C}$ and $30 \pm 1^\circ\text{C}$) and flow modes (fed-batch and continuous) using single-chamber air-cathode microbial fuel cells (MFCs). Temperature was an important parameter for treatment efficiency and power generation.

1.3.2 Transport and Chemical Reactions of Water Pollutants

Most water poisons are in the end conveyed by streams into the seas. In a few zones of the world the impact can be followed one hundred miles from the mouth by studies utilizing hydrology transport models. Propelled PC models, for example, SWMM or the DSSAM Model have been utilized as a part of numerous areas worldwide to analyze the destiny of toxins in amphibian frameworks. Marker channel sustaining species, for example, copepods have likewise been utilized to study poison destinies in the New York Bight, for instance. The most astounding poison burdens are not specifically at the mouth of the Hudson River, however 100 km (62 mi) south, since a few days are required for joining into planktonic tissue. The Hudson release streams south along

the coast because of the coriolis power. Encourage south are ranges of oxygen exhaustion brought about by chemicals spending oxygen and by green growth sprouts, created by overabundance supplements from algal cell demise and deterioration. Fish and shellfish slaughters have been accounted for, in light of the fact that poisons climb the evolved way of life after little fish expend copepods, then huge fish eat littler fish, and so on. Each progressive stride up the natural pecking order causes a combined centralization of poisons, for example, overwhelming metals (e.g. mercury) and constant natural toxins, for example, DDT. This is known as bio-amplification, which is sporadically utilized reciprocally with bio-gathering. Expansive gyres (vortexes) in the seas trap coasting plastic flotsam and jetsam. The North Pacific Gyre, for instance, has gathered the purported "Awesome Pacific Garbage Patch", which is currently assessed to be one hundred times the span of Texas. Plastic flotsam and jetsam can retain lethal chemicals from sea contamination, possibly harming any animal that eats it. A number of these durable pieces wind up in the stomachs of marine winged creatures and creatures. This outcome in block of digestive pathways, which prompts diminished voracity or even starvation. Numerous chemicals experience receptive rot or compound change, particularly over drawn out stretches of time in groundwater stores. A critical class of such chemicals is the chlorinated hydrocarbons, for example, trichloroethylene (utilized as a part of mechanical metal degreasing and hardware assembling) and tetrachloroethylene utilized as a part of the laundry business. Both of these chemicals, which are cancer-causing agents themselves, experience incomplete deterioration responses, prompting new dangerous chemicals (Sarkar, et al., 2006). Groundwater contamination is a great deal more hard to subside than surface contamination in light of the fact that groundwater can move incredible separations through concealed aquifers. Non-permeable aquifers, for example, dirts mostly purge water of microorganisms by straightforward filtration (adsorption and assimilation), weakening, and, sometimes, synthetic responses and natural movement; be that as it may, now and again, the contaminations just change to soil contaminants. Groundwater that travels through open cracks and caves is not separated and can be transported as effectively as surface water. Indeed, this can be disturbed by the human inclination to utilize regular sinkholes as dumps in regions of karst geography. There are an assortment of auxiliary impacts stemming not from the first toxin, but rather a subordinate condition. A sample is sediment bearing surface spillover, which can restrain the entrance of daylight through the water segment, hampering photosynthesis in aquatic plants.

