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## PREFACE

One of the greatest problems that the world is facing today is that of environmental pollution, increasing with every passing year and causing grave and irreparable damage to the earth. Environmental pollution consists of five basic types of pollution, namely, air, water, soil, noise and light.

Air pollution is by far the most harmful form of pollution in our environment. Air pollution is caused by the injurious smoke emitted by cars, buses, trucks, trains and factories namely sulphur dioxide, carbon monoxide and nitrogen oxides. Evidence of increasing air pollution is seen in lung cancer, asthma, allergies and various breathing problems along with severe and irreparable damage to flora and fauna. Chlorofluorocarbons (CFC), released from refrigerators, air-conditioners, deodorants and insect repellents cause severe damage to the Earth's environment. This gas has slowly damaged the atmosphere and depleted the ozone layer leading to global warming. Water pollution caused industrial waste products released into lakes, rivers and other water bodies, has made marine life no longer hospitable. Humans pollute water with large scale disposal of garbage, flowers, ashes and other household waste. In many rural areas one can still find people bathing and cooking in the same water, making it incredibly filthy. Acid rain further adds to water pollution in the water.

Noise pollution, soil pollution and light pollution too are damaging the environment at an alarming rate. Noise pollution includes aircraft noise, noise of cars, buses and trucks, vehicle horns, loudspeakers and industry noise, as well as high-intensity sonar effects which are extremely harmful for the environment. Soil pollution, which can also be called soil contamination, is a result of acid rain, polluted water, fertilizers etc., which leads to bad crops. Soil contamination occurs when chemicals are released by spill or underground storage tank leakage which releases heavy contaminants into the soil. These may include hydrocarbons, heavy metals, MTBE, herbicides, pesticides and chlorinated hydrocarbons.

Environmental protection is a practice of protecting the natural environment on individual, organisation controlled or governmental levels, for the benefit of both the environment and humans. Since the 1960s, activity of environmental movements has created awareness of the various environmental issues. There is no agreement on the extent of the environmental impact of human activity and even scientific dishonesty occurs, so protection measures are occasionally debated. In the light of the aforesaid challenging tasks, we believe that the present National Seminar plays a vital role in identifying the thrust areas of research in assessing the pollution depth and evolving the methods for controlling the pollution. No doubt the fruitful deliberations in the seminar would yield the constructive suggestions and guidelines for the further developments in environmental sciences.

**-Dr. K.A.EMMANUEL.M.Sc, M.Phil, Ph.D,**  
**Organizing Secretary**  
**Associate professor,**  
**Department of chemistry**  
**Sir.C. R. Reddy Autonomous College,**  
**Eluru, W.G.District, A.P. India.**

### **ACKNOWLEDGEMENTS**

The Two day National seminar on “Environmental Protection and Sustainable development, Issues and challenges” (EPSDIC-16) has been made possible with the support of many technical experts, individuals and organizations both in man power and finance. This support is gratefully acknowledged.

I am very much grateful to our college Managing committee for its constant encouragement in organizing this type of academic activities for the development of the college.

I owe a deep sense of gratitude to Sri. Kommareddy Rambabu, President, Sir.C.R.Reddy Educational Institutions, Eluru and Chief Patron of the National seminar for his constant encouragement, valuable guidance in organizing the seminar in most efficient way. I am very thankful to Sri. N.V.K.Durga rao, Secretary, Sir.C.R.Reddy Educational Institutions, Eluru of the National seminar for his precious support as Patron of this seminar.

My sincere and special thanks to Sri. U.S.Ramaprasad, Correspondent, Sir.C.R.Reddy Autonomous College, Eluru for his encouragement, co-operation and meticulous guidance at every stage in organising and planning the National seminar and bring out this book.

I am thankful to V RaghuKumar, Correspondent (PG Courses), Sir.C.R.Reddy Autonomous College, Eluru for encouragement in the success of seminar and also I'm great full to Smt C Aruna Kumari Director PG courses for her timely help during the seminar

I am deeply indebted to Sri. N.V. Choudary, Principal, Sir.C.R.Reddy Autonomous College, Eluru for his constant support and having taken every responsibility for completing this task through various stages.

I also express my deep sense of gratitude to Sri. K. Bhaskar, Deputy General Manager of Andhra Bank, West Godavari for the sponsoring the Seminar Kit bags.

