E. Scott Tucker III, Ph.D.

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EXHIBIT
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EDUCATIONAL BACKGROUND

Ph.D. Analytical/Organic Chemistry, University of Iowa, Iowa City, IA (1968)

B.S. Analytical Chemistry, Michigan State University, East Lansing, MI (1963)

A.S. Chemistry/Mathematics, University of Michigan, Flint, MI (1961)

EXPERIENCE SUMMARY

Dr. Tucker has accumulated over 35+ years of analytical chemistry research & development and industrial technical management experience during his career at five major chemical, engineering and waste management companies. He is one of the original principal industrial scientists and team leaders that confirmed the widespread presence and sources of polychlorinated biphenyl (PCBs) residues in our environment through the development and application of analytical methods for the absolute identification and analysis of PCB residues in industrial products and environmental samples. Dr. Tucker also has extensive direct technical knowledge and scientific expertise in the following associated areas.

- Air Toxics hazardous waste sites, thermal treatment stack testing, perimeter/on-site/off-site, and community environmental (air/water/soil) monitoring program plan preparation, QA/QC, equipment specification, cost estimation, installation, startup, operation, maintenance and data collection/verification/validation.

- Design, development, start-up, operation, and management of high performance analytical service laboratories and field systems specializing in the characterization of hazardous, low/high level radioactive and mixed waste samples, environmental (air, water, soil) monitoring, and R&D treatability studies.

- Environmental impact expert and fact witness for PolyChlorinated Biphenyl/Dioxin/Furan, Hexachlorobenzene, Toxaphene, Aromatic/Aliphatic chlorinated hydrocarbon litigation, remediation litigation, affidavit preparation, arbitrations, depositions, impact evaluations and data review, validation & interpretation etc. for EPA/DOJ, Monsanto Company, Paramount Communications, Dames & Moore, .., Solutia Company, Bell & James/GA, Bronson Bronson & McKinnon/CA, Preuss Walker & Shanagher/CA, Smith Helms Mulliss & Moore/NC, Thompson Hine & Flory/OH, Lightfoot, Franklin & White/AL, Husch Blackwell/MO...

- Working knowledge and experience with NRC, DOE, RCRA, CERCLA, TSCA, NPDES, POTW, OSHA, NIOSH, AIHA, CAA, BIF, etc. regulatory and analytical testing requirements for the characterization, treatment, and disposal of low level radioactive, hazardous, and mixed wastes.

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EMPLOYMENT HISTORY

ANALYTICAL CHEMISTRY CONSULTING SERVICES - ACCS. (Liberty, SC) Principal, (1992 – CURRENT). Analytical/Environmental litigation, affidavit preparation, data interpretation / validation, arbitrations, depositions, etc. for a select client list. References available upon request.

IT CORPORATION / THE IT GROUP, OHM REMEDIATION SERVICES CORP. & RUST REMEDIATION SERVICES (Findlay, OH/Liberty, SC) Senior. Consultant/Technical Manager, Engineering/Thermal Operations, Analytical Support, Chemical Analyses & QA/QC Programs (1993 – 2002)

DRAKE CHEMICAL SUPERFUND SITE (Lock Haven, PA) (1994 - 1999). Provided technical planning, setup, continuing operational support including SOP preparation, equipment procurement/setup, staff recruiting/training, lab certification and data generation, documentation, verification and liaison with USACE/PADEP/EPA/DOJ for all site analytical programs valued at a total of over $5.5 million. These programs included the generation and validation of the following major regulatory monitoring efforts.

Perimeter Ambient Air Monitoring - Real Time Sampling and Analyses for NMOC, Speciated Volatile Organics, and Meteorological Parameters and Time Integrated Semi-Continuous Sampling & Analysis for Volatile Organics, Semivolatile Organics, Fenac, 2-Naphthylamine, Total Suspended Particulate, and Metals at four (4) stations.

Community Ambient Air Monitoring - Time Integrated Semi-Continuous Sampling & Analysis for Volatile Organics, Semivolatile Organics, Fenac, 2-Naphthylamine, Dioxins, Furans, Total Suspended Particulate, & Metals at four (4) stations.

Waste Water Treatment Plant NPDES/PED Sampling and Analyses for Volatile Organics, Semivolatile Organics, Fenac, 2-Naphthylamine, and Metals.

Incinerator Feed Soil, Incinerated Soil & APCS Incinerated Soil Residues Sampling and Analyses for Physical Properties, Volatile Organics, Semivolatile Organics Fenac, 2-Naphthylamine, & Metals.