1.3.3 Measuring the Contamination

Water contamination might be examined through a few general classifications of techniques: physical, compound and natural. Most include accumulation of tests, trailed by specific systematic tests. A few strategies might be directed in situ, without inspecting, for example, temperature. Government offices and examination associations have distributed institutionalized, accepted expository test techniques to encourage the similarity of results from unique testing occasions. Examining of water for physical or substance testing should be possible by a few techniques, contingent upon the precision required and the qualities of the contaminant. Numerous tainting occasions are strongly limited in time, most regularly in relationship with downpour occasions. Therefore "get" tests are regularly lacking for completely measuring contaminant levels. Researchers assembling this kind of information regularly utilize auto-sampler gadgets that pump augmentations of water at either time or release interims. Inspecting for organic testing includes gathering of plants and/or creatures from the surface water body. Contingent upon the sort of appraisal, the life forms might be recognized for bio surveys (populace tallies) and came back to the water body, or they might be analyzed for bioassays to decide lethality. Organic testing includes the utilization of plant, creature, and/or microbial pointers to screen the wellbeing of an amphibian environment. They are any natural species or gathering of species whose capacity, populace, or status can uncover what level of biological system or ecological respectability is available. One illustration of a gathering of bio-markers are the copepods and other little water scavengers that are available in numerous water bodies. Such living beings can be observed for changes (biochemical, physiological, or behavioral) that might demonstrate an issue inside of their biological system. Water tests might be analyzed utilizing the standards of systematic science. Numerous distributed test techniques are accessible for both natural and inorganic mixes. Much of the time utilized strategies incorporate pH, biochemical oxygen request (BOD), 102 synthetic oxygen request (COD), 104 supplements (nitrate and phosphorus mixes), metals (counting copper, zinc, cadmium, lead and mercury), oil and oil, absolute petroleum hydrocarbons (TPH), and pesticides. According to (Alvarez et al., 2002), The analysis of heavy metals is a very important task to assess the potential environmental and health risk associated with the sludge coming from wastewater treatment plants (WWTPs). However, it is widely accepted that the determination of total elements does not give an accurate estimation of the potential environmental impact. So, it is necessary to apply sequential extraction techniques to obtain a suitable information about their bioavailability or toxicity. In this paper, a sequential extraction scheme according to the BCR's guidelines was applied to sludge samples collected from each sludge treatment step of five municipal activated sludge plants. According to (Bejankiwar, 2002), The electrochemical treatability of wastewater from the cigarette industry has been investigated in this paper using cast iron electrode. The treatment efficiency was monitored in terms of COD, BOD and suspended solids concentration. The cast iron anode was found effective in treatment of the above-mentioned wastewater. About 56% of COD and 84% of BOD removal was observed at 3.5 A current for 5 h of electrolysis. The effect of increase in surface area of anode reduces electrolysis time and also energy consumption per kg of COD removal. The treated effluent was subjected to chemical

coagulation studies using $\text{Ca}(\text{OH})_2$ as coagulant. The final treated effluent was found to confirm the stipulated standards for safe disposal into surface water bodies (Indian Standards).

1.4 Control of Pollution

Choices on the sort and level of treatment and control of squanders, and the transfer and utilization of sufficiently treated wastewater, must be founded on a thought all the specialized components of every seepage bowl, so as to keep any further tainting or mischief to the earth. A couple of insights delineate the size of the issue that waste water (chemicals washed down channels and released from industrial facilities) can bring about. Around half of all sea contamination is created by sewage and waste water. Every year, the world creates maybe 5–10 billion tons of modern waste, a lot of which is pumped untreated into streams, seas, and different conduits (Vandevivere et al., 1998). In the United States alone, around 400,000 manufacturing plants take clean water from waterways, and numerous pump dirtied waters back in their place. In any case, there have been significant enhancements in waste water treatment as of late. Following 1970, in the United States, the Environmental Protection Agency (EPA) has put about \$70 billion in enhancing water treatment plants that, starting 2015, serve around 88 percent of the US populace. Production lines are point wellsprings of water contamination, yet a considerable amount of water is dirtied by common individuals from nonpoint sources; this is the manner by which standard water gets to be squander water in any case. Practically everybody pours chemicals of some sort down their channels or toilets. Indeed, even cleansers utilized as a part of clothes washers and dishwashers in the end wind up in our waterways and seas. So do the pesticides we use on our greenery enclosures. A great deal of dangerous contamination additionally enters waste water from roadway overflow. Roadways are ordinarily secured with a mixed drink of poisonous chemicals—everything from spilled fuel and brake liquids to bits of worn tires (themselves produced using concoction added substances) and fumes outflows. When it rains, these chemicals wash into channels and streams. It is not strange for substantial summer rainstorms to wash dangerous chemicals into streams in such fixations that they murder extensive quantities of fish overnight. It has been evaluated that, in one year, the thruway spillover from a solitary substantial city spills as much oil into our water surroundings as an ordinary tanker spill. Some parkway overflow flees into channels; others can contaminate groundwater or collect in the area by a street, making it progressively dangerous as the years pass.

