



**Environmental Audit Certificate**

**Audit Details:**

- **Audit Period:** Academic Year 2022-2023

**Executive Summary:**

This certificate confirms that St. Aloysius College has successfully completed its Environmental Audit for the academic year 2022-2023, adhering to rigorous environmental standards and demonstrating a proactive approach in various aspects of environmental sustainability.

**Key Achievements:**

- **Vermicomposting:** Processed 105 kg of organic waste, producing 60 kg of vermicompost.
- **Environmental Education:** Hosted multiple programs including an internship on sustainable waste management and a collaborative environment awareness program with the Kadam Foundation.
- **Plantation Initiatives:** Over 180 rose plants were planted by students and faculty, contributing to biodiversity and campus aesthetics.
- **Water and Air Quality Monitoring:** Conducted detailed assessments of water conductivity and microbial air quality, ensuring compliance with health and environmental standards.

**Audit Recommendations:**

- **Continuous Monitoring:** Regular audits are recommended to maintain and improve environmental protocols.
- **Enhanced Waste Segregation:** Implement more refined waste segregation methods to boost recycling and reduce landfill use.
- **Energy Conservation:** Installation of solar panels or other renewable energy sources is advised to decrease the college's carbon footprint.
- **Water Conservation Measures:** Implement techniques like rainwater harvesting to optimize water usage.

**Issued by:**



Awaneesh Nema & Associates

**Issue Date:** 24<sup>th</sup> October 2023



# ST. ALOYSIUS' COLLEGE

(AUTONOMOUS), JABALPUR(M.P.)

Reaccredited 'A+' Grade by NAAC (CGPA 3.68/4.00)

College with Potential for Excellence (CPE) by UGC

DST-FIST Supported & Star College Scheme by DBT.

## Environmental Audit

2022-23

The Environmental Audit Report for St. Aloysius College for the academic year 2022-23 is prepared by Dr. Laxmikant Pandey (Head of Biotechnology), Dr. Priyanka Sinha (Head of Zoology), and Dr. Smarika Lawrence (Head of Chemistry). The report details the college's environmental initiatives and protocols, focusing on water purity, air quality, microbial evaluations, and hazardous waste management. It demonstrates the college's compliance with environmental safety standards and its commitment to a sustainable academic environment. The audit has been submitted to Awaneesh Nema and Associates for review.

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## ENVIRONMENTAL AUDIT REPORT

2022-23

The ecosystem, comprising flora, fauna, and humans, forms an intricate web of interdependencies, ensuring mutual survival. This balance is threatened by global warming, a consequence of escalating temperatures. Such climatic shifts can induce severe environmental modifications, directly influencing human health. These changes encompass rising sea levels, altered precipitation patterns, heightened drought and flood risks, and biodiversity threats. Notably, nations least responsible for global warming face the gravest health and livelihood repercussions.

"Environmental audit" is a comprehensive assessment targeting systemic environmental compliance shortcomings, offering rectification strategies. This audit scrutinizes both internal and external environmental policies, gauging their impact on fostering an eco-friendly milieu. Such audits are instrumental in pinpointing energy and water consumption patterns, facilitating resource optimization and cost-saving. Additionally, they aid in waste management by identifying waste types and volumes, thereby enhancing waste reduction or recycling initiatives.

Recognizing the urgency of addressing environmental challenges, St. Aloysius College has proactively engaged in environmental conservation endeavors. As a premier academic and research institution, the college's foundational strategies revolve around addressing on-campus environmental issues. This commitment is evident in their preliminary environmental assessment, which serves as a precursor to broader sustainability initiatives. Following a rigorous self-assessment, the college has identified key environmental focus areas, ensuring a sustainable campus for future academic cohorts.

St. Aloysius' College has orchestrated several environmental activities, emphasizing sustainable practices and awareness:

### **Solid Waste Management via Vermicomposting:**

- Two vermicomposting pits (4' x 3') were utilized.



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- 105 kg of organic waste was processed, yielding 60 kg of vermicompost in 2022-23.
- An internship training on “Vermicomposting as Sustainable Practice for Solid Waste Management in Jabalpur city” was conducted from January 23 to April 30, 2023.

## Environmental Awareness and Plantation Initiatives:

- Collaborative efforts with Kadam Foundation facilitated an Environment Awareness Programme on January 14, 2023.
- A rose plantation event, involving UG, PG students, and faculty, resulted in the planting of over 180 rose plants on September 24, 2022.
- NSS organized a tree plantation involving 25 students on Environmental Day, June 5, 2022.

## Eco Fest 2023:

- Organized on January 21, 2023, focusing on the theme 'Science and Environment', it included poster making and waste repurposing competitions.

## Water Pollution Awareness:

- A program, highlighting water pollution through posters and slogans, was conducted at Gwarighat, Narmada River, Jabalpur on December 3, 2022.

