

IN THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, KALAS MAHAL, CHENNAI
OA 14/2024 (SZ)

IN THE MATTER OF:

Tribunal on its own motion SUO
MOTU based on the News Item in
One India Dt 25.10.2023 titled
“Vegetables Across Bengaluru
Contaminated with Heavy Metal,
Warns Study”

... .. APPLICANT

VERSUS

Central Pollution Control Board
Through its Member Secretary New
Delhi and Ors

...RESPONDENTS

Previous D.o.H: 15.10.2024

Next D.o.H: 02.12.2024

I N D E X

S. NO.	DESCRIPTION	PAGE NO.
1.	Brief Report on behalf of the Respondent No. 3 EMPRI	1 – 2
2.	Affidavit in support thereto	3 – 5


MUKESH KUMAR

Advocate for Respondent No. 3 EMPRI

Lex Regula LLP

Email: LexRegula@gmail.com

Mobile: +91-9211059000

Place: NEW DELHI

Date: 30.11.2024

**Brief Report for O.A. No. 14/2024 before Honorable NGT Southern Zone listed on
02.12.2024**

Subject: Study of Heavy Metal Concentrations in Vegetables Obtained from Markets of Bengaluru City

Environmental Management and Policy Research Institute (EMPRI) is an autonomous institute established by Government of Karnataka on 17 September 2002 under the Department of Forest, Ecology and Environment. It is registered under the Karnataka Societies Registration Act, 1960. EMPRI undertakes applied and policy research and also endeavours to provide capacity building trainings on concurrent environmental issues relevant to the society.

The study on the concentration of heavy metals in vegetables obtained in Bengaluru markets was undertaken by EMPRI during 2021-22 as a pilot study to preliminarily assess the presence of metals in select vegetable samples. The study was intended as an exploratory investigation to observe metal content in vegetables, with the objective of gathering baseline data for further in-depth research. The study involved random sampling of vegetables from five different types of markets: retail markets, local markets, organic stores, and Horticultural Producers' Cooperative Marketing and Processing Society (HOPCOMS).

A total of ten vegetables—Brinjal, Tomato, Capsicum, Bean, Carrot, Green Chilly, Onion, Potato, Spinach, and Coriander—were collected once in duplicates, and tested for the presence of eight metals: Iron (Fe), Zinc (Zn), Chromium (Cr), Manganese (Mn), Lead (Pb), Copper (Cu), Nickel (Ni), and Cadmium (Cd). The analysis carried out in the in-house laboratory was not intended to provide conclusive results but rather to serve as indicative observation of heavy metal presence in vegetables available in Bengaluru's markets.

The results were compared against FAO/WHO standards for permissible levels of heavy metals in vegetables. Out of the 320 samples analyzed, 200 samples were found to be within permissible limits for Fe, Zn, Mn, Cu, and Ni. However, concentrations of Cr, Pb, and Cd were found to exceed permissible limits in certain samples, while Pb and Cd were below detectable limits in vegetables sourced from retail markets and organic stores.

Similar studies conducted by the researchers at national level are as mentioned below.

- 1) In Bangalore, a study was conducted to determine the heavy metal composition in the vegetable and fruit samples collected from the markets (Mahdavian and Somashekar, 2009).
- 2) In Delhi, vegetables from the markets were investigated for the heavy metal contamination (Marshall et al., 2003).
- 3) In Varanasi, India, a study found heavy metal contamination through surface deposition in vegetables due to the transportation and marketing of vegetables in contaminated environment (Sharma et al., 2009).

- 4) In West Bengal, a research highlighted the heavy metal contamination in vegetables and showed that the concentration of lead, cadmium and chromium exceeded the allowable limit (Banerjee et al., 2010).

It is important to highlight that the findings of this study were initially reported in the media without validation from subject experts or accredited institutions. Currently, the study has been reviewed and validated by experts, confirming that the initial findings were indicative but require further investigation for more statistically significant results.

Given that the project included one-time sampling in a single season, the study acknowledges the need for a larger sample size and coverage of all seasons, as well as the inclusion of control samples, to provide more reliable data on the concentrations of heavy metals. A more extensive, multi-seasonal study by relevant stakeholder departments/institutions would help to ascertain the persistence and variability of heavy metal contamination in vegetables.

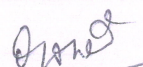
Further, this pilot study serves as an initial step toward identifying potential risks posed by heavy metal contamination in vegetables and underscores the necessity of a more in-depth study to provide conclusive evidence.

It is submitted that the EMPRI Laboratory is not recognized to Food Safety and Standards Authority of India (FSSAI) for detailed investigation into vegetables as also reported in the CPCB report dated 13.03.2024 para no.3 (ix to xi) therein. Hence, it is opined that for heavy metal analysis in vegetables, FSSAI needs to be impleaded.

The EMPRI laboratory is accredited under National Accreditation Board for Testing and Calibration Laboratories (NABL) for analysis of environmental parameters in water and waste water, and services be utilized for testing such samples.

