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The centre will come up with new strategies and plans for conservation of biodiversity. Various alternative measures will be developed to mitigate the effects of pollution to protect the environment. Centre also provide S&T base for assessment of Biodiversity and Pollution. Recently centre organized "Tree Plantation" in campus on the eve of world environment day.

**The Centre is involved in the following activities**

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- Development of eco-friendly techniques and products
- Assessment and conservation of biodiversity of the state
- Monitoring of Environmental Pollution and Development of Alternatives Measures
- Identification and Investigations of Harmful Synthetic Compounds in Environment and Remedial Measures
- Assessment and Conservation of Biodiversity
- Eco-friendly Product Development


https://www.amity.edu/gwalior/centre_of_excellence.aspx

Presence of a Research Centre with a specific focus on environmental sustainability

# Centre Of Excellence for Environmental Conservation & Biodiversity

## Publication

## Research Papers

1. PLLA Nanosheets for Wound Healing: Embedding with Iron-Ion-Containing Nanoparticles Aslan Mussin, Ali A. AlJulaih, Neli Mintcheva, Delvin Aman, Satoru Iwamori, Stanislav O. Gurbatov, Abhishek K. Bhardwaj and Sergei A. Kulinich, Nanomanufacturing 2023, Volume 3(4), Page 401-415; **(Peer Reviewed)**

2. Sushama Rawat, Dipti B Ruikar, Santosh Amritlal Raotole, Geeta Sahu, Rwitabrata Mallick, Manish Kumar Shakya, Saroj Kumar Raul, S.Varalaxmi; 2023; "In-Vivo Genotoxicity and Cytotoxicity Study of Prazosin HCl in Pregnant Mice"; European Chemical Bulletin, ISSN: 2063-5346; Volume - 12, Special Issue-4; Page: 20494-20502; **(Scopus Indexed)**

3. Paresh Kumar, Sarita Srivastava, Kuldip Dwivedi, Surabhi Sharma, B.S. Chauhan, Saurabh Jain, Priyanka Gupta. Impact of Heavy Metal Contamination on Human Health. ISSN 2063-5346 European Chemical Bulletin 2023, Vol. 12 (Issue 8), pp 1366-1379. (**Scopus Indexed)**

4. Alam Sadre, Bhardwaj Laxmi Kant, Mallick Rwitabrata, Rai Swapnil; 2023; "Estimation of Heavy Metals & Fluoride Ion in Vegetables Grown Nearby the Stretch of River Yamuna, Delhi (NCR), India"; International Journal of Environmental Protection; ISSN: 0253-7141; Vol 43, Issue 1; Page 64-73; (**Scopus Indexed)**

5. Mittal, R., Sharma, A., Bhardwaj, A.K., Bhateria, R., Bansal, S., Kashyap, R. and Bhukal, S., (2023) "Removal of Chromium (VI) using Spirulina assisted

Synthesized Mesoporous Iron Oxide Nanoparticles". Inorganic Chemistry Communications, p.110881. (**Scopus, Web of Science, SCI Impact Factor~3.6**)

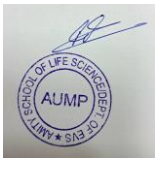
6. Srivastav, A.L., Markandeya, Patel, N., Pandey, M., Pandey, A.K., Dubey, A.K., Kumar, A., Bhardwaj, A.K. and Chaudhary, V.K., (2023). Concepts of circular economy for sustainable management of electronic wastes: challenges and management options. Environmental Science and Pollution Research, 30(17), pp.48654-48675. (**Web of Science, Scopus, SCI, Impact Factor~5.2)**

## Books

1. Elsevier Book entitled "Green and Sustainable Approaches using Wastes for the Production of Multifunctional Nanomaterials"; 2023; Editors: Abhishek Kumar Bhardwaj, Arun Lal Srivastav, Kuldip Dwivedi, Mika Sillanpaa; Paperback ISBN: 9780443191831 eBook ISBN: 9780443191848

## Book Chapters

| S. No. | Book Title | Authors | Chapter Title | Year of publication | Publisher Name | ISBN |
|---|---|---|---|---|---|---|
| 1 | Biofuel Extraction Techniques | Rita Sharma, Kuldip Dwivedi, Bhavna Sharma, Shashank Sharma | New Advancements of Biofuel Extractions and Future Trends | 2023 | Wiley | Print ISBN:9781119829324 \|Online ISBN:9781119829522 |
| 2 | Women Health and Diseases – A Challenge | Rwitabrata Mallick, Gourav Singh | Implications of Environmental Pollution on Women's Health | 2023 | ABS Publication | 978-93-94424-64-7 |
| 3 | Environmental Processes and Management- | Rwitabrata Mallick, Kuldip Dwivedi, | Water Resource Management | 2023 | Springer | 978-3-031-20208-7 |



| S. No. | Book Title | Authors | Chapter Title | Year of publication | Publisher Name | ISBN |
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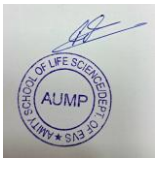
| | Tools and Practices for Groundwater | Swapnil Rai, Nidhi Shukla, Abhishek Bhardwaj | —A Sustainable Approach Towards Ground Water Conservation | | | |
| **4** | Environmental Processes and Management- Tools and Practices for Groundwater | Rwitabrata Mallick, Kuldip Dwivedi, Swapnil Rai, Nidhi Shukla, Abhishek Bhardwaj | Chemicals in the Water: A Serious Concern for the Humans and Aquatic Life | 2023 | Springer | 978-3-031-20208-7 |
| **5** | Environmental Processes and Management. Water Science and Technology Library, vol 120. | Shukla, N., Gupta, S., Rai, S. | Potential Impacts of Climatic Changes and Human Activity on Water Quality | 2023 | Springer | 978-3-031-20208-7 |
| 6 | Valorization of Biomass | Gautam, R.L., Bharadwaj, A.K., Kumar, S. and Naraian, R. | Microbial enzymes for the variable applications of textile industry processing. In Valorization of Biomass to Bioproducts (pp. 297-321). | 2023 | Elsevier. | 978-0-12-822887-6 |



## Achievements






*nanomanufacturing*

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*Article*

# PLLA Nanosheets for Wound Healing: Embedding with Iron-Ion-Containing Nanoparticles

**Aslan Mussin [1], Ali A. AlJulaih [1], Neli Mintcheva [1,2], Delvin Aman [3], Satoru Iwamori [1,4], Stanislav O. Gurbatov [5], Abhishek K. Bhardwaj [6] and Sergei A. Kulinich [1,4,*]**