1.4.1 Non-point Source Controls

Sediment (Loose Soil) washed off fields is the biggest wellspring of farming contamination in the United States. Ranchers might use disintegration controls to decrease overflow streams and hold soil on their fields. Regular strategies incorporate shape furrowing, crop mulching, crop revolution, planting enduring harvests and introducing riparian cushions. Supplements are regularly connected to farmland as business compost, creature fertilizer, or showering of civil or modern wastewater (emanating) or ooze. Supplements might likewise enter overflow from yield buildups, watering system water, natural life, and environmental affidavit. Ranchers can create and actualize supplement administration arrangements to decrease abundance use of supplements and lessen the potential for supplement contamination. To minimize pesticide sways, ranchers might utilize Integrated Pest Management (IPM) systems (which can incorporate organic bug control) to keep up control over nuisances, decrease dependence on synthetic pesticides, and ensure water quality.

1.4.2 Point Source Wastewater Treatment

Ranches with huge domesticated animals and poultry operations, for example, processing plant homesteads, are called concentrated creature encouraging operations or feedlots in the US and are being liable to expanding government regulation. Creature slurries are typically treated by control in anaerobic tidal ponds before transfer by shower or stream application to meadow. Built wetlands are in some cases used to encourage treatment of creature squanders. Some creature slurries are dealt with by blending with straw and treated the soil at high temperature to deliver a bacteriologically sterile and friable fertilizer for soil change.

1.4.3 Control of Urban Runoff (Storm Water)

Powerful control of urban spillover includes diminishing the speed and stream of tempest water, and also decreasing toxin releases. Neighborhood governments utilize an assortment of tempest water administration strategies to decrease the impacts of urban overflow. These strategies, called best administration rehearses (BMPs) in the U.S., might concentrate on water amount control, while others concentrate on enhancing water quality, and some perform both capacities. Contamination counteractive action hones incorporate low-affect advancement procedures, establishment of green rooftops and enhanced substance taking care of (e.g. administration of engine energizes and oil, composts and pesticides) (Stephenson, 2000). Overflow relief frameworks incorporate penetration bowls, bio retention frameworks, built wetlands, maintenance bowls and comparable gadgets. Warm contamination from spillover can be controlled by tempest water administration offices that retain the overflow or direct it into groundwater, for example, bio retention frameworks and penetration bowls. Maintenance bowls have a tendency to be less compelling at lessening temperature, as the water might be warmed by the sun before being released to a getting stream.

1.5 Effects of Water Pollution

A few individuals trust contamination is an unpreventable aftereffect of human action: they contend that in the event that we need to have industrial facilities, urban communities, ships, autos, oil, and beach front resorts,

some level of contamination is verging on sure to come about. At the end of the day, contamination is a fundamental underhandedness that individuals must endure on the off chance that they need to gain ground. Luckily, not everybody concurs with this perspective. One reason individuals have woken up to the issue of contamination is that it brings expenses of its own that undermine any financial advantages that occur by dirtying. Take oil slicks, for instance. They can happen if tankers are too inadequately worked to survive mischances adrift. In any case, the monetary advantage of trading off on tanker quality brings a financial expense when an oil slick happens. The oil can appear on close-by shorelines, demolish the biological community, and seriously influence tourism. The fundamental issue is that the general population who bear the expense of the spill (regularly a little seaside group) are not the general population who brought about the issue in any case (the general population who work the tanker). Yet, seemingly, everybody who puts gas (petrol) into their auto—or uses any sort of petroleum-filled transport—adds to the issue somehow. So oil slicks are an issue for everybody, not simply individuals who live by the coast and tanker works. Sewage is another great sample of how contamination can influence all of us. Sewage released into waterfront waters can appear on shorelines and cause a wellbeing danger. Individuals who bathe or surf in the water can fall sick in the event that they swallow contaminated water—yet sewage can have other unsafe impacts as well: it can harm shellfish, (for example, cockles and mussels) that become close to the shore. Individuals who eat harmed shellfish hazard experiencing an intense—and some of the time lethal—disease called disabled shellfish harming. Shellfish is no more gotten along numerous shores since it is essentially excessively dirtied with sewage or harmful concoction squanders that have released from the area adjacent. Contamination matters since it hurts the earth on which individuals depend. Nature is not something inaccessible and separate from our lives. It's not a lovely shoreline many miles from our homes or a wild scene that we see just on TV. The earth is everything that encompasses us that gives us life and wellbeing. Devastating the earth eventually lessens the nature of our own lives—and that, most egotistically, is the reason contamination ought to matter to every one of us. According to (Fang et al., 2006), Over 99% of phenol was effectively degraded in an up flow anaerobic sludge blanket (UASB) reactor at 55 °C with 40 h of hydraulic retention time (HRT) for a wastewater containing 630 mg/L of phenol, corresponding to 1500 mg/L of chemical oxygen demand (COD) and a loading rate of 0.9 g-COD/L/d. According to (Howard et al., 2004), The quality control of wastewater treatments was monitored using selected novel and classical physicochemical and microbiological indicators, and the associations of the treatments with the effluents was analyzed. The microbiological indicators monitored were heterotrophic plate count (HPC), total coliforms (TC), fecal coliforms (FC), fecal streptococci (FS), sulfite-reducing clostridia (SRC), *Pseudomonas aeruginosa*, and *Salmonella* spp. The stages of wastewater treatment also were evaluated through determination of ammonia; biological oxygen demand (BOD₅); chemical oxygen demand (COD); chloride; conductivity; suspended dissolved and total solids; fats; nitrate, nitrite, and total nitrogen; pH; phosphate and total phosphorus.

