IJEP 40 (4) : 441-444 (2020)

# Role Of Municipal Solid Waste In Water And Soil Pollution - A Case Study From Thirunallar Temple Town, Pondicherry

**S. Jeevendran[1] and M. Ashraf Bhat[2*]**

*1. Pondicherry University, Department of Ecology and Environmental Sciences, Kalapet - 605 014, Pondicherry*

*2. Government Degree College (GDC), Department of Zoology, Pattan - 193 121, Baramulla*

**Corresponding author, Email : bhatashraf@gmail.com; jjeevan02@gmail.com*

**Heavy metal pollution in water, soils and eventually in food crops is a great environmental concern. We, possibly, first time explored the heavy metal infiltration from municipal solid waste (MSW) into the water resources and agricultural soil. Thirunallar temple town (TTT) in Pondicherry, South India is one of the several largest Hindu faith religious places. Annual attendance of devotees at Thirunallar temple town has crossed 5 million in the year 2018, a 50% increase from the year 2013. This throughout the year affair is responsible for the generation of tonnes of solid waste and with no proper mechanism and regulations at a place; these religious rituals may become a great threat to the environment. Further unregulated and unscientific MSW handling practices has enormously impacted the water and soil quality in and around Thirunallar temple town. It was found that unorganized and mass scale religious rituals are directly responsible for water and soil pollution. Cu was found beyond recommended limits in both soil and water samples.**

**KEYWORDS**

Municipal solid waste, Water quality, Soil quality, Heavy metal pollution, Religious rituals

**REFERENCES**

1. Gilli,. 2010. The religious composition of India's population. *Sarjana.* 25(2):61-76.
2. Majumdar, S. 2018. 5 facts about religion in India. Fact Tank, Pewrearch. org. http://www.pewresearch .org/fact-tank/2018/06/29-5-facts-about-religion-in-india.
3. Arora, N.K., *et al.* 2013. Analysis of water quality parameters of river Ganga during Maha Kumbha, Haridwar. *J. Env. Bisol.,* 34(4):799.
4. Peter, A.E., *et al.* 2019. Environmental burden by an open dumpsite in urban India. *Waste Manage.,* 85:151-163.
5. Bini, C., *et al.* 2010. Soil contamination by mine dumps, plant toxicity and restoration perspectives by phytoremediation. *Air, Water and Soil Poll.,* 173-180.
6. Lim, H.S., *et al.* 2008. Heavy metal contamination and health risk assessment in the vicinity of the abandoned Songcheon. Au-Ag mine in Korea. *J. Geochem. Explor.,* 96(2-3):223-230.
7. Kabata. 1995. Trace elements in soils and plants. CRC Press, Inc., Boca Raton, Florida, USA. pp 3-18.
8. Wahsha, M. 2012. Toxicity assessment of contaminated soils from a mining area in northern Italy by using lipid peroxidation assay. *J. Geochem. Explor.,* 113:112-117.
9. Jiang, Y., *et al.* 2019. Spatiotemporal variation of soil heavy metals in farmland influenced by human activities in the Poyang lake region, China. *Catena.,* 176:279-288.
10. Abbasi and Abbasi. 2010. Biomass energy and the environmental impacts associated with its production and utilization. *Renew. Sust. Energ. Rev.,* 14(3):919-937.
11. Loureiro, S., *et al.* 2016. Toxicity assessment of two soils from Jales mine (Portugal) using plants : Growth and biochemical parameters. *Arch. Env. Con. Tox.,* 50(2):182-190.
12. Alfonso and Puppo. 2009. Reactive oxygen species in plant signaling. Springer, Berlin.
13. Joshi, G., *et al.* 2005. Free radical mediated oxidative stress and toxic side effects in brain induced by the anticancer drug adriamycin : Insight into chemobrain. *Free Radic. Res.,* 39(11):1147-1154.
14. Bini, C., *et al.* 2008. The chromium issue in soils of the leather tannery district in Italy. *J. Geochem. Explor.,* 96(23):194-202.
15. Aravind and Prasad. 2003. Zinc alleviates cadmium-induced oxidative stress in *Ceratophyllum demersum* L. : A free floating freshwater macrophyte. *Plant Physiol. and Biochem.,* 41(4):391-397.
16. Baryla, A., *et al.* 2000. Evaluation of lipid peroxidation as a toxicity bioassay for plants exposed to copper. *Env. Poll.,* 109(1):131-135.
17. Sinha, S. 2005. Chromium induced lipid peraxidation in the plants of *Pistia stratiotes* L. : Role of antioxidants and antioxidant enzymes. *Chemosphere.* 58(5):595-604.
18. Guo, X., *et al.* 2019. Heavy metal redistribution mechanism assisted magnetic separation for highly-efficient removal of lead and cadmium from human blood. *J. Colloid Interface Sci.,* 536:563-574.
19. APHA. 2005. Standard methods for the examination of water and wastewater. American Public Health Association, Washington, D.C., USA.