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**Abstract:** This article reports on polymer (PLLA, poly(L-lactic acid)) nanosheets incorporated with Fe-ion nanoparticles, aiming at using the latter nanoparticles as a source to release Fe ions. Such Fe ions should facilitate burn wound healing when such nanosheets are applied as a biomedical tissue on skin. Laser ablation in liquid phase was used to produce Fe-containing nanoparticles that, after incorporation into PLLA nanosheets, would release Fe ions upon immersion in water. Unlike most iron-oxide nanostructures, which are poorly soluble, such nanoparticles prepared in chloroform were found to have water solubility, as they were shown by XPS to be based on iron chloride and oxide phases. After incorporation into PLLA nanosheets, the ion-release test demonstrated that Fe ions could be released successfully into water at pH 7.4. Incorporation with two different metal ions (Fe and Zn) was also found to be efficient, as both types of ions were demonstrated to be released simultaneously and with comparable release rates. The results imply that such polymer nanosheets show promise for biomedical applications as potential patches for healing of burns.

**Keywords:** PLLA nanosheets; laser ablation in liquid; Fe-containing nanoparticles; metal-ion release; burn wound healing



**Citation:** Mussin, A.; AlJulaih, A.A.; Mintcheva, N.; Aman, D.; Iwamori, S.; Gurbatov, S.O.; Bhardwaj, A.K.; Kulinich, S.A. PLLA Nanosheets for Wound Healing: Embedding with Iron-Ion-Containing Nanoparticles. *Nanomanufacturing* **2023**, *3*, 401–415. https://doi.org/10.3390/nanomanufacturing3040025

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## 1. Introduction

Wounds are defined as damage or disturbance of normal anatomical structure and function of skin resulted from pathological processes that begin internally or externally [1,2]. Among different types of wounds, burns are known typically to need long-lasting and complex treatment to provide, support and accelerate their healing [3–13]. An ideal wound dressing used for their treatment should accelerate one or several stages of the healing processes, including the inflammatory phase, the migratory phase, the proliferative phase and the remodeling phase. Nowadays, a variety of wound dressings are available and still widely used to treat such wounds [3–10,12,13]. However, even though the characteristics of "ideal" dressings for wound treatment are well known, such ultimate dressings are still difficult to realize within the same material [4–13]. It is still challenging, if ever possible, to realize an optimal combination of desired properties in one wrapping material, implying that new materials with improved characteristics are still highly anticipated. In parallel, incorporation of metal ions such as Mg, Zn, Fe and Cu is believed to be beneficial for efficient wound healing [2,4,5,11,14–16]. However, very little progress has been achieved in this direction thus far.

*Section A-Research paper*
*ISSN 2063-5346*

**Research Article**

# In-Vivo Genotoxicity and Cytotoxicity Study of Prazosin HCl in Pregnant Mice

Sushama Rawat[1], Dipti B Ruikar[2*], Santosh Amritlal Raotole[3], Geeta Sahu[4], Rwitabrata Mallick[5], Manish Kumar Shakya[6], Saroj Kumar Raul[7], S.Varalaxmi[8]

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**Abstract:**

This research's objective is to examine and assess the cytotoxicity and genotoxicity of prazosin HCL in pregnant mice. Prazosin (PZ) was administered to the animals intraperitoneally (IP) at dosages of 5, 15, and 25 mg/kg/body weight for single dose (14-day) toxicity tests. The investigation was conducted using a variety of techniques, including estimations of the levels of reduced glutathione (GSH), Malondialdehyde (MDA), body weight, organ weight, and food intake. The following parameters have been examined for evaluating genotoxicity: DNA fragmentation assay for determining DNA damage, metaphase chromosomal analysis. The collected information conclusively demonstrates that PZ was harmful to hepatocytes at the higher dose as indicated by elevated MDA levels, decreased GSH levels, DNA damage, and elevated DNA

Section A-Research paper

# IMPACT OF HEAVY METAL CONTAMINATION ON HUMAN HEALTH

**Paresh Kumar[1], Sarita Srivastava[2], Kuldip Dwivedi[3], Surabhi Sharma[4], B.S. Chauhan[5], Saurabh Jain[6], Priyanka Gupta[7]**

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**ABSTRACT**

Heavy metal contamination has become a growing concern worldwide due to its detrimental effects on human health. This paper aims to provide a comprehensive review of the impact of heavy metal contamination on human health. The paper begins by discussing the bioaccumulation, toxicity, sources, and pathways through which heavy metals enter the human body, including industrial activities, agricultural practices, and environmental pollution. It highlights common heavy metals of concern, such as lead, mercury, cadmium, arsenic, and chromium, outlining their sources, distribution, and toxicological properties.

The research shows that natural processes and interactions between people, including industrial processes, mining, agriculture, and poor waste management, all contribute to heavy metal pollution. It has been shown that the most common ways heavy metals surround people are inhalation, ingestion, and skin contact. Arsenic has been related to many types of cancer and cardiovascular illness, whereas mercury has been connected to neurological issues after long-term exposure. Nickel exposure in the workplace has been linked to respiratory issues and certain forms of cancer, while lead exposure is linked to neurodevelopmental difficulties and kidney damage. Lung cancer and other breathing problems have both been linked to hexavalent chromium exposure.

# Estimation of Heavy Metals and Fluoride Ion in Vegetables Grown Nearby the Stretch of River Yamuna, Delhi (NCR), India

IJEP 43(1): 64-73 : Vol. 43 Issue. 1 (January 2023)

Full Text

**Sadre Alam[1], Laxmi Kant Bhardwaj[2]*, Rwitabrata Mallick[1] and Swapnil Rai[1]**

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**Abstract**

Heavy metals are very hazardous to humans and the environment. They are non-biodegradable and can enter humans through contaminated water and food. After entering, they are deposited in fat tissues, bones and can cause multi-organ failure. The aim of this study was to investigate the concentration of Pb, Cu, Cd, Hg, Cr, As and F- in the vegetables which were grown near the stretch of Yamuna river, Delhi (NCR). A total of 32 vegetable samples were collected from Mayur Vihar, near Kalindi Kunj and near thermal power plant in three different seasons (2017-2019). In the monsoon season, the highest concentration of Pb, Cu, Cd and Cr were found to be 18.05 ppm in spinach, 32.60 ppm in ladyfinger, 2.59 ppm in radish, 6.60 ppm in ladyfinger. In the summer seasons, Pb, Cu, Cd and Cr were found to be 1.58 ppm in spinach and radish, 2.65 ppm in radish, 0.32 ppm in radish, 0.25 ppm in methi. In the winter seasons, Pb, Cu and Cr were found to be 17.08 ppm in radish, 2.84 ppm in beet, 4.39 ppm in spinach. The highest concentration of fluoride ion (F-) was found to be 4.35 ppm in

