# Article information:

Setting a limit on anthropogenic sources of atmospheric 81Kr through Atom Trap Trace Analysis - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S0009254117300748>

# Article summary:

1. A 2.5% limit is placed on the anthropogenic contribution to the modern abundance of Kr/Kr in the atmosphere at the 90% confidence level.

2. Atom Trap Trace Analysis (ATTA) is a laser-based atom counting technique that has been used to measure 81Kr/Kr ratios with relative uncertainties of 1%.

3. A new theoretical model for anthropogenic 81Kr production in the atmosphere sets an upper limit of 0.15%.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article “Setting a Limit on Anthropogenic Sources of Atmospheric 81Kr through Atom Trap Trace Analysis” provides an overview of the Atom Trap Trace Analysis (ATTA) technique and its application in measuring 81Kr/Kr ratios with relative uncertainties of 1%. The article also presents a new theoretical model for anthropogenic 81Kr production in the atmosphere, which sets an upper limit of 0.15%, and places a 2.5% limit on the anthropogenic contribution to the modern abundance of Kr/Kr in the atmosphere at the 90% confidence level.

The article appears to be reliable and trustworthy, as it provides detailed information about ATTA and its applications, as well as a thorough discussion of potential sources of anthropogenic 81Kr and their effects on dating measurements. The authors provide evidence for their claims, such as citing previous studies that have used ATTA to measure 81Kr/Kr ratios with relative uncertainties around 8%, and they present their own experimental results from two 1% one-sigma relative uncertainty measurements using ATTA to place a 2.5% experimental limit on anthropogenic 81Kr in the atmosphere at the 90% confidence level.

The article does not appear to be biased or one-sided, as it presents both sides equally by discussing both potential sources of anthropogenic 81Kr and their effects on dating measurements, as well as presenting evidence for their claims from previous studies and their own experiments. There are no unsupported claims or missing points of consideration, nor any promotional content or partiality present in this article. The authors do note possible risks associated with human nuclear activity, such as injecting anthropogenic 81Kr into the atmosphere, which could disturb atmospheric baselines over time and add unacknowledged systematic errors to all 81Kr-dating measurements.

In conclusion, this article appears to be reliable and trustworthy due to its detailed discussion of ATTA and its applications, thorough exploration of potential sources of anthropogenic 81Kr and their effects on dating measurements, presentation of evidence for its claims from previous studies and experiments conducted by the authors themselves, lack of bias or one-sidedness, absence of unsupported claims or missing points of consideration, lack promotional content or partiality present in this article, noting possible risks associated with human nuclear activity that could disturb atmospheric baselines over time and add unacknowledged systematic errors to all 81Kr-dating measurements

# Topics for further research:

* Anthropogenic 81Kr production
* Atom Trap Trace Analysis (ATTA)
* 81Kr-dating measurements
* Atmospheric baselines
* Systematic errors in 81Kr-dating
* Nuclear activity and its effects on the atmosphere

# Report location:

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