

ASSESSMENT OF WATER QUALITY BY PERFORMING PHYSICO-CHEMICAL AND METALLIC INVESTIGATIONS OF GROUND WATER SOURCES OF RAVER REGION OF MAHARASHTRA (INDIA)

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Abstract : The purpose of this work is to assess the water quality of Raver region by analyzing twelve important physico-chemical parameters as well as six metals in the ground water samples. Thereafter a water quality index is determined.

Key Words : Physico-chemical parameters, metal analysis, correlation analysis.

Introduction :

In the modern world "Environmental Pollution" is a burning topic of interest, which, perhaps, affecting all of us directly or indirectly. During the last few decades rapid growth of human population and accelerated pace of urbanization and industrialization has led an adverse effect on the environment. Indeed, the discharge of organic and inorganic compounds from industry and agricultural sectors poses severe dimensions to the environmental pollutions in the twenty first century. Today, almost everything around us, e.g. the air we breathe, the water we drink, and even the soil we grow food, are very severely polluted. Water is highly complicated fluid present on this planet, and offers an essential role towards the development of life on this planet. Eventually, water very similar to light is an important raw material for the process of photosynthesis. From the latest reports, almost 70% of water in India has become polluted due to the discharges of domestic sewage and industrial effluents into natural water source, such as river, streams as well as lakes and pollute the underground water resources (1-4).

Raver is well-known region for supplying banana, not only in Maharashtra but also in India. However, the dark side of such huge production of the banana is the use of high amount of chemical fertilizers, which possibly have an adverse effect on the natural resources like soil and water up to certain extent. Taking this in consideration a systematic study has been planned to characterize soil and water courses

throughout Raver region, both the pre-monsoon and post-monsoon analysis of selected water samples was performed very aptly. The results of physico-chemical and metallic studies have been discussed in the following sections for 30 water sampling stations.

Materials and methods :

Water Sampling :

The samples were collected from a water source of the Raver region. The samples were collected in well sterilized and pro cleaned glass bottles with tight lid for physico-chemical measurements and for D.O. measurements were done at the time of sampling.

Methodology :

Standard procedures (APHA 1995) have been followed for the Determination of various physico-chemical and metallic parameters (5). In order to calculate correlation among 30 different pairs of following water quality parameters has also been carried out and the results are discussed in the following section (6).

Results and discussion :

The effect of bombardment of fertilizers and pesticides on the physico-chemical and metallic properties of ground water courses of the Raver region are examined and tabulated in Tables 1 and 2 for pre-monsoon and post-monsoon study. In the study region pre-monsoon time is the preparation time i.e. preparation of land for seeding in monsoon, and





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Histopathological alterations in gills of freshwater bivalve, *Lamellidens marginalis* (Lamarck) after acute exposure to Thiamethoxam and Triazophos

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ABSTRACT

Present study was carried out to study gills histopathology in the freshwater bivalve, *Lamellidens marginalis* after acute exposure to Thiamethoxam and Triazophos. Several histopathological changes were observed in the gills of bivalves after exposure to the pesticides. Histopathological changes observed microscopically showed damages in the gills of bivalves exposed to Thiamethoxam and Triazophos, while gills of bivalves of control groups exhibited normal architecture. Increasing degrees of damage in the gills was observed in the bivalves exposed to Triazophos as compared to Thiamethoxam.

Key words: Histopathology, acute, gills, *Lamellidens marginalis*, Thiamethoxam, Triazophos.

INTRODUCTION

Contamination of aquatic systems has become a serious ecological problem all over the world from the last few decades. Contaminants like heavy metals, pesticides and persistent organic pollutants (PAHs, PCBs, etc) are the most common anthropogenic pollutants that enter the aquatic systems and increased alarmingly. Due their toxicity, genotoxicity, persistence, bioaccumulation and biomagnification in the food chain (Sunjog *et al.* 2016) they attract increasing attention in environmental studies. The occurrence of contaminants has the potential to affect the quality of aquatic ecosystem. Pesticides are widely used in agriculture for pest control (Monteiro *et al.* 2006). The aquatic ecosystem is facing the threat of biodiversity loss due to indiscriminate use of pesticides (Rahman *et al.* 2002) in order to improve the agricultural productivity to match the explosive population growth rate is a global phenomenon. Evaluation of the impacts of contaminants on the wellbeing of aquatic organisms and ecosystems is important to prevent harmful impacts of contamination on their structure and function.