CIBA-GIEGY SUPERFUND PROJECT (McIntosh, AL) (1996 - 1999). Provided technical planning, setup, continuing operational support including SOP preparation, equipment procurement/setup, staff recruiting/training, lab certification and data generation, documentation, verification for support sampling and analyses provided by client staff and on-site laboratory. Acted as liaison with ADEM/EPA for site analytical programs. The programs had an estimated value of $0.5 - $1.0 million and included the generation and validation of the following major regulatory monitoring efforts.

Perimeter Ambient Air Monitoring - Real Time Sampling and Analyses for Total Suspended Particulate and Time Integrated Semi-Continuous Sampling & Analysis for Total Suspended Particulate and site specific pesticide and herbicide contaminants at five (5) remediation zone and five (5) Ciba site perimeter stations.

On-Site Chemical Sampling and Lab Analysis supporting all excavation, incineration, and wastewater treatment project activities.

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SANGAMO WESTON SUPERFUND SITE (Pickens, SC) (1995 - 1996). Provided analytical and QA/QC planning, setup, continuing operational support including SOP preparation, sampling equipment procurement/setup, staff recruiting/training, off-site lab selection/certification and data generation, documentation, verification for on-site sampling and off-site laboratory sample analyses and acted as a technical interface with Client/SCDHEC/EPA for the site analytical QA/QC programs. The estimated value of these programs was $100 - $150K and included the generation and validation of the following major regulatory monitoring efforts.

Thermal Treatment Facility Feed Soil, Cyclone Soil Solids and Bio-Treatment Plant Waste Water for PCBs, Physical Properties, COD, BOD and TSS.

Site Waste Water Treatment Water Plant NPDES discharge for PCBs, BOD, TSS, & Metals.

BRIO SUPERFUND SITE (Houston, TX) (1993 - 1994). Brought to site to provide technical analytical chemistry, QA/QC and management expertise needed to get existing perimeter air monitoring program back on track and in compliance with all client contract and regulatory agency requirements. The system consisted of seven (7) perimeter air monitoring stations each equipped with a real time gas chromatography-flame ionization detection system that were intended to continuously monitor a suite of seven (7) – nine (9) volatile and semivolatile organic compounds at the low ppb level every 15 minutes, feed the data via radio telemetry to a central computer system which would combine the data with simultaneously generated meteorological parameters and calculate levels detected and set off alert alarms when the concentrations exceeded specified threshold values. The system was being implemented by an unqualified subcontractor being used by client for other monitoring purposes. To that point the perimeter monitoring system had produced approximately 2,000 false positives and the project remediation management were under heavy pressure from the client, regulatory agencies & opposing environmental groups to "make it better or else". With in 1-2 months all initial target goals had been met and or exceeded and system was producing technically defensible data with verified QA/QC that was acceptable to all concerned 24 hours a day 7 days a week.

WASTE MANAGEMENT INCORPORATED (1985 – 1993)

CHEM NUCLEAR & CHEM NUCLEAR ANALYTICAL SERVICES (Greenville/Anderson, SC) Managing Director Mixed (Radioactive/Hazardous) Waste Analytical Programs (1990 - 1993). Acquired Sirrine Environmental Consultants (SEC) and Enwright Environmental Consulting Laboratories, harvested existing analytical laboratory environmental businesses and converted them into interim mixed waste training/production facilities providing DOE site analytical services at an annualized rate of $3.6 million. Concurrently implemented design/build construction of new 40,000 SF Clemson Technical Center (CTC) Analytical and Treatability Development & Demonstration Laboratory located in Clemson Research Park Anderson, SC. Planned in 1989, initialized in 1991, and completed in March 1992, 18 months after breaking ground at a cost of $155/SF. SEC (Progress Park) and Enwright (Greengate Park) interim laboratory facilities phased out and closed in 1992 and all staff, equipment, casework, etc. transferred to newly completed CTC facility. All facility systems, equipment, procedures were up and operational and generating revenues three (3) weeks after moving into the facility. All radioactive licensing, environmental compliance, industrial radiation safety, QA/QC programs, test methods, practices, procedures and protocols for sample receipt, radioactive/hazardous fingerprint screening, characterization, storage and disposal of samples/secondary wastes, LIMS data management, contract required reporting/invoicing were specified, written, initiated and established under my direction. The analytical laboratory provided environmental and waste sample analyses to the Department of Energy

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(DOE) site environmental restoration and monitoring programs achieving an annualized revenue rate of $6 million in less than one year after start up.

