UNODC
United Nations Office on Drugs and Crime

Survey on the impact of UNODC assistance in the Scientific and Forensic Field

2016

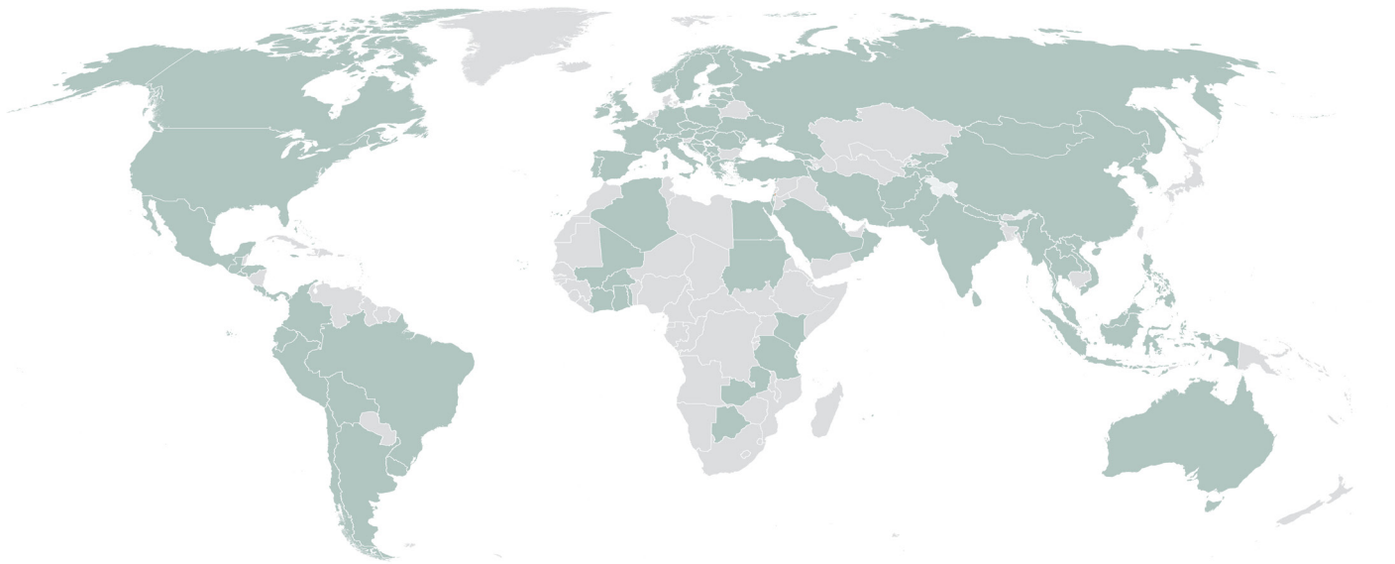

Figure 1: Member States who have participated in the International Collaborative Exercises. Note: the boundaries, names and delegations used do not imply official endorsement or acceptance by the United Nations. This document has notbeen formally edited.

Introduction

The UNODC laboratory and forensic science services programme seeks to ensure that Member States have access to, and use quality forensic science services in their efforts against drugs and crime. Forensic science enriches trend analysis and thus helps to provide an objective evidence-base for effective policy decisions. UNODC support to the forensic sector is to a large extent delivered directly to beneficiaries worldwide, comprising drug analysis and forensic science laboratories, law enforcement authorities and health and regulatory authorities, from its headquarters in Vienna, Austria. Various country/regional capacity building projects and initiatives are implemented by UNODC field-offices under the substantive guidance of the Laboratory and Scientific Section.

In 2016 UNODC ICE, assisted 254 national laboratories in 78 countries, a 22 per cent increase in 12 months. Laboratories participating in ICE were provided with over 686 units of reference standards of controlled substances, and the direct assistance to support law enforcement interdiction capacity included the provision of 436 drug and precursor field testing kits and related training to countries worldwide.

Following the scheduling decisions of the Commission on Narcotic Drugs in March 2016, UNODC supported implementation by Member States through the development and dissemination of a supplement to the Multilingual Dictionary of Narcotic Drugs and Psychotropic Substances Under International Control. (link)

The 2016 survey was conducted in May/June 2017 and responses were received from 198 institutions in 58 Member States.

