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Sources Release of Nanoparticles During Construction Activities that could Potentially Pollute the Surrounding Air

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Construction of buildings, infrastructure and industrial facilities are constantly happening around us, irrespective of the country that we live in. Construction activities can range from site clearing, demolishing, excavation, recycling of construction debris, assembling/removal of formwork, concreting and architectural works such as painting, partition works and tiling works. When bulk materials are broken down, nano-sized particles can be emitted and released into the air from any of these activities into the environment unintentionally. In order to reuse the construction and demolition wastes, they are broken down by crushing process which releases reactive nano aluminosilicates. Studies have indicated that 95% of the particle concentration during the crushing process are nanoparticles (Kumar & Morawska, 2014). It has been found that the average nanoparticle concentration can be about 10-11 times higher than the background particle concentration during demolition works (Kumar et al., 2012). An indoor experiment to study the release of nanoparticles during 20 different types of refurbishment works revealed that the average particle concentration went up by about 40% compared to the background levels when such activities were carried out (Azarmi et al., 2015). While at one hand, there is a potential for nanoparticles to be released during the various construction activities, on the other hand, nanoparticles like nanotubes, nano-titanium dioxide (Anu Mary Ealia & Saravanakumar, 2017) and nanosilica are now being extensively used in the process of concrete construction to enhance the concrete's flexibility, durability and viscosity (Díaz-Soler et al., 2016). Release of such nanoparticles into the surrounding air during such processes is a field that is yet to be researched.

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