

DRAFT

PERFORMANCE WORK STATEMENT

Air Pollution Prevention and Control Research:

“Effluent/Emissions Evaluations,
Control Technology Studies, Source Characterizations,
Emissions Inventory Modeling,
And Homeland Security Research”

BACKGROUND:

The work to be performed under this contract involves support of the technical functions carried out by the U. S. Environmental Protection Agency (USEPA), National Risk Management Research Laboratory (NRMRL), Air Pollution Prevention and Control Division (APPCD) in Research Triangle Park, NC, as well as support for Homeland Security research on chemical and biological contaminants. Work performed under this contract will be specified in work assignments (WAs) issued by the Contracting Officer.

Information derived from the WAs will be used by the Environmental Protection Agency (EPA) to assess technologies and associated strategies for cost-effective development and/or use in contaminant control/remediation, or to conduct emission control strategy development. Control technology and associated strategies are defined to include end-of-pipe and prevention techniques for the control of any substance, practice, process or activity (or any combination thereof) which may reasonably be anticipated to affect the environment. Support for Homeland Security research on chemical and biological contaminants will include: evaluation of materials decontamination approaches; characterization of air cleaning systems to contain contaminants; chemical , physical and/or biological measurement capabilities; experimental building structures; removal or disposal techniques for residues and materials including decontamination waste water; and heating ventilation & air conditioning (HVAC) design and control systems. WAs will provide detailed instructions as to the nature of the problem, available EPA information, sources to be investigated, the manner of evaluation and assessment, and the output expected from the work assignment (WA).

Quality Assurance/Quality Control (QA/QC) requirements will be specified in each WA. The contractor shall comply with all QA/QC requirements as delineated in the

contract.

PERFORMANCE WORK STATEMENT (PWS):

The contractor shall supply the necessary labor, materials, and facilities for the performance of effort in the following areas:

A. Effluent/Emissions Evaluations, Control Technology Studies and Source Characterizations

1. The contractor shall conduct engineering and assessment studies of designated residential, commercial, industrial, municipal, and energy sources, as well as indoor air-related sources. These studies are to characterize a wide variety of source emissions and define the control/prevention technology research and development requirements which will lead to the achievement of effective control/prevention technology and emissions estimation methodologies for toxic, hazardous, and other pollutants, including the radioactive decay products from naturally occurring radiation sources. The contractor shall, using all available sources of data and process information, document the quantities and characteristics of multimedia toxic, hazardous, and other pollutants from various sources. The contractor shall identify existing control/prevention capabilities, and limitations. In the event adequate emissions/effluents data are not available for control/prevention technology evaluations, emission factor development, or other purposes, the contractor shall recommend the most appropriate sampling and testing procedures to acquire the necessary information.

2. The contractor shall travel to pollution source sites and conduct necessary preliminary studies and make arrangements for conducting specified measurements. Except for the use of the EPA's dilution sampler, the contractor shall provide necessary sampling and analytical support for each source assessment. All necessary measurements (temperature, flow, velocity, moisture content, solids content, pertinent process equipment, operating parameters, radon and radon daughters, etc.), emission/discharge calculations, laboratory analyses, log sheets, process data information and descriptions, test methods, and procedures shall be reported in a format specified in the WA. Generally, three independent measurements at each sampling location will be required. The following are examples of the testing support required of the contractor:

- a. Particulate mass concentration and size measurements and collection of particulate samples for chemical and metal analysis shall be obtained using sampling trains designated in the WA. Whenever particulate control equipment is present, measurements shall be taken simultaneously upstream

and downstream of the control device, if required by the WA. In all cases, sampling shall be performed within specified limits of isokinetic conditions unless otherwise specified and while the plant's operations are at the desired conditions. Collected samples shall be analyzed.