ICE Programme

The UNODC ICE programme allows drug testing laboratories from both developing and developed countries to continuously monitor their performance on a global scale. Two rounds are offered per year with options for participation in the analysis of drugs in Seized Materials (SM) and/or in Biological Specimens (BS, specifically urine). Figure 1 shows the participation of the survey respondents in the past four rounds of the ICE programme, reflecting their continuous participation and the overall growth of the UNODC International Quality Assurance Programme. An increase was observed in the number of laboratories choosing to participate in either the SM or BS test groups as well as those who participated in both test groups. The impact of the ICE Programme on the work done in their laboratories was assessed as either very good or good by 96% of respondents in 2016 (Figure 2).

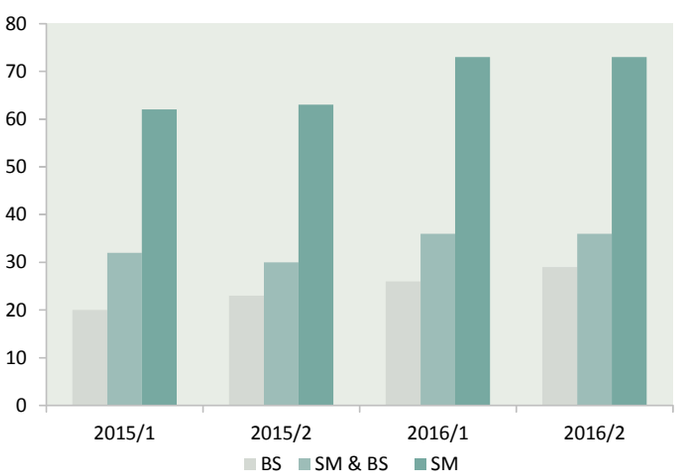

Figure 1: Participation of survey respondents in the ICE Programme in 2015 and 2016.

The information presented in Figure 3 shows the rating of various different aspects of the ICE programme by respondents to the survey. The UNODC ICE portal facilitates the submission of participant results and greatly assists in the preparation of summary reports and regional/global reports. The value of the ICE portal is reflected in its continued use as reported by 99% of survey respondents.

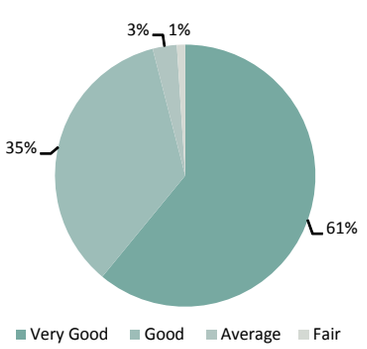

Figure 2: Assessment by participants of the impact of the UNODC ICE Programme on work done in their laboratory.