References

1. Mahdavian S.E., and Somashekar R.K. (2009). Heavy Metal Contamination of Vegetables and Fruits from Bangalore City. Nature Environment and Pollution Technology. 8(4): 829-834.
2. Banerjee, D., Bairagi, Himadri, Mukhopadhyay, S., Pal, A., Bera, Debabrata, Ray, Lalitagauri. (2010). Heavy metal contamination in fruits and vegetables in two districts of West Bengal, India. Electronic journal of environmental, agricultural and food chemistry. 9. 1423 - 1432.
3. Marshall, M., Agarwal, R., Lintelo, D, Bhupal, D.S., et al. (2003). Heavy metal contamination of Vegetables in Delhi. Executive summary of technical report.
4. Sharma, R.K., Agrawal, M., and Marshall, F.M. (2009). Heavy metals in vegetables collected from production and market sites of a tropical urban area of India. Food and Chemical Toxicology, 47(3), 583-591.


 DIRECTOR GENERAL
 ENVIRONMENTAL MANAGEMENT
 & POLICY RESEARCH INSTITUTE
 BANGALORE-78

**BEFORE THE NATIONAL GREEN
TRIBUNAL
SOUTHERN ZONE, KALAS MAHAL, CHENNAI
OA 14/2024 (SZ)**

IN THE MATTER OF:

Tribunal on its own motion SUO
MOTU based on the News Item in
One India Dt 25.10.2023 titled
"Vegetables Across Bengaluru
Contaminated with Heavy Metal,
Warns Study"

... .. APPLICANT

VERSUS

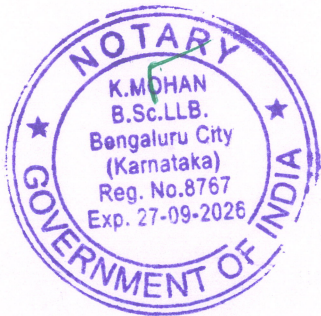
Central Pollution Control Board
Through its Member Secretary New
Delhi and Ors

...RESPONDENTS

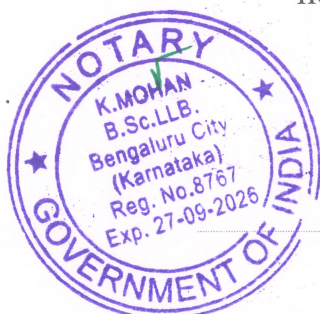
**AFFIDAVIT ON BRIEF REPORT ON BEHALF OF
THE RESPONDENT NO. 3 EMPRI**

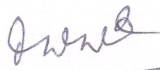
I, Ravi B P, son of B. Parameshwarappa, aged about 57 years, currently posted as Director General, Environmental Management and Policy Research Institute (EMPRI), Bangalore, Karnataka 560001, do hereby solemnly affirm and declare as under:-

1. That the deponent is working with Respondent No. 3 EMPRI, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent and authorized to verify, sign and swear this affidavit on behalf of the Respondent No. 3 EMPRI.



2. That the instant Affidavit on Brief Report is being filed in compliance to the directions/ Order dated 15.10.2024 passed by this Hon'ble Southern Zone Bench of this Hon'ble National Green Tribunal.
3. That the present brief report is in continuation of the earlier report filed on 15.11.2023 in OA 685/2023 (PB) before the Hon'ble Principal Bench of this Hon'ble National Green Tribunal, New Delhi. The matter stood transferred to this Hon'ble Southern Bench vide Order dated 21.11.2023 by the Hon'ble Principal Bench.
4. That it is respectfully submitted that the answering Respondent No. 3 EMPRI will be obliged to provide any additional information if so required by this Hon'ble Tribunal and hereby submit this affidavit for kind consideration.
5. That I have read and understood the contents of the this Affidavit. The same has been drafted by my counsel under my instructions and the same are true and correct as per the official records made available to me and same has been understood by me.
6. That the contents of the accompanying brief report may be read as part and parcel of this affidavit and the same are not repeated herein for the sake of brevity.

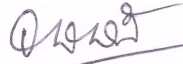


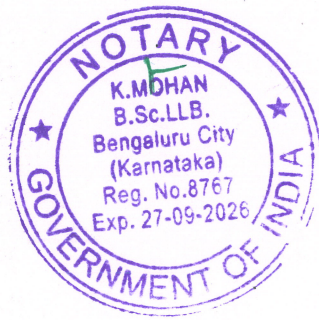

DEPONENT

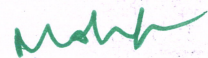
VERIFICATION:

Verified at Bangalore on this 30th day of November' 2024 that the contents of the above Affidavit are true and correct on the basis of my knowledge and official documents. No part of it is false and nothing material has been concealed therefrom.

5


DEPONENT



TRUE COPY
compared with the originals
and found correct

K. MOHAN, B.Sc. LLB.
ADVOCATE and NOTARY
No. 6, 14th Cross,
Sampige, Margosa Road,
Malleshwaram,
Bengaluru - 560 003.
30 NOV 2024