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Short communication

# Removal of chromium (VI) using *spirulina* assisted synthesized mesoporous iron oxide nanoparticles

Rishi Mittal [a], Anuj Sharma [a], Abhishek Kumar Bhardwaj [b], Rachna Bhateria [c], Shafila Bansal [d], Rajiv Kashyap [e], Santosh Bhukal [a,*]

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ABSTRACT

Worldwide demand for clean and safe drinking water is a serious concern due to sharply rising industrialization and the growing population. In this work, *Spirulina* (microalgae) based green synthesis of mesoporous iron oxide nanoparticles (MIONPs) was performed for the adsorption of chromium (VI) in an aqueous solution. Synthesized MIONPs were characterized by XRD, FT-IR, Raman Spectroscopy, Zeta Potential, Particle Size Analyzer, and FESEM with EDX. The mesoporous nature of synthesized material was confirmed using Brunauer–Emmett–Teller (BET) with a pore diameter of 3.837 nm. The adsorption mechanism of Chromium (VI) by synthesized MIONPs was explained using XPS analysis. The various other parameters including pH, Temperature, ion concentration, adsorbent dose, and contact time were also studied in batch experiments for chromium removal. The synthesized material shows the best adsorption efficiency on pH 2, 100 min of contact time, and a temperature of 70 °C. The Langmuir isotherm model with an adsorption efficiency of 92.8505 mg/g shows better adsorption than the Freundlich isotherm model for synthesized material. The pseudo-second-order model with chemisorption kinetics explains better chromium adsorption with an $R^2$ value of 0.99863 than the pseudo-first-order model. Regeneration studies analyse the recyclable use of green synthesized MIONPs during the adsorption of chromium. This study could be useful for the removal of multiple heavy metals at a time from drinking water safely without harming the ecosystem and hence it is employable to meet the sustainability goals.

## 1. Introduction

Water is a basic need of life for existence and survival in the biosphere. The growing population and industrialization increasing continuously and the demand for freshwater is also increasing [1]. The Industrialization and Urban sector are great sources of generation of wastewater due to human activities, oil spillages, agricultural runoff, and industrial effluents [2–3]. The major factor for the degradation of the quality of water is the inappropriate release of effluents by industries into the water bodies [4]. These effluents contain various toxic pollutants like oils, dyes, volatile organic compounds (VOC), and heavy metals that are dangerous to humans and other aquatic life. Heavy metals like arsenic, cadmium, copper, lead, mercury, chromium, cobalt, and nickel cause problems like gastrointestinal disorders, kidney, liver, and neurological disorders due to heavy metals entering drinking water [5]. Chromium is a most toxic heavy metal than others released from tanning, cement, electroplating, etc. Generally, chromium has the most commonly used oxidation states which are + 3 and + 6. Hexavalent chromium is largely released by industries and it is more highly toxic than trivalent chromium [6]. Accordingly, the Indian standard for drinking water (ISO:10500) acceptable limit of chromium was 0.05 mg/l. A recent study in the urban groundwater at the upper Gangetic plains of northern India found that the chromium concentration exceeds 18% of the desirable limits [7]. In another study the chromium concentration was discovered to be higher than the allowable limit in an industrial area of Ranipet, Tamil Nadu, India [8].

For heavy metals remediation from wastewater, various physiochemical techniques were used as reduction, chemical precipitation, reverse osmosis, oxidation, etc. have been used. High cost, high energy expenditure, and toxic by-products are some of the biggest downsides of

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REVIEW ARTICLE

# Concepts of circular economy for sustainable management of electronic wastes: challenges and management options

**Arun Lal Srivastav[1] · Markandeya[2] · Naveen Patel[3] · Mayank Pandey[4] · Ashutosh Kumar Pandey[5] · Ashutosh Kumar Dubey[1] · Abhishek Kumar[6] · Abhishek Kumar Bhardwaj[7] · Vinod Kumar Chaudhary[8]**

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## Abstract

The electronic and electrical industrial sector is exponentially growing throughout the globe, and sometimes, these wastes are being disposed of and discarded with a faster rate in comparison to the past era due to technology advancements. As the application of electronic devices is increasing due to the digitalization of the world (IT sector, medical, domestic, etc.), a heap of discarded e-waste is also being generated. Per-capita e-waste generation is very high in developed countries as compared to developing countries. Expansion of the global population and advancement of technologies are mainly responsible to increase the e-waste volume in our surroundings. E-waste is responsible for environmental threats as it may contain dangerous and toxic substances like metals which may have harmful effects on the biodiversity and environment. Furthermore, the life span and types of e-waste determine their harmful effects on nature, and unscientific practices of their disposal may elevate the level of threats as observed in most developing countries like India, Nigeria, Pakistan, and China. In the present review paper, many possible approaches have been discussed for effective e-waste management, such as recycling, recovery of precious metals, adopting the concepts of circular economy, formulating relevant policies, and use of advance computational techniques. On the other hand, it may also provide potential secondary resources valuable/critical materials whose primary sources are at significant supply risk. Furthermore, the use of machine learning approaches can also be useful in the monitoring and treatment/processing of e-wastes.

**Highlights** In 2019, ~ 53.6 million tons of e-wastes generated worldwide.
Discarded e-wastes may be hazardous in nature due to presence of heavy metal compositions.
Precious metals like gold, silver, and copper can also be procured from e-wastes.
Advance tools like artificial intelligence/machine learning can be useful in the management of e-wastes.