1.6 Disposal of Wastewater

In some urban zones, civil wastewater is conveyed independently in sterile sewers and spillover from boulevards is conveyed in tempest channels. Access to both of these is commonly through a sewer vent. Amid high precipitation periods a joined sewer flood can happen, constraining untreated sewage to stream once more into nature. This can represent a genuine risk to general wellbeing and the encompassing environment. Sewage might deplete straightforwardly into significant watersheds with insignificant or no treatment. Whenever untreated, sewage can impactsly affect the nature of a domain and on the wellbeing of individuals. Pathogens can bring about an assortment of ailments. A few chemicals posture chances even at low fixations and can remain a risk for drawn out stretches of time due to bioaccumulation in creature or human tissue (Vandevivere et al., 1998).

1.7 Treatment

There are various procedures that can be utilized to tidy up wastewaters relying upon the sort and degree of pollution. Wastewater can be dealt with in wastewater treatment plants which incorporate physical, synthetic and natural treatment forms. Civil wastewater is dealt with in sewage treatment plants. Farming wastewater might be dealt with in agrarian wastewater treatment forms, though modern wastewater is dealt with in mechanical wastewater treatment forms. For civil wastewater the utilization of septic tanks and other On-Site Sewage Facilities (OSSF) is far reaching in some country regions, for instance serving up to 20 percent of the homes in the U.S. One sort of oxygen consuming treatment framework is the actuated slop process, in light of the support and distribution of an intricate biomass made out of miniaturized scale life forms ready to retain and adsorb the natural matter conveyed in the wastewater. Anaerobic wastewater treatment forms (UASB, EGSB) are likewise broadly connected in the treatment of mechanical wastewaters and natural ooze. Some wastewater might be very regarded and reused as recycled water (Lin, et al., 1994).

1.8 Reuse of Wastewater

Regarded wastewater can be reused as savoring water, industry (for instance in cooling towers), in fake revive of aquifers, in farming and in the recovery of characteristic biological communities. There are advantages of utilizing reused water for watering system, including the lower cost contrasted with some different sources and

