*****Do not exceed 600 words including tables and charts.*****

TITLE: *Survey of Forensic Laboratories Testing for Novel Psychoactive Substances (NPS)*

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ABSTRACT:

Introduction: Since 2021, the SOFT NPS Committee has produced quarterly NPS Scope Recommendations to provide guidance to laboratories looking to develop or update their scope of testing to include the most timely and commonly identified NPS on the drug market. These scope recommendations are developed as a collaborative effort by members of the SOFT NPS Committee, spanning various regions of the United States, with additional perspectives and input from other national and international partners and/or reports.

Objectives: In early 2023, the SOFT NPS Committee sought to conduct a survey of forensic laboratories testing for NPS to determine both the effectiveness of our scope recommendations and also other pertinent information regarding their testing (e.g., instrumentation, NPS subclasses tested for, prevalence of specific NPS, etc.). The primary purpose of the survey was to solicit feedback about who uses the scope recommendations and how they are being used. The survey also allowed for suggestions on future improvements and developments.

Methods: The survey was developed in SurveyMonkey and facilitated online. The survey consisted of 29 total questions, including a mix of required and optional single answer, multiple choice, and open-ended response types. The estimated completion time was 10-15 minutes. The survey was distributed to the SOFT membership via email, as well as to the TIAFT membership and the CFSRE's NPS Discovery listserv. Generic questions included basic information about the respondent's laboratory, the type of work conducted (e.g., forensic toxicology, drug chemistry) and subdiscipline (e.g., postmortem, DUID), size of agency, years of experience testing for NPS, and others. Analytical questions included information regarding types of NPS tested for and instrumentation used for testing. There were nine questions regarding the effectiveness of the scope recommendations, including responses about frequency of development/distribution (e.g., quarterly, annually), utility of suggested cutoff concentrations, and manner in which the recommendations impact laboratory practice. The survey also included optional

questions regarding NPS detections and prevalence, including a full list of all NPS previously listed in prior scope recommendations.

Results: Survey responses were exported to Excel and standardized prior to analysis. In total, there were 83 respondents that completed the survey, or a portion thereof. Respondents were primarily from the United States (77%), with responses from 14 additional countries. Respondents reported working for laboratories across 31 states, with the majority being public agencies (71%). Respondents reported conducting toxicology (84%) and drug chemistry (36%) testing with overlap, including work related to following fields: postmortem (65%), DUID (58%), DFC/DFSA (47%), clinical (25%), and drug material (43%). Respondents primarily (92%) worked for laboratories with less than 60 employees and caseloads were predominantly (83%) greater than 1,000 cases per year. Experience with NPS was approximately broken in thirds: less than 5 years (35%), 6-10 years (30%), and greater than 10 years (35%). LC-QQQ-MS (69%), GC-MS (65%), and LC-HRMS (42%) were the most commonly used methodologies reported for NPS testing. Respondents reported variance in NPS subclasses tested for: benzodiazepines (86%), opioids (84%), stimulants (76%), hallucinogens (60%), and cannabinoids (57%). Most respondents reported using the scope recommendations to expand scope of testing (64%) and to add new NPS to screening methods (54%). Most respondents (74%) said the scope recommendations were somewhat to highly useful, and most (64%) said quarterly regularity was appropriate (19% responded biannually, or two times per year). Finally, respondents reported that the SOFT NPS Scope Recommendations (66%) were their go-to resource for determining their scope of testing – the highest response selected.

Conclusion/Discussion: The SOFT NPS Committee successfully completed a survey of forensic laboratories regarding their NPS testing practices. Diversity in responses was noted, and both close- and open-ended responses provide the committee important insights moving forward.