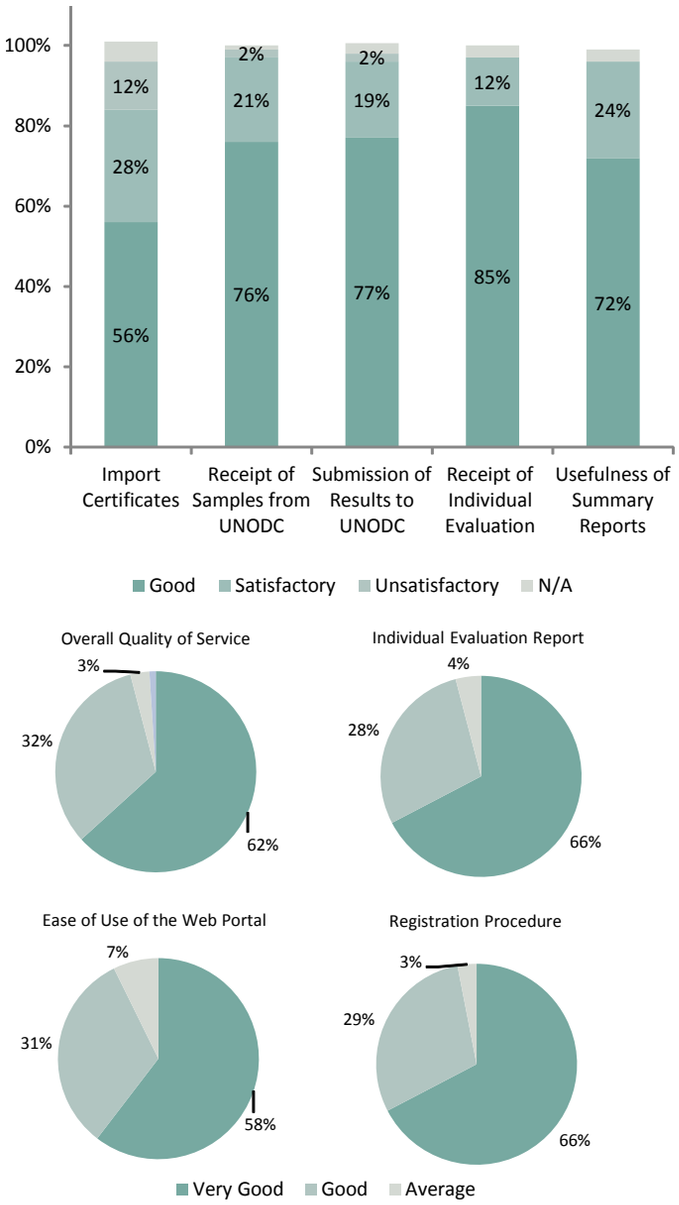

Figure 3: Ratings of various aspects of the ICE Programme by participants in 2016.

Reference Materials

Reference materials of substances under international control and selected metabolites are provided to ICE participating laboratories biennially and to other national drug testing laboratories upon request. UNODC/LSS continues to develop the range of reference materials to suit the needs and specific requests of laboratories. A total of 686 chemical reference material samples were provided to laboratories participating in the ICE programme or to laboratories upon specific request in 2016. Figure 4 shows the range of areas in which reference materials were used by recipients in 2016 compared to 2015.

Drug and Precursor Field Testing Kits

UNODC supplies institutions in Member States with field testing kits for drugs, drug precursor chemicals and pocket-sized test kits for acetic anhydride (precursor in the production of heroin). Figure 5 illustrates the numbers of each type of test kits that have been provided to Member States in the 2013-2016 period. Of the institutions receiving these test kits who responded to the survey, 80% of respondents rated the kits very good or good and 66% of respondents used the kits regularly or often (Figures 6 + 7).

UNODC Publications (guidelines and manuals)

In 2016, 90% of survey respondents indicated that they used UNODC/LSS publications (guidelines and manuals) in their work and 92% of these respondents rated the usefulness of these publications as very good or good (Figure 8). The majority (95%) of the respondents accessed the publications via the internet, while 12% also obtained hard copies by post.

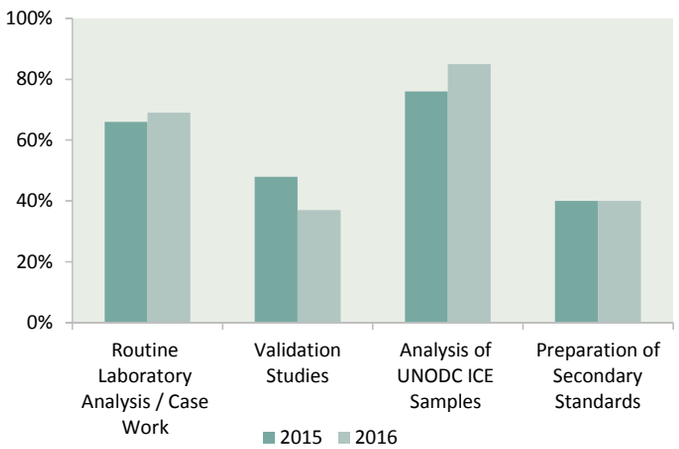

Figure 4: Purposes for which the reference materials supplied by UNODC/LSS are used by laboratories participating in the ICE Programme (2015/2016).

