Imperial Journal of Interdisciplinary Research (IJIR)
Vol-3, Issue-9, 2017
ISSN: 2454-1362, http://www.onlinejournal.in

Occurrence of Micropollutants in wastewater

Avantika B. Kulkarni[1] & Dr. Sunil B.Thakare [2]
[1]Master's student Civil Engineering, Anantrao Pawar college of Engineering Parvati, Pune.
[2]Principal, Anantrao Pawar college of Engineering Parvati, Pune.

Abstract*: Nowadays due to increase rate of population, requirement of daily need products also increasing tremendously. Low quantity of micro pollutants present in wastewater at very low concentrations in nano grams or micro grams per liter. Micro pollutants come from biocides, pharmaceuticals, body care products, cleaning agents in numerous commercial, industrial and domestic applications. They also occur through drainage system and other sources such as agriculture. Micro pollutants are harmful to human beings and animals because they come at very low concentrations as they becomes too difficult to identify easily. They are not get easily removed or they are not completely biodegradable.*

1. Introduction

Micro pollutants frequently occur at hazardous sites through different media like air, water and soil but major source is water. In rural areas main source is agricultural pesticides. Through fields some micro pollutants goes to surface water and some to the groundwater. In urban areas personal care products, sunscreen, pharmaceuticals goes in main sewers and some pollutants go to surface water.

2. Objectives

1. The impact of micro pollutants on the ecosystem.
2. Finding commonly occurring micro pollutants in wastewater.
3. To help ecosystem and environment from micro pollutants.

3. Problem Statement

Present day, people use medicines for various health problems. Medicines are also a major source of micro pollutants through water. Medicines used by people go through excretion or waste disposal. Pollutants sources are excretion by hospital effluents, private households and waste disposal by unused medicines. After excretion pollutants go to municipal waste water and then sewage treatment plants. After treatment plant some micro pollutants goes to surface water. Waste disposal goes to waste disposal sites after treatment water goes to groundwater may be used as drinking water in future. Medicine products used by animals containing micro pollutants go through excretion as it is used as manure. So pollutants pass to soil through manure and to ground water in future.

4. Microplutants

Mainly occurring micro-pollutants are Nicotine, Phenol compounds, CBZ, Methadone, Benzophenon, Methylparaben, Bisphenol-A, Sulfasalazine, Azithromycin. Benzene is used in the production of rubbers, lubricants, dyes, pesticides, detergents. Also in chemicals which are used to make plastics, resins, nylon and other synthetic fibers. They afterwards disposal in many ways as landfills, transfer to treatment plants. It is highly toxic chemical can cause serious health effects. Benzene has shown to cause cancer in both humans and animals. It is not get easily removed by normal treatment methods. In India normally the people addicted to various bad habits which evolved Nicotine in wastewater through alcohol, Tambhakhu etc. So amount of nicotine is found in large amount in wastewater. Powdered activated carbon has an adsorption capacity of organic matter and can adsorptions pharmaceutical residue and other micro pollutants.

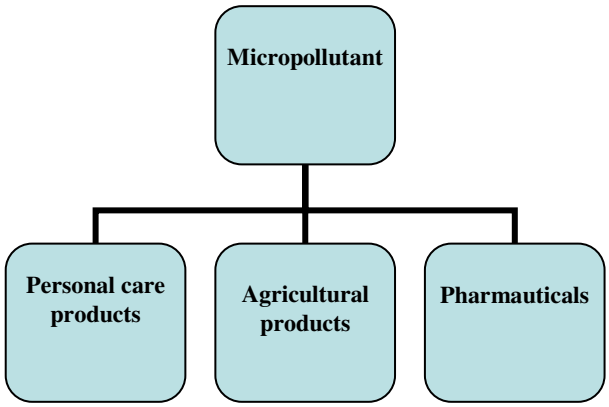

Fig.No.01: Major sources of micro pollutants

5. Conclusion

For removal of micro pollutants wastewater treatment need to add an additional barrier with advanced water treatment technologies. Micro pollutants are found in wastewater in very small amount which cannot be analyzed by normal tests so therefore for identification of micro pollutants High performance liquid chromatography is used. Micro pollutants such as pharmaceuticals, personal care products and other chemicals in wastewater are not get completely removed. Therefore it is a subject to intensive research on how to remove these compounds from wastewater. It is time for people to pay attention to the issue of micro pollutants emission and even to designing to new treatment method.

6. References

[1] Webber Wei-Po Lai, Yen-Ching Lin, Hsin-Hsin Tung, Shang-Lien Lo, Angela Yu-Chen Lin" Occurrence of pharmaceuticals and per fluorinated compounds and Evaluation of the availability of reclaimed water in Kinmen" Emerging Contaminants 2 (2016) 135e144.

[2] Lena Westhof a, Stephan Koster b, Margrit Reich' occurrence of micro pollutants in the wastewater streams of cruise Ships' Science Direct, Emerging Contaminants 2 (2016) 178e184.

[3] Edward Archer, Bruce Petrie b, Barbara Kasprzyk-Hordern b, Gideon M. Wolfaard' The fate of pharmaceuticals and personal care products (PPCPs), endocrine disrupting contaminants (EDCs), metabolites and illicit drugs in a WWTW and environmental waters" Chemosphere 174 (2017) 437e446.

[4] Rui Dong ,Gang Yu, Yuntao Guan , Bin Wang , Jun Huang "Occurrence and discharge of pharmaceuticals and personal care products in dewatered sludge from WWTPs in Beijing and Shenzhen" Emerging Contaminants,2-2016-1/6.

[5] Victoria Osorio, Aitor Larranaga, Jaume Acena, Sandra Perez" Concentration and risk of pharmaceuticals in freshwater systems are related to the population density and the livestock units in Iberian Rivers" Science of the Total Environment-5-40(2016)267-277.

[6] Bruce Petrie, Benjamin D. Smith, Jane Youdan, Ruth Barden "Multi-residue determination of micro pollutants in Phragmites.

[7]Lena Westh of, Stephan Koster, Margrit Reich" Occurrence of micro pollutants in the wastewater streams of cruise ships" Emerging Contaminants" (2016)178-184.

[8]Anekwe Jennifer Ebele, Mohamed Abou- Elwafa Abdallah, Stuart Harrad" Pharmaceuticals and personal care products (PPCPs) in the freshwater aquatic environment" Emerging Contaminants, 2016-1-17.