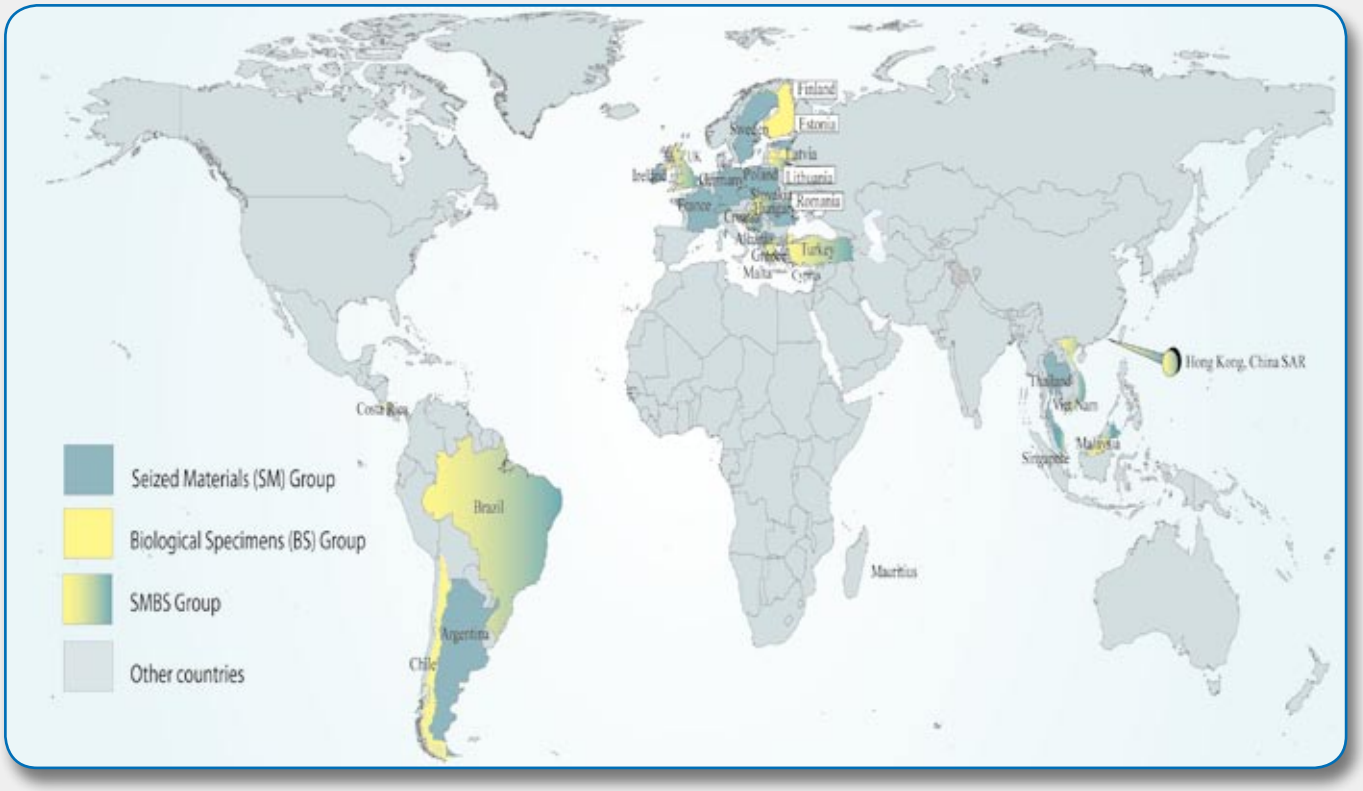
UNODC
United Nations Office on Drugs and Crime

ICE 2007

International Collaborative Exercises

Drug Analysis

Member States participating in the 2007 round of ICE



An introduction to ICE

The UNODC's International Collaborative Exercises (ICE), administered by the Laboratory and Scientific Section (LSS), aims to allow laboratories to continuously monitor their performance, an essential element for implementation of quality management systems and ultimately accreditation. It provides a worldwide overview of performance and capacities of forensic laboratories and enables tailored technical support and assistance.

