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Ecosystem Exploitation: Environment, Human and Animal Health Risk

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Short Communication

Urbanization is principally associated with industrialization that increases the settlement area and creates industrial zones [1]. An industrial process plays a major role in the degradation of environmental health. Every developing country is often seen of having a high percentage of heavily polluting activities and areas within its industrial sector. In developing countries, a double environmental effect is occurring. The old environmental problems, such as deforestation and soil degradation, remain largely unsolved. At the same time, new problems linked to industrialization are emerging, such as rising greenhouse gas emissions, air and water pollution, and growing volumes of waste production leading to severe ecological and human health risk [2].

Many developing countries still practice the open dumping of municipal wastes. Such practices have imposed a severe health as well as environmental threat to the nearby residents within the urban areas. It has been reported that various diseases like malaria, chest pains, diarrhea and cholera have affected both nearby and far residents from the location of the waste dumpsites [3]. Population increase has dramatically raised the production of wastes of all kinds [4]. Besides, the unplanned development of small and medium cities/towns leads to accumulation of municipal solid wastes including toxic disposals, which are increasingly finding their way into the very core of the nearby water bodies significantly affecting the wetland dependent biota as well as nearby environment [5].

Pharmaceuticals are the complex mixture of medicinal products that may be introduced into the environment after use in patients by sewage effluent pathways [6]. The consumption of pharmaceuticals is increasing gradually in both hospitals and households. Hospital patients are regularly administered by relatively high doses of drugs, therefore, hospital wastewater consistently contributes to the magnitude of environmental risk posed by pharmaceuticals originating from hospitals which are rarely accounted [7]. Of the total amount of waste generated by health-care activities globally, about 75-90% is general, non-hazardous waste comparable to domestic waste. The remaining 10-25% is considered hazardous material that may be infectious, toxic or radioactive [8]. At the global level, nearly 64 percent of healthcare institutions are reported to have unsatisfactory Bio-Medical Waste Management facilities. India is one of the first countries to implement Bio-Medical Waste Management rules. The Ministry of Environment and Forests, Govt. of India notified the "Bio-medical Waste Management and Handling Rules", in July 1998 (later amended in 2003 and 2011) under the Environment Protection Act, 1986. Even after a decade of its implementation, most Indian hospitals are yet to achieve the desired standards [9].

Studies confirmed the presence of trace concentration of pharmaceuticals in the biomedical and municipal sewage wastewater. Human used pharmaceuticals are introduced into the environment from domestic households and from hospitals via urine and feces and by improper disposal. A low concentration of pharmaceuticals appears in the natural environment because only partial amount is eliminated in the wastewater treatment plant while residue amount reaches the ground water [10]. There is a report on the presence of microbial resistance to antibiotics and heavy metals in the environment. Due to the frequent use of pharmaceuticals and heavy metals by humans in medical and industrial practices respectively and their release into the environment their contribution has increased the global pool of resistant microorganisms significantly posing a serious threat to the environmental health and its biodiversity [11,12].

Also, a report establishes that the aquatic environment especially is contaminated by the antimicrobial resistant microbes due to constant introduction of biomedical and municipal wastewater from various source of origin. Evidence on anuran limb deformities due to aquatic predators and microbial parasitic infections has already been reported [13]. Although a sewage treatment plant can reduce the antimicrobial resistance stain, a selective elimination is not possible [14]. According to a report incinerator also contributes a wide range of pollutants which leads to health deterioration and environmental degradation. The major impact on health is the occurrence of cancer and respiratory symptoms, also congenital abnormalities, hormonal defects and increase in sex ratio are most frequently observed.

Environmental threats such as global warming, acidification, photochemical ozone or smog formation, eutrophication is accounted. More attention should be given to the analysis and replacement of hazardous contaminants from hospital waste, and to their elimination in wastewater treatment plant. It is important to investigate ecotoxic risks linked to various emissions and the production of metabolites, especially during transit inside wastewater treatment plant [15,16]. Therefore, evaluating the risk assessment of these pharmaceuticals to aquatic life, human health and the ecosystems that receive them is very important to generate the database information as little information is available on biomedical waste toxicity.

Environmental contaminants generated from any source are the substances, when accidentally or deliberately introduced into the environment, have the potential to harm the health of the environment and its biodiversity. Declining biodiversity is a major and ongoing environmental concern among the experts throughout the globe. Although aquatic biodiversity has been declining continually, species extinction rates have gone from about one species per year over the past 600 million years to hundreds of species per year in recent times. Since, aquatic organisms serve as an important indicator of water quality and ecosystem health [17] the toxicological evaluation of sewage waste and early-warning responses at the sub-cellular level is useful for the protection of aquatic biodiversity as well as prevention of long-term ecological and environmental damages.

Exploitation of natural habitat and untreated waste dumping is definitely the biggest challenge to restore the environment and protect human and animal health. Hence, there is an urgent need for introduction of a proper management system and also to undertake some necessary action plan from both government and private sectors before disposing of the hospitals, household, pharmaceuticals and industrial wastes in the environment as these are directly linked to human as well as animal health and our precious environment.

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Conflict of Interest

None

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