I profusely thank the Key note speaker, Prof. P.R.Naidu, Ex-Vice chancellor, S.K. University, Ananthpur for his valuable address to the gathering. I also thank Pro. N.V.S Naidu, Chairman of the Advisory and Organising committee of the National seminar for his timely help in conducting the seminar in a successful manner.

My sincere thanks to all the speakers, chair persons, Rapporteur of various technical sessions of the seminar have readily responded to our invitation to conduct the proceedings and to the address the gathering and for their kind gesture in the seminar.

I owe special thanks to Sri. N.V.S.S. Pathangali, Office Manager and his staff for their constant support throughout the seminar.

I sincerely thank KY Publications, Guntur for bringing out the proceedings of the seminar in Book format.

I am very much grateful to my colleagues in the Departments of Chemistry (UG&PG), Botany and Zoology and also organizing committee members' teaching and non-teaching members individually, for their continuous support in making this event successful.

Finally, I thank all the people and organizations who are directly and indirectly involved in organizing the seminar, but I could not mention their names due to paucity of space.

I thank one and all.

***Dr. K.A.EMMANUEL,***  
***Organizing Secretary***

## INTRODUCTION

Environment is living things and what is around them. It includes physical, chemical and other natural forces. Living things do not simply exist in their environment. They constantly interact with it. Organisms change in response to conditions in their environment. In the environment there are interactions between plants, animals, soil, water, temperature, light and other living and non-living things. Now a day's People afraid of threat of III World war. But there are so many problems which attacking the world in several ways. Terrorism, Unemployment, Financial crisis and Environmental disasters etc., are also other problems which is going to be destroy the world. Out of them Environmental pollution is one of the danger which now the globe is facing. It is very dangerous than Nuclear weapons. Therefore it is the responsibility of every citizen of the world to protect our environment carefully in order to give life to future generations.

### **Inaugural Session**

Professor G.V.R.Prasada Raju, Principal, University College of Engineering, JNTU, Kakinada was the chief guest of the session. He said water and environment are one of the most important natural elements on earth. Water and environmental quality directly and indirectly influence human lives and development. Water and environmental technologies provides a wide variety of professional and civil and environmental services with emphasis on surface water, ground water and remediation issues. Due industrialisation and urbanisation the water bodies are contaminated in a larger way which causes the non availability drinking water. If we are not protecting the water bodies no doubt there is going to wars between the nations and states for the sake drinking water.

Professor P.R.Naidu, Ex-Vice chancellor, S.K.University, Ananthapur delivered the Key note address. He is mainly pointing out about incoming danger due to carbon dioxide and green house gases. Global warming is caused partly by Carbon dioxide (CO<sub>2</sub>) in the atmosphere. Carbon dioxide is held responsible for "green house effect". This effect is confined to the troposphere, whose bottom is the earth. It is needless to emphasize that human activity on earth releases large quantities of CO<sub>2</sub>. Fortunately green plants on our earth convert a good part of the CO<sub>2</sub> into carbohydrates by the well know Photosynthesis process. However, large quantities of CO<sub>2</sub> still remain in the upper region of troposphere and this becomes responsible for the formation of CO<sub>2</sub> layer.

Carbon dioxide acts as a window to infrared radiations released by solar system. All these infrared radiations move towards the earth and interact with materials on the earth and lose their energies to some degree and become weak. The weak infrared radiations get reflected back by the materials. They move towards the carbon dioxide layer in troposphere. This acts as a closed window. Hence these infrared radiations are once again reflected back to the earth. This event becomes responsible for increase in the temperature on the earth. This effect has been named as "greenhouse effect" as people thought that it is similar to the high temperature inside a greenhouse. As it was considered as one-way filtering action of glass in glass house. In order to reduce this effect plant trees as many as possible such that they absorb green house gases to protect the environment form global warming.

The Managing committee members of Sir C.R.Reddy Educational Institutions Sri. Kommareddy Rambabu (President), Sri.N.V.K.Durga Rao (Secretary) Sri V.Raghu Kumar (Correspondent PG Courses), Sri U.S.Ramaprasad (Correspondent Sir.C.R.Reddy (A) College) and Sri. N.Veerraju Chowdary (Principal & convener of the seminar) were present and spoke about the Protection of Environment and Sustainable development.

### **First Technical session:**

The session was chaired by Prof. D.Ashok, Department of chemistry, Osmania University, Hyderabad. Sri, G.Ramu HOD, Department of Chemistry PG Courses acted as Rapporteur of the technical session. Professor K.Laxma Reddy, NIT Warangal gave invited talk on environmental issues and challenges.