**Keywords** Electronic wastes · Environmental health · Recycling and recovery · Circular economy · Sustainable development goals

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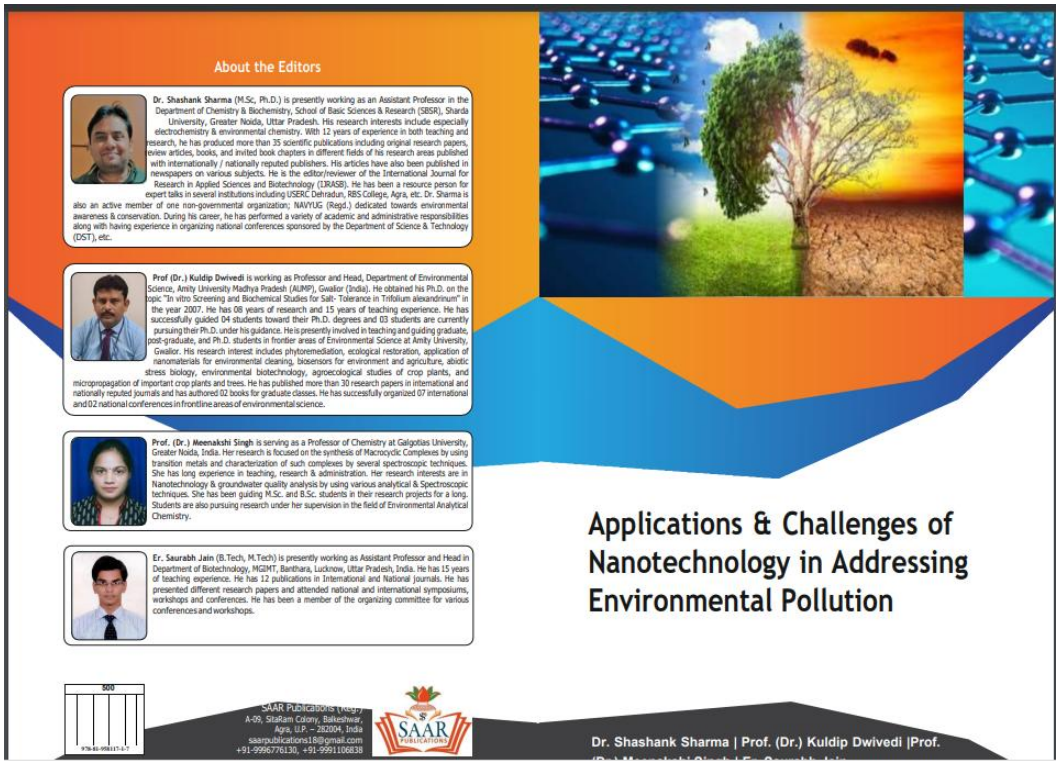
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Er. Saurabh Jain (B.Tech, M.Tech) is presently working as Assistant Professor and Head in Department of Biotechnology, MGIMT, Banthara, Lucknow, Uttar Pradesh, India. He has 15 years of teaching experience. He has 12 publications in International and National journals. He has presented different research papers and attended national and international symposiums, workshops and conferences. He has been a member of the organizing committee for various conferences and workshops.
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Green and Sustainable Approaches using Wastes for the Production of Multifunctional Nanomaterials
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NANOPARTICLES
Edited by
Abhishek Kumar Bhardwaj
Arun Lal Srivastav
Kuldip Dwivedi
Mika Sillanpää
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AMITY SCHOOL OF LIFE SCIENCES
AUMP

**Women Health and Diseases**

A Challenge

**Edited By**

**Dr. Kanchan Karki**
**Gourav Kumar Singh**
**Prof. (Dr.) Sanjay Kumar**

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**Women Health and Diseases A Challenge**
By : Dr. Kanchan Karki & Gourav Kumar Singh & Prof. (Dr.) Sanjay Kumar

# 3.

# Implications of Environmental Pollution on Women's Health

**Rwitabrata Mallick**[1]
**Gourav Kumar Singh**[2]

## Introduction

Women interact with the environment more frequently than males do in daily life, making them more susceptible to numerous environmental problems. Many kinds of chemicals and other environmental contaminants can lead to various health issues in women. The relationship between environmental pollutants and menopause, breast cancer, and endometriosis is the subject of numerous studies. Premature birth, miscarriage, and other pregnancy issues can be increased by exposure to hazardous substances such cadmium, mercury, arsenic, lead, pesticides, solvents, and household chemicals. These and other environmental pollutants can be

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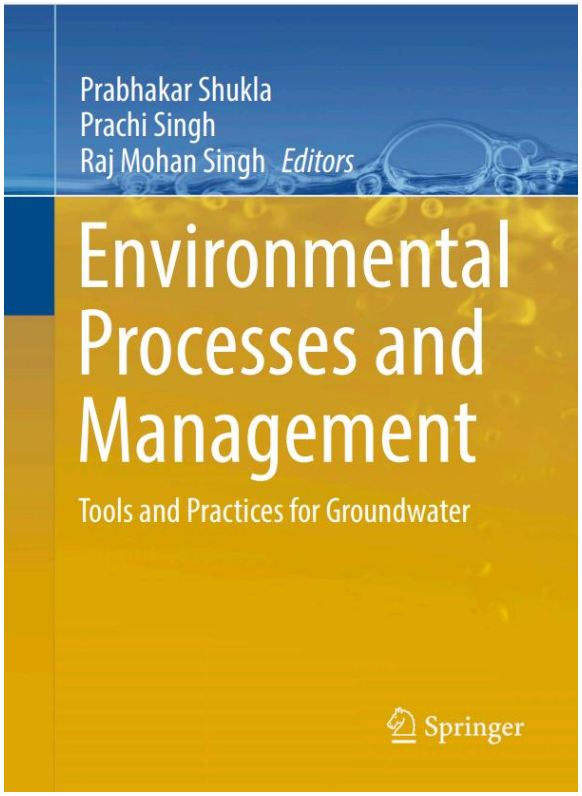
[2]Department of Environmental Science, ITM University, Gwalior, M.P.

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# Chapter 11
# Water Resource Management—A Sustainable Approach Towards Ground Water Conservation

**Rwitabrata Mallick, Swapnil Rai, Kuldip Dwivedi, Nidhi Shukla, and Abhishek Bhardwaj**

**Abstract** A sustainable approach towards water resource management involves land, water and biodiversity in a specific designated area for ecological and sustainable socio-economic purpose towards ground water conservation in hilly areas. The present study shows concept and implementation of watershed management towards developing ground water conservation strategy to minimize the scarcity of water for the local people of Kurseong hill area. Present study finds out the significance and applicability of combined watershed management in and around various tea gardens in Kurseong. Local inhabitants depending on rainfed agriculture are at risk as they are highly vulnerable to changes in seasonal climatic patterns and disturbed water cycle. The people depend on natural jhoras for drinking water supply, household activities and irrigation, but in recent times most of them become seasonal or extinct. 12-month rainfall data has been collected from selected 13 locations of the research area which shows productivity is adversely affected by non-availability of adequate ground water for drinking, household activities and irrigation at critical stages of crop growth. Therefore, the solution is an integrated sustainable approach through watershed management towards conservation of ground water in the study area.

