

# **Texas Commission on Environmental Quality (TCEQ)**

## **WORK ORDER UNDER THE UMBRELLA CONTRACT FOR NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) BETWEEN TCEQ AND GRADCO, LLC dba GRADIENT**

*Association Between Ozone and Asthma*

**Work Order No. 582-13-32032-06 (PCR No. 42658)**

**Contract No.:** 582-13-32032

**Original Amount of Umbrella Contract:** \$550,000

**Amendment 1 Amount:** \$550,000

**Amendment 2 Amount:** \$550,000

**Current Amount of Umbrella Contract:** \$1,650,000

**Work Order Amount (Maximum Not-to-Exceed):** \$722,000

**Amount in Contract After this Work Order:** \$323,500

**Effective Date of the Work Order:** Date Signed

### **Time Line**

The work shall begin upon the date signed by the Texas Commission on Environmental Quality (TCEQ) and must be completed no later than August 31, 2015 unless extended by TCEQ. The Work Order does not expire on the required delivery date and continues until closed or terminated by the TCEQ. Gradient Corporation (Contractor) must submit a final payment invoice/request as well as a release of claims within 45 days of TCEQ's approval of the final technical deliverable for this Work Order.

### **Purpose**

The purpose of the Contract is to examine associations between ozone and asthma.

## **TASKS AND DELIVERABLES**

### **Background**

The USEPA established the 8-hour ozone National Ambient Air Quality Standard based on the prevention of premature mortality. The Dallas County Medical Society (DCMS) recently filed a petition for rulemaking to the TCEQ to require more stringent controls for power plants. The DCMS asserted that power plant emissions increase ambient ozone, which in turn exacerbates asthma.

## Scope

1. The Contractor will provide a comprehensive review and report of the scientific literature addressing potential impact of ozone on asthma including, but not limited to, the following elements:
  - Epidemiology studies that report correlations between ambient ozone levels and asthma-related endpoints such as: incidence, exacerbation, medication use, hospitalization, ER visits, etc.
    - Strength of effect – often very small relative risks
    - Acute exposure vs chronic exposure scenarios – weight of evidence for each
    - Are asthmatics (children and/or adults) more sensitive or susceptible to asthma-related effects attributable to ozone exposure?
    - What is the evidence that ozone exposure causes or contributes to new cases of asthma versus exacerbation of asthma?
    - Lag times reported should be summarized as well as consistency of observed effects across various lag times
    - Asthma prevalence vs asthma incidence and how asthma data are collected (do you currently have asthma vs ever diagnosed with asthma?)
      - Adequacy of certain measures of asthma such as school absences.
    - We are interested in U.S. studies as well as Texas-specific studies, if available
    - Pediatric asthma rates are increasing, but ozone concentrations generally decreasing – please address hypothesized explanations including, but not limited to:
      - Other asthma triggers (smoking, pollen, etc.)
      - Evidence linking increasing use of acetaminophen and asthma
      - Obesity and asthma
      - Genetics
    - Confounding variables and any evidence of the size of the effect they may have on the ozone-asthma relationship
    - Evidence of publication bias (for instance, differences between single-city studies versus multi-city reports, evidence that negative results are underreported, etc.).

- Differences between meta analysis results and individual reports
- Clinical studies exposing human volunteers to ozone and any reported asthma-related endpoints (wheezing, FEV decrements, etc.)
  - Both of the above should indicate levels of ambient ozone/doses that are associated with health effects and the general severity of effects across the dose-response.
  - Discussion on what level of FEV decrement or combination of effects should be considered (clinically) adverse
  - Limitations of using filtered air in clinical studies instead of some level of background ozone concentrations
    - Evidence that individuals may adapt to ozone exposure (for instance, <http://www.ncbi.nlm.nih.gov/pubmed/7235372> and <http://www.ehjournal.net/content/7/1/22>)
- Animal studies: potential MOAs, consistency with human studies, important differences in doses leading to health effects, and key differences between animal models and humans.
- Background ambient ozone levels
- Evidence for thresholds for key health effects
  - Uncertainty analysis/uncertainty characterization (including, but not limited to known issues regarding model selection and statistical methods (lag structure, degrees of freedom, splines, etc.). Confounding variables may also be summarized here.
- 2. The contractor will perform studies looking at available asthma (or similar) data and available air quality data.

## **Deliverable**

The Contractor will provide a final draft report conforming to the Work Order requirements by August 31, 2015.

TCEQ - Project Representative  
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Work Order No. **582-13-32032-06** is issued as of the date shown below. The amount shown as "Work Order Amount" in the heading of this Work Order is the maximum amount to be paid to the Contractor for this work unless a Work Order Amendment raising that amount is issued by TCEQ.

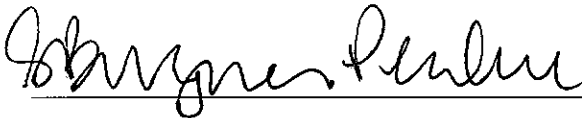
The work shall begin on the signature date below and the deliverable is due by August 31, 2015. The Contractor must clearly state on each invoice that all the work described was performed either on or before August 31, 2014; or on or after September 1, 2014.

**Instructions to Contractor:**

The contractor project manager shall provide TCEQ with a Work Plan document within 14 days of the date of this Work Order. This Work Plan document should include the work that can be finished by August 31, 2014 and the remaining work that will be finished on or before August 31, 2015.

**TCEQ:**

Texas Commission on Environmental Quality



Stephanie Bergeron Perdue  
Deputy Executive Director

Date: 3/7/2014