He has discussed that environment is the life support system that includes air, water and land. Nature is the valuable asset possessed by the earth that provides all the basic requirements such as food, air, water

and shelter for the livelihood of living beings. All these components of the environment are the resources that are continuously being utilized by the living organisms for their survival. Every activity on the earth is cyclic and hence the resources are replenished either at a slower rate or a faster rate, depending upon the change they undergo. In his lecture he presented few environmental problems like Global warming, fluoride effect in drinking water and effect of plastics on environment. I believe that the key factor for the success of sustainable development lies in the identification of the causes that are responsible for environmental degradation.

About ten papers were presented in this session. Dr. M.C.Rao and T.Srikumar presented a paper on Natural Resources - Environmental Strategic Considerations. They have discussed about how the natural resources provide fundamental life support, in the form of both consumptive and public good services. Ecological processes maintain soil productivity, nutrient recycling, the cleansing of air and water and climatic cycles. Soils are the foundation of agriculture, which in turn is the basic building block in the livelihoods of all people. At the genetic level, diversity found in natural life forms supports the breeding programs necessary to protect and improve cultivated plants and domesticated animals to safeguard food security. Wild flora and fauna form the basis of traditional medicine and much of the modern pharmacological industry.

Neha khandelwal, Rahul Tiwari have stressed that trace element concentration and Particulate metal concentration in different Indian mosquito coils. They explained that five most available brands of mosquito coils were purchased from the local market of Agra. The study suggests burning of mosquito coil in the indoor environment emit quiet higher respirable particulate matter, which may on prolonged exposure lead to undesired health effects.

#### **Second Technical session:**

This session chaired by Dr.B.Jagan Mohan Reddy, Assistant professor and Placement officer, Adikavi Nannya University, Rajamahendravaram. Dr. P.Paul Divakar, Associate professor, Department of Physics acted as Rapporteur of the technical session. Dr. K.V.Raghu, Director, Dr.Reddy's lab, Hyderabad acted as lead speaker in this session. He spoke on sustainability. In his introduction he mainly points out on Definitions, environment, policy, scale, and jurisdiction. Environment is defined as the circumstances, objects or conditions by which one is surrounded. The complex of physical, chemical and biotic factors (as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival. The aggregate of social and cultural conditions that influence the life of an individual or community. Environmental effects are felt, and modified, in 3 main ways through the flows of materials, energy, information fundamental 'spheres of influence' for sustainability. For sustainable development we must use materials in continuous cycles. Use continuously reliable sources of energy. Encourage desirable human traits (equity; creativity; communication; coordination; appreciation; intellectual and spiritual development).

About ten papers were presented and discussed in this session. Dr B. Syam Sundar in his paper discussed on Socio-Economic and Legal Dimensions of Sustainable Development. Business Organizations rely not only on economic resources but also on natural resources and ecosystem services such as fresh water, clean air, healthy biodiversity and productive land to function. To be successful and to thrive they need to ensure that the natural systems upon which they depend also thrive. However, historically business has not integrated the cost of degradation of these natural systems as they are seen as externalities. But given the realities confronting the businesses as natural resources decline and the impacts of climate change increase, it is increasingly becoming important to take a new view that businesses need to recognize their reliance on natural capital.

Doing so will lead to environmentally responsible approaches, which are not only good for the environment and for society, but for business itself. The Environmental Profit and Loss Account (EPL), one of such approaches, is an innovative tool to help identify and account for the value of natural capital used in the business. In this paper he seeks to study the practices of Environmental or Green Accounting among the business organizations in general and to highlight it as a new way of doing business that takes natural resources into account, and to recommend it as a more holistic approach to reporting by business organizations for sustainable development in the future.

Smt P.Neerada, Lecturer in Chemistry, VRS & YRN College, Chirala, Prakasam District presented a paper on Importance of Environmental Education. She explained that environment is the physical and biotic habitat that surrounds us. The need to have a working knowledge of environmental issues is not confined to environmental scientists, engineers and policy makers. The major goals of environmental education programs are to raise consciousness about environmental conditions and to teach environmentally appropriate behaviour. The greatest challenge we face is to rediscover our place on this planet. Knowledge about the environment is not an end, but rather a beginning. Thus the environmental education is aimed at increasing the public awareness and knowledge about environmental issues and provides facts, opinions to make informed decisions and take environmentally responsible actions.

