# Effects of Micro- and Nano-plastics Wastes on Human Health

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## Abstract

Every element of daily life, such as technology, health and therapeutics, as well as household items, is impacted by the plastics. After its single use, most of the people discard the majority of these used plastics, which would cause serious major environmental threat. The breakdown of these plastics in such a large number from micro-to-nanosizes has raised much concern about how hazardous these plastics are to the environment and the individuals. Although a number of researchers have been published extensively on the environmental implications of micro and nano-plastics, there has been little research on their effects on human health at the sub-cellular or molecular level. This chapter deals with the manufacturing of plastics, their behaviour, degradation, levels of toxicity and pollution in the environment, and the possible health impacts on humans, especially in the days of Covid-19 and provide possible solutions to this ever increasing plastics wastes mitigation. We will discuss on the impact of these micro- and nano-plastics on human health such as central nervous system, kidney, digestive and excretory system; respiratory system; placental barrier; skin, etc. This chapter will also discuss about the plastics wastes generated from the pandemic that the world is facing today.

**Keywords**: Plastics; Micro- and nanoplastics; Toxicity; Health impacts; Environmental pollution



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## Biography

*Dr. Tejraj M. Aminabhavi* is presently the Emeritus Professor, Department of Chemistry Karnatak University, Dharwad, India continuing his research activities in Pharmaceutical Engineering Department. He completed his PhD from the University of Texas at Austin in 1979 in the field of polymer science and was a post doctoral associate at Clarkson University, Potsdam, New York during 1980-1982. He taught polymer science for 37 years at Karnatak University, Dharwad, India in addition to being the founder director of center of excellence in polymer science (2002-2007). During 2007-2012, he worked as a scientific advisor to Reliance Life Sciences in Mumbai, India. Dr. Aminabhavi has a distinct career of having published 850 research papers, 70 review articles, a text book published by Wiley in 2002, an edited book by Elsevier in 2020 and 3 US Patents in membrane science area applied to water purification. His research interests are in the area of pharmaceutics, nanoparticulate drug delivery systems, and hydrogels in drug delivery. He has done research in brain delivery applications of polymeric nanoparticles, hydrogels for insulin therapy, and anticancer drug delivery systems. Professor Aminabhavi is the recipient of two international awards one from Iran (2009), QIA Laureate from the President of Iran and Nikkei Asia Award from Japan (2013). His research publications received high citations up to 43,000 with an h-index of 100. Aminabhavi has been the visiting scientist to University of Texas at Dallas, Lamar University, Texas, UT Southwestern Medical Center at Dallas, Texas State University, San Marcos, and Cambridge University (UK) in addition to many other universities in China, France, Taiwan and Korea. He is serving as the editor in Chemical Engineering Journal (membrane section), Editor in chief of Materials Science for Energy Technologies and Sensors International.

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