



# ***UNIVERSITY OF THE PEOPLE***

***ENVS 1301-01 INTRODUCTION TO ENVIRONMENTAL  
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***LEARNING JOURNAL UNIT 7***

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## Introduction

A recent health crisis related to arsenic contamination of groundwater has emerged in Pakistan that could potentially impact up to 60 million people. In Bangladesh, the widespread drilling of wells in the 1970s led to dangerous levels of naturally occurring arsenic leaching into many water sources from surrounding soil and rocks. When ingested at high levels over long periods, arsenic causes severe health consequences including skin diseases, cancer, heart conditions, and developmental disorders. Though the scale remains uncertain, early evidence suggests Pakistan's situation could parallel or exceed the disaster in Bangladesh, regarded as the worst mass poisoning from toxins in drinking water in modern history. Clearly further investigation and action are urgently needed to test well water across Pakistan and mitigate this alarming threat to tens of millions who may now be unwittingly drinking dangerous amounts of arsenic on a regular basis (Guglielmi, 2017).

## The Environmental Problem: Arsenic Contamination in Drinking Water

Arsenic contamination in groundwater resources affects many parts of Pakistan, especially the southern Sindh province. Estimates suggest over 50 million people drink water containing unsafe arsenic levels above the World Health Organization's guideline of 10 µg/L. Long-term ingestion of arsenic causes skin lesions, neurological disorders, higher cancer rates and other health issues in adults. Children are also vulnerable, with impairments to intellectual development.

The main anthropogenic source of arsenic is fertilizers in agriculture. Many chemical inputs and pesticides contain trace amounts of arsenic. These gradually accumulate in topsoil after application and monsoonal flooding causes leaching into groundwater reservoirs. Pakistan's outdated irrigation drainage systems and lack of arsenic testing protocols exacerbate contamination

spreading to human population centers. The result is toxic water sources used for drinking, cooking, bathing, and crops.

## Personal and Community Impacts

My grandparents live in a village in Sindh severely affected by arsenic groundwater contamination. Over 75% of wells in their community contain arsenic over ten times the safe limit. Without access to piped municipal water, they must choose between unhealthy well water or extremely limited supplies of bottled water for their daily household needs including drinking and cooking. Many residents in their village suffer visible skin lesions and lung diseases associated with long-term arsenic toxicity. The situation deeply affects my family both emotionally and physically when visiting our ancestral village.

Additionally, arsenic enters the food supply through irrigation of crops like wheat, rice, and vegetables. Studies show staple products in Pakistan frequently contain heavy metals that accumulate in human bodies over time. The broad health and environmental damage from arsenic therefore threaten communities across Pakistan, not just areas where groundwater draws directly from contaminated aquifers. The problem spans from farms to cities, putting millions at risk from this silent poisoning.

## Potential Solutions

In terms of solutions, the United Nations recommends switching to alternate safe drinking water sources as the first step. Options include piping water from less-affected areas or installing filtration systems to remove arsenic from tainted groundwater. Educational campaigns also raise awareness so families can take precautions when existing water contamination cannot be avoided immediately. Additionally, new agriculture guidelines limit arsenic content in pesticides and fertilizers to reduce further environmental loading beyond current thresholds.

In Pakistan's arsenic-plagued regions, recent projects exemplify sustainable progress on this environmental issue. Social entrepreneurs have installed solar-powered water filtration plants that decontaminate well water for up to 300 families per system. Nonprofits partner with communities to build rainwater harvesting cisterns and use affordable imported test kits for well assessments. Such collaborative initiatives address both immediate and long-term infrastructure needs while empowering villagers to protect themselves through decentralization. With persistence from grassroots advocates, Pakistan can overcome the scourge of arsenic to secure the universal human right of clean, safe water.

## Conclusion

Environmental contamination from arsenic poses a severe yet overlooked threat to public health and food security across Pakistan. Systemic changes in agricultural practices alongside water treatment innovations can mitigate risks over time. Yet political accountability and consistent environmental policies are vital to reform the underlying failures behind this toxic crisis, protecting vulnerable communities for current and future generations.

### References:

Guglielmi, G. (2017). Arsenic in drinking water threatens up to 60 million in Pakistan.  
Science.org. <https://www.science.org/content/article/arsenic-drinking-water-threatens-60-million-pakistan>

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