### **Third Technical session:**

This session chaired by Dr.K.V.Raghu, Director, Dr.Reddy's Lab, Hyderabad Dr. G.Satynarayana, Associate professor, Department of Chemistry PG Courses acted as Rapporteur of the technical session. Prof. D.Ashok, Department of chemistry, Osmania University, Hyderabad. acted as lead speaker in this session. He discussed on greener synthetic techniques for the synthesis of novel bis-heterocycles as potential drug candidates. Organic Chemistry is *the* heart of our society as it provides a multitude of consumer goods, without which modern life would not have been possible.

Organic compounds display a wide variety of biological properties, many of which can be exploited for medicinal purposes and are also essential for the human well-being. The exclusive role of heterocycles for drug discovery is best documented by the occurrence of a heterocyclic moiety in current drugs. Synthesis of heterocycles using greener synthetic techniques is the best option to accelerate these synthetic process in an eco-friendly way. In recent years greener synthetic techniques such as Microwave Assisted Organic Synthesis, Ultrasound Assisted Organic Synthesis, Ring Closing Metathesis (RCM), Aqueous Phase Organic Synthesis and Solvent-Free Organic Synthesis attracted the attention of chemists. The salient features of these techniques are enhanced reaction rates, easy workup, high yields, operational simplicity, greater selectivity and experimental ease of manipulation, low cost and economic. He presented about the greener synthetic techniques used for the synthesis of some novel Bis-heterocycles and their biological activity.

About eighteen papers were presented in this session. J.Chandrasekhara rao, K.Sudha Rani, and T. Rose Mery, presented a paper on Environmental Biofilms. They have discussed that in the water bodies both large and small, on land underground, as well as on and within higher organisms, biofilms are an integral component of the natural environment. The report, "Global Environmental Change: Microbial Contributions, Microbial Solutions, points out." The basic chemistry of earth's surface is determined by microbiological activity, especially that of the many trillions of microbes in soil and water. Microbes make up the majority of the living biomass on earth and as such have major roles in the recycling of elements vital to life.

Moreover, streambed biofilms are considered as good indicators of the overall water quality and the ecological status of the system (i.e., ecosystem health) It is then of special interest to assess how biofilm communities respond to anthropogenic pollution of aquatic environments (e.g., rivers, lakes, and reservoirs) considering the increasing amount of chemical compounds (metals, personal care products and drugs used in veterinary and human medicine) released into these water bodies mainly through wastewater treatment plant (WWTP) effluents and agricultural run-off This review focuses on the role of streambed biofilms as reservoirs of antibiotic resistant bacteria and resistance genes, providing a general overview of the causes and consequences of a chronic exposure of biofilm communities to sub-inhibitory concentrations of antibiotics and their role in the spread and persistence of antibiotic resistance.

Sri. V.V.Ramana, Senior lecturer in Economics, Dr.K.A.Emanuel, Associate Professor in chemistry and Dr.T.Rajesh Associate professor in MBA of Sir.C.R.Reddy College, Eluru, presented a paper on green marketing – environmental protection. They have explained that Businesses are an integral part of society. They have a great social responsibility towards the well being of society. As consumer is an important component of society, businesses have an obligation to him. But when the goods are short in supply, high prices are charged for the products and consumers have no choice but to purchase what is available. Thus arises the need for protecting consumers from unsafe products, poor quality of goods and services, high

prices, unfair trade practices and misleading advertisements. Material management is also a very crucial component to focus upon for delegating the recycling and packaging of the goods and services in environmental friendly manner. We can now understand the importance of ecology and the need to protect it for coordinated and balanced growth. They highlighted the Green Marketing - Environmental Protection involves control exerted over all immediate and eventual environmental effects of products and process associated with converting raw materials into final products.

K. Lakshmi kantha, K B S Gopal, Sir C R R (A) College, Eluru presented on Pharmaceutical pollution – Extinction of Indian vultures. They pointed out that The Indian vulture (*Gyps indicus*) is an Old World vulture. Vultures constituted the natural animal disposal system. Vultures also play a key role in the wider landscape as providers of ecosystem services, and were previously heavily relied upon to help dispose of animal and human remains in India. According to Dr. J. Lindsay Oaks, Professor of Microbiology at Washington State University ran scores of tests on the deceased birds. Oaks discovered the vultures were dying of kidney failure from the accumulated diclofenac in the cows and other cattle. In March 2006 the Indian Government announced its support for a ban on the veterinary use of diclofenac. Captive-breeding programmes for several species of Indian vulture have been started. They mate only once a year, producing only one egg. At that rate it will take decades of captive breeding simply to prevent the birds from going completely extinct. In early 2014 the Saving Asia's Vultures from Extinction (Save) programme announced that it expects to start releasing captive-bred birds into the wild by 2016.

