

# Screen-printed pesticide detection

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Researchers have developed an innovative method for detecting harmful organophosphorus (OP) chemicals, presenting a significant advancement in environmental monitoring for pesticide contaminants. They provide details in the *International Journal of Intelligent Enterprise*.

With the escalating impact of agriculture and industrialization on the environment, there is an increasing need for effective detection of environmental contaminants. Sumit Mor, Saveena Solanki, and Vikas Dhull of the Maharshi Dayanand University in Haryana, India, have used an interesting approach to creating [sensors](#) with a specific focus on monitoring these compounds. The team synthesized nanoparticles and modified a screen-printed gold electrode by layering a mixture of zinc oxide nanoparticles (ZnO NPs) and [single-walled carbon nanotubes](#) (c-SWCNTs) to form ZnO NPs/c-SWCNTs/SPAuE.

The team adds that the integration of the enzyme acetylcholinesterase, which is affected by organophosphorus compounds on to the modified electrode, along with the application of cellulose acetate to prevent enzyme leaching and electrode fouling, gave them a highly efficient biosensor for detecting organophosphorus compounds in a range of samples. The researchers demonstrated rapid response times of less than 14 seconds. The sensor is reusable and remains stable in storage thanks to the protective cellulose acetate layer.

The practical implications of this strategy could go beyond [environmental monitoring](#). The biosensor could be used for on-site analysis. It could also be adapted to detecting other contaminants from the food and textiles industries, and even in medical diagnostics.

As the [world population](#) grows, its impact on the environment intensifies. This research represents a step towards improving

environmental monitoring, which would improve our management and control of these important chemicals to safeguard the environment and vulnerable ecosystems as well as [human health](#).

**More information:** Sumit Mor et al, An intelligent pesticide screening strategy using screen-printing technology, *International Journal of Intelligent Enterprise* (2023). [DOI: 10.1504/IJIE.2024.135442](https://doi.org/10.1504/IJIE.2024.135442)

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