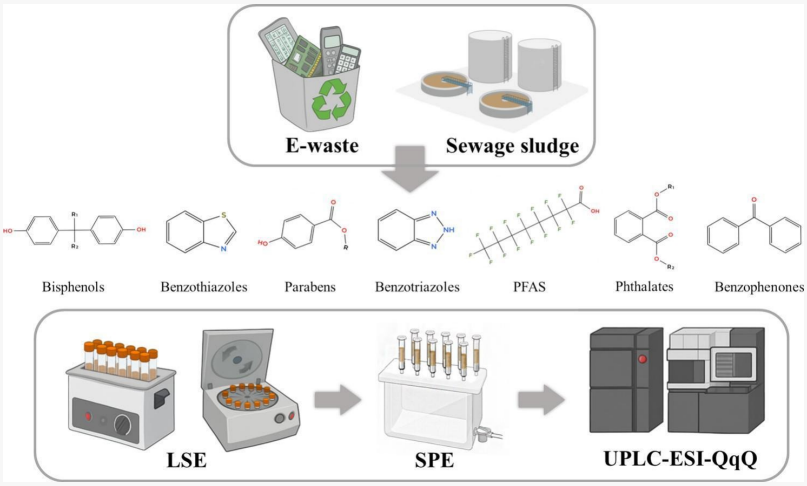
# New method detects hazardous chemicals in key circular economy matrices in Norway

GA, UNITED STATES, May 26, 2025 /EINPresswire.com/ -- Researchers have developed a novel method to detect 75 emerging contaminants in sewage sludge and e-waste (WEEE), identifying several chemical classes never before reported in e-waste. The findings support safer waste management and circular economy practices.



This visual summarizes the two complex waste matrices investigated (sewage sludge and e-waste), the seven targeted chemical families and the analytical methodology used.

A team of European researchers has developed a method to identify hazardous chemicals in two of the most dominant waste types: sewage sludge and electronic waste (WEEE). The new technique, based on liquid-solid extraction and advanced mass spectrometry, identified 75 emerging contaminants across seven chemical classes—including substances never before detected in WEEE.

“The contaminants we identified—some at surprisingly high levels—could pose long-term risks if not properly managed,” says corresponding of the study Dr Alexandros G. Asimakopoulos from the Norwegian University of Science and Technology (NTNU).

The team uncovered widespread presence of toxic compounds like PFAS, bisphenols, and phthalates—highlighting risks to both human and environmental health. Notably, Bisphenol A, an endocrine-disrupting compound, was found at concentrations exceeding 40 µg/g in certain e-waste plastic samples, raising concerns over recycled materials entering the consumer market, while anaerobic digestion in wastewater treatment plants was shown to remove up to 89% of contaminant concentrations from sewage sludge.

Besides shedding light on under-researched pollutants in e-waste, the study addresses regulatory and safety gaps in managing waste streams. According to lead author Dr Daniel Gutiérrez-Martín, the new findings, published in Environmental Chemistry and Ecotoxicology, can

help design better monitoring tools and inform treatment strategies in line with circular economy goals.

“Our methodology also demonstrated reliable performance despite the chemical complexity of the materials, opening possibilities for extending the approach to other problematic waste types like food packaging or industrial sludge,” adds Gutiérrez-Martín.

The study, supported by the Norwegian Research Council through the SLUDGEFFECT project, comes at a critical time when global e-waste generation is rising rapidly and effective monitoring tools are essential for sustainable waste reuse.

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