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What is the future of illicit drug profiling in Switzerland? Condemned to disappear or forgotten treasure

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Abstract

Illicit drug profiling bears a long history. Developments in the field from mid-90s have led to several international profiling programs. Several countries have put their efforts to develop and implement the routine use of illicit drug profiling in the investigation and prosecution of illicit drug-related crimes. For more than 20 years, the School of Criminal Sciences (ESC) at the University of Lausanne has, through its illicit drug expertise laboratory, played a main role in promoting the use of illicit drug profiling. In Switzerland, there is no national illicit drug profiling practice and the ESC laboratory is the only one offering such service. However, only a limited number of Swiss jurisdictions send regularly all or part of their seized specimens for analysis to the ESC laboratory. Profiling results are furnished to investigators and prosecutors regardless if they have been requested or not and are stored in a database with limited contextual information with no further data treatment. In 2020, the interruption of a project intended to develop and implement an intercantonal database gathering traditional police data, forensic data (e.g., DNA, fingerprints, etc.), and physical and chemical links, to produce intelligence and support investigation, led to the fundamental question: Is illicit drug profiling in Switzerland condemned to disappear or is it a forgotten treasure, a neglected approach that deserves to be revalued? This paper reports the Swiss situation regarding illicit drug profiling practices and discusses some factors that are thought to impact its use in day-to-day work.

KEYWORDS
illicit drug profiling, intelligence, investigation, Swiss context, usefulness

1 | INTRODUCTION

In the past years, the role of forensic science not only to supply evidence at court, but to add valuable information (i.e., intelligence) for use in daily police work has become increasingly central throughout forensic community. The importance of the use of forensic data in an intelligence perspective has been recognized and emphasized in the field of illicit drugs. Illicit drug profiling is a widely applied process and bears a long history.[1] First attempts to establish links or a common origin between illicit drugs were based on physical characteristics of illicitly produced tablets.[2,3] Since then, important contributions and developments have been made in this field. Developments from mid-90s led to several profiling programs, such as the pan-European project SMT-CT98-2277 for the development of a harmonized method for profiling of amphetamine,[4–10] the European project Collaborative Harmonization of Methods for the Profiling of Amphetamine-type Stimulants (CHAMP),[11] the CASTEL project on the profiling of cocaine seized in the French–Swiss cross-border area and the Signature

Programs of the Drug Enforcement Administration of the United States of America, such as the Heroin Signature Program.[12] These projects illustrate the willingness to promote harmonization to produce and share intelligence based on illicit drug profiling.

A variety of profiling approaches exist allowing to infer a geographical origin, a clandestine laboratory, a synthetic pathway, a production batch, or a physical unit. Over the past years, numerous studies have been published highlighting the use of chemical profiles of seized illegal substances for intelligence purposes (i.e., tactical and strategic intelligence). Research has focused mainly on development and improvement of analytical techniques (ranging from simple to more complex ones like gas chromatography-isotope ratio mass spectrometry [GC-IRMS]), comparison methodologies and/or decision theories to generate intelligence from profiling of cocaine, heroin, amphetamine-type stimulants, and cannabis.[11,13–27] However, little is known about how illicit drug profiling results are shared between forensic laboratories and end users. Significantly, how this information is used and integrated into day-to-day practice and work by illicit drug investigators and prosecutors has never been addressed. This presents an important aspect of the illicit drug profiling process that requires equal if not even more focus than that placed on the development of novel techniques. An exploratory study about end users' perceptions about illicit drug profiling practices was conducted in Finland in an attempt to fill this gap.[28,29] Before developing new analytical techniques, it is necessary to know customers' needs, specifically the forensic question that needs to be answered. By working closely together with end users, laboratories can furnish more relevant information about the highlighted links, which would find greater use in day-to-day work.

2 | ILLICIT DRUG PROFILING IN SWITZERLAND

Switzerland has a fragmented illicit drug control system with various entities involved. Firstly, each of the 26 independently functioning cantons has their own police authority. Additionally, the cantons of Zurich and Vaud have two municipal police authorities (cities of Zurich and Lausanne), who conduct their own investigations within their territories as they have extended judicial power. Finally, the Swiss Federal Crime Investigation Department is solely responsible in drug matters linked to organized crime activities.[30] Each canton has their own policies and regulation regarding illicit drug analyses, and samples are sent to different laboratories (e.g., cantonal chemical laboratory, toxicology laboratory) within each canton. This fragmentation and the lack of a centralized national illicit drug analysis laboratory or a network of laboratories using harmonized methods regarding illicit drugs analyses makes it hard to gain a nationwide picture of the illicit drug market in Switzerland based on the analysis of illicit drugs seizures. Moreover, illicit drug profiling is not a nationwide practice.