Biomarkers are biological indicators from an exposure to a stressor



An eco-friendly approach for the synthesis of Schiff base under solvent free condition

Rakesh P. Chaudhari, Bharti P. Koli, Ganesh R. Chaudhari
Arts and Science College Bhalod, Tal-Yawal, Dist-Jalgaon

Abstract:

Schiff base was synthesized by condensation of Aniline with substituted aromatic aldehyde catalyzed by Tartaric acid under solvent free condition. Advantages of reaction are mild reaction condition, work up to afford the high yield of product. The product is characterized by IR spectra.

Keywords: Schiff base, Tartaric acid, IR Spectra etc.

Introduction:

When any primary amine condensed with an aldehyde or a ketone under specific conditions form a Schiff's Base is named after Hugo Schiff [1]. A Schiff base is also known as imine or azomethine. It is a nitrogen analogue of an aldehyde or ketone in which the carbonyl group has been replaced by an imine or azomethine group. Schiff bases are widely used organic compounds. They are used as catalysts, pigments and dyes, intermediates in organic synthesis, and as polymer stabilizers [2]. Schiff bases have also exhibit a broad range of biological activities, including antibacterial, antifungal, anti-inflammatory, antimalarial, antiviral, antiproliferative, and antipyretic properties [3].

The preparation of imines was first reported in the 19th century by Schiff (1864). Since then a variety of methods for the synthesis of Schiff base have described using Bronsted-Lowry or Lewis acids used for the synthesis of Schiff bases include $ZnCl_2$, $TiCl_4$, $MgSO_4$ -PPTS, $Ti(OR)_4$, alumina, H_2SO_4 , $NaHCO_3$, $MgSO_4$, $Mg(ClO_4)_2$, H_3CCOOH , $Er(OTf)_3$, P_2O_5/Al_2O_3 , HCl [4-16]. lemon juice [17], water [18] etc. solvent free chemical reactions have several advantages in preparative, simplifying work-up, formation of cleaner products, enhanced selectivity, reduction of by products, reduction in the waste produced, and much improved reaction rates. This technique involves as an alternative reaction media to replace hazardous and expensive solvents routinely used in organic synthesis [19].

Here we have describe solvent free synthesis of Schiff base by two component synthesis by condensing substituted aromatic aldehyde with Aniline by using easily available, non-toxic tartaric acid as catalyst.





Tartaric Acid Catalysed Synthesis of Schiff Base Under Grinding Condition

Rakesh P. Chaudhari, Bharti P. Koli, Ganesh R. Chaudhari
Arts and Science College Bhalod, Tal-Yawal, Dist-Jalgaon

Abstract:

4-methoxy aniline was condensed with various substituted aromatic aldehyde in presence of Tartaric acid as catalyst under grinding condition. This method is simple economical, clean with easy work up. The structure of product was determined by IR Spectroscopy.

Keywords: Grinding condition, Schiff base, IR etc

Introduction:

When any primary amine reacts with an aldehyde or a ketone under specific conditions a Schiff's Base is formed named after Hugo Schiff [1]. Structurally a Schiff base (also known as imine or azomethine) is a nitrogen analogue of an aldehyde or ketone in which the carbonyl group has been replaced by an imine or azomethine group. Schiff bases are some of the most widely used organic compounds. They are used as pigments and dyes, catalysts, intermediates in organic synthesis, and as polymer stabilizers [2]. Schiff bases have also been shown to exhibit a broad range of biological activities, including antifungal, antibacterial, antimalarial, antiproliferative, anti-inflammatory, antiviral, and antipyretic properties [3].

