

Appendix C

Quality Assurance and Audits of Data Quality

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The primary objective of the Quality Assurance procedures implemented on this project was to minimize and hopefully eliminate the possibility of obtaining measurements and data that were not comparable and to ensure the highest level of data quality.

Sample Materials

Quality assurance began with obtaining Certificates of Conformance or compositional analysis of the samples used in the project and traceability to their source vendor/provider. Only one batch of each type of sample material was prepared - eliminating the possibility of batch-to-batch variation - and used for dispensing of smaller quantities of samples to send to commercial labs. A sample dispensing procedure (Appendix A) was developed to divide the batch into smaller quantities. The objective of the sample dispensing procedure was to eliminate the introduction of variation in vapor pressure due to handling when samples were dispensed into multiple smaller vials and monitoring for any changes in the vapor pressure between the first, middle and last samples dispensed from a batch.

Commercial Labs

All labs were provided the same instructions in their purchase orders, which they were required to accept upon receipt of the purchase order. These instructions required them to report critical test conditions and instruments used to ensure/verify compliance with the ASTM measurement methods. Any issues or problems encountered were to be reported with their results. Finally, all (100%) of the lab measurements submitted were reviewed by the same UT Austin project team member (Kirsten Rosselot). Any anomalies in the data were challenged and an explanation requested and reviewed by the project team.

Automated Mini Method Instrument Measurements

To ensure consistent processing of samples using the mini method instruments, a procedure (Appendix D) was developed for using these instruments and introducing samples into the instrument. It too was strictly adhered to by the lab chemist team member (Jarett Spinhirne) who performed all (100%) of the analyses obtained using these instruments, also eliminating the introduction of variation in vapor pressure measurements due to different instrument operators. All (100%) measurements obtained were first reviewed by the operator and then by the data analyst (Kirsten Rosselot) for anomalies and analysis parameters. Any anomalies in the data were challenged and an explanation requested, reviewed by the project team and rerun if needed.

In addition to reviewing instrument measurements, the data analyst also reviewed the procedures employed by the instrument manufacturers for compliance with the ASTM measurement methods. In so doing, she found discrepancies in the ASTM method and errors in the instrument's programming and processing of data. As these issues could not be addressed by the project team or compensated for, their impacts on the data are noted and discussed in the data analysis section of the report.