



## OSAC Research Needs Assessment Form

**Title of research need:**

**Keywords:**

**Submitting subcommittee(s):**  **Date Approved:**

*(If SAC review identifies additional subcommittees, add them to the box above.)*

### Background information:

1. Description of research need:

Research is needed in the development of analytical methods for the identification and quantitation of emerging drugs of abuse and new therapeutic agents to enhance the scope of capability and knowledge of the forensic toxicology community. Evaluation of existing and novel sample preparation techniques in the recovery of these analytes is also warranted. Research should also include epidemiological studies, metabolite identification, post-mortem distribution studies, matrices studies, and pharmacodynamics/pharmacokinetics studies.

## 2. Key bibliographic references relating to this research need:

1. New Psychoactive Substances in Europe: An update from the EU Early Warning System. European Monitoring Centre for Drugs and Drug Addiction. March, 2015  
<http://www.emcdda.europa.eu/system/files/publications/65/TD0415135ENN.pdf>
2. National Forensic Laboratory Information System-2014 Annual Report. U.S. Department of Justice-Drug Enforcement Administration-Office of Division Control.  
<http://www.deadiversion.usdoj.gov/nflis/NFLIS2014AR.pdf>
3. Special Report: Synthetic Cannabinoids and Synthetic Cathinones Reported in NFLIS, 2010-2013. U.S. Department of Justice-Drug Enforcement Administration-Office of Division Control.  
[https://www.nflis.deadiversion.usdoj.gov/DesktopModules/ReportDownloads/Reports/NFLIS\\_SR\\_CathCan\\_508.pdf](https://www.nflis.deadiversion.usdoj.gov/DesktopModules/ReportDownloads/Reports/NFLIS_SR_CathCan_508.pdf)
4. Rogers, J. Rehrer, S. Hoot, N. Acetylfentanyl: An Emerging Drug of Abuse. The Journal of Emergency Medicine. In press.  
<http://www.sciencedirect.com/science/article/pii/S0736467915011488>
5. National Drug Threat Assessment Summary 2014. U.S. Department of Justice-Drug Enforcement Administration-Office of Division Control. <http://www.dea.gov/resource-center/dir-ndta-unclass.pdf>
6. Salomone, A., Gazzilli, G., Di Corcia D., Gerace E., Vincenti, M. Determination of cathinones and other stimulant, psychedelic, and dissociative drugs in real hair samples. Anal Bioanal Chem. 2015 Dec 17.
7. Nelson, M., Bryant, S., Aks, S. Emerging Drugs of Abuse. Emergency Medicine Clinics of North America. Clinical Toxicology. Volume 32, Issue 1, February 2014, Pages 1-28

## 3a. In what ways would the research results improve current laboratory capabilities?

Current analytical methodologies and instrumentation capabilities may not detect emerging drugs of abuse or new therapeutic agents. Forensic cases involving toxicological analysis in which compounds go undetected could have an impact on case adjudication regardless if it is ante-mortem (DUID, OUI, DFSA, probation/parole, etc.) or post-mortem (cause/factor of death) analysis.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Results of research studies focused on emerging drugs of abuse and new therapeutic agents would not only contribute to the improved understanding of the scientific basis of the Toxicology subcommittee but also the forensic toxicology community. The following are how each of the subcategories would impact the community:

Identify emerging drugs of abuse/therapeutic agents that are not currently included in testing panels.

Develop and optimize sample preparation techniques that could be used by the forensic toxicology community.

Metabolite identification for history of drug use when the parent compound is no longer detected.

Different matrices may be analyzed in the subcategories of forensic toxicological testing. Understanding the variability of results is important and will impact how results are interpreted.

Pharmacodynamics/pharmacokinetic information is often completely lacking on emerging drugs of abuse and may be unknown for new therapeutic agents as it applies to subcategories of testing (i.e. postmortem analysis, human performance testing, etc.).

Epidemiological studies should be conducted.

3c. In what ways would the research results improve services to the criminal justice system?

This research would have direct impact on the criminal justice system with regard to cases involving driving while impaired or under the influence, drug facilitated crimes, probation/parole violations and rulings on the cause/factors of death. Accuracy and thoroughness of testing provides a more complete understanding of the factors relating to a crime and/or death.

4. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	<b>I</b>	<b>III</b>
Existing current research is being conducted	<b>II</b>	<b>IV</b>

*This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.*

Subcommittee	Approval date: <input data-bbox="609 231 969 279" type="text"/>
<i>(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)</i>	
SAC	
1. Does the SAC agree with the research need? Yes      No <input type="radio"/>	
2. Does the SAC agree with the status assessment? Yes      No <input type="radio"/>	
<i>If no, what is the status assessment of the SAC:</i> <input data-bbox="841 611 943 659" type="text"/>	
Approval date: <input data-bbox="321 695 682 743" type="text"/>	
<i>(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)</i>	