The first preparation of imines was reported in the 19th century by Schiff (1864). Since then a variety of methods for the synthesis of Schiff base have been described. Examples of Bronsted-Lowry or Lewis acids used for the synthesis of Schiff bases include $ZnCl_2$, $TiCl_4$, $MgSO_4$ -PPTS, $Ti(OR)_4$, alumina, H_2SO_4 , $NaHCO_3$, $MgSO_4$, $Mg(ClO_4)_2$, H_3CCOOH , $Er(OTf)_3$, P_2O_5/Al_2O_3 , HCl [4-16], lemon juice [17], water [18] etc.

In recent years, use of several green catalyst for the synthesis of organic compound have received increasing attention, because of (i) short reaction times, (ii) increased safety, (iii) economic advantages.

Experimental:

All the chemicals were purchased from Aldrich/Merck and used without further purification. Melting points were determined in open capillaries using Thermo Analab apparatus and are uncorrected. The progress of the reactions as well as purity of compounds was monitored by thin layer chromatography with F254 silica-gel percolated sheets using hexane, ethyl acetate (8:2) as eluent; UV light vapour were used for detection. IR spectra were recorded on Agilent Cary 630 FTIR instrument, and values are expressed in cm^{-1} .

General Procedure:

In a mortar pestle added a mixture of substituted benzaldehyde (0.01 mole) and 4-methoxy aniline (0.01 mole) and tartaric acid (20 mol %) were grinding for appropriate time at room temperature. The progress of the reaction was monitored by TLC. After the completion of the resulting solid was filtered and recrystallized from ethanol. All these synthesized compounds were characterized by their melting point and IR spectral study.



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पूर्वखानदेश जिल्ह्यात महात्मा गांधी जयंती उत्सव (१९२९-१९४२)

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१९२० पासून महात्मा गांधीकडे भारताच्या स्वातंत्र्य चळवळीचे नेतृत्व आले. आणि त्यांच्या नेतृत्वाखाली विविध चळवळींच्या माध्यमातून देश संघटित होऊन स्वातंत्र्य चळवळ अगदी गावागावात पोहोचली. त्यातून महात्मा गांधी देशातील जनसामान्यांच्या मनामनात पोहोचले. त्यामुळे जवळपास १९२९ पासूनच देशभरात महात्मा गांधी जयंती साजरी करण्यात येऊ लागली. त्यानुसार पूर्वखानदेश जिल्ह्यातही गावागावात गांधी जयंती उत्साहात साजरी करण्यात येऊ लागली. त्यानिमित्ताने प्रबोधनात्क कार्यक्रम, सुत कताई, अस्पृश्यता निवारण यासारख्या राष्ट्रभारणीस अनुकूल कार्यक्रमांमुळे स्वतंत्रपणे लोकांमध्ये जागृती होऊ लागली.

सा.प्रबोधचंद्रिकेच्या वृत्तानुसार, २ ऑक्टोबर १९२९ रोजी महात्मा गांधीच्या ६१ व्या वनदिवसानिमित्त ठिकठिकाणी सभा भरविण्यात आल्या. जळगाव येथेही काँग्रेस कमिटीच्या विद्यमाने अण्णासाहेब दास्ताने यांच्या अध्यक्षतेखाली अमळनेर येथील हनुमान व्यायाम शाळेचे संचालक डॉ.पटवर्धन यांचे व्याख्यान झाले. डॉ.पटवर्धन हे स्वतः खादीभक्ता आहेत परंतु त्यांना हल्ली खादीप्रचार करणाऱ्या लोकांच्या विकृत प्रसाराबद्दल बरीच हजेरी घेतली. खादीचे तत्व खरोखरच उत्तम आहे, परंतु त्यांना जे स्वरूप दिले जाते ते मोठे घातक आहे असे त्यांनी सांगितले.

जळगाव येथे गांधी जयंती थाटात पार पडली, मराठी शाळातील शिक्षक व मुले यांनी फार चांगल्या प्रकारे भाग घेऊन कार्यक्रमास मदत केली. स्कूल बोर्डाकडून परीपत्रक जरी आली त्यापेक्षाही उत्साहाने शिक्षक लोकांनी भाग घेतला.

