# Article information:

Nitrogen and phosphorous recycling from human urine by household electrochemical fixed bed in sparsely populated regions - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0043135422004213?via%3Dihub>

# Article summary:

1. An electrochemical system was developed for the pretreatment of human urine, followed by the recovery of nitrogen and phosphorus via struvite precipitation and ammonia volatilization.

2. The acid/base zones created by electrochemical water splitting dissolved the magnesite filler as the Mg2+ source of struvite, creating an ideal pH environment for struvite precipitation and NH3 volatilization in the effluent.

3. Life cycle assessment indicated that the on-site employment of produced struvite avoids long-distance fertilizer transportation, thus reducing carbon emission by a hundred million tons per year if the household facility is driven by clean electricity.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Nitrogen and phosphorous recycling from human urine by household electrochemical fixed bed in sparsely populated regions” is a well-researched piece that provides an overview of an innovative technology for decentralized treatment of human urine in sparsely populated regions. The article presents a comprehensive description of the process, including its advantages such as avoiding sewage collection problems, utilizing recovered N/P fertilizer in-situ to nurture gardens, creating an ideal pH environment for struvite precipitation and NH3 volatilization in the effluent, and reducing carbon emission through on-site employment of produced struvite as fertilizer.

The article is reliable and trustworthy due to its detailed description of the process and its potential benefits. It also provides evidence to support its claims through life cycle assessment results indicating that on-site employment of produced struvite can reduce carbon emission significantly if powered by clean electricity. Furthermore, it acknowledges potential limitations such as long start-up time, complicated maintenance, prohibitive transport costs for additional chemicals, high energy consumption etc., which could impede application in sparsely populated regions.

However, there are some points that could be further explored or discussed more thoroughly in order to make this article more comprehensive. For example, while it mentions potential limitations such as long start-up time or high energy consumption associated with this technology, it does not provide any information about how these issues can be addressed or mitigated. Additionally, while it discusses potential benefits such as reduced carbon emissions from avoiding long distance transportation of fertilizers, it does not discuss any possible risks associated with using this technology such as environmental contamination or health risks due to improper handling or disposal of wastewater or fertilizer products. Finally, while it mentions potential applications such as agricultural use for liquid fertilizer production from urine treatment processes like membrane distillation or electrolysis, it does not provide any information about other possible applications such as industrial use or other uses outside agriculture sector which could benefit from this technology.

In conclusion, this article is reliable and trustworthy overall due to its detailed description of the process and evidence provided to support its claims; however there are some points that could be further explored or discussed more thoroughly in order to make this article more comprehensive.

# Topics for further research:

* Environmental impacts of urine treatment processes
* Health risks associated with urine treatment processes
* Industrial applications of urine treatment processes
* Mitigation strategies for long start-up time and high energy consumption
* Transportation costs for additional chemicals in urine treatment processes
* Non-agricultural uses of urine treatment processes

# Report location:

<https://www.fullpicture.app/item/c0125f4c242446deae77d83270eaa1a5>