b. Carbon oxides, nitrogen oxides, sulfur oxides, hydrocarbons, and other pertinent gaseous pollutants and/or process-related gases shall be measured. Sampling shall be conducted in feed, process, and control device streams, for area sources, and for non-plant point sources. Collected samples shall be analyzed.

c. Liquids shall be sampled and subjected to physical, chemical, and biological analysis. Bioassays shall also be conducted. Liquids to be sampled may be contained in pipes, culverts, tanks, and open ponds, and may involve feed, process, control device, and effluent samples, often containing suspended solids. Collected samples shall be analyzed.

d. Solid wastes, sludges, slurries, leachates, etc., shall also be measured and collected for subsequent chemical and biological analysis when specified. Typical sampling sites include storage facilities, feed stocks, in-process streams, process residues, and products. Collected samples shall be analyzed.

e. Samples of fugitive emissions and uncontained gases, particles, and liquids shall be collected using procedures specified in the WA. Sources include building materials, the decay of naturally occurring and radioactive materials, process leaks, and run-off. Collected samples shall be analyzed as specified in the WA.

B. Support for Emissions Inventory Modeling

The Contractor shall:

1. Identify and characterize sources of emissions from new or existing point, area, and mobile sources needed to account for previously missing sources of emissions and to improve the current state-of-knowledge of existing sources of emissions using conventional or optical remote sensing methods specified by the work assignment.

2. Collect and characterize emissions test and control data needed to support inventory development.
3. Collect and characterize actual emissions, econometric, energy consumption and other statistical data needed to develop emission estimating models for specific categories of sources.
4. Collect and characterize transportation-related data on both on-road and off-road vehicles, including highway traffic demand models and forecasts, vehicle-miles-traveled data, vehicle registrations, vehicle use patterns and other data on highway motor vehicles needed to improve emission estimating models for highway vehicles.
5. Collect and characterize energy/economic forecast data, estimated air and multi-media pollution control performance and future costs, proposed regulatory approaches, and other data needed to develop improved mathematical models for projecting air and multi-media pollutant emissions control capacity and regional/national scenario development.
6. Develop and update data needed to implement new or improved models for estimating current emissions and projecting future emissions.
7. Conduct statistical evaluations, collect independent measures of emissions, and analyze emissions inventory data to assess the uncertainties inherent within this data and to estimate ranges of accuracy for estimated/forecasted emissions data produced by the emissions models.
8. Periodically update data as new information becomes available.

C. Support for Homeland Security Research

The Contractor shall:

1. Verify existing and innovative techniques to detect, decontaminate, and dispose of materials contaminated with biological and chemical agents, that would allow for instant response to an act of terrorism.

2. Conduct studies to determine how available detection systems (e.g. those used by DoD to detect chemical and biological weapons in the field) could be applied to buildings.
3. Test, demonstrate and verify various techniques to decontaminate buildings and outdoor areas impacted by biological, radiological, and chemical agents. Research may include testing the efficacy of antimicrobial products on porous and non-porous building materials and evaluating proposed protocols and methods for antimicrobial application and decontamination. The use of ultraviolet irradiation to decontaminate HVAC system air and various surfaces may be investigated.
4. Determine the extent to which the building itself can protect occupants from agents of concern and assess the impacts of HVAC Design and Operation on reducing occupant exposure.
5. Conduct lab and field tests to evaluate whether air cleaners can be effectively used to remove agents from a contaminated building. The form of the agent (liquid aerosol, gas) will have a significant impact on filter effectiveness. Investigate the single pass efficiency of air cleaners challenged with likely biological agents and impact of extended operation on filter performance. In-room air cleaners shall also be investigated to determine whether they could be used effectively to provide a “safe haven” for building occupants during and shortly after a terrorist attack.
6. Conduct lab studies or prepare technical guidance to determine how to deactivate biological agents collected on building or outdoor materials, such as filters, either during routine use or in spaces with known contamination. Determine how best to ultimately dispose of building or outdoor materials such as air filters, drinking or waste water infrastructure materials, food, and agricultural materials either contaminated by biological or chemical agents, or possibly non-contaminated but present in such quantities as to present concerns from a homeland security standpoint, including wastewater produced during decontamination activities. The contractor shall develop incinerator or thermal treatment methods, conduct lab studies or prepare technical guidance for removal or disposal of contaminated building or outdoor materials. The contractor shall consider the impact of air pollution caused by incineration when developing incinerator methods or technical guidance. Land-filling these materials may cause transport into leachate or landfill gases which also must be considered in development methods. While existing disposable technologies may be used,