Dr. CA Jyothirmayee Associate professor in chemistry and Dr. K. Sreelatha, Associate professor in physics Ch SD St Theresa's college for women, Eluru presented a paper on the topic Clean water for a healthy world. They stressed that Water pollution is a major global problem which requires ongoing evaluation and revision of water resource policy at all levels (international down to individual aquifers and wells). It has been suggested that water pollution is the leading worldwide cause of deaths and diseases. Surface water seeps through the soil and becomes groundwater. Conversely, groundwater can also feed surface water sources. Sources of surface water pollution are generally grouped into two categories based on their origin. Point source water pollution refers to contaminants that enter a waterway from a single, identifiable source, such as a pipe or ditch.

Dr. S.B. Ronald, Dr. PSNH Ramachandra Rao, Dr. B. Ananda Kumar, Associate professors, Department of Chemistry, Sri Y.N.College, Narsapur presented a paper on Need to act on climate change. They explained that Carbon dioxide is a natural constituent of atmosphere, but now its concentration is increasing at an alarming rate. According to an estimate, carbon dioxide level rose from 280 ppm to 320 ppm in the troposphere over the period 1870 to 1970. The atmospheric concentration of carbon dioxide has risen by almost 30 per cent since the Industrial Revolution. Both the current concentration of about 379 parts per million (ppm) – compared with 280 ppm in the pre-industrial era - and the current rate of increase is approximately 2 ppm per annum.

The time is right for action, and it must be taken quickly. We have the technologies to deal with this or the scope to develop them. Action is affordable. Inaction is not. The Kyoto protocol which was accepted by the 55 developed and developing nations is going to come to force from the month of February 2005 will do much to re-invigorate the international climate change process. The good news is that we now understand what is happening and therefore what we must do to address this. Recently 196 countries in the world on April 22<sup>nd</sup> 2015 signed on Paris agreement in UNO to reduce Green house gas emissions drastically.

#### **Fourth Technical session :( 23rd Sept.2016)**

This session chaired by Prof. N.V.S.Naidu professor of chemistry, S.V.University, Tirupathi. Dr.A.Veerabhadra Rao, Associate professor in Physics acted as Rapporteur of the technical session. Prof. Ajay Taneja, HOD, Department of chemistry, Dr. B. R. Ambedkar University, Agra, India acted as lead speaker in this session. About fifteen papers were presented in this session. Professor Ajay Taneja on his invited talk mainly focussed on Indoor environmental air quality: case studies. Indoor air quality deals with the essence of interior air that could affect health and comfort of building occupants including those in residential, public or private organizations. A wide spectrum of pollutants including toxic gases or particles has been recognized within the



air inside that can harm your health. The effects of indoor air pollutants range from short term effects including eye and throat irritation to respiratory diseases and cancer abiding in the fullness of time. The health impacts of many chemical components in building are not well understood. Many chemicals present in indoor air environment have not been thoroughly tested and little is known about their long-term health effects.

Apart from homes, other microenvironments small scale industries and schools were pointed as an area of utmost concern of indoor air quality. All the case studies undertaken highlights that there exists a paramount requirement to collect better and systematic information concerning actual exposure levels experienced by household and other defined workplaces in different parts of the country and develop a model for predicting the exposure levels based on fuel use and other households / occupational data therein (exposure atlas) to protect the health of children, women, workers and elderly persons. Among which the corner stone of control truly relies upon the education and awareness of the masses and also amalgamation of government policies to create pollution less 'cleaner' indoor environment.

B. Padmaja, K. Usha Rani, Dept of Zoology, D.N.R. College, Bhimavaram, presented a paper on impact of Glyphosate on biochemical constituents of the freshwater fish, catla catla. In her paper she observed that the freshwater fish, Catla catla was exposed to the test toxicant glycil (SL 41%) (glyphosate), an organophosphate herbicide under static and continuous flow through systems to determine the acute toxicity values for 24, 48, 72 and 96 h. The 24, 48, 72 and 96 h LC<sub>50</sub> value of glyphosate were found to be decreased in static and in continuous flow through system indicating a decrease with time of exposure and also the static LC<sub>50</sub> values were found to be higher, compared to the continuous flow through values. Depletion of total glycogen and protein contents were observed in all the tissues of the fish exposed to toxicant.