Drug testing laboratories (DTLs) participate in UNODC's ICE programme and other external proficiency tests to ensure that the users of their services have confidence in their ability to generate appropriate results. UNODC's ICE currently addresses the ability of DTLs to identify and quantitate drugs of abuse in seized samples and in biological fluids. The latter category is designed to mimic the urine of drug users. The exercise is offered bi-annually and is based on a *fit-for-purpose* concept, allowing the use of a range of analytical techniques to obtain the required results.

For example, the techniques employed by DTLs in this round ranged from basic methods such as thin layer chromatography (TLC) through ultra violet (UV) spectrophotometry to advanced techniques such as high performance liquid chromatography (HPLC) and gas chromatography-mass spectrometry (GC-MS).

Participating laboratories provide, in addition to information on the techniques/analyses performed, valuable comments on new forms of drugs and combinations of substances that have been encountered in their respective countries. The exercise attracts laboratories from both developed and developing countries and thus provides a good platform for the latter to assess their performance on a truly global scale.

The ICE programme provides feedback on results to each individual laboratory in the form of an *Evaluation Report*. In addition, mentoring and expert advice is provided to participants who do not obtain the expected results. A Standing Panel of Forensic Experts oversees the implementation of this exercise and reviews the summary report.

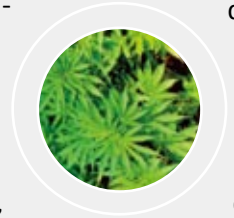
ICE 2007

In August 2007, invitations for participation were sent to the laboratories. A set of four test samples of seized materials (SM1, SM2, SM3 and SM4) and/or biological specimens (BS1, BS2, BS3 and BS4), was distributed to the participating laboratories in October/November 2007 with a deadline of mid January 2008 for submission of reports. A total of 56 laboratories from 29 Member States (see map) completed the exercise. The results reported in the *Analytical Results Form* by the laboratories participating in the 2007 ICE round have been evaluated, and the outcome disseminated to individual laboratories in the *Evaluation Report*.

The current report provides an overview of the results received from the participating laboratories, the techniques used for screening, identification and quantification and information on trends in participating laboratories.

Test samples

The ICE programme provides for analysis of controlled substances in seized materials and in biological fluids (urine), with the latter extending to metabolites of the drug substances. Laboratories were asked to report in the *Analytical Results Form* the presence/absence of only those substances included in a menu provided by the LSS. Participants could, in addition to the principal component, report all substances identified in the test samples that were not included in the ICE menu. Quantification of drug substances is recommended but not mandatory in this exercise.



The controlled substances analysed in 2007 belonged to four drug classes; cannabinoids, opiates, amphetamine-type stimulants and cocaine. In addition to the main compounds, there were impurities/cutting agents (e.g. cannabinol in SM1; acetylcodeine, monoacetylmorphine and noscapine in SM2; and caffeine in SM4) in the seized samples.

Performance data

Out of the total number of 56 laboratories that completed the exercise, 32 laboratories participated in the SM group, 10 in the BS group and 14 in both SM and BS groups. From the 46 sets of SM samples and 24 sets of BS test samples analyzed, quantitative data were reported on 67% and 42% of samples respectively. Although quantification is only performed on voluntary basis, 64% of the laboratories (36 laboratories) provided quantitative results.

For the SM samples, 93% (43 laboratories) of participants correctly identified the major components of all 4 sets of seized samples. In addition, 89 % identified the additional substances present in the samples, including adulterants, as well as substances not included in the ICE menu. All participants correctly identified cocaine (SM3). Twelve laboratories did not identify THC in SM1 and this has subsequently been traced to the low levels of THC in the samples dispatched to the laboratories. However, eleven of the twelve laboratories reported a positive test for cannabinol (a degradation product of THC) in SM1. With regard to the sample containing heroin (SM2), only one laboratory failed to provide the right result. For BS samples, 22 out the 24 participating laboratories identified morphine, methamphetamine and tetrahydrocannabinol in urine correctly while all the laboratories noted correctly the absence of any controlled substances in BS3.

Trends in analytical methodology

As in previous rounds, the programme attracted the participation of laboratories applying a wide range of techniques with different degrees of sophistication. While GC-MS and GC-FID were the predominant methods employed in this round, a demonstration of the programme's *fit-for-purpose* concept was the positive identification achieved with low-cost robust techniques such as thin layer chromatography (TLC).

