To,

Dated: 16 March 2025

Dr. Reinhard Dallinger and **Bin Gao BS**
Editors-in-Chief
Water, Air, & Soil Pollution

Subject: Submission of a Systematic Review Article - *"A Systematic Review on Potential Health Risk Assessment for Nitrate Contamination in Different Water Resources in India"*

Dear Sir,

I am pleased to submit our manuscript entitled ***"A Systematic Review on Potential Health Risk Assessment for Nitrate Contamination in Different Water Resources in India"*** for consideration in *Water, Air, & Soil Pollution*. The authors of this manuscript are Ritu Ritu, Ruby Ruby, Dimple Dimple, Nancy Nancy, and Arup Giri. This article has not been published, submitted, or accepted elsewhere. All authors have reviewed and approved this manuscript for submission, and we collectively affirm its originality and compliance with ethical standards.

Nitrate contamination in water resources is an escalating public health concern in India, primarily due to agricultural runoff, improper waste disposal, and rapid urbanization. Despite numerous regional studies on nitrate pollution, a comprehensive nationwide synthesis remains scarce. Our systematic review and meta-analysis integrate data from 90 studies conducted between 2014 and 2024 across 16 Indian states, providing a thorough assessment of nitrate contamination trends and associated health risks.

The findings reveal substantial regional variations in nitrate concentrations, with Rajasthan exhibiting the highest mean levels (80.43 mg L^{-1}), significantly exceeding the Bureau of Indian Standards (BIS) permissible limit of 45 mg L^{-1}. Health risk assessments using the US EPA model indicate that non-carcinogenic risks, as measured by the Total Hazard Quotient (THQ), surpass the safe limit (>1) for all age groups, with children being the most vulnerable. The study underscores oral ingestion as the primary exposure pathway, whereas dermal absorption posed minimal risks (DHQ <1). These findings highlight the urgent need for policy interventions, including sustainable agricultural practices, enhanced wastewater management, and community-based water quality monitoring.

This study directly aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 6 (Clean Water and Sanitation) and SDG 3 (Good Health and Well-being), by providing evidence-based recommendations to ensure safe drinking water and mitigate public health risks. Additionally, our findings contribute to bridging critical knowledge gaps and offers valuable insights for policymakers, environmental agencies, and researchers working on water resource management and public health protection.

We believe that this manuscript is well-suited for *Water, Air, & Soil Pollution*, given its focus on environmental sustainability, water quality assessment, and risk evaluation. By presenting a systematic and quantitative analysis of nitrate contamination in Indian water resources, this article provides significant contributions to the field of water research and human health risk assessment.

We kindly request your consideration of this manuscript for publication in *Water, Air, & Soil Pollution*. We are confident that the insights provided will resonate with your readership and inspire further research and policy interventions in water resource management. Hence, I request you for special attention to the importance of the issue discussed in the present manuscript. I hope the article would get a place for publication in the upcoming issue of the journal.

Thanking you, Sir.

Yours sincerely,
Dr. Arup Giri