

AQRP Monthly Technical Report

PROJECT TITLE	Quantification and Characterization of Ozone Formation in Central San Antonio	PROJECT #	20-028
PROJECT PARTICIPANTS	Ezra Wood, Alexa Rhoads	DATE SUBMITTED	4/12/2021
REPORTING PERIOD	From: 3/1/2021 To: 3/31/2021	REPORT #	7

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task

The goal of Task #1 is to prepare for the field deployment to San Antonio which is currently scheduled for the first two weeks of May 2021. The main activities conducted during the reporting period as part of this task were continued testing out the performance of the ECHAMP peroxy radical sensor at reduced pressure. Laboratory tests have shown that the sampling losses of HO₂ through the pressure-reducing orifice are greater than those from propyl peroxy radicals, but are low enough that we are optimistic that the new reduced pressure sampling method will work for the field deployment.

No work has been done on Task #2 (Field Deployment), Task #3 (Data Quality Assurance), or Task #4 (Data Analysis). Work for Task #5 (Project Reporting and Presentation) has focused on deciding whether to continue the project due to the continued lack of vaccination in the PI's research group and Drexel University's travel policy as described below.

Preliminary Analysis

Continued preliminary analysis of the laboratory characterization of ECHAMP at reduced pressure show that the sensitivity of the instrument is, as predicted, much less sensitive to ambient humidity, but the absolute sensitivity does not appear to have changed greatly. At the lowest pressures tested (~250 Torr), the absolute sensitivity decreases in fact. Additionally, use of larger diameter tubes shows superior results. We have begun testing the transmission of HO₂ and other organic peroxy radicals (RO₂) through the new pressure-dropping inlet and found that sampling losses of HO₂ are higher. These losses have been reduced with minor adjustments to the tubing, suggesting that continued adjustments will lead to acceptably low sampling losses.

Data Collected

No field data have been collected, though laboratory data have been collected related to the characterization of the ECHAMP peroxy radical sensor at reduced pressure as described in the “Preliminary Analysis” section.

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

As of April 1, 2021, neither graduate student Alexa Rhoads nor PI Ezra Wood have been vaccinated, and Drexel University has not softened its prohibition on non-essential academic travel. As a result the project must be terminated as of March 15, 2021, the date at which no subsequent charges were made to the project.

Goals and Anticipated Issues for the Succeeding Reporting Period

The only remaining goals are to continue the termination of the project and all associated reporting issues.

Detailed Analysis of the Progress of the Task Order to Date

Tasks 1 and 5 were in progress but have been halted. Tasks 2, 3, and 4 never started.

Do you have any publications related to this project currently under development? If so, please provide a working title, and the journals you plan to submit to.

Yes No

Do you have any publications related to this project currently under review by a journal? If so, what is the working title and the journal name? Have you sent a copy of the article to your AQRP Project Manager and your TCEQ Liaison?

Yes No

Do you have any bibliographic publications related to this project that have been published? If so, please list the reference information. List all items for the lifetime of the project.

Yes No

Do you have any presentations related to this project currently under development? If so, please provide working title, and the conference you plan to present it (this does not include presentations for the AQRP Workshop).

Yes No

Do you have any presentations related to this project that have been published? If so, please list reference information. List all items for the lifetime of the project.

Yes No

Submitted to AQRP by

Ezra Wood,
Principal Investigator