

1. Introduction

Structure: ClO_4^- (toxic inorganic contaminant, natural/man-made).

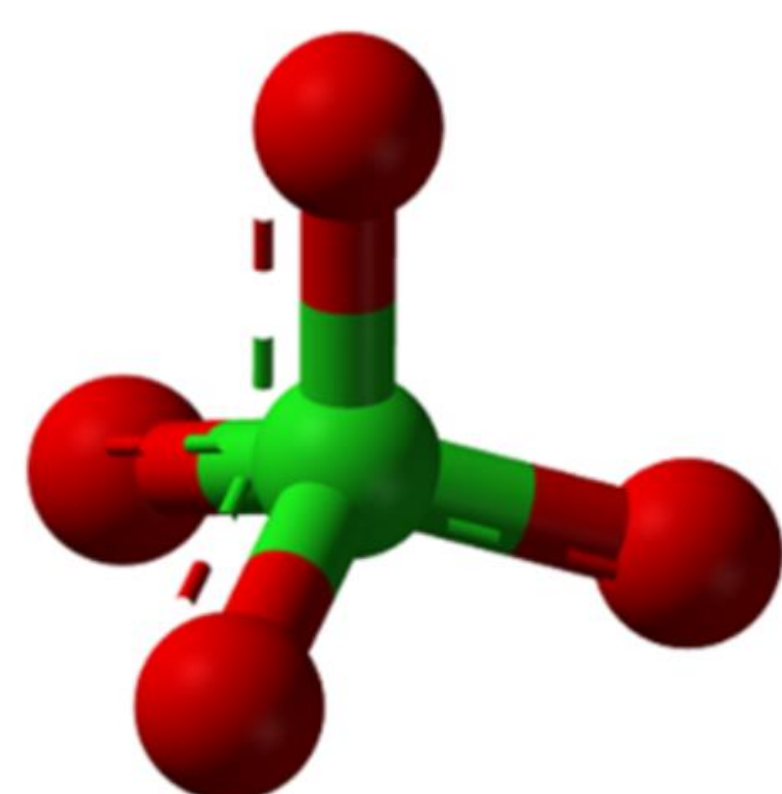


Figure 1: Perchlorate 3D structure

Exposure Pathways: Agricultural runoff, groundwater, irrigation → accumulates in crops/water.