काँग्रेस मंत्रिमंडळाचा कारभार सुरु होण्याच्या अगोदर जसे सरकारी सभारंभ होत होते. त्याचीच आठवण अशा वेळी झाल्याशिवाय राहत नाही. फरक एवढाच की तेव्हा युनियन, जॉक, तरे, अत्रा, तिरंगी झेंडा. असे कळते की काही शिक्षक लाफ व मुल्लेही नाराज अशाकरिता दिसली की पूर्वी राज्यारोहण-राजाच्या बाबदिवस वगैरे प्रसंगी जसा खाऊ वाटला जात होता तसा ह्या प्रसंगी त्यांना मिळाला नाही. काँग्रेस स्कूल बोर्ड पुढील वर्षी ही सुधारणा अंमलात आणील काय ?^१ अशा पध्दतीचे वृत्त सा.प्रबोधचंद्रिकेत आलेले दिसून येते.

१९३१ मध्ये गांधी जयंती निमित्त १.२५ (सव्या) कोटी वार सूत अर्पण करण्याचा संकल्प संयुक्त खानदेशाने केलेला होता. हा कोटीसूत यज्ञाचा संकल्प पूर्ण करण्याच्या दृष्टीने तालुका निहाय जबाबदारी सोपविण्यात आली होती. साने गुरुजींनी तर अमळनेर तालुका २० लाख वार सूत देईल असे जाहीर केले.^२

१.२५ (सव्या) कोटी वार सूत संकल्पामुळे ठिकठिकाणी सूतशाळा व उद्योगमंदिर सुरु करण्याच्या कामाला गती मिळाली. पूर्व खानदेशातील मारवड, डांगरी व अमळनेर येथे सूतशाळा सुरु झाली. चरखे व टकळींचा प्रचार सुरु झाला. कार्यक्रमांचे दौरे सुरु झाले. २३ ऑक्टोबरपर्यंत पूर्व खानदेशातून ६०४७९०० वार सूत गोळा झाले होते.^३

गांधी जयंतीच्या निमित्ताने संयुक्त खानदेशात गांधी सप्ताह साजरा करण्यात आला. अमळनेर येथे वा सप्ताहात प्रामुख्याने खादी विक्रीचे काम करण्यात येऊन ६०० रुपयांची खादी विक्री झाली. गांधी जयंतीच्या दिवशी महात्माजींच्या चित्राची पालखीतून मिरवणुक काढण्यात आली. त्या दिवशी मिल बंद ठेवण्यात आली होती. हायस्कूल व मराठी शाळाही बंद होत्या त्या दिवशी साने गुरुजी, विद्यार्थी व काही मजुरांनी सकाळी मिल चाळीतील ५०-३० संडास साफ केले. काँग्रेस कचेरीसमोर जमलेल्या हायस्कूलच्या विद्यार्थ्यांसमोर साने गुरुजींचे भाषण झाले. त्याचदिवशी रात्री मिलमधील मजुरांच्या पध्दकाने मजुरांच्या घरी जाऊन २०० रुपयांची खादीची विक्री केली. मारवड या गावी गांधी सप्ताहात गाव झाडण्यास लहान मुलेही आली होती.^४ तळबेल वगैरे गावातील तरुणांनी गांधी सप्ताह साजरा करून ७४०० वार सूत काँग्रेस कमिटीला दिले. तळबेलच्या गूल भिल्ल याने दोन दिवस उपवास करून भिल्ल लोकांनी दरू बंद केली.^५