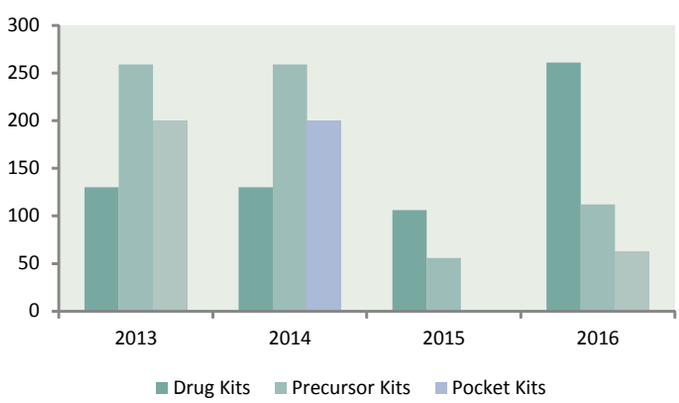

Figure 5: Numbers of drug, precursor and pocket field testing kits provided by UNODC to Member States in the years 2013-2016.

Substances recently placed under International Control

In 2014 and 2015, seventeen substances were controlled at the International level. Survey respondents were asked

- If they had analytical methods available for the identification of each substance.
- If they had access to reference materials for each substance.
- If they had identified a particular substance in their laboratory.

Figure 9 shows the percentages of survey respondents who answered “yes” to each of the questions asked for a particular substance.

- Regarding the availability of analytical methods, on average, 50% of respondents stated that they had methods available for the identification of these substances with 66% and 63% indicating that they had methods for mephedrone and JWH-018 respectively. In contrast, 31% of respondents have analytical methods available for the identification of the synthetic opioid, MT-45.

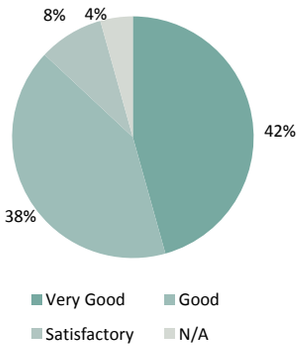

Figure 6: The usefulness of the drug and/or precursor field testing kits.

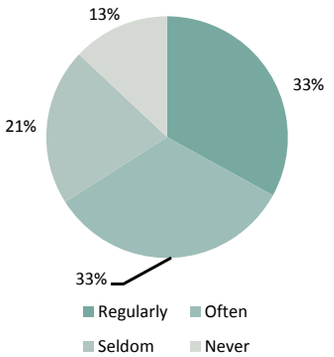

Figure 7: The regularity of use for the drug and/or precursor field testing kits.

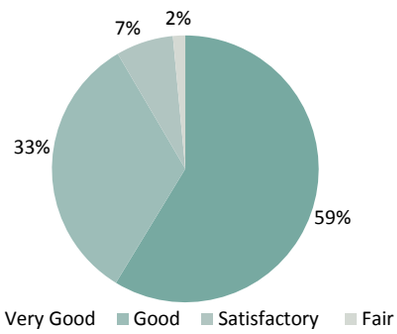

Figure 8: Rating of the usefulness of UNODC/LSS publications in the work of participating institutions.

- Regarding the ease of access to reference materials, 50% of respondents indicated they had access to reference materials for mephedrone. However, on average 31% of laboratories indicated they had access to reference materials, while only 9% and 12% of respondents indicated they had access to reference materials for MT-45 and 4,4'-DMAR respectively.
- Regarding the identification of recently scheduled substances in their laboratories, on average, 31% of survey respondents indicated that one of these substances had been identified. While 50% indicated that they had identified mephedrone, only 6% indicated that the synthetic opioids AH-7921 and MT-45 had been identified.

