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Researchers at IIT-G suggest novel method for managing biomedical waste

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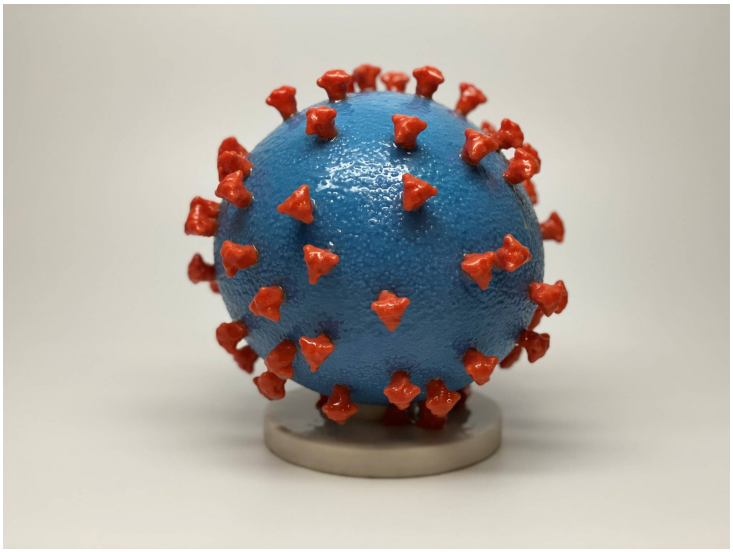
Research presents a promising solution to the increasing challenge of managing pathogenic waste post-COVID-19 pandemic



Researchers at the Indian Institute of Technology Guwahati (IIT-G) have studied the fate and transport of virus through compacted natural clays for pathogenic waste disposal.

The study, published in the American Chemical Society journal, *Langmuir*, presents a promising solution to the increasing challenge of managing pathogenic waste post-COVID-19 pandemic.

Biomedical waste (BMW) that contains viruses poses significant risks to human health, food safety, animal health, and the environment. Recent COVID-19 pandemic created an emergency and produced a huge quantity of potentially virulent waste from the hospitals and isolation facilities.

The COVID-19 waste was treated similar to the municipal solid waste (MSW) during this pandemic and was disposed of in the existing MSW landfills. However, the geosynthetic landfill liners become ineffective in the presence of landfill leachate containing high-concentration salt solutions thereby the infectious viral pathogen waste can then easily escape from such facilities to potentially cause secondary infections in humans. Thus, highlighting the urgent need for proper management and safe disposal protocols.

To study the behavior of viruses in clays, the researchers used a safe virus called the Newcastle disease virus (NDV) as a substitute for the coronavirus. They conducted experiments where they mixed different amounts of the virus with bentonite and kaolin clays, allowing them to interact for varying durations. Also, through-diffusion tests are conducted with the viruses through compacted clays. The results demonstrated that both types of clays were highly effective in reducing the concentration of the virus in the source.