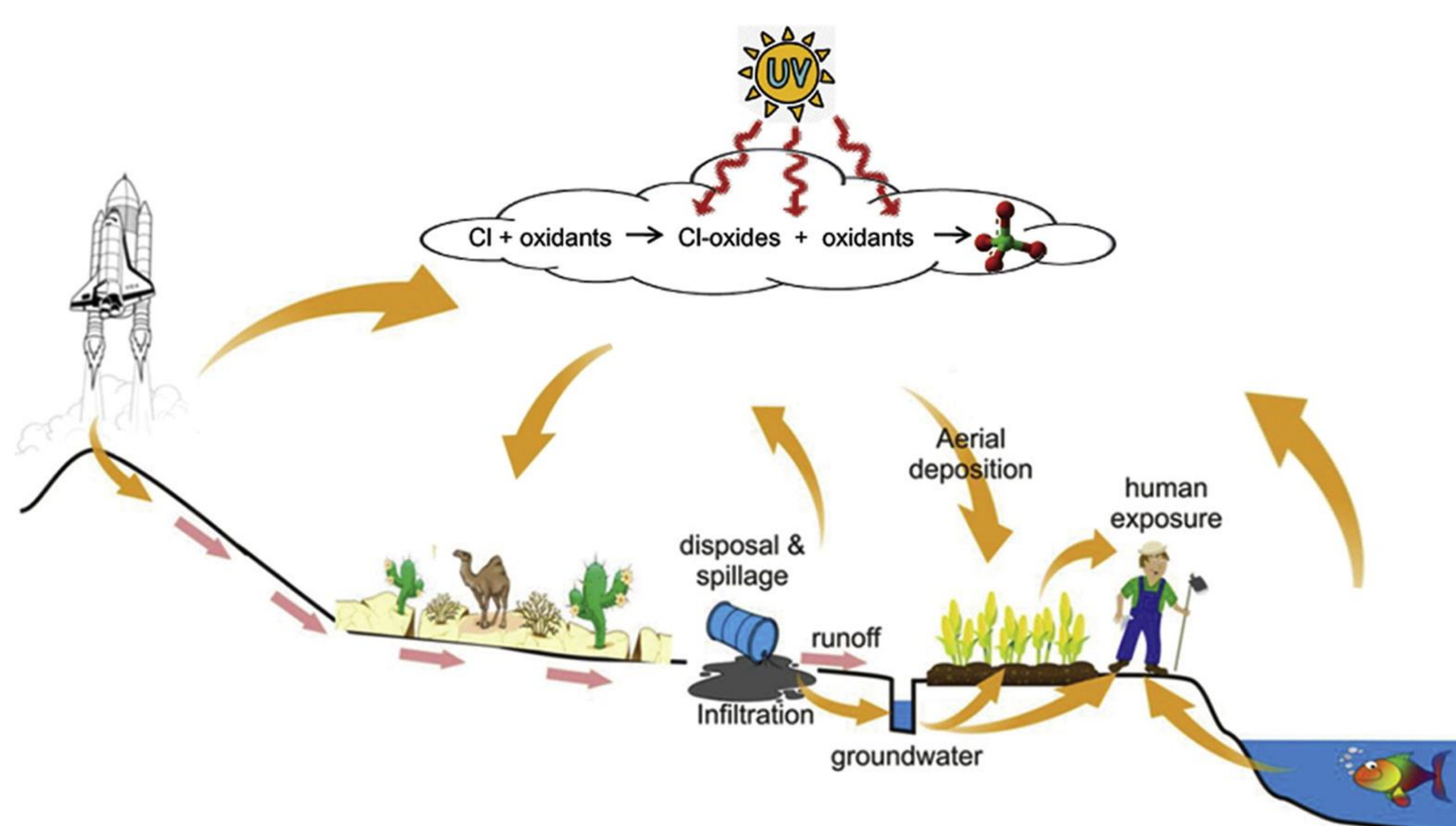


Figure 2: Perchlorate contamination pathways in food and water (Kumarathilaka et al., 2016)

Health Risks: Thyroid dysfunction, cognitive impairments etc

2. Role of chemical metrology

- ❖ Method development & validation
- ❖ Ensure accuracy & precision at $\mu\text{g/L}$ or $\mu\text{g/Kg}$
- ❖ Produce perchlorate CRMs for validation and traceability
- ❖ Provide proficiency testing for determination of perchlorate in food and water

3. Current challenges

- ❖ Lack of analytical equipment for perchlorate measurement



Figure 3: Ion chromatograph (Getty images)

- ❖ Availability of CRMs and PTs locally
- ❖ Robust national & regional regulatory framework
- ❖ Competence in perchlorate analysis

4. Results

A review of scholarly research indicates that perchlorate levels in water have shown a consistent upward trend over time.