Challenges in the identification and analysis of controlled drugs and new psychoactive substances (NPS)

Survey respondents listed cannabis as the controlled substance most commonly analysed in their laboratories in 2016, followed by cocaine, heroin and amphetamine-type stimulants. With regard to NPS, the most commonly analysed substances were from the synthetic cathinones group, followed by synthetic cannabinoids. Of the respondents who answered this question, 18% did not identify any NPS in 2016 and 9 % of respondents erroneously categorised a number of internationally controlled substances as NPS. In terms of the challenges faced by laboratories in the analysis of controlled substances and NPS, the most predominant areas identified by survey respondents are listed hereafter and illustrated in Figures 10 and 11 respectively.

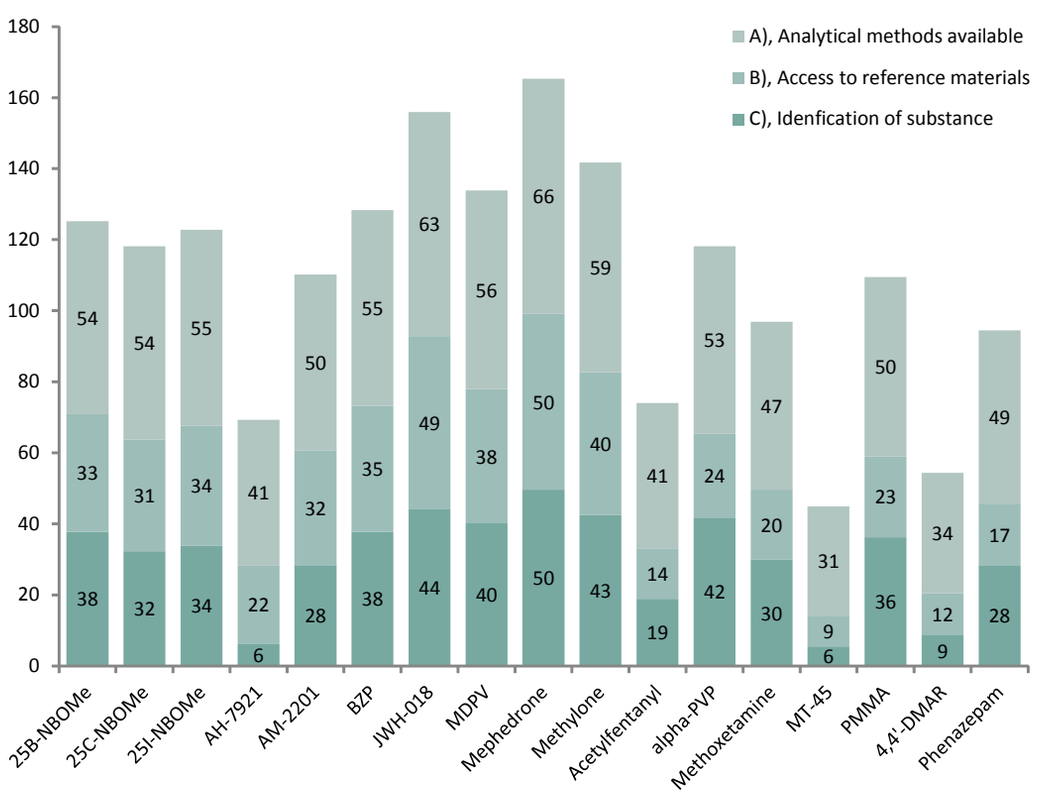

Figure 9: Percentage of survey respondents who for the 17 susbtances scheduled internationally in 2014-2015 stated;
A), that they had analytical methods available for the identification of these substances
B), that they had access to reference materials for these substances
C), that they had identified a particular susbtance.

Challenges in the analysis and identification of controlled substances

- Reference materials: 72% of respondents indicated challenges in this area. The high cost and low availability of reference materials, together with issues related to import/export and regulatory procedures were most commonly indicated.
- Validated methods: 45% of respondents mentioned challenges, in a range of different aspects of validation of methods for both qualitative and quantitative analysis of substances in seized materials and biological specimens.
- Analytical techniques: 34% of respondents faced challenges in this area. The need for advanced analytical techniques such as tandem mass spectrometry and NMR was mentioned by a number of respondents.
- Others: Among the "other " challenges mentioned by 20% of respondents, training for new and existing staff was emphasized along with lack of sufficient resources and equipment.

