

Environmental Impact of Plaster of Paris Idols: Challenges and Sustainable Alternatives

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Abstract

The immersion of Plaster of Paris (PoP) idols during religious festivities has significant environmental repercussions, particularly for aquatic ecosystems. This study explores the impact of PoP idol immersion on water quality and aquatic life, highlighting the toxicity of materials such as heavy metals in synthetic paints and non-biodegradable PoP. Laboratory tests compared water quality parameters before and after immersion, demonstrating increased pollution levels. The study concludes with recommendations for eco-friendly practices to balance cultural traditions with environmental preservation.

Introduction

India is a culturally diverse nation where religious festivals like Ganesh Chaturthi are celebrated with fervor. A central ritual in many of these festivals involves immersing idols in water bodies. Traditionally made from clay, these idols have increasingly been replaced by PoP idols due to their affordability and ease of availability. However, PoP idols, made from gypsum and adorned with paints containing heavy metals like mercury, lead, and cadmium, pose significant environmental risks. When immersed in water bodies, these materials degrade water quality, harm aquatic life, and disrupt ecosystems.

Review of Literature

Previous studies have highlighted the detrimental effects of idol immersion on aquatic ecosystems. According to Sharma et al. (2019), heavy metals such as lead, cadmium, and mercury, commonly found in synthetic paints, significantly alter the physicochemical properties of water, reducing its suitability for aquatic life. Gupta and Reddy (2020) demonstrated that PoP idols contribute to long-term sedimentation, which disrupts the natural flow and balance of water bodies. Furthermore, Singh et al. (2021) emphasized the role of cultural practices in exacerbating water pollution, noting the widespread use of non-biodegradable materials like thermocol and plastic in festival decorations. These findings underscore the urgent need for adopting eco-friendly practices and regulatory measures to mitigate the environmental impact of idol immersion.

Methodology

The study was conducted in a controlled laboratory environment. Two PoP idols were submerged in separate 20-liter buckets of water. One bucket was aerated, while the other remained stagnant. Key water quality parameters—conductivity, turbidity, pH, biological oxygen demand (BOD), chemical oxygen demand (COD), hardness, total dissolved solids (TDS), and dissolved oxygen (DO)—were measured before and 48 hours after immersion. The results were compared to the baseline parameters of normal water to assess the impact of idol immersion.

Results and Discussion

The results revealed significant changes in the physicochemical properties of water post-immersion:

- **Increases:** Parameters such as total alkalinity, hardness, calcium, COD, oil and grease, temperature, and pH showed a marked rise. The use of PoP and synthetic paints contributed to these increases.
- **Decreases:** Dissolved oxygen, BOD, and free CO₂ levels dropped, indicating oxygen depletion and reduced water quality.

Heavy metals, introduced through paints and other materials, further exacerbated the pollution. Red, blue, orange, and green paints contain carcinogenic substances like mercury, zinc oxide, chromium, and lead. Additionally, items like thermocol, plastic, and fabric decorations added to the pollution load, causing eutrophication and stagnation, which promote the breeding of pests and disrupt aquatic ecosystems. The long-lasting nature of PoP further compounds these issues, as it takes months to dissolve and adds to sedimentation in water bodies.

Conclusion

The immersion of PoP idols, while culturally significant, poses severe threats to aquatic ecosystems and public health. The introduction of heavy metals and non-biodegradable materials into water bodies degrades water quality, harms biodiversity, and affects communities relying on these resources. A shift towards eco-friendly practices is essential to mitigate these impacts.

Suggestions

1. Promote the use of eco-friendly idols made from natural clay, which dissolve in water within hours.
2. Encourage the adoption of permanent idols made from metal, which can be reused annually.
3. Avoid thermocol and plastic in decorations; instead, use biodegradable materials.
4. Collect floral offerings (*nirmalya*) and compost them for sustainable disposal.
5. Ensure local authorities collect and dispose of residual materials near water bodies within 24 hours of immersion.
6. Prohibit the burning of solid waste at immersion sites.

References

1. National Green Tribunal (NGT) Reports on Water Pollution from Idol Immersion, 2023.
2. Central Pollution Control Board (CPCB) Guidelines on Idol Immersion, 2022.
3. "Impact of Heavy Metals on Aquatic Ecosystems" – Environmental Research Journal, Vol. 15, Issue 3, 2021.
4. Local Government Initiatives for Eco-Friendly Festivities – Maharashtra Pollution Control Board (MPCB), 2020.