

The COVID-19 Pandemic from an Environmental Perspective – An Appeal to Health-care Professionals for Awareness Activities in a Concerted Effort with Environmentalists

Dear Editor,

Maturing from teenage into being in its twenties; the 21st century; in the year 2020, seems to have goals of being a “change-maker” almost akin to a young entrepreneur; and turning completely rebellious; as if with a plan; almost as if to reiterate, that life cannot not be the same anymore and a “new normal” would have to be adopted by all strata of society; at least till we, as a civilization is not able to overcome this pandemic through steps like mass vaccination campaigns; whenever, effective vaccines are available. Purely from an environmental perspective; while the initial period of the pandemic and the consequent lockdown saw something akin to an environmental revival with the air getting cleaner; the rivers getting much less polluted and vivid pictures of wild animals roaming fearlessly on city streets; it became difficult for us humans; to get out of our homes for simple social activities without feeling a fear of getting infected by the potentially fatal virus; leading to the wide scale use of face masks among other prescribed COVID appropriate behavior. At the same time, our health-care professionals faced many never before imagined challenges; one of them being the need to use personal protective equipment (PPE) to protect themselves and also their families from hospital-acquired infections. The PPE industry saw a massive 56 times growth; and matured from zero to the production of nearly 4.5 lakh PPE kits every day.^[1] Thus, while there is now no scarcity of PPE; an important aspect because of use of disposable PPE especially masks is an enormous amount of plastic waste that is being generated. We, wholeheartedly, acknowledge all our health care workers and understand the emphatic need to safeguard them from COVID-19 with appropriate PPE. But at the same time, it is observed many times; that citizens at large, that is, our general population use PPE like disposable N95 respirators and disposable nitrile gloves; which are actually meant for health care workers. Such use, followed by inappropriate disposal, that is, disposal without waste segregation from household waste; leads to such biomedical waste being treated as the regular solid waste destined for landfills; which is a matter of concern to environmentalists already highlighted by us.^[2] Further, the onus of segregation of such inappropriately disposed waste and the risk of infection from such waste comes on our Safai Sevaks [Figure 1].

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Herein, we make an earnest appeal through you; to specifically and earnestly request our general physicians and specialist consultants working in our hospitals; to educate and create awareness among their patients and the attendants; about using appropriate PPE and its disposal and also help educating and creating awareness among general public at large. One such small activity could be; when patients with completely non-respiratory symptoms; visit health-care facilities wearing N95 respirators (especially those with expiratory valves which are known to offer minimum to no protection to the individual interacting with its user). At such times, such patients and their attendants can be made aware of the presence of more cost effective and environment-friendly options like reusable and also biodegradable engineered filtration layer masks; which are almost at par with N95 respirators like the indigenously made masks from IIT, Delhi.^[3] Similarly, the Defense Institute of Advanced Technology Pune, India, has developed a cotton mask using a herbal extract obtained from neem oil, turmeric, tulsi (holy basil), ajwain (carom seeds), black pepper, gum arabic, clove, sandalwood, and saffron; which has been used in the non-woven nanofiber of this three-layered biodegradable mask, named “pavitrapati.” Such awareness will not only ensure the availability of appropriate PPE to our health care workers but also go a long way in maintaining a vital ecological balance; while balancing the safety needs of our citizens and healthcare workers. Even outside our country, such awareness has led to a Manila-based “Philippine fiber agency” making biodegradable masks



Figure 1: A Safai Sevak in Mumbai after having segregated biomedical waste – disposable masks from the rest of household waste (Picture: Sharang Ambadkar)

which are made from fiber from a relative of the banana tree called as Abaca. A preliminary study by the Philippine Department of Science and Technology showed abaca paper to be more water resistant than a commercial N-95 mask and to have pore sizes within the United States Centers for Disease Control and Prevention's recommended range to filter hazardous particles and is also decomposable.^[4] Furthermore; as highlighted by us previously;^[2] single-use disposable PPE such as face masks, N95 respirators, and gloves when used by citizens need to be appropriately disposed by segregation

at source before throwing them into the bin. These PPE can/ should be wrapped in newspapers or paper bags and marked as biomedical waste with a red highlighter before disposal so that the waste segregation personnel would easily spot such waste and appropriately segregate them easily. Such awareness created by health care workers and also innovations like the one which potentially turns PPE waste into economical bricks; using 52% of shredded PPE material, 45% paper sludge, and 3% binding agent formulated gum base^[5] are very inspiring in these times and could possibly help conserve environment and help save humanity on planet earth.

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