# Article information:

Assessing the environmental impacts and costs of biochar and monitored natural attenuation for groundwater heavily contaminated with volatile organic compounds - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S004896972204414X?via%3Dihub>

# Article summary:

1. This article assesses the environmental impacts and costs of three options for remediating groundwater contaminated with volatile organic compounds (VOCs): a combination of monitored natural attenuation (MNA) and biochar (MNA + BC), biochar (BC), and pump and treat (PT).

2. The environmental impacts were examined through a Life Cycle Assessment (LCA) using the ReCiPe 2016 method, while the costs were evaluated using a Life Cycle Cost (LCC) method created in SimaPro.

3. Results show that MNA + BC renders relatively low impacts and costs, while incorporating institutional controls, using renewable energy and recycled or alternative materials, and developing BC with superior adsorption capacity are recommended to optimize the remediation strategies.

# 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:

This article is generally trustworthy as it provides an in-depth analysis of the environmental impacts and costs of three options for remediating groundwater contaminated with VOCs. The authors have used two reliable methods - Life Cycle Assessment (LCA) using the ReCiPe 2016 method, and Life Cycle Cost (LCC) method created in SimaPro - to evaluate the environmental impacts and costs respectively. Furthermore, they have provided recommendations on how to optimize the remediation strategies by incorporating institutional controls, using renewable energy and recycled or alternative materials, and developing BC with superior adsorption capacity.

However, there are some potential biases that should be noted. Firstly, there is no mention of any potential risks associated with these technologies such as long-term effects on human health or environment due to their use. Secondly, there is no discussion about possible counterarguments or other alternatives that could be used for remediating VOCs contaminated groundwater. Lastly, there is no mention of any potential conflicts of interest that may have influenced the results presented in this article.

# Topics for further research:

* Long-term effects of VOCs on human health
* Alternative technologies for remediating VOCs contaminated groundwater
* Potential conflicts of interest in environmental remediation
* Institutional controls for groundwater remediation
* Renewable energy for groundwater remediation
* Adsorption capacity of biochar for VOCs

# Report location:

<https://www.fullpicture.app/item/0cfe9aa78fb1cd58fe04901f76eccce3>