**Keywords** Water harvesting · Watershed management · Sustainable · Rainfall · Kurseong

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P. Shukla et al. (eds.), *Environmental Processes and Management*, Water Science and Technology Library 120, https://doi.org/10.1007/978-3-031-20208-7_11

# Chapter 6
# Chemicals in the Water: A Serious Concern for the Humans and Aquatic Life

**Rwitabrata Mallick, Swapnil Rai, Kuldip Dwivedi, Nidhi Shukla, Abhishek Bhardwaj, and Shashank Gupta**

**Abstract** Water is an essential element for life without which the life cannot sustain on the earth. The earth's major part is covered with water which carry maximum biodiversity. The humans, animals and plants of the terrestrial ecosystem depend on freshwater sources which are less than 3% of the total water available on the earth while marine water sources have saline water available in oceans, seas and saline lakes. Both these sources are suffering from contamination by different chemicals. The majority of chemical contamination in water is due to human activities. Human population growth is directly proportional to the degradation of the environment which means mismanaged human activities are causing different types of environmental problems. Out of all environmental problems, contamination of water and degradation of water quality is a big problem for the water resources. It is evident that water has high levels of harmful chemicals like heavy metals, pesticides and volatile organic compounds. These chemicals are now getting accumulated in the plants, humans and animals. In humans, these chemicals get deposited in the tissues and are responsible for the different types of life-threatening diseases. The studies on different water sources including poles and glaciers have shown the presence of different harmful chemicals, and even at some places these are found in high concentration. The people from different parts of the world are suffering from

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P. Shukla et al. (eds.), *Environmental Processes and Management*, Water Science and Technology Library 120, https://doi.org/10.1007/978-3-031-20208-7_6

# 1.

# Geographical Indication and Protection of Traditional Knowledge

**Rwitabrata Mallick***
**Gourav Kumar Singh****
**Dr. Deepika Saini*****

## Introduction

The rights that control mental works that have both ethical and financial worth are known as intellectual property rights. The phrase "Creation of Human Minds" refers to things like food, symbolism, industrial and fashion designs, literary and creative works, and innovations. Since these assets are immaterial, it was impossible to safeguard them, which is how the laws governing intellectual property came to be. These regulations govern the use, production, and exploitation of mental and creative labour. Trade Related Intellectual Property Rights, or TRIPS, is a global legal pact that all 1641 World Trade Organization members have signed

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***Assistant Professor, Chaman Lal Mahavidhyalaya, Landhora, Roorkee.

Welcome Smita Sahu Sign out

Controller General of Patents, Designs & Trade Marks

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|---|---|---|---|---|---|---|
| 1 | 202311042712 | TEMP/E-1/49002/2023-DEL | 1600 | 28456 | FORM 1 | A BIOREACTOR BASED POWER GENERATION USING PLANT BIOMASS AND METHOD THEREOF |
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CELEBRATING WORLD ENVIRONMENT DAY 2023
वसुधैव कुटुम्बकम्
ONE EARTH • ONE FAMILY • ONE FUTURE
Lecture and Interactive Session on
Sustainable Practices for Plastic-Free Environment 01 June 2023 (10:15 AM-12:10 PM)
Subtheme:
Alternatives to Plastics
Reuse & Recycle of Plastics
Microplastic in Environment
Technological Advancement of Plastics degradation
Life Style Practices for Effective Waste Management 5th June 2023 (02:10 PM-04:15 PM)
E-certificates will be provided to all registered participants
Register at : https://forms.gle/swEz7Pp3RMdgF5vf9
Organized By:
Department of Environmental Science, Center of Excellence for Environmental Conservation and Biodiversity, and Eco-club
Contacts
Prof. Kuldip Dwivedi : 8770867384
Prof. Swapnil Rai : 9837756610
Dr. R Mallick : 9831970014
Dr. Nidhi Shuka : 8707548341
Dr. Abhishek K Bhardwaj: 9839259480


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**Events**

- Centre of Excellence for Environmental Conservation & Biodiversity and Department of Environmental Science, Amity School of Life Science along with Amity Institute of Biotechnology organized International Seminar on Current Trends in Life Sciences (Int-SCTLS-2023) on 1st March 2023.

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP organized "Paryavaran Sanrakshan Gatividhi: PSG", on 4th August 2023 amongst undergraduate students, eco club members and faculties, to take up the task in the conservation & protection of the environment with special focus on the following aspects: -
    - Water management and recharging of redundant water bodies
    - Elimination of Plastic & Non-biodegradable material usage
    - Discourage felling of trees, plantation drive & waste management
    - Emphasizing the reuse and recycling of natural resources.
    - Creating awareness towards Climate Control through seminars and holding workshops at relevant forums.
  - Aims & Objectives of the Program was:

    1. To create awareness amongst young minds to comprehend the in-depth complexity of the looming dangers of uncontrolled climate devastation.

    2. To acquire knowledge on the job skills, competency & attitude to confront the environmental challenges & their mitigation.

    3. To encourage proactive & enthusiastic participation from the students to create "Green and safe planet."

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP along with Department of Environmental Science, Amity School of Life Science organized Lecture and Interactive Session on Sustainable Practices for Plastic Free Environment on 1st June 2023. More than 100 undergraduate students along with eco-club members participated in the event.

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP along with Department of Environmental Science, Amity School of Life Science organized Lecture and Interactive Session on Lifestyle Practices for Effective Waste Management on 5th June 2023. The day was celebrated as World Environment Day and the program was recognized by UNEP. More than 100 undergraduate students along with eco-club members participated in the event.

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP along with Department of Environmental Science, Amity School of Life Science

organized Innovation Week 2023 by organizing webinar on Mercury Toxicity and Human Health on Wednesday 27th September 2023.

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP along with Department of Environmental Science, Amity University Madhya Pradesh, organized a lecture series on the of the Institution's Innovation Day on 16th October 2023 from 9:15 AM to 12:00 afternoon in Amity University Madhya Pradesh to commemorate the birth anniversary of the former President of India, Bharat Ratna Dr A P J Abdul Kalam (Under the mandate of the Institute Innovation Council (IIC) an initiative of MOE). Around 200 undergraduate students participated.

- Centre of Excellence for Environmental Conservation & Biodiversity AUMP members actively participated in the "Mera Maati Mera Desh" and tree plantation in the "Amrit Vatika" at Amity University Madhya Pradesh Campus and encouraged others for the same on the occasion of Independence Day 15th August 2023.

- Member of Centre of Excellence for Environmental Conservation & Biodiversity was invited as Resource Person and Keynote Speaker under PM Shree Scheme at Kendriya Vidyalaya 2 (KV2) Gwalior, Madhya Pradesh, on 31st October 2023.