P.C. Swaroop, Associate Professor in Geology & Convener, IQAC, Sir C.R. Reddy (A) College – CPE, Eluru presented a paper on Ground water, a geological marvel – needs sustenance. In his paper he focussed on Ground water is the water found in the gaps and voids and spaces in the formations below the earth. It accumulates in spaces between soil particles and in cracks and fissures traversing hard rocks. Depending on the nature of the soil and the rock, water becomes available in greater or lesser quantities. The basic fact that the source of all water, whether on the surface or below ground, is rainwater only should not be forgotten. Rainwater harvesting should be taken up on a large-scale. People should be made to understand that a precious resource like water is not unlimited and it has to be used judiciously. Overuse and misuse of water should be stopped. Roof top rain water harvesting should be made mandatory for every Building. People from all strata of society should strive to put an end to the misuse of water.

D.Madhava Sarma, B.Venkata Rao, S. Seshumtyalu, Associate Professors Department of Chemistry, D.R.G. Govt. Degree College, Tadepalligudem presented a paper on Quantification of irrigated soils of tadepalligudem tehsil and fertilizer recommendation for paddy cultivars with special reference to zinc for end user applications. They observed that Rice (Paddy) is the main cultivated crop in the Tadepalligudem Tehsil of Andhra Pradesh. Growth and yield of any crop depends on factors like soil fertility and nutrient availability from the soil, besides other soil properties. It has been found that, in most of the soils zinc is below the critical value. According to recent studies, zinc deficiency in soils of Andhra Pradesh is further expected to increase from the current 49% to 63% by the year 2025 as most of the marginal soils are being brought under cultivation. It is proposed to advise the stake holders about the results obtained in this analysis so that they can apply the fertilizers according to the need only. Sincere efforts are going on to convince farmers about the use of fertilizers basing on soil testing is a good practice. It is a practical tool for optimizing the use of fertilizers which leads to higher yields.

V.Venkata Rao Senior Lecturer in English, Sir C.R.R Autonomous College, Eluru and K.Suresh Principal Scientist, ICAR-Indian Institute of Oil Palm Research, Pedavegi, India have presented a paper on Carbon Sequestration Potential of Oil Palm in Mitigating Climate Change - An Oil Palm Grower's Perspective. In their paper they analysed the annual dry matter production and carbon contents in the system using non destructive sampling techniques, while the other study involved estimation of standing biomass and carbon sequestered by oil palm through destructive methods. Results indicated that the annual dry matter production and carbon sequestered by oil palm were 36.25 t ha<sup>-1</sup> y<sup>-1</sup> and 11.63 t ha<sup>-1</sup> y<sup>-1</sup> respectively. Leaves or fronds of

oil palm plantations possessed the maximum carbon sequestration ability (40 per cent) followed by trunk, bunches and roots. The standing biomass and carbon sequestered in the plantation were of the order of 79.05 and 30.97 t ha<sup>-1</sup>. The above study emphasizes that oil palm has a huge potential in mitigating climate change since it sequesters substantial quantities of carbon. The carbon credits accrued due to cultivation of oil palm could add additional income to the oil palm grower. The findings could help policy and decision makers in drafting climate change mitigation programmes and policies in India.

#### **Fifth Technical session:**

This session chaired by Dr. D.Ramachandran, HOD, Department of chemistry, Acharya Nagarjuna University, Guntur. Dr. N.V.V.S Prasad, Reader in Chemistry acted as Rapporteur of the technical session. Dr. B.Sreedhar, Scientist, IICT, Hyderabad, acted as lead speaker in this session. About ten papers were presented in this session. He spoke on Nanoengineered Materials for Catalytic Applications: Silica Core@Shell and Natural Gums Stabilized Nanoparticles. He discussed on Nanomaterials, with their unique physical and chemical properties, hold promise for applications in a wide range of sectors including catalysis, electronics, photonics, telecommunications, biotechnology, medicine, aerospace, and energy. Most nanostructures are primarily surface rearrangements of atoms. By using nanoparticles in various operations we can reduce the pollution in all fields of life.

