
# *UNIVERSITY OF THE PEOPLE*

## *ENVS 1301-01 INTRODUCTION TO ENVIRONMENTAL SCIENCES- AY2024-T2*

### *WRITTEN ASSIGNMENT UNIT 4*

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# Impacts of My Lifestyle on the Nitrogen Cycle

## Introduction

The Earth's environment provides vital resources that enable the flourishing of life as we know it. However, the exploitation and misuse of these resources have raised great concerns about environmental degradation. Specifically, human activities are altering natural cycles in ways that threaten ecosystems' ability to sustain ourselves and other species. An essential element for life on Earth is molecular nitrogen (N2), which accounts for 78% of the atmosphere (Dorsner, 2020). As an integral nutrient for all organisms, nitrogen availability shapes the viability of habitats and food webs. However, the amplified use of nitrogen compounds in agriculture and urban areas can lead to oxygen depletion and declines in biodiversity. Maintaining equilibrium in the global nitrogen cycle is thus critical for ecological health. Moving forward, mankind must pursue agricultural and industrial practices that balance sustainability with yields. Failing to rein in the uncontrolled environmental impacts of anthropogenic nitrogen flows could irreversibly damage diverse ecosystems and undermine nature's ability to meet human needs.

## a. Considerable Impacts I Make

The most significant impact I make on the nitrogen cycle stems from my diet and transportation choices. As a meat eater, I require more reactive nitrogen for the crops that are used to feed livestock. Intensive agriculture utilizes nitrogen fertilizers, leading to runoff and emissions during production and farming. My transportation via gasoline-powered vehicles also substantially contributes to nitrogen oxide emissions that lead to smog, acid rain, and climate change. On the household level, activities like using nitrogen-based cleaners and detergents, over-applying fertilizers for lawn care, and disposing pet waste into landfills exacerbate nitrogen pollution problems. As an urban resident, my water consumption and waste generation are tied to municipal

sewage systems, where nitrogen from human waste can overwhelm natural denitrifying bacteria if infrastructure lacks proper maintenance. Through these primary lifestyle factors, I significantly tax the nitrogen cycle via amplified inputs and undesirable transformations of nitrogen compounds.

### b. Reducing My Impacts

To tangibly reduce my nitrogen footprint, I would need to make several critical lifestyle changes. Shifting to a plant-based diet would allow me to cut my individual reactive nitrogen requirements by over 50%. Eliminating personal vehicle usage in favor of public transportation, biking, walking, and efficient ride shares would markedly lower my proportional contributions to nitrogen oxide emissions as well. At home, I can switch all cleaning and self-care products to vegetable-based formulas free of synthetic nitrogenous compounds. My outdoor care could employ organic practices to nourish lawns and gardens without excessive fertilizer applications. Notably, even small habitual upgrades like using less water, consuming less electricity, and reducing general material waste makes an incremental difference to avoid taxing municipal waste management systems.

Implementing these modifications would demand significant sacrifices to convenience and personal choice. Abandoning private transport gives up the flexibility of always having accessible mobility. Plant-based eating requires more time sourcing foods and preparing meals without reliance on quick protein fixes from meat. Using green cleaners means having to research and trial more specialized niche products. Rethinking gardening and lawn care takes considerable initial effort in revamping longtime standard procedures as well. Ultimately though, these substitutes to consume and transport less while eliminating synthetic nitrogen from my direct environs are essential to proportionally minimizing my disturbance to the nitrogen cycle.

### c. Balancing Personal Choices and Environmental Considerations

Finding balance between personal lifestyle decisions and ecological impact is undoubtedly challenging. Human lives are complicated with constraints like time, budgets, health status, family needs, and career demands. People require fuel, shelter, income, leisure, and myriad other basic needs and higher desires to feel content. Fulfilling these regularly necessitates some resource use and refuse output. Meanwhile, environmental tipping points loom from mass overconsumption.

With the nitrogen cycle, meat-eating, fossil fuels for transport, fertilizers, wastefulness are integral pieces of common lives. Most individuals and households are locked into traditional infrastructures and behavioral patterns supporting these nitrogen-intensive pillars. Altering lifestyles then not only demands personal sacrifice, but also significant systemic shifts at industrial, municipal, and societal scales. Achieving sustainable nitrogen management requires just as much top-down innovation to provide alternative fuels, diet options and waste programs as it does bottom-up pledges from individuals like me. The difficulty lies in bringing about mutual understanding between citizens, businesses, and governments to agree on tolerable levels of environmental impact. Hard lines must be weighed against reasonable desires for safety, health, jobs, recreation, etcetera in people's lives. With honest conversation and innovation though, less damaging comprises can certainly support humans and ecologies alike.

## References:

Doršner, K. (2020). *Essentials of Environmental Science* (2nd edition)

Word count: 750