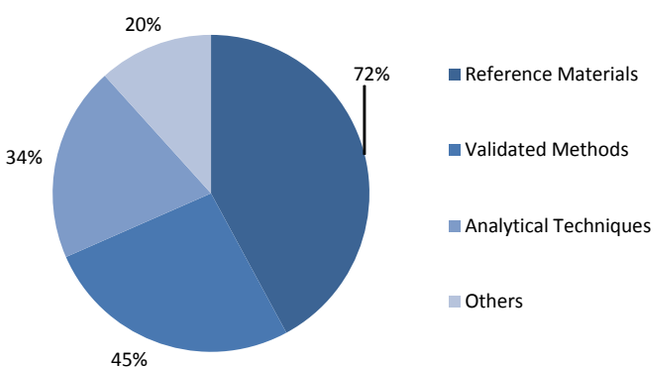

Figure 10: Challenges in the analysis and identification of controlled substances

Challenges in the analysis and identification of NPS

- Reference materials: 85% of respondents mentioned challenges related to the analysis of NPS in the area of reference materials. The cost , availability and access to NPS reference materials were the most common comments. In addition, many respondents mentioned issues with regulatory requirements.
- Reporting: 50% of respondents mentioned difficulties they have in reporting NPS, particularly due to gaps in national legislation and in how to report and discriminate between positional isomers .
- Awareness: 48% of respondents noted challenges due to a lack of knowledge of current trends in NPS and insufficient expertise/experience in how to approach the identification of NPS, particularly in the interpretation of mass spectral fragmentation patterns. Some respondents also noted that they have not yet encountered NPS in their laboratories.
- Analytical techniques: 46% of respondents mentioned the lack of techniques as being a challenge. A range of techniques from screening methods to GC/MS, LC/MS, tandem mass spectrometry and NMR were mentioned ..
- Validated methods: 36% of respondents noted that they did not have access to validated analytical methods for the analysis of a wide range of NPS mainly due to the lack of the reference material required for validation.
- Literature: 35% of respondents mentioned that they have little or no access to scientific publications.

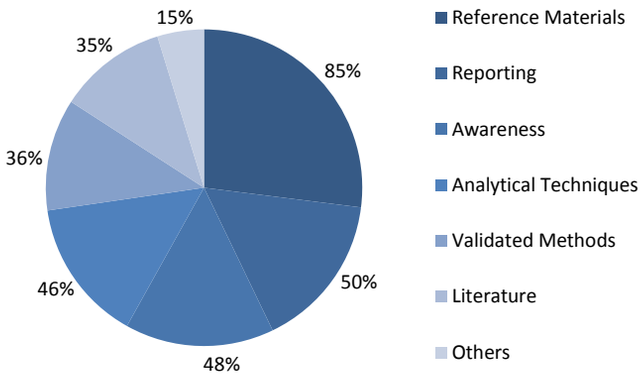

Figure 11: Challenges in the analysis and identification of NPS

- Others: Comments in areas not covered previously were mentioned by 4% of respondents and included the need for updating out of date libraries, greater access to training courses in the identification and analysis of NPS using modern analytical equipment.

Additional feedback from survey respondents

Respondents to the 2016 survey were requested to provide additional comments or suggestions in order to assist UNODC in improving the services it provides to institutions in Member States. 32% of the comments received from respondents were related to requests for UNODC support with reference materials of controlled drugs and NPS. Further information about specific requests for reference materials can be found at: (link)

Considering the challenges identified by survey respondents, UNODC will continue to develop its early warning advisory (EWA) on NPS (www.unodc.org/nps), and provide resources to assist laboratories in the identification and analysis of NPS, including analytical spectra and methods, literature, online resources and alerts through the EWA. Laboratories participating in the ICE programme have direct access to the contents of the advisory through their ICE portal accounts.

Comments were also received related to requests for assistance with training, cooperation and access to manuals and guidelines in different languages among others. UNODC will reply to each of the comments of individual respondents and issues raised will be addressed in order to improve the quality of UNODC laboratory and forensic science services.

Acknowledgements

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UNODC

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