G. Naga Raju, V. Ravi Kumar, Department of Physics, AcharyaNagarjuna University, Nagarjuna Nagar, Guntur presented a paper on Methods to prevent the water pollution from industries. They observed that organic wastes are produced by animals, humans and include such things as fecal matter, crop debris, yard clippings, food wastes, rubber, plastic, wood, and disposable diapers. Such wastes require oxygen to decompose. When they are dumped into streams and lakes and begin to break down, they can deprive aquatic life of the oxygen it needs to survive. Some of the facilities can install a pre-treatment system to remove the toxic components, and then send the partially treated waste water to the municipal system. Industries generating large volumes of waste water typically operate their own complete onsite treatment systems.

Some industries have been successful at redesigning their manufacturing processes to reduce or eliminate pollutants, through a process called pollution prevention. Toxic chemicals produced from motor fuels, industries, factories and concrete washout is prevented by use of spill prevention, control plans and specially designed containers.

Singampalli mutta reddy and yenumula bala rami reddy, Govt.college for women, chirala, prakasam district presented a paper on the topic Estimation of total Suspended particulate matter (tspm) in dachepalle industrial area, Andhra pradesh, India. They observed that estimation of Respirable Suspended Particulate Matter (RSPM), Non Respirable Suspended Particulate Matter (NRSPM) and Total Suspended Particulate Matter (TSPM) estimated in Dachepalle industrial area with the help of PM 10 sampler (Respirable Dust Sampler). The PM 10 sampler shell draw the air sampler into sampler inlet through the filter at a uniform face velocity. Discharge exhaust air at a sufficient discharge from the sample inlet to minimize the sampling of exhaust air. After the estimation TSPM is 549.09 µg /m<sup>3</sup> height in summer season and 441.45 µg /m<sup>3</sup>) Lowest in Monsoon. It is more than permissible limit as per EPA.

Dr. T. Raja Rajeswari, Talari Kalpana, Associate Professor, Department of Chemistry, Y.A. Govt. College for Women, Chirala, Prakasam (Dist), A.P, presented a paper on the topic Impacts of pharmaceuticals and personal care products in environment. In their paper they observed tons of pharmaceutical substances are used in human medicine for diagnosis, treatment or prevention every year. The presence of pharmaceuticals and personal care products (PPCPs) in the ecosystem has emerged as a serious concern due to their rapid growing and unregulated disposal practices. These micro pollutants disturb the ecological balance and attracted the public as well as scientific community. These emerging pollutants introduced into aquatic environment by discharges from sewage treatment plants, industrial and hospital wastewater, landfill leachates, disposal of unused drugs, effluents from aquaculture, agricultural use and so on, the occurrence of drugs in the environment was usually in low concentrations, where in rivers, lakes and seawater ranges from ng/L. They mainly discussed the impacts of pharmaceuticals and personal care products on environment.

#### **Sixth Technical session:**

This session chaired by Dr. B. Sreedhar, Scientist, IICT, Hyderabad and Dr.G.Ramu, Associate professor in Chemistry (P.G) acted as Rapporteur of the technical session. Prof. N.V.S.Naidu, Department of Chemistry acted as lead speaker in this session. In his invited talk he mainly concentrated on pesticide pollution. How the selfish farmers for their own profits using the pesticides indiscriminately and the excess pesticides is mixed with the drinking water which ultimately causes various diseases among the mankind. He suggested the people to use eco friendly fertilizers in order to get high yield and also clean environment. About twenty papers were presented in this session.

P. Supriya, B. Supraja, B. Sreedhar presented a paper on Natural gum induced biomineralization of TiO<sub>2</sub> nanocrystals - a rapid and facile approach for high-efficiency photocatalyst. They have explained that the physico-chemical properties of as-prepared TiO<sub>2</sub> NPs were investigated employing a wide variety of techniques, including X-ray diffraction, Transmission electron microscopy, UV-Vis spectroscopy, Thermal gravimetric analysis and FT-IR spectroscopy. The structural and size analysis revealed that the formed nanocrystals are monodisperse, unagglomerated, well defined with spherical morphology having an average crystallite size of 12 nm and a large band gap of 3.2 eV that makes them ideally suitable for a variety of applications including photocatalysis, photovoltaics, nanotoxicology studies and optical coatings. This report demonstrates a new facile and greener approach for the synthesis of highly crystalline, smaller and more transparent TiO<sub>2</sub> nanoparticles with respect to commercial nanotitania P25.