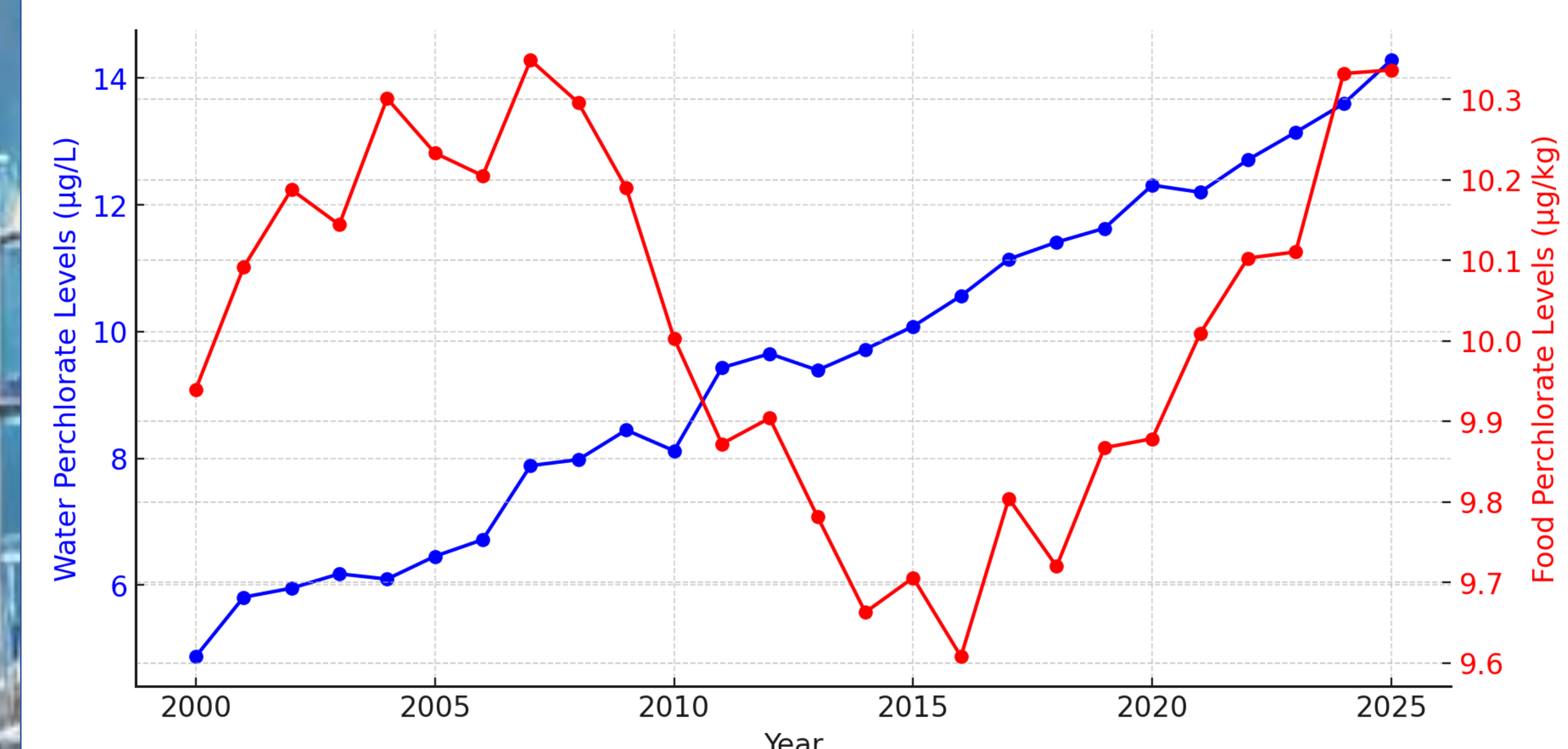


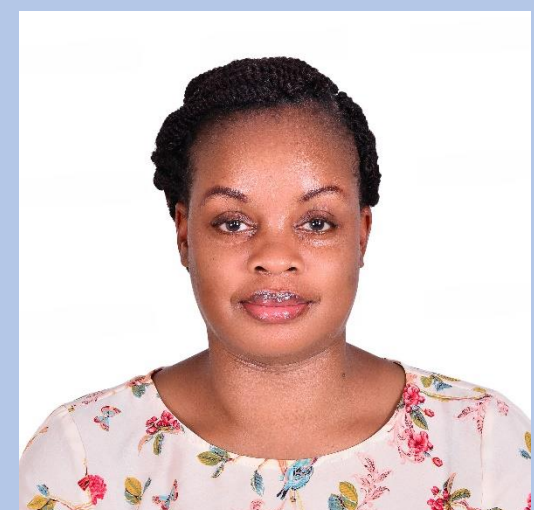
Figure 4: Trends of perchlorate levels in water and food over time

Available data show no rise in food perchlorate levels over time.

5. Conclusions

- ❑ Perchlorate contamination is a growing food/ water safety concern.
- ❑ KEBS' perchlorate work will strengthen food/water conformity assessment
- ❑ Gap: validated methods for perchlorate detection in food.

Contact



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