Emerging drug trends

A number of ICE participating laboratories in Europe and Latin America have reported an increase in analysis of samples containing piperazines. *m*-Chlorophenylpiperazine (*m*CPP) in tablet form is the most common analogue reported in Europe and benzylpiperazine and trifluromethylphenylpiperazine (TFMPP) have both been seen on the market.

The ATS-like effects of this new class of designer drugs – the piperazines, have been known since the 1970s. Benzylpiperazine (BZP) is the most common of these drugs and their chemical structures are similar to those of the amphetamines and ecstasy. The piperazines are commonly sold as party pills in the form of tablets, capsules, or powders. They have also been reported to be present in tablets sold as ecstasy or amphetamine.

In addition, unusual drug combinations reported in 2007 by ICE participants included opium + cannabis and cocaine + MDMA. In terms of trafficking trends, one participating laboratory reported the concealment of cocaine in polymer plates.

Beyond 2007

Responding to emerging threats

The activities of the LSS were reemphasised in Commission of Narcotic Drugs resolution 50/4 (2007) "improving the quality and performance of drug analysis laboratories". The drug analysis component of ICE helps participating laboratories to assess their ability to identify and quantitate correctly drugs identified as regional/national threats. UNODC's assessment of the world drug situation in 2008 showed an increase in drug trafficking activities in the Middle East[1] and West Africa.[2] Ironically, the participation of laboratories in these regions in ICE and commercially-available proficiency testing schemes has been poor. As a matter of priority, the programme will seek to actively engage laboratories in Africa and the Middle East in this exercise.

Tailored solutions

Laboratories in different regions may require tailored solutions to specific threats. In addition, countries with large clusters of drug testing laboratories often require the assurance that these services which support the criminal justice system produce reliable and comparable results. In response to this, LSS is piloting an exercise in Brazil involving initially 15 laboratories for participation in the ICE programme. This will be followed by the implementation of a national collaborative exercise involving approximately 35 national laboratories, which will commence in March 2009. As with the global format, laboratories will be provided with a confidential evaluation of their performance.

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1 UNODC, *Amphetamines and Ecstasy 2008 Global ATS Assessment* (September 2008)

2 UNODC, *Drug Trafficking as a Security Threat to West Africa* (November 2008)

From drugs to other forensic disciplines

The need to document performance and the quality of analytical work carried out in national laboratories is not limited to the field of drug analysis. During 2009, LSS will explore the availability and accessibility of proficiency testing (PT) schemes to forensic laboratories e.g. in the field of documents examinations. Depending on the outcome of this initial assessment, the feasibility of offering such schemes by UNODC or in collaboration with existing PT suppliers would be explored

Strengthening cooperation with accreditation bodies

Laboratories worldwide need to carry out their analytical work by conforming to the requirements of an international quality standard. The aim of LSS quality assurance programme is to improve the performance of laboratories to meet internationally accepted standards and assist them to move towards accreditation. In this connection, LSS is exploring areas of collaboration with accreditation bodies to support laboratories in setting up a quality management system and promote implementation of good laboratory practices.

Upcoming ICE rounds in 2009

In 2009, LSS will resume implementation of two ICE rounds per year. Laboratories interested in participating should note the following deadlines:

	ICE Round 1	ICE Round 2
Confirmation of participation	28.02.09	31.08.09
Receipt of import documents	31.03.09	15.10.09
Submission of test results	30.06.09	15.01.10

All participants will be issued with an individual evaluation report. However, failure to meet the deadlines might result in a participating laboratory's data not being included in the summary report.

Need additional information

Contact us

If you have comments on this report please e-mail us at **Lab@unodc.org**. Additional information on the ICE Programme and other UNODC Laboratory and Scientific Section programmes can be found via the internet at www.unodc.org or by writing to UNODC at the Vienna International Centre, P.O. Box 500, A-1400, Vienna, Austria.

Important web-links

ICE protocols:

www.unodc.org/pdf/document_1998-10-01_1.pdf

www.unodc.org/documents/scientific/IQAP.pdf