T. Preethi Rangamani, Assistant Professor, PVP Siddhartha Institute of Technology presented a paper on evaluation of physicochemical parameters of eluru and bandar canals of Krishna river in Vijayawada. In their paper they mainly stressed on state of Andhra Pradesh Krishna canal water is being used for domestic purposes including drinking water supply for several villages, major panchayats and towns, for irrigation in the delta, for fisheries, industry, religious purposes, etc. Eluru and Bandar canals of Krishna river in Vijayawada has human interference through emersion of idols, irrigation, domestic use, discharge of sewage, industrial wastes, etc. by which water quality get changed. Assessment of temperature, pH, total alkalinity, turbidity, chloride, hardness, dissolved oxygen, total dissolved solids, calcium, phosphate, heavy metals and pesticides were carried out monthly during June, 2015 to June, 2016. Results showed significant alterations in the physicochemical parameters. The analyzed data of water body was interpreted in relation to pollution status.

Dr. Jalla Suresh, Department of chemistry, SRVB SJB MR College, Peddapuram, East Godavari District., A.P. presented a paper on the topic Importance, resources, water policies, technology, problems, micro bacteria present in water. In his paper he observed that water one of the most important engineering materials and is used for steam generation, as a coolant in power plants, for air conditioning and fire fighting and in building and other concrete constructions water has a unique position in industry. It is needed for the production of such a wide variety of materials as steel and other metals, paper, textiles beverages, dairy products, petroleum, coal, rubber and plastics automobiles industry and a solvent in chemical processing. In fact, production units not using water for some purpose or the other may be hard to find. It is for this reason that before setting up a production unit at a particular site, the quantity of water needed, the character and quality of the water available and the effect of impurities in water on the processing must be carefully considered.

Dr. NVVS Prasad, Dr. Harinadha Babu Raparla, Dr. C. Ravi, B. Ranjith Kumar, presented a paper on a topic study on physico-chemical analysis of ground water quality and linear correlation analysis of Lingapalem mandal West Godavari District, Andhrapradesh, India. They observed that the ground water quality is determined in LingapalemMandal which lays in the Northern part of West Godari District of Andhra Pradesh. 19 water samples were collected from different villages and studied for various physico-chemical parameter like pH, turbidity, electrical conductivity (EC), total dissolved solids (TDS), total hardness (TH), Total alkalinity (TA) content of calcium (Ca<sup>2+</sup>), magnesium (Mg<sup>2+</sup>), sodium (Na), potassium (K), Iron (Fe), chloride (Cl<sup>-</sup>), fluoride (F<sup>-</sup>), sulphate (SO<sub>4</sub><sup>2-</sup>), Nitrite (NO<sub>2</sub><sup>-</sup>), DO, BOD, COD,) were determined. The pH was measured by using Eutech ion- 2700 PH meter and EC was measured in electrical conductivity meter 304. Total hardness, calcium, magnesium were measured by EDTA titration methods. Total alkalinity was determined by volumetrically. Sulphate was determined by turbidimetric method using digital Nephelo turbidity meter 132 .

Fluoride and chloride content in water was determined by using ion selectivity meter Eutech ion -2700. The Physico-chemical analysis was carried out according to standards methods. Iron, nitrite and phosphate were determined by spectrophotometric method using Equiptronics EQ-822A Spectrophotometer. DO, BOD, COD were determined using standard methods.

**Valedictory Session: (23<sup>rd</sup> Sept.2016)**

Sri. Kommareddy Rambabu, President, Sir.C.R.Reddy Educational Institutions presided over the function. The managing committee members Sri.N.V.K.Durgar Rao (Secretary) Sri A.V. Subramanyam (Joint Secretary) Sir.C.R.Reddy Educational Institutions Sri U.S.Ramaprasad (Correspondent Sir.C.R.Reddy (A) College) and Sri. N.Veerraju Chowdary (Principal & convener of the seminar) were present and spoke about the Environmental Protection and Sustainable development. Sri.S.Venkateswralu, Environmental Engineer, A.P.Pollution Control Board, Eluru, and W.G.Dist. attended as a chief guest of the function and addressed the gathering. Dr.K.A.Emmanuel organizing secretary of the seminar presented a brief report on the seminar. Mr. K.Visweswara Rao, HOD, Department of Zoology proposed vote of thanks. The programme was concluded with National Anthem.

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