



## Securing UK borders

LGC scientists have provided UK national security stakeholders with an improved understanding of the technologies used to detect drugs and explosives. This will help to disrupt the UK's £3.7 billion illicit drug market and contribute to efforts to safeguard the UK from terrorist attacks.



Department for  
Business, Energy  
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## The requirement

The 2015 UK Government National Security Risk Assessment identified the “increasing threat posed by terrorism” as one of the four main challenges that will be driving UK security priorities over the next decade.

To protect our borders, portable or transportable technologies are widely used for ‘point-of-test’ analyses. These generate an instant result on-site without the need to send a sample to a laboratory for analysis. For passenger and luggage screening, ion mobility spectrometry (IMS) is well established and is used regularly at all major airports and shipping ports to detect explosives and drugs. It has low detection limits, is small, robust and low-cost, and produces rapid real-time results. However, the National Security Strategy recognises that developments in science and technology offer benefits in terms of identifying current and future risks at the earliest possible opportunity.

To extend the range of tools available to detect potential threats at border crossings, further technologies are required to complement IMS. One such option is transportable mass spectrometry. Recent developments have overcome previous barriers to industry adoption – instrumentation is smaller, cheaper and more efficient, no longer requiring extensive laboratory sample preparation – enabling in-field use. It is now appropriate to evaluate the measurement performance of these technologies to further improve the detection of drugs and explosives.

## The solution

LGC scientists have investigated the measurement challenges associated with the latest technologies (IMS and transportable mass spectrometry) available for use in the field for counter-terrorism activities and to tackle drug crime. This knowledge has been shared with national security stakeholders to support the implementation of improved policy and procedures and ensure high accuracy screening for drugs and explosives.

## The impact

In 2004 alone there were over 10,000 explosives detectors based on IMS used at security checkpoints in airports globally, and over 50,000 handheld IMS devices used by the armed forces for chemical weapons monitoring worldwide. In the UK, national police forces and the UK Border Force currently use 100-200 IMS units specifically for drug detection.

The latest Home Office report (2013) conservatively estimates the social and economic cost of the supply of illegal drugs in the UK at £10.7 billion each year. Disrupting this market is a key priority for the UK Border Force.

The work done by LGC to improve measurement accuracy of current equipment and ensure appropriate adoption of novel technologies will improve the detection of explosives and drugs at UK borders and will help safeguard the UK from further terrorist attacks. This will protect lives, property and infrastructure, and avoid disruption to businesses and travel, while also improving confidence in public safety.

A collaborator from the Home Office Centre for Applied Science & Technology said:

*“LGC is very well-placed to help improve the understanding of IMS and its use in detecting illicit drugs. Their considerable knowledge of analytical instrumentation coupled with the high quality of their work gives us greater confidence in our deployment of IMS technology for drug detection on the person, on vehicles, and on currency notes. This confidence is essential for the integrity of evidence for intelligence and forensic purposes.”*

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