CHEMICAL WASTE MANAGEMENT (Chicago, IL) Senior Staff Manager, Corporate Analytical Programs, Science & Technology (1989 - 1990). Provided corporate support for analytical laboratory optimization, acquisition, transition, start up and operational services to new, acquired and existing facilities (30+) in the areas of (staffing, training, methodology, equipment, design/remodel, environmental compliance, health & safety, waste management, QA/QC policies & procedures, etc.

WASTE MANAGEMENT INTERNATIONAL (Moerdijk, The Netherlands) Senior Staff Manager, Corporate Analytical Programs, Science & Technology Advisor (1988 - 1989). Helped develop site business plan and implement technology transfer for start up of the company's first land based hazardous waste treatment storage and disposal (TSD) in the European Community. Converted existing analytical/process support laboratories into expanded facilities capable of producing on time analyses and defensible data by upgrading staff, training, equipment and layout of existing site laboratory and implementing practical and effective QA/QC, environmental compliance, and health/safety policies & procedures.

CHEMICAL WASTE MANAGEMENT (Chicago, IL) Senior Scientist/Technical Manager, Corporate Analytical Programs, Science & Technology (1986 - 1988). Responsible for the development of centralized corporate regional analytical laboratory facilities net work system, organization, and programs required to provide nation wide analysis for remediation/sales samples and multiple site/method waste disposal decision approvals for both internal and external customers.

WASTE MANAGEMENT INC. (Chicago, IL) General Manager, Corporate Hazardous Waste Analytical Laboratory, Riverdale Corporate Technical Center, (1985 - 1987). Developed, upgraded, and expanded the corporate hazardous waste laboratory from an initial staff of 7 to 50+. Converted the operation from a cost center to a cost savings center covering 87% of the laboratory's $4.2 million cost of operation via internal/external analytical service fees.

AMF INCORPORATED (1979 – 1985)

AMF CORPORATE ENGINEERING & RESEARCH (1983 - 1985) (Stamford, CT) Project Manager, Materials Science Center. Demonstrated commercial viability of products made from AMF Engineered Leather and optimized product formulations and processing conditions. Acquired a natural gut racquet string plant, improved plant chemical/physical process operations and QC testing required to allow the production of a premium grade high performance string acceptable for use by tennis professionals.

AMF CUNO FILTRATION DIVISION Filtration & Microflake Divisions (Stamford, CT) Research Specialist, Process Chemistry & Non-Tobacco Research & Development, (1979 - 1983). Managed the development of process chemistries and analytical/regulatory support for non-tobacco smoking products, charged pathogen attacking media, and highly refined (fibrillated) natural collagen fiber systems. Awarded a propriety patent for technology required to produce engineered sheet products from chrome tanned leather waste scraps, guided the process from bench to full scale batch continuous plant production.

AMF WORLD TOBACCO DIVISION (Stamford, CT) Group Manager, Process Engineering and Analytical Chemistry, (1979 - 1980). Responsible for the process chemistries and analytical/regulatory support for all reconstituted natural tobacco cigarette/cigar binder/wrapper products.

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MONSANTO COMPANY (1967 - 1978)

MONSANTO CORPORATE ENVIRONMENTAL HEALTH LABORATORY (Creve Coeur, MO) Staff Consultant (1977 - 1978).

Design and planning of an analytical and clinical chemistry laboratory to support a new corporate environmental toxicology testing facility. Recommended laboratory design, analytical staffing, equipment purchases, and budgeting

Developed on-line computerized report and record keeping procedures in conjunction with computer programmer analysts for data acquisition, reduction, retention, and retrieval in compliance with anticipated regulatory environmental and toxicological analytical GLP requirements.

MONSANTO INDUSTRIAL CHEMICALS CO. (Creve Coeur, MO) Research Specialist Technology Department / Research Group Leader Analytical Chemistry Group Applied Sciences Section (1970 - 1977).

External and internal liaison on the environmental and analytical chemistry of polychlorinated biphenyl dielectric fluids and phthalate ester plasticizers for corporate legal department, manufacturing units, customers, consultant laboratories, and governmental regulatory agencies.

Development of standardized protocols for the evaluation of the environmental compatibility of new and existing Monsanto Co. products.

Division Radiation Safety Officer and Member Corporate Radiation Safety Committee. Designed and implemented a company-wide computerized isotope inventory system for compliance with NRC regulations and inspections. Improved techniques for the chemical syntheses and characterization of high specific activity radiolabel product for analytical environmental compatibility studies.

