Environment & Ecology · GS - III

Examine the environmental and public-health implications of nitrate contamination in drinking water. Discuss the measures required to strengthen water-quality monitoring and reduce nitrate pollution from agricultural sources.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 03/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Nitrate contamination; agricultural runoff; groundwater pollution; fertiliser use; blue-baby syndrome; epidemiological evidence; drinking-water standards; water-quality monitoring; sustainable agriculture; public health protection

Model Answer

Introduction

Nitrate contamination is an important drinking-water and public-health concern. The supplied article reports calls for the World Health Organization to review its nitrate guidelines amid concerns about potential health effects associated with chronic exposure.

Environmental and Health Implications

Excessive application of nitrogen-based fertilisers and agricultural runoff can increase nitrate concentrations in surface water and groundwater. High nitrate exposure can cause methemoglobinemia in infants. The article also highlights epidemiological studies reporting associations between chronic exposure and colorectal cancer and premature births; these associations require careful scientific assessment before causal conclusions are drawn.

Challenges

Contamination may remain undetected where water-quality monitoring is inadequate. Groundwater pollution can be difficult and costly to reverse. Standards must also reflect available scientific evidence, vulnerable populations and practical monitoring capabilities.

Way Forward

Authorities should strengthen routine testing of drinking-water sources, publish monitoring results and provide alternative safe water where contamination exceeds applicable standards. Precision fertiliser application, soil testing, improved nutrient management and vegetative buffer zones can reduce agricultural nitrate losses. Periodic scientific review of drinking-water guidelines should incorporate robust evidence and transparent risk assessment.

Conclusion

Protecting drinking water requires preventive agricultural practices, reliable monitoring and evidence-based standards. Coordinated action by health, agriculture and water authorities can reduce nitrate exposure and safeguard public health.

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