# Waste water treatment by Tea Waste, Alum, Pre-Aluminium Chloride.

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**Abstract -** In the tighra reservoir heavy metals Cr,Pb,Cd,Ni etc were found immersely. The heavy metals infected the tighra reservoir which can cause the human health.An effective tea waste adsorbent were urbanized to eradicate the heavy metal. Activated carbon showing good result for purification and seperation technique.Classification of the tea waste adsorbent, Alum, and PAC showed a clear image

**Key Words** Tea waste, Alum, Pre aluminium chloride(PAC).

## 1. INTRODUCTION

The main reason behind getting water impure of tighra dam is is immersing the idols of god during the time of Ganesh Chaturthi and NavDurgas.The hindu community peoples worship idols of lord during the time.And ritual is performed by muslim during the Muharram festival, and Tazias are being immersed by them. The idols are made up of clay, POP, cloth, paper wood, thermo Cal, jute, adhesive material and synthetic paints etc. The synthetic chemical paints that arwe generally increases the hewavy metals concentration and acidity while immersing the idolsin tighra dam.Lead and chromium which also adds through SINDUR in the water bodies are very dangerous even in a very small quantity for human health through the process known as Bioaccumulation.In Gwalior, lot of religious activities takes place all around the year.

### Health Effect of Heavy Metals

Heavy metals are very dense metals or metalloid that is noted for its potential toxicity Especially in environmental context. These metals cadmium,mercury,lead,and arsenic all of appeard in W.H.O.Common sources are from mining and industrial waste , vehicalsemission,

Lead acid batteries, fertilizers, paints, treated woods and ageing water supply infrastructure.

(Cn, PB, Zn, Cu, As, Cd, Ni, Hg, Cr) is 18.39%, 18.60%, 20.30%, 321%, 22.10%, 23.01%, 23.20%, 25.56%.

## 2. Material and Method

In this study, life cycle assessment framework methodology provided by the International standard organization (ISO) 14040 is utilized to access the environmental impacts of sewage water treatment process of a reservoir .Tea waste were collected from an hotel of Gwalior near purani chawani and washed with boiled water until the water was colourless. This process were repeated with 15 cycle and after that it keeps in a tray drier at $108^0$c for 12h.The dreid

substances were changed into powder and screened the sizes upto 100μm.Again the powder dreid at $108^0$c for 5h and dreid tea waste was chemically activated with 1.2M sulphuric acid and stored in sealed polythene bags.Now adsorbent is ready to use.

## 3. Result and Discussion

The example of water is taken from Tighra dam and were mock up by UV- spectrophotometer. The residual focus of heavy metals were determined by its wavelength.

| Heavy Metals | Wavelength |
|---|---|
| Nickle(Ni) | 385nm |
| Copper|(Cu) | 310nm |
| Zinc(Zn) | 308nm |
| Cynaid(Cn) | 280.2nm |
| Cadmium(Cd) | 379nm |
| Lead(Pb) | 382.5nm |
| Chromium(Cr) | 530nm |
| Arsenic(As) | 355nm |
| Mercury(Hg) | 390.5nm |

0.3gm adsorbents were dissolved into 1000ml of Tighra water sample to make up 0.5gm/l.This sample is scum from white man filter paper to get final absorption of water sample. This experiment is experienced from UV spectrophotometer from 280nm, 285nm, 310nm, 309nm, 345nm, 390nm, 530nm wavelength respectively.

**Table -1:** Sample Table format

| Preparation of Manuscript | | | |
|---|---|---|---|
| **Transparency** | **126.71cm** | **T.D.S** | 112.1mg/l |
| ELECTRICAL CONDUCTIVITY | 137.9μS/cm | FREE $CO_2$ | 0.18mg/l |
| TOTAL ALKALINITY | 26.73mg/l | TOTAL HARDNESS | 48.16mg/l |
| CHLORIDES | 27.97mg/l | NITRATE-NITROGEN | 0.024mg/l |
| PHOSPHOROUS | 0.006mg/l | MAGNESIUM | 3.46mg/l |
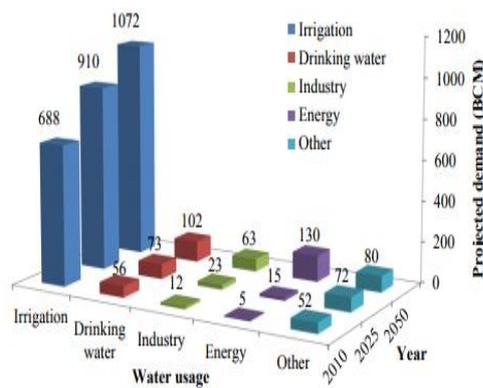
**Chart -1**: water availability and its use

India accounts for 2.45% of land area and 4% of water resources of the world but represents 16% of the world population. Total utilizable water resource in the country has been estimated to be about 1123 BCM (690 BCM from surface and 433 BCM from ground), which is just 28% of the water derived from precipitation. About 85% (688 BCM) of water usage is being diverted for irrigation (Figure 1), which may increase to 1072 BCM 2050. Major source for irrigation is groundwater. Annual groundwater recharge is about 433 BCM of which 212.5 BCM used for irrigation and 18.1 BCM for domestic and industrial use (CGWB, 2011). By 2025, demand for domestic and industrial water usage may increase to 29.2 BCM. Thus water availability for irrigation is expected to reduce to 162.3 BCM. With the present population growth-rate (1.9% per year), the population is expected to cross the 1.5 billion mark by 2050.

## 4. CONCLUSION

Experiment result shows the max. removal of heavy metals (Cr,Pb,Zn,Cu,As,Cd,Ni,Hg,Cr) by tea waste, Alum and Pre-aluminium chloride(PAC) is 25.6% ( APPROX).

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