consistency of supply paying little respect to season, climatic conditions and related water limitations. Watering system with reused wastewater can likewise serve to treat plants in the event that it contains supplements, for example, nitrogen, phosphorus and potassium. Around 90% of wastewater delivered internationally stays untreated, bringing on across the board water contamination, particularly in low-pay nations. Progressively, horticulture is utilizing untreated wastewater for watering system (Stephenson, 2000). Urban areas give lucrative markets to new create, so are alluring to ranchers. Notwithstanding, on the grounds that horticulture needs to vie for progressively rare water assets with industry and metropolitan clients, there is regularly no option for ranchers however to utilize water contaminated with urban waste specifically to water their products. There can be huge wellbeing risks identified with utilizing untreated wastewater as a part of agribusiness. Wastewater from urban communities can contain a blend of synthetic and organic toxins. In low-wage nations, there are frequently elevated amounts of pathogens from excreta, while in rising countries, where modern advancement is outpacing ecological regulation, there are expanding dangers from inorganic and natural chemicals. The World Health Organization, in a joint effort with the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environmental Program (UNEP), has created rules for safe utilization of wastewater in 2006. These rules advocate a 'different obstruction' way to deal with wastewater use, for instance by urging agriculturists to receive different danger lessening practices. These incorporate stopping watering system a couple of days before collecting to permit pathogens to cease to exist in the daylight, applying water deliberately so it doesn't taint leaves prone to be eaten crude, cleaning vegetables with disinfectant or permitting fecal muck utilized as a part of cultivating to dry before being utilized as a human excrement.

2. OBJECTIVE OF THE STUDY

The objective of the study is as follows:

- To study and process the water quality in Uppal lake.
- The lake water samples were collected from 4 sides randomly.
- The physico-chemical analyses were done by APHA method.
- The results of the lake water samples will be presented in the study.

3. PROBLEM STATEMENT

- To analyses the water quality in Uppal lake by physio-chemical analysis.
- To make physico-chemical analyses by APHA method for water quality test.
- To collect the data from different sources.
- To compare the general methods for checking water quality and present the APHA as an efficient method.

4. MATERIAL AND METHODS

Primary sources which use were books and articles and secondary sources were two samples, sample 1 and sample 2 were collected from Uppal Lake and Physical, Chemical, Bacteriological and Parasitological analysis were performed according to description and protocols which mentioned in the literatures cited at the end of this paper.

5. RESULTS & DISCUSSION

Table 5.1: The analysis result and standard parameters of both Industrial effluent water sample and Waste water sample are tabulated in below mentioned table.

Table-5.1 The Analysis Result of both Industrial Effluent Water Sample and Waste Water Sample

	PARAMETER		SAMPLE 1	SAMPLE 2
I.	Physical Analysis of Water			
	1)	Temperature of water	31°C	30-35 °C
	2)	Conductivity of water	2.56 mS	2 m S
II.	Chemical Analysis of Water			
	1)	pH in the water	6.8	5.5-9
	2)	Chloride in water	6.52 mg/ml	1 mg/ml
	3)	Acidity of water	205 mg/l	-
	4)	Alkalinity of water	420 mg/l	<120
	5)	TDS of water	500 mg/l	<500
III.	Organic Constituents in Water			
	1)	Free CO ₂	74.8 mg/l	22
	2)	DO	-	
	3)	BOD	-	
	4)	COD	0.016 mg/ml	-
IV.	Bacteriological Analysis of Water			

	1)	MPN Test	>= 1600	<400
			Coliforms bacteria are present in water sample.	
V.	Parasitological analysis of water			
			nonpathogenic cyst of Protozoa, Protozoan cyst colony, Bacilli, Macrophage cells	

Results obtained revealed many remarkable features regarding the pollution status of Amanishah nala. Comparison between Physical, Chemical, Bacteriological parameters and their respective standards shows many differences in many parameters. Also by analyzing Parasitological parameters we can see many species of parasites including protozoa, porifera and a huge number of bacterial species. As we can see that conductivity, TDS, free CO₂, free Cl₂ and Alkalinity of both Industrial effluent water sample and also the waste water sample are higher than their respective standards. There are some parameters which lie under the limits of waste water and industrial effluent samples, even during performing DO and BOD proper reading could not have been obtained i.e. free oxygen was nearly absent in both water samples, possibility of which may be is because of growth of lots of microorganisms which are facultative or obligate anaerobic. All these results show negative characteristics of water i.e. contamination, microorganisms, absence of free O₂, free CO₂ etc. Problem arises when this water is taken in use for irrigation. The effluents are usually treated by physio-chemical treatment followed by biological treatment process. However, such treatment systems are not effective for removal of color, dissolved solids, trace metals, etc. and the effluents are directly discharged into drains, public sewers, rivers, etc. which ultimately become the reason of high degree of pollution.

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