

Drones will help investigators tackle chemical, biological and nuclear attacks

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Researchers are making use of unarmed vehicles and robots to gather information and samples from crime or disaster scenes. Their initiative

will help save lives.

Risks that involve chemical, biological, radiological, nuclear and explosive (CBRNe) materials are among major safety concerns. Accidental or targeted, events caused by such agents could be hazardous to humans. They could also hinder and endanger any subsequent forensic investigations.

To address the challenges involved in examining such incidents, researchers from the EU-funded project ROCSAFE are developing strategies and technologies that will automate the collection of evidence related to CBRNe scenes. This is done by using remotely controlled robotic aerial vehicles (RAVs) and robotic ground vehicles (RGVs).

According to a news report in Ireland's 'TheJournal.ie', a research team has recently conducted a test to evaluate how first responders, emergency workers and forensic specialists would react to 'dirty bomb'-type scenarios. Dirty bombs are weapons that combine radioactive waste materials with conventional explosives. They could contaminate an area and cause loss of life, injury, property damage, social and economic disruption, or environmental degradation.

Robotic air and ground vehicles

As explained on the ROCSAFE project website, the overall goal of the project is to fundamentally change how CBRNe events are assessed, "in order to ensure the safety of crime scene investigators by reducing the need for them to enter high-risk scenes when they have to determine the nature of threats and gather forensics."

First, RAVs – which have cameras and miniaturised sensor systems for radiological, nuclear, chemical and biological threats – will assess the scene. All images and data will be streamed to a command centre using

central decision management software. The data will be analysed and displayed "on a sophisticated and intuitive interface with maps and video, showing results of analytics and giving readings geographical context. This will enable the [scene](#) commander to assess the nature of threats, develop an Action Plan and an Evidence Plan, supported as needed by the Central Decision Management."

After this process, RGVs will roll in to collect forensic material or evidence, with automatically optimised routes to avoid hazards. "Thus, ROCSAFE will ensure that CBRNe scenes are assessed more rapidly and thoroughly than is currently possible, and that forensic evidence is collected in a manner that stands up in court, without putting personnel at risk." It adds that the RAVs and RGVs are designed to endure rain, wind, and challenging ground surfaces and obstacles.

The ongoing ROCSAFE (Remotely Operated CBRNe Scene Assessment Forensic Examination) project is led by the National University of Ireland Galway and brings together various experts from the private and public sectors, including the Irish Defence Forces.

Quoted in the magazine *Horizon*, Prof. Michael Madden from the National University of Ireland Galway and project coordinator, said: "We will send robots into harm's way instead of humans. The goal is to improve the safety of [crime scene investigators](#)." He added: "These are rare events. This is nobody's everyday job."

Provided by CORDIS

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