For more than 20 years, the School of Criminal Sciences (ESC) at the University of Lausanne has, through its illicit drug expertise laboratory, played a main role in promoting the use of physical and chemical profiling at different stages of the judicial system. It is the only laboratory in Switzerland that has implemented systematic methods to extract chemical information from cocaine and heroin specimens and created a database storing chemical profiling results along with limited contextual information (e.g., date and place of seizure and specimen mass) and physical profiling data (e.g., logo, packaging characteristics). However, to this day, since the implementation of the profiling methodology, only a limited number of Swiss cantons send regularly all or part of their seized specimens for analysis to the ESC laboratory and use illicit drug profiling services according to ongoing investigation needs (e.g., to confirm links between different persons or seized specimens). From 2015 to late 2020, cocaine or heroin samples submitted to the ESC laboratory for analysis originated from Geneva, Neuchâtel, Jura, Vaud (canton and city of Lausanne), Valais, and Ticino (Figure 1). Geneva and Vaud are the most predominant with respective 530 and 431 submitted cases over the past 5 years (Figure 2).

These cantons contribute to increase the existent profile database by sending their cocaine and heroin samples to the ESC laboratory. The latter systematically retrieves the chemical profile of each analyzed cocaine or heroin sample and saves the results into the database. However, despite this practice and the existence of a database collecting all this data, the laboratory is not exploiting the intelligence product to its full potential, because they lack comprehensive contextual information, time, and/or a dedicated criminal intelligence unit. It is difficult for them, for instance, to interpret connections between distant cases (e.g., geographically and temporally) or cases that have not yet been connected through police investigations. The laboratory also faces the challenge of managing, over an extended period of time (years), the growing number of cases stored in the database and by extension the complexity and the management of the chemical/physical links.

Currently, laboratory's results are sent out in form of a written expertise report or as an Excel® file, depending on the canton. Reports include information about identification and purity of the illegal substance, presence of cutting agents, and profiling results for cocaine and heroin samples.* Illicit drug profiling results for these samples are systematically reported regardless of whether this has been requested or not by customers. The highlighted chemical class[31] for each sample and established links are reported in table format without further explanation about the meaning, the strength of the highlighted links, or contextualization with traditional police information. Based on personal experiences, investigators explicitly request illicit drug profiling during their ongoing cases principally to confirm or substantiate suspected connections between different persons or between different seizures inferred on the basis of traditional police information. However, little is known about how (and if at all) illicit drug profiling results are used when not requested.

Experience shows that often the lack of contextualization and of understanding about the value of provided links, as well as the amount of time required to investigate them in depth, discourages investigators in conducting further investigations into the

FIGURE 1 Swiss jurisdictions (cantons) that submitted regularly cocaine and heroin specimens to the School of Criminal Sciences (ESC) for analysis between 2015 and 2020 are highlighted in green, namely, the cantons of Geneva (GE), Jura (JU), Neuchâtel (NE), Ticino (TI), Vaud (VD), and Valais (VS)

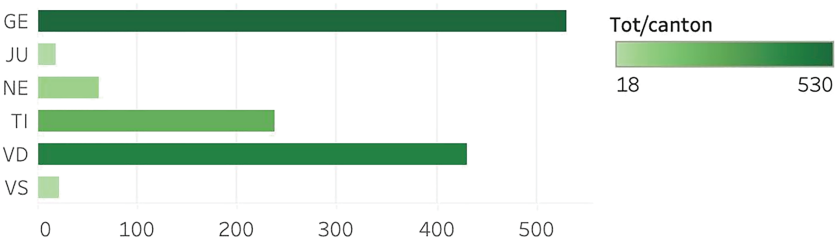

FIGURE 2 Number of cocaine/heroin cases handled by the School of Criminal Sciences (ESC) laboratory for the period 2015–2020 per canton. (for interpretation of the color information in this figure legend, the reader is referred to the web version of the article)

highlighted links. Moreover, the lack of a dedicated crime analysis unit being able to produce contextualized intelligence and delay in information availability (i.e., to be useful illicit drug profiling results should be received promptly during the investigation)[28,29] are supposed to be the most important factors impacting the use of illicit drug profiling results in Switzerland. These reasons, which are not exhaustive, may cause the investigator to abandon the provided information. Therefore, having a crime analysis unit that combines traditional police information, forensic data (e.g., DNA, fingerprints, and packaging), and illicit drug profiling data to produce contextualized intelligence and support investigators and/or prosecutors in the interpretation and understanding of the produced intelligence would be of great benefit.[28,32]

Laboratories and police authorities must find ways to manage increasing amount of data. To better understand customers' needs and deliver more "tailored" results based on the information sought it would be beneficial to formally establish the criminal investigation and prosecution process regarding illicit drugs in Switzerland as well as evaluate the role of illicit drug profiling and the factors influencing its use within this process. Although there have been a few changes to the laboratory's analytical methodology, its approach to data treatment and information sharing has not advanced in the past 30 years. However, it is crucial for laboratories to focus not only on the two first steps of the illicit drug profiling process[1]: the extraction of a chemical and/or physical profile[2]; the analysis and interpretation of the provided information[33]; but also on a third step[3] link management and communication of the resulting forensic intelligence product to law enforcement officers and prosecutors.[28]

To provide insight into procedures regarding illicit drug profiling within the Swiss criminal justice system, semi-directive interviews with investigators and prosecutors of six cantons (Geneva [GE], Jura [JU], Neuchâtel [NE], Ticino [TI], Vaud [VD], and Valais [VS]) and of the city of Lausanne (VD) are going to be carried out and results will be presented in another paper. These cantons have been chosen because they have been regularly sending samples to the ESC's laboratory over the past 5 years.

