# OSAC RESEARCH NEEDS ASSESSMENT FORM

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| **Title of research need:** | Postmortem Distribution and Redistribution |
| **Keywords:** | Postmortem, redistribution |

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| **R&D Need Rank:** Low, Medium, High | Medium | **SAC Approved Date:** | 6/4/2025 |

**Submitting subcommittee(s):** Forensic Toxicology

## Research Need Summary:

The purpose of these research needs is to build a stronger scientific foundation for forensic science standards. The information provided herein will help to evaluate and strengthen existing standards, and/or fill any standards related gaps. In the space below, please provide a brief narrative of the need to be addressed. This should include:

- The identity of any specific standards that would be affected/improved/evaluated
- A discussion on gaps that exist within the standards or standards related gaps that need to be filled
- How this work would fill those gaps
- An overview of any current or past research efforts that may be relevant to this effort
- A discussion regarding how this research might improve current laboratory capabilities and/or forensic services within the criminal justice system
- Any relevant references

When drugs are taken into the body, they and their metabolites are distributed to biological fluids and tissues via various mechanisms such as passive diffusion and blood transport. Drug concentrations in bodily fluids and tissues are known to significantly change during the time interval between death and the collection of specimens at autopsy (a phenomenon known as *postmortem redistribution*). Forensic toxicologists are often called upon to interpret laboratory results taking into account these postmortem changes. Comprehensive research is needed to further define and characterize the distribution and redistribution of drugs found in postmortem forensic cases. The following potential research areas have been identified:

1. Comprehensive tissue distribution studies to provide data for the relationship between tissue and blood drug and/or metabolite concentrations.
2. Further characterize the chemical and/or /biological mechanisms of postmortem redistribution of drugs and metabolites.
3. Identify potential specific chemical markers in biological fluids and/or tissues that provide evidence that redistribution has occurred.
4. Potential development of mathematical relationships between fluid and tissue drug and/or /metabolite concentrations to evaluate the extent of postmortem redistribution.

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