- Centre of Excellence for Environmental Conservation & Biodiversity and Department of Environmental Science, Amity School of Life Science organized National Conference on Technological Innovations & Environmental Sustainability (NCTIES 2023) on 24th November 2023.


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Reduce Single-Use Plastics


CELEBRATING WORLD ENVIRONMENT DAY 2023


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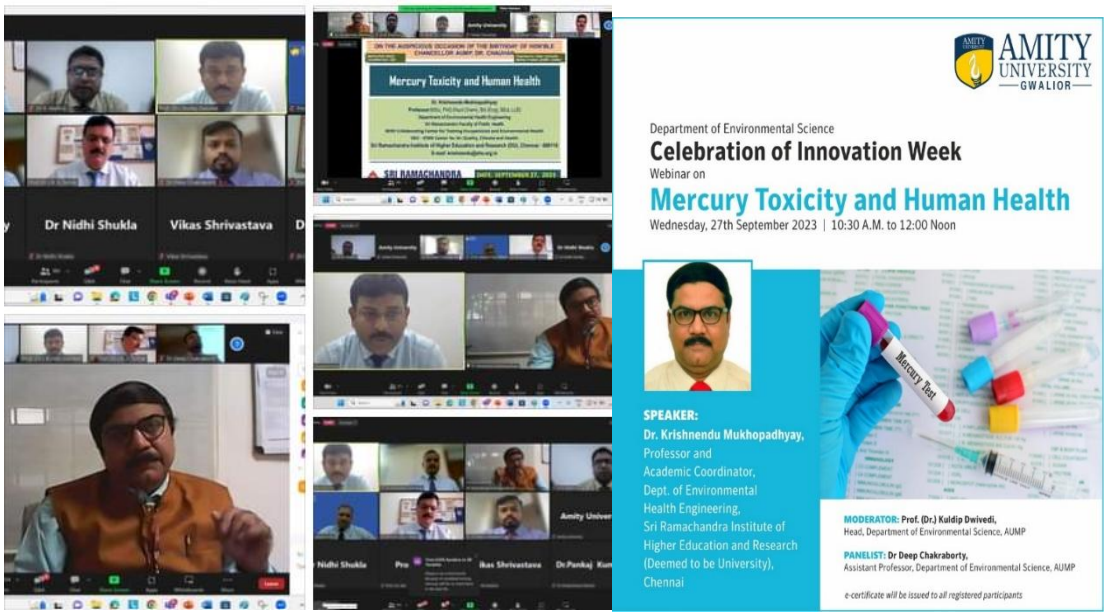
Recognition from UNEP on the occasion of Celebration of World Environment Day 2023


Lecture and Interactive Session on Lifestyle Practices for Effective Waste Management

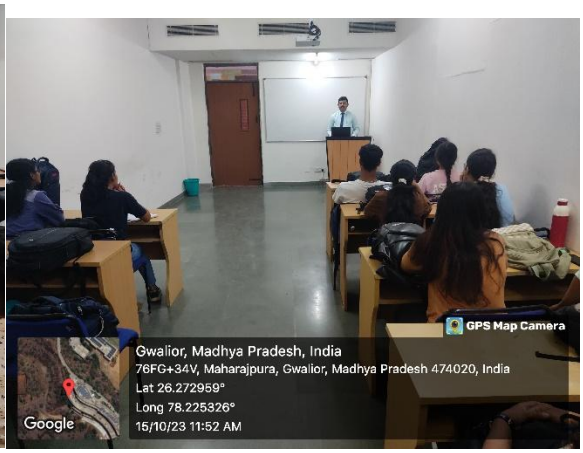



Webinar on Mercury Toxicity and Human Health on Wednesday 27th September 2023

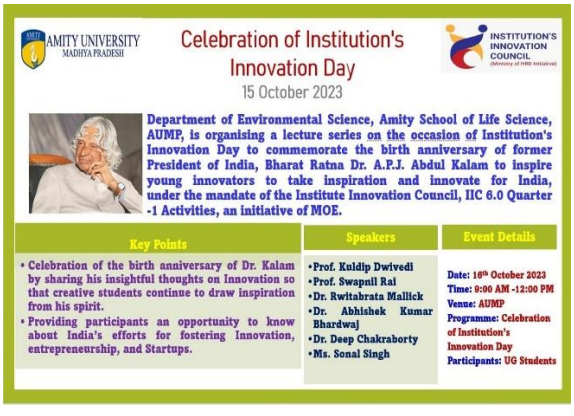
AMITY SCHOOL OF LIFE SCIENCES DEPT OF EVS AUMP










Lecture series on 16th October 2023 to commemorate the birth anniversary of the former President of India, Bharat Ratna Dr A P J Abdul Kalam (Under the mandate of the Institute Innovation Council (IIC) an initiative of MOE)

## 2nd National Conference on Technological Innovations and Environmental Sustainability (NCTIES 2024)

Organized By

**Department of Environmental Science, Amity School of Life Sciences, Amity University Madhya Pradesh, Gwalior**

Supported by

**Madhya Pradesh Council of Science and Technology (MPCST)**

**General Information:**

**Date of Event:** 14-11- 2024

**Venue:** AUMP auditorium and Zoom meeting

**Organized by**: Department of Environmental Science, Amity school of Life Science, Amity University Madhya Pradesh

**Total Participation:** 110

**Convener:** Prof. (Dr.) Kuldip Dwivedi

**Organizing Secretary:** Dr. Rwitabrata Mallick

**Organizing Committee:** Prof. (Dr.) Swapnil Rai, Dr. Nidhi Shukla, Dr. Abhishek Kumar Bhardwaj, and Dr. Deep Chakraborty

1) **What was the Inspiration behind taking up this Particular Subject for the Conference?**

**Addressing Global Challenges:**

The pressing need to mitigate climate change, environmental degradation, and resource depletion has emphasized the role of technological innovations in driving sustainable solutions for a greener future.

- **Promoting Interdisciplinary Collaboration:** Environmental sustainability requires input from diverse fields, including engineering, biotechnology, environmental science, and social sciences, making this subject a unifying platform for multidisciplinary discourse.

- **Harnessing India's Potential:** India, with its vast biodiversity and emerging technological capabilities, has the potential to pioneer innovations in sustainable development, aligning with national priorities like "Make in India" and "Atmanirbhar Bharat."
- **Aligning with Global Goals:** The conference theme resonates with the United Nations Sustainable Development Goals (SDGs), particularly those related to climate action, clean energy, and responsible consumption and production.
- **Catalyzing Policy and Practice:** Bridging the gap between research, innovation, and implementation is crucial for achieving tangible environmental outcomes. The conference aims to inspire practical strategies and foster dialogues that influence policy frameworks.