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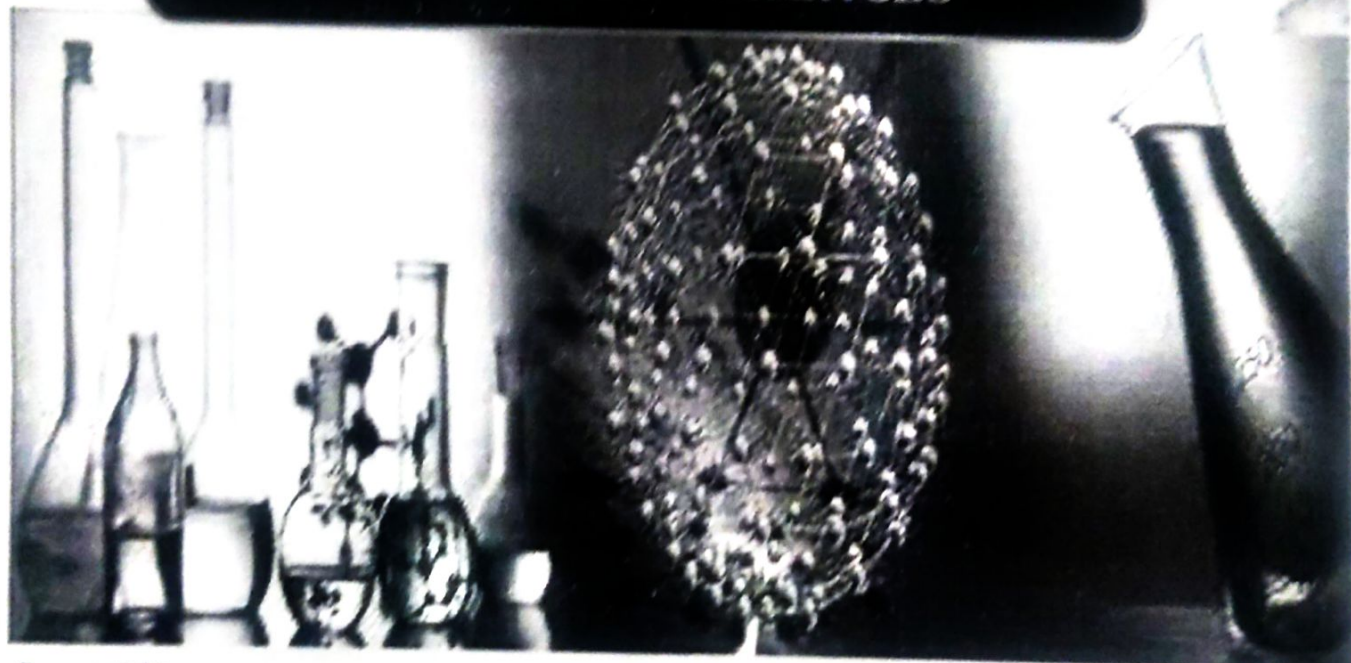
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E-Waste- Environmental Problem

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Abstract :

The electrical and electronic waste is one of the fastest growing waste in India. The increasing "market penetration" in developing countries produce e-waste as one of the fastest growing waste. The e-waste has become a matter of concern because of the presence of toxic and hazardous substances present in electronic goods and if not properly managed, it can have adverse affects on environment. Hence there is strong need to adopt sustainability practices to tackle the growing threat of e-waste. This article is based on secondary data which study the e-waste composition, and different hazardous materials found in the E-waste. During the disposal of e-waste the , partial recyclability can occur, and use of development of retrieval techniques for their recycling and re-use in order to and protect the environment.

Keywords: E-waste, E-waste management, hazardous substances, recycling etc.

Introduction

E-waste is defined as waste electrical and electronic equipment that is dependent on electric currents or electromagnetic fields in order to function, including all components, subassemblies and consumables which are part of the original equipment at the time of discarding. They include:

- Consumer/entertainment electronics (e.g. Televisions, DVD players and tuners).
- Devices of office, information and communications technology (e.g. Computers, Laptops, Telephones and Mobile phones).
- Household appliances (e.g. Fridges, Washing machines and Microwaves, Grinders).
- Lighting devices (e.g. Desk Lamps).
- Power tools (e.g. Power drills) with the exclusion of stationary industrial devices.
- Devices used for sport and leisure including toys (e.g. Fitness machines and Remote control cars).
- Networking devices (e.g. Routers, Hub, Gateways, Switch)



Growth of e-waste

