



Black Carbon Soot: Impact on Human Health and Other Systems

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ABSTRACT: Soots obtained from various sources are formed due to incomplete combustion of fossil fuels, bio-fuel, and biomass. It is emitted in both anthropogenic and naturally occurring partially burned emissions. Carbon soot (CS) consists of fine carbon particles and adsorbed components on their surface. It is formed from the aliphatic and aromatic compounds which undergo certain reactions such as pyrolysis and oxidation. The Black Carbon of soot consists of pure carbon linked in several forms. These particles can have different types of morphologies, but the basic unit of it is agglomerated carbon particle which are, rough and spherical within the size range 0.01 to 0.05 μm . Various reactions like condensations, fragmentation, of aliphatic and aromatic hydrocarbons, at high temperatures in the presence of adequate oxygen with the C/H ratio at-least or above the threshold value of 1-2 to form poly aromatic hydrocarbons (PAHs) contributes towards their formation and during this soot nuclei grow to form larger soot particles. Various biological systems including human beings are badly affected if exposed to CS. Smaller particles (sizes $1/30^{\text{th}}$ of human hair) can easily enter the respiratory tract and cause diseases like: cancer and asthma. They are also the second largest contributor for global warming and acid rains causing a variety of detrimental environmental impacts on agriculture, forests, animal ecosystems and human made structures. The present study describes the impact of carbon soot on human health and other ecological systems. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

Conference Proceedings: International Conference on Life Sciences, Informatics, Food and Environment; August 29-30, 2014

Indo Global Journal of Pharmaceutical Sciences(ISSN 2249 1023 ; CODEN- IGJPAI; NLM ID: 101610675) indexed and abstracted in EMBASE(Elsevier), SCIRUS(Elsevier),CABI, CAB Abstracts, Chemical Abstract Services(CAS), American Chemical Society(ACS), Index Copernicus, EBSCO, DOAJ, Google Scholar and many more. For further details, visit <http://iglobaljournal.com>