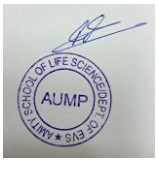
2) **Who were the Distinguished Guest Speakers Invited for the Event. Kindly give their Names. Designations, Organisation, Qualifications, Area of Expertise and any Honours and Awards received by them.**

**1. Chief Guest, Dr. Ayyanadar Arunachalam,** Director ICAR-Central Agroforestry Research Institute (CAFRI), Jhansi, Uttar Pradesh
**Specialization:** Ecology, Agroforestry

**2. Shri Shiv Sankar Ji, Prantiya** Sanyojak, Paryavaran Sanrakshan Gatividdhi Madhya Bharat, New Delhi

**3. Prof. (Dr.) Krishnendu Mukhopadhyay,** Professor
Department of Environmental Health Engineering, Faculty of Public Health, Sri Ramachandra Institute of Higher Education and Research (Deemed to be University), Chennai, WHO Collaborating Centre for Training Occupational and Environmental Health; ICMR Centre for Air Quality, Climate and Health
**Specialization:** Public Health, Exposure Science, Industrial Health, safety and Hygiene

**4. Prof. (Dr.) Neelam Pathak,** Head, Department of Biochemistry, Dr. R. M.L. Avadh University Faizabad U.P.
**Specialization:** Food Biochemistry



**5. Prof. (Dr.) Naba Kumar Mondal,** Environmental Chemistry Laboratory, Department of Environmental Science, The University of Burdwan, Burdwan, West Bengal
**Specialization:** Green Chemistry, Nano science, Indoor air pollution

**6**. **Dr. Aditya Singh,** Marie-Curie Postdoctoral Fellow at the Department of Physics and Institute of Advanced Study at the University of Warwick (UoW), UK.
**Specialization:** Optical physics

**7. Prof. (Dr.) Tarit Roychowdhury,** Professor, School of Environmental Studies, Jadavpur University, Kolkata
**Specialization:** Arsenic and fluoride toxicity, Ground water chemistry

**8. Dr. Arun Lal Srivastav,** Associate Professor, Chitkara University, Solan, Himachal Pradesh
**Specialization:** Phytoremediation, adsorption, agro-waste management

**9. Dr. Hemanth Noothalapati PhD,** Department of Life Sciences, Faculty of Life and Environmental Sciences, Shimane University, Matsue-Shi, Shimane, Japan
**Specialization:** Biomedical applications of Raman spectroscopy

**3) What was the Criteria Considered for inviting the Various Individual Guests, Internal as well as External?**

- Relevant qualifications, experience, and expertise as per the different thematic areas of the Conference.

4**) Were the guests in advance and if yes, from what previous interaction? Were the guests Recommended by someone. If yes, who?**

- Yes, the Guest speakers were contacted 2-3 months in advance and their confirmation taken. The guests are all close collaborators of the faculty of the department of environmental science.

**5) Who all attended the webinar? Also, if possible, give the numbers.**

- 110 participants included research scholars, faculties and scientists from different research institutes and universities of the country.

6) **What were the 'Take Homes' for the Guests and the Attendees in the form of knowledge, facts, information etc.? Please give the Salient Novel Points Covered by the Guest Speakers, in Bullet Points Format.**

- The programme begun with the welcome address by Prof. (Dr) Kuldip Dwivedi Convener of the conference followed by opening remarks by Hon'ble Vice Chancellor **Prof. (Dr.) R. S. Tomar**, Amity University Madhya Pradesh. There were Four (4) Technical sessions, and each session was having Two (2) plenary lectures.

- **Plenary Lecture 1 has given by Prof. (Dr.) Krishnendu Mukhopadhyay** on "Environmental Health Risk Assessment in Sustainable Development Goals – An Overview" which highlights the integration of health risk assessments within the framework of the SDGs to ensure sustainable, safe environments. It addresses how environmental hazards impact public health and development, emphasizing proactive risk assessment to prevent health crises. This approach aims to support SDG goals by promoting health, reducing inequalities, and ensuring a healthier ecosystem for future generations.

- **Plenary Lecture 2 has given by Prof. (Dr.) Neelam Pathak** on "Healing of Environment through Sustainable Biotechnological Approach" which explores the use of biotechnology to restore ecological balance and mitigate environmental degradation. It focuses on innovative techniques like bioremediation, bioenergy production, and sustainable agriculture to reduce pollution and conserve resources. This approach aligns with global sustainability goals, fostering a harmonious relationship between technology and nature.

- **Plenary Lecture 3 has given by Prof. (Dr.) Naba Kumar Mondal** who gave his lecture on "Beauty of Nanoscience: A Journey from Metallic to Non-Metallic Nanoparticles" which delves into the fascinating realm of nanotechnology, highlighting

the diverse properties and applications of nanoparticles. It explores the transition from metallic to non-metallic nanoparticles, showcasing their roles in medicine, energy, and environmental solutions. This journey emphasizes the transformative potential of nanoscience in shaping future technologies.

- **Plenary Lecture 4 has given by Dr. Aditya Singh** on "Raman Spectroscopy of Layered Materials" which focuses on the application of Raman spectroscopy to study the structural, electronic, and vibrational properties of layered materials like graphene, transition metal dichalcogenides, and beyond. It highlights the technique's sensitivity in identifying layer thickness, defects, and interactions within these materials. This analysis is pivotal for advancing nanoelectronics, photonics, and material science innovations.

- **Plenary Lecture 5 has given by Prof. (Dr.) Tarit Roychowdhury,** delivered his lecture on “Ground water contamination scenario in West Bengal (India), food chain contamination, adverse health effects and mitigation strategies with special reference to arsenic, fluoride and nitrate” which examines the pervasive contamination of groundwater with arsenic, fluoride, and nitrate, impacting the food chain and public health. It explores the adverse effects, including chronic illnesses and developmental issues, linked to long-term exposure. The study emphasizes mitigation strategies, such as improved water management, advanced filtration technologies, and community awareness programs, to combat this critical environmental challenge.

- **Plenary Lecture 6 has given by Dr. Arun Lal Srivastav** on "Sustainable and Innovative Aspects for Waste Management" which highlights eco-friendly and advanced strategies to address waste generation and disposal challenges. It emphasizes techniques like circular economy models, waste-to-energy technologies, and biotechnological interventions for effective resource recovery. These approaches aim to minimize environmental impact while promoting sustainable development and efficient resource utilization.

