

PROJECT INFORMATION

Internship Project Title: Data Analysis Assistance with Oil & Gas Emission Measurements

Internship Office: Air Program, EPA Region 8

Internship City & State: Denver, CO

Project Advisor Adam Eisele

Intern Manager Dee Rothery

For this project the intern will predominantly work in the: Office (85%) Field (15%)

Having his/her own vehicle is: *Helpful* in getting around the internship city and/or finding affordable housing

Public transportation in the internship city is: Good

Intern Qualifications:

This internship may be best suited for a GRO Fellow who is majoring in:
Engineering, Atmospheric Science

And who has experience / skills in: Data analysis and statistics

Background Information:

This internship is in Region 8's Air Program, which covers a majority of the Rocky Mountain West. The Air Program consists of scientists and engineers and policy-makers with duties that include permitting, monitoring, and modeling. The intern will work out of the EPA Region 8 Headquarters in Downtown Denver. The work environment is a typical office setting in a LEED Gold building. The culture in the Region 8 Air Program is hard-working, but supportive and encouraging, as many staff share common interests.

Useful Web Links

<http://www.epa.gov/aboutepa/region8.html>

<http://www.epa.gov/ttn/amtic/>

<http://www.epa.gov/nrmrl/research/goal1/aqm.html>

Project Synopsis:

Energy development issues relating to air quality are of increasing importance near the Rocky Mountains and across the nation as new drilling technologies have enabled profitable extraction and production of natural gas and oil reserves. Energy production facilities (wellheads, compressor stations, storage tanks, etc.) are often dispersed in nature and cover large rural areas. In many cases, both controlled and uncontrolled releases of methane and volatile organic compound (VOC) emissions occur at these production facilities. Little is known about the quantity and composition of the emissions. It is important to characterize these emissions, as VOCs are a critical ingredient for the production of ground

level ozone, which is a regulated pollutant. The project team has limited resources to fully understand critical air monitoring data that were collected in natural gas plays. This internship project will further EPA's knowledge on this subject. The internship will also include participation in collaborative research efforts with other EPA regions and EPA's Office of Research and Development.

Specific Tasks:

The intern will focus efforts on interpreting air quality data collected from field studies in natural gas plays to further understand ground-level ozone implications from VOC emissions. Approximately 250 air samples have been collected during these field studies, with each sample having a corresponding infrared video of leaking sources at that specific location. Using his/her knowledge of statistics and basic data analysis, the intern will analyze the speciated sample data set and compare these to infrared imagery. Microsoft Excel will be the primary program used for this analysis. Potential field work may include using an infrared camera to visit previously surveyed sites.

Context:

This project will support EPA's priorities towards understanding the air impacts of energy production on nearby communities.

Benefits to the Intern:

The intern will gain a number of valuable skills that include improved knowledge on energy extraction practices and their associated environmental impacts, improved understanding of statistical analysis, and interpretation of actual environmental data. These skills can be used in a variety of settings and would be useful to possess in the current job market.

End Product:

The intern will be expected to give a presentation to the Air Program and/or the region. The intern would also have the opportunity to be an author on a peer-reviewed journal.