Chapter 4
White Pollution:
A Hazard to Environment and Sustainable Approach to Its Management

Mehvish Hameed
National Institute of Technology, India

Rouf Ahmad Bhat
Sher-e-Kashmir University of Agricultural Sciences and Technology, India

Dig Vijay Singh
Sher-e-Kashmir University of Agricultural Sciences and Technology, India

Mohammad Aneesul Mehmood
Cluster University Srinagar, India

ABSTRACT

Plastic derived from the petrochemical industry with a high molecular weight constitutes about 9-13% of total solid waste. Since the industrial revolution, the use of plastic has increased manifold without improving its adequate management as a waste. Most of the plastic waste produced in the world is mainly from packaging industry followed by building and construction. Plastic is a non-degradable deadly pollutant to degrade environmental quality and are known to remain in water and soil for years without making any change in their structure. Due to enormous generation, open burning of plastic is also preferred due to the lack of resource in the developing countries thus releasing toxic gases thereby causing air pollution. Plastic disturbs the balance of the environment by acting as physical barrier leading to the drainage of the drains, degrading soil properties, and are often ingested by the organisms ultimately leading to their death. Thus, it becomes more important to manage the plastic pollution keeping in view its detrimental impacts on the environment.

DOI: 10.4018/978-1-7998-0031-6.ch004

INTRODUCTION

Population explosion as well as urbanization leads to the enormous quantity of waste generation (Camill, 2010; Bhat et al., 2014; Bhat et al., 2018) and this waste generated is known as municipal solid waste (Kumar et al., 2016). The availability of the different alternative choices of the product has resulted in the short life span of the single product. Apart from that, the new trend is the use of disposable products which are produced, used and disposed easily (Ahmed and Ali, 2004). The generation of waste is directly related to the economic background (Bhat et al., 2012) as the economically sound families produce more quantity of the waste compared to poor families (Ambulkar & Shekdar, 2004). The waste is generated in such a large quantity if it is allowed to be disposed of in landfill than whole earth will soon get covered with waste (Buenrostro & Bocco, 2003) and if the waste is treated by incineration, toxic pollutant are released which will ultimately destroy the climate of the earth (Kumar et al., 2009). Plastic waste constitutes the major proportion of the solid waste (Sangawar & Deshmukh, 2012) thus it became important to look for good management techniques like recycling which help to minimize the quantity of the waste (Zmak & Hartmann, 2017).

The word 'plastic' comes from the Greek word 'plasticos', which means on heating, changes the shape and form a totally different product. Plastic invented a century ago (Baekeland, 1909) is one of the widely used human made product and can be found in every nook and corner of the country. Plastic has found its use in every field of the life and each person on an average produce 52 kg of plastic waste annually (Jambeck et al., 2015). Geologists are now considering a plastic horizon in the world's soils and sediments as one of the key indicators marking the current geological epoch, the anthropocene (Waterset al., 2016). 'Polymers' the generic term for all kinds of plastic materials, produced mostly from the petro industry is a giant molecule of the carbon-based organic compounds (Ismail & Hashmi, 2008). The use of polymers in alloys and blends has increased its uses for the production of different kinds of products as blending of polymers increase performance as well as life of the product (Gupta et al., 1998). Plastics waste is mainly produced from the packaging of the material, daily use as carry bags and discarded items (Staniskis, 2005). Plastic are having extensive industrial applications (Heskett et al., 2012) because of their cheapness, strength, durability and many other properties which make them one of the most commonly used products on the earth (Andrady, 2011). The single largest consumer is the packaging industry which uses more than 1/3rd of the plastic (Schmidt et al., 2017). The good quantity (0.2- 0.3%) of the plastic waste ultimately reach to the oceans thereby leads to the degradation of the ocean ecosystem (Andrady & Neal, 2009). The products produced from plastic are the major part of human life and due to their increased use, the production on global level has reached more than 150 million tonnes annually (Rillig, 2012). The comparison of per capita plastic consumption with the rest of the word is presented in Table 1.

Further, as per the data from World Economic Forum, the quantity of waste and green house gases generation increases with the production and consumption of the plastic (Wohlleben & Neubauer, 2016)