This study will clarify and formalize how illicit drug profiling is perceived, integrated, and used by investigators and prosecutors as well as review practitioners' needs regarding illicit drug profiling to adapt the sharing of laboratory results to meet their needs. Findings would help revaluate and rethink ESC laboratory's mission and work and understand on what kind of developments and changes, based on end users' needs, to focus on (e.g., should a more case-to-case service or a more intelligence-led service be proposed; should developments focus on methods where results can be obtained rapidly like near infrared analysis, images, etc. or on the development of a unit/structure with interlocutors that are able to interpret and contextualize the illicit drug profiling results).

3 | ILLICIT DRUG INTELLIGENCE IN SWITZERLAND

The profiling procedure as carried out today by the ESC laboratory was established from the work carried out by Guéniat and Esseiva.[25] Their work, from the mid-90s, showed the strong potential of such information to support the investigation, specifying the need to develop an analysis unit that would collect this information and have an overall view of the links established between the different cases and between the different cantons. They proposed the importance of adequate interlocutors in this unit who understand and interpret the highlighted links, to be able to provide contextualized and relevant information as well as real support to investigators in their daily work. Despite substantial research and some examples of the use of illicit drug profiling in an intelligence perspective[30,34] such an entity, as it exists for example for burglaries, is still missing in Switzerland.

In 2017, the question of the development and implementation of a database—like the one within the Forensic Laboratory of the National Bureau of Investigation in Finland[29]—allowing to gather traditional police data (e.g., context information), forensic data (e.g., DNA and fingerprints), and physical and chemical links was raised again. The prototype of this database was named IRIS† (Intercantonal Drug Intelligence Interface). However, in 2020, the project was stopped because there were no common and clear visions about how to revalue illicit drug profiling in the current judicial system. Nevertheless, discussions during this period were constructive because they led to the following fundamental question: Is illicit drug profiling condemned to disappear or is it a neglected approach that deserves to be revalued?

Recurring demands show that illicit drug profiling is useful in a certain extend to investigators and prosecutors. However, there is little understanding about how it is integrated, used, and needed in day-to-day work. The assumption of the usefulness of illicit drug profiling can be made based on theoretical aspects and few examples,[32] but what if it does not reflect the reality? When samples are brought to the ESC's illicit drug laboratory, no information is given about the specific aim of the request (i.e., sought information). Supposedly, often investigators are interested in comparing samples seized on different persons or in different locations to confirm implications between two persons or to increase the amount of the seized illegal substance for judicial purposes. This shows that there is more a tactical use of illicit drug profiling (case-to-case comparison for evidential purposes). However, in the authors' opinion, the intelligence aspect of illicit drug profiling is a real added value and a dedicated structure (e.g., crime analysis unit) to digest this information and transmit it to practitioners is necessary. Further research on these questions shall provide factual answers about end users' perceptions about illicit drug profiling practices in Switzerland.

4 | CONCLUSION

For investigators and prosecutors, it is mandatory to acquire updated and constant knowledge of illicit drug profiling through further education as well as exchange needs and problems with forensic laboratories to receive more relevant answers to their questions. It is important to understand customer's thoughts of a provided service to adapt and rethink laboratories' work and missions. As cited by Mennell and Shaw[35] from Dr Werrett speech "… Forensic science has been through a period of forensic scientists doing what forensic scientists think they should do. We now need to listen much more carefully to what customers want us to do. They [forensic scientist] will […] provide added value services to enhance that service and then be able to communicate the results directly to their customers." Thus, law enforcement agencies and forensic laboratories require close collaboration. In Switzerland, this close collaboration exists. Despite this close collaboration, there are some issues regarding the illicit drug profiling process that need to be addressed. There are currently several factors that are causing valuable intelligence to be lost. Factors include lack of financial and human resources (for the establishment of crime analysis units), lack of time (for in depth data analysis and interpretation), and delays in information availability. We think that illicit drug profiling is not condemned to disappear. Instead, it is a neglected approach that deserves to be revalued by making it more accessible and comprehensive for practitioners (e.g., furnishing timely and accurate intelligence during investigation) as well as by redefining its relation to the criminal investigation and its place within the Swiss illicit drug policy as a whole.

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ENDNOTES

* The ESC laboratory does profiling of cocaine and heroin based on major alkaloids and a link is defined as samples that share a common origin (same physical unit).

† *Interface de Renseignement Intercantonal en matière de Stupéfiant*.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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