

2012 2nd Quarter Report

“Characterization of Cotton Gin Particulate Matter Emissions”

During the 2nd quarter of 2012, work on the project progressed in the areas data processing, compiling, and quality checking, and report development.

Laboratory photographic, gravimetric, and particle size distribution analyses of all of the more than 10,000 samples collected during the project field work were completed before the second quarter by the USDA-ARS Air Quality Lab in Lubbock, TX. Thus, work has focused on processing and compiling both the stack and ambient sampling data.

Work to process the stack sampling data for each source and test– compiling test run and gin operation information, and sample gravimetric and PSD data – was completed at the USDA Ginning Labs and Oklahoma State University. All data sources for each gin/source/test method were merged, checked, and verified.

Approximately 78% of the ambient sampling data has been processed by the project team at Oklahoma State University. Data for about 5000 individual ambient sampler runs detailing ambient sampler operation (flow rate, ambient temp/Rh/barometric pressure, etc.) were merged with data from gravimetric, photographic, and particle size analyses into individual ambient sample reports. Work to complete processing of the remaining ambient samples and check/verify all the ambient sample reports continues.

Significant progress was made in developing reports for the stack testing. Reports for each ginning system/test method combination were planned and outlined. Further, data tables summarizing stack test results for the reports were compiled. The reports will include formal journal articles and testing data summary pages detailing TSP, PM₁₀, and PM_{2.5} emissions for each gin systems tested.

In 2011, California regulatory officials indicated that they are under pressure to complete their PM_{2.5} feasibility assessment of cotton gin permits. Throughout this project, the PIs have stressed the need to avoid releasing emissions data for individual gins as it becomes available or disseminating preliminary data “piece-meal” before completing all the sampling and data analysis. However, to provide CA officials with information to satisfy their immediate needs, during the 1st quarter of 2011 the PIs compiled and reported preliminary PM_{2.5} information from four of the total seven gins to be sampled for the project. The preliminary PM_{2.5} information reported in 2011 was updated in the 2nd quarter of 2012 to include data from all seven gins.

Based on EPA methods OTM-27 and Method 201a, the updated preliminary estimate for the ratio of PM_{2.5} to PM₁₀ is approximately 15%. Based on EPA method OTM-27 and AP-42 emission factors, the updated preliminary estimate of PM_{2.5} to TSP is 6.7%. Based on the Method 17 and particle size analyses, the updated preliminary estimate for the ratio of PM_{2.5} to TSP is 2.4%. These estimates are based on information from all seven gins and reflect the best estimates to date. While the stack sampling data have been checked and verified and confidence in the estimates is high, as individual systems are further scrutinized as reports are developed, the estimates may vary slightly from their current values.

If you have any questions, please give me a call. Thank you for the continued support.