- **Plenary Lecture 7 has given by Dr. Hemanth Noothalapati** on "Application of AI-Assisted Raman Spectroscopy: From Single-Cell Biology to Diagnostics" which explores the integration of artificial intelligence with Raman spectroscopy to enhance precision and efficiency. It showcases advancements in analyzing cellular components,

identifying biomarkers, and diagnosing diseases with high sensitivity. This fusion of AI and spectroscopy is revolutionizing biomedical research and personalized healthcare.

- The valedictory session was chaired by Guest of Honour **Prof. (Dr.) Krishnendu Mukhopadhyay,** and he has given an overview of the conference and the effective

- Concluding remarks has been given by **Prof. (Dr.) Swapnil Rai**, Associate Dean (Research) & Professor, EVS

- Vote of thanks has been given by **Dr. Rwitabrata Mallick**, organizing secretary of the conference.

**7) Has the Webinar been able to generate any Tangible Gains for the Faculty, Researchers and Students of Amity. If yes, what are these?**

- There were 7 invited Plenary lectures during the conference by experts from various academic arenas of national and international repute. All the lecture topics were up to date and need of the hours. Faculty, scholars interacted with experts and many fruitful discussions came out of the events.

- Amity University Madhya Pradesh is now being recognized as research driven University. This conference would prove to be a milestone in furthering our endeavor for more sustained research in frontier areas of Innovative Approaches in Environmental Research and Sustainability and its impacts on the environment, social, and economic sustainability.
- The conference was successful and was well advertised on social media, websites, blogs and on messenger apps among the various Universities, Institutes, Departments and Colleges of National and International repute. This has helped with the brand building of AUMP.
- The event was covered by newspapers like Nababharat and Swadesh. This has increased the visibility of AUMP and is likely to result in enhanced admissions in the forthcoming session.

- Total 04 technical sessions on Technological Innovations & Environmental Sustainability were organized including Inaugural session and Valedictory session. All participants showed enthusiasm in taking part in various sessions. This has helped in broadening the horizons of participants with respect to the current knowledge and has provided a platform to technocrats, experts and academicians for presenting their innovative and constructive ideas at an international level.

8) **What are the 'Progressive Outcomes /Way Forward' planned, based on the event of the webinar? Please give them pointwise, with timelines and names of the persons responsible for their execution.**

The "Progressive Outcomes/Way Forward" for the conference entitled " Technological Innovations & Environmental Sustainability (NCTIES 2024)" could include several key areas of focus, based on the event's objectives and outcomes.
These might include:

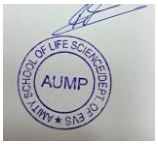
1. **Collaboration & Networking:**
    - Foster multidisciplinary collaborations between academia, industry, and government institutions to drive innovation in environmental sustainability.
    - Establish a dedicated platform or forum for ongoing communication among participants to exchange ideas and best practices.
2. **Research Advancements:**
    - Encourage the development of cutting-edge technologies in areas such as renewable energy, bioremediation, and waste management.
    - Promote the integration of emerging technologies like artificial intelligence, IoT, and nanotechnology in environmental monitoring and conservation.
3. **Policy Recommendations:**
    - Draft actionable policy suggestions to bridge gaps between research and implementation, aligning with global sustainability goals like the UN SDGs.
    - Advocate for regulatory frameworks that support green technologies and incentivize their adoption.
4. **Capacity Building:**

- Organize training programs and workshops to enhance skills in innovative and sustainable technologies for students, researchers, and professionals.
- Develop and distribute open-access educational resources for the broader dissemination of knowledge.

5. **Scaling Innovation:**
   - Facilitate the translation of lab-scale innovations into scalable, market-ready solutions through incubation programs and startup funding opportunities.
   - Support SMEs and startups with mentorship and access to infrastructure for sustainable technology deployment.
6. **Global & Local Impact:**
   - Leverage outcomes to address local environmental challenges, aligning solutions with global environmental priorities.
   - Create case studies and pilot projects demonstrating the efficacy of proposed solutions in real-world scenarios.
7. **Tracking Progress:**
   - Establish an annual follow-up mechanism to assess progress on initiatives launched during NCTIES 2024.
   - Publish a comprehensive report outlining conference outcomes, recommendations, and subsequent actions.
8. **Public Awareness & Outreach:**
   - Strengthen community engagement through outreach programs highlighting the role of technological innovations in environmental sustainability.
   - Promote awareness campaigns to encourage individual and organizational contributions to sustainable practices.

This way forward aims to translate the conference's discussions and innovations into impactful, long-term contributions to environmental sustainability.

**9) Have we Followed-Up with the Guests to consider Various Collaborations such as Joint Research Papers and Publications; Joint Funded Projects; Student Internships and Placements; Participation in National/ International Seminars/ Conferences, /Workshops; Student/Faculty Exchange Programmes; Post Doctorate tie ups; etc. etc.**



- Eminent Guests/speakers may be approached as Co-Supervisor of scholars for Ph.D. programmes.
- Eminent speakers may be approached as Co-PI for research projects of national and international funding agencies.
- Eminent speakers may be nominated as external member/domain expert in various departmental committees, if consented by them

**10) What are the plans for utilizing the contacts developed with the Invited Guests, for future cooperation to meet the targets of 'Mission: Connect' and 'Mission: Synergy of Brains'? Please give a roadmap with timelines.**

- A strong relationship can be built with the premier research organizations like Sri Ramachandra Institute of Higher Education and Research, Chennai; Dr. R. M.L. Avadh University Faizabad U.P.; The University of Burdwan, WB; Department of Physics and Institute of Advanced Study at the University of Warwick (UoW), UK; Jadavpur University, Kolkata; Chitkara University, Solan, Himachal Pradesh; Shimane University, Matsue, Japan etc.
- Relationships with the eminent speakers/guests to be sustained so that collaborative funded projects can be formulated and MOUs for funded projects can be signed.

**11) Financial information**

- Total participants registration fee = INR 28,505/-
- Expected funding to be received by MPCST = INR 40,000/-
- Total expenditure for flyer, information brochure, souvenir, certificate designing and printing = INR 20,000/-
- Other expenditures (High tea, lunch etc = Rs. 20,000/-
- Total financial saving out of the online workshop = INR /- 28505/-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**Shri Shiv Shankar Ji, Guest of Honour**, a leading voice in environmental conservation, shared his experience about the 2nd National Conference on Technological Innovations & Environmental Sustainability, organized by the Department of Environmental Science at Amity University Madhya Pradesh and brought together brilliant minds to discuss innovative solutions for a sustainable future.
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