## NSS Initiatives:

- NSS Day was celebrated with a college campus clean-up on September 24, 2022.

## Educational and Awareness Sessions:

- A guest lecture on ‘Water Analysis and Water Testing’ was held on February 4, 2023.
- An industrial visit to “Pesticide Residue Analysis Laboratory” was organized on February 2, 2023.



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## Wildlife and Biodiversity Conservation:

- Competitions like wildlife sketching, photography, and video documentary on endangered animals were held from October 7-13, 2022.

## Community Engagement:

- A skit on cleanliness and tree plantation was organized in Bargi Village, promoting environmental management.

## Creative Environmental Advocacy:

1. A collage competition themed 'Only one Earth' was held on October 8, 2022.
2. World Earth Day was commemorated with a plantation program on April 22, 2023.
3. Poster making, essay writing, and plantation were organized on World Environment Day, June 5, 2023.

## Protocol for Hazardous Waste Management in Laboratories

### 1. Biological Waste Management:

#### a. Management of Liquids with Biohazardous Agents:

- Liquids are collected in containers that are leak-proof, such as specialized flasks or bottles.
- For steam sterilization, containers resistant to autoclaving temperatures are employed.

#### b. Management of Solid Biohazardous Waste:

- Non-sharp, solid waste (e.g., used plastic cell culture flasks, petri dishes, tubes, gloves) potentially contaminated with viable biological agents is accumulated in designated waste plastic bags.
- Laboratories producing significant volumes of agar gel in disposable containers use specific waste plastics. Autoclavable bags containing such waste can leak during and post-sterilization.
- Post-autoclaving in the college, waste is double-bagged and sealed securely for appropriate disposal.

### 2. Chemical Waste Management:

- a. Compounds reactive to acid (e.g., cyanides, sulphides) that release gases upon acidification are kept separate from inorganic acids like sulphuric or hydrochloric acid.



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- b. Organic acids, such as glacial acetic acid, are stored separately from inorganic acids due to their distinct reactive properties.
- c. Materials reactive to water, like sodium, are stored away from any water sources.
- d. Oxidizing agents, such as hydrogen peroxide or lead nitrate, are not combined with organic materials (e.g., organic bases, flammable solvents) or reducing agents (e.g., water-reactive chemicals).

This protocol ensures the safe and efficient management of hazardous waste in laboratory settings, minimizing risks and environmental impact.

## Conductivity Testing of Water at St. Aloysius College, Jabalpur"

Water's electrical conductivity is a pivotal metric indicating its ability to transmit electrical currents. This conductivity varies, with pure water exhibiting minimal conductivity, while saline water, like seawater, demonstrates higher values. The Department of Zoology at St. Aloysius College undertook a comprehensive assessment of water samples from various sources to determine their conductivity, which indirectly measures water purity. The results, presented in uS/cm and mS/cm, are crucial for several industrial applications, including boiler and cooling tower operations.

Key Observations:

1. Tap and aquarium water showed similar conductivity at 0.20ms/cm.
2. R.O. and Nagar Nigam water exhibited lower conductivity, indicating higher purity at 0.10ms/cm.
3. Water hardness, a measure of calcium and magnesium ion concentration, varied across different college locations. For instance, water near the library showed a total hardness of 2000 ppm, while the church campus had 700 ppm.
4. The pH levels of all samples were near neutral, indicating balanced acidic and alkaline properties.
5. Fluoride content remained negligible in most samples, aligning with the World Health Organization's permissible limit of 1.5 ppm.

## Air Quality Microbial Assessment at St. Aloysius College, Jabalpur

In the controlled laboratory environments of St. Aloysius College, Jabalpur, a comprehensive "Air Quality Microbial Assessment" was undertaken. The primary objective was to ascertain the presence and diversity



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of airborne microorganisms, particularly fungi, which can pose potential health hazards. Air, being a significant reservoir for various microorganisms, requires consistent monitoring to ensure the safety and health of the individuals working within these environments. The assessment revealed the presence of diverse fungal species. Each species was meticulously isolated, identified, and categorized based on its morphology and potential pathogenicity. While the presence of multiple fungal species underscores the need for regular air quality checks, it was reassuring to note that none of the isolated fungi were identified as pathogenic. However, continuous monitoring is imperative to preemptively address any potential hazards and ensure a safe working environment.

## Conclusion

This report outlines the college's environmental sustainability efforts and compliance with green policies. It focuses on key initiatives such as solid waste management through vermicomposting, environmental awareness activities, and the implementation of waste reduction and recycling measures. It also includes assessments of water and air quality and the management of hazardous materials within the college laboratories. This underscores the institution's commitment to enhancing its ecological footprint and ensuring a sustainable, eco-friendly campus environment.



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