research is needed to determine how best to handle and prepare materials before they are sent to the facility.

D. Documentation and Technology Transfer Related to Air Pollution Prevention and Control Research.

1. The contractor shall prepare special engineering reports, such as computation of discharges by process and source, or carry out special problem-definition studies. The problem-definition assignments may require the interpretation and correlation of physical, chemical, radiological, and biological data as they relate to the need for development of emission control and/or prevention technologies, or to the development of methods for the modeling of emissions/effluents patterns.

2. The contractor shall prepare experimental designs for a variety of emission and energy technologies, including but not limited to, site planning, configuration of power plants, renewable energy systems, processes using chlorofluorocarbons/hydrofluorocarbons (CFCs/HFCs), and industrial and municipal process layouts incorporating space limitation and process equipment design based upon specifications and data supplied by EPA in Work Assignments.

3. The contractor shall prepare special reports that evaluate the market potential of products and by-products, as well as energy efficiency, cost effectiveness, and reliability of performance of various emerging, innovative and advanced emission characterization processes and contaminate control/remediation systems.

4. The contractor shall prepare draft material as input to technical manuals and similar documentation needed to convey information on effluent/emissions evaluation, control technology surveys, and source characterizations to potential users. To perform this task, the contractor shall: (a) Conduct literature searches, make telephone and personal contacts with selected technical experts to gather information; (b) describe effluent/emissions evaluations, control technology surveys, and source characterizations in the selected specific subject area; (c) prepare appropriate charts, tables, graphs and other illustrative material to better describe the topics being discussed; (d) submit documentation and graphics to the Project Officer (PO)/Work Assignment Manager (WAM) for review and approval; (e) having incorporated the PO/WAM's comments, prepare camera-ready copy and submit to the PO/WAM.

5. The contractor shall provide support for the presentation of technical conferences, workshops and meetings to convey research and development activities in the areas of effluent/emissions evaluation, control technology surveys, source characterizations, and emissions inventory modeling and strategy development. To perform this task, the contractor shall provide support in the formulation and preparation of technical symposia, workshops, and meetings. This includes any or all of the following tasks: Preparing draft meeting announcements and calls for papers for the approval of the PO/WAM; incorporating comments, preparing final meeting announcements and calls for papers, and mailing same using EPA-developed mailing lists; receiving meeting acceptances and cataloging papers and reports to be presented at the meetings; preparing meeting agendas based on information received and securing the PO/WAM's approval; attending meetings, taking notes on the proceedings, and securing copies of all papers presented; providing draft proceedings for the PO/WAM's review; providing camera-ready copy of final proceedings with the PO/WAM's comments incorporated.

E. SPECIAL REQUIREMENTS

1. In the course of conducting work under the contract, the contractor may be exposed to a wide range of outside organization and experts. The contractor shall clearly identify itself as an EPA contractor when in attendance at EPA meetings and other specialized functions by wearing visible badges identifying its affiliation. Contractor personnel shall also identify themselves as contractor personnel when placing calls in conjunction with activities described in this Performance Work Statement.

2. The Contractor shall submit a quality assurance project plan (QAPP) in accordance with Appendix #1 to the Performance Work Statement for each work assignment involving environmental data. The QAPP must be approved by the PO prior to any data being acquired or used. The monthly progress reports for each WA must describe QAPP activities undertaken during the reporting period.