Development and application of standardized protocols using radiolabled products in bacterial, aquatic, avian, and mammalian bioaccumulation and metabolism studies with computerized HPLC/LSC separation and detection techniques.

Setup and design of avian, mammalian, and aquatic toxicological study protocols with consultant laboratories for residue bioaccumulation studies.

MONSANTO ORGANIC CHEMICALS DIVISION (St. Louis, MO) Senior Research Chemist Applied Sciences, (1967 - 1970).

Principal U.S. industrial scientist and team leader who confirmed the widespread presence and sources of poly chlorinated biphenyl (PCBs) residues in our food chains and environment.

Development and application of analytical methods for the absolute identification and analysis of PCB residues in industrial products and environmental samples including the use of Gas chromatography (packed, capillary, etc.) with electron capture, flame ionization, thermal conductivity, flame photometric, nitrogen-phosphorous, photoionization, microcoulometric, electro-conductivity and mass spectrometry detection techniques for trace environmental pollutant identification and quantitative analysis.

Extended the use of static aquatic bioassay testing and bioaccumulation studies including bacterial river die away, semi-continuous activated sludge, and ultimate biodegradation studies to the study of water insoluble organic molecules.

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SELECTED PATENTS, PUBLICATIONS, AND PRESENTATIONS

A Comparison of Three Ambient Air Monitoring Strategies for Superfund Remediation Sites, Midwest Section Air & Waste Management Association Conference and Exhibition, Kansas City, KC, September 17, (1998).

Application of Real-Time GC Fenceline Network Monitoring to a Superfund Remediation Program, Air & Waste Management Association Symposium, "Measurement of Toxic and Related Air Pollutants", Research Triangle Park, NC, May 16-18, (1995).

A Performance Evaluation of a GC Based Continuous Air Monitoring System Used During a Superfund Site Remediation, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 5-10, (1995).

International Association of Environmental Testing Laboratories, "Federal Facilities Compliance Act", 6th IAETL Annual Conference, San Diego, CA, September 26-28, (1993).

Management of Laboratory Radioactive and Mixed Wastes Generated via Analysis of DOE Samples, Second International Mixed Waste Symposium, Baltimore, MD, August 17-20, (1993).

Commercial Laboratory Position on National Accreditation, USEPA 9th Annual Waste Testing and Quality Assurance Symposium, Washington, DC, July 12-16, (1993)

International Association of Environmental Testing Laboratories, Mixed Wastes Stakeholders Workshop on DOE's "Analytical Services Five Year Program Plan", Committee Co-Chair, McLean, VA, October 27-29, (1992) & IAETL Stakeholders Workshop Report, June (1993).

International Association of Environmental Testing Laboratories, "Mixed Waste Committee Objectives", 5th IAETL Annual Conference, Wyndham Harbor Island Hotel, Tampa, FL, October 18-20, (1992).

The Application of X-Ray Fluorescence Spectroscopy for Rapid Hazardous Waste Classification and Screening, USEPA 7th Annual Symposium on "Solid Waste Testing and Quality Assurance", Washington, DC, July 8-12, (1991).

Evaluation of EPA SW-846 Gas Chromatography/Mass Spectrometry Methods 8240 and 8270 for the Analysis of Volatile and Semi-volatile Halogenated Organic Constituents, USEPA 4th Annual Symposium on "Solid Waste Testing and Quality Assurance", Washington, DC, July 11-15, (1988).

Ion Chromatograph for the Analysis of Anions in Hazardous Waste Materials, USEPA 3rd Annual Symposium on "Solid Waste Testing and Quality Assurance", Washington, DC July 13-17, (1987).

Reconstituted Leather Products from Fibrillated Leather Fibers, Filed, Patent Pending, U.S. Serial No. 857,750/E.P. App. No. 83-102-425.2, Mar. 11 (1982). Additional Foreign Patent Fillings.

Comparative Smoke Deliverables and Chemistries of Natural and Reconstituted Tobacco Cigarettes, German Health Board, Berlin, Germany, (1980).

Environmental Fate of Selected Phosphate Esters, Environmental Science and Technology, 13 (7), 840-4, (1979).

Tissue Residues from Subacute Oral Feeding of Biphenyl Dialectic Fluids, Bulletin of Environmental Contamination and Toxicology, 15 (6) 699-707, (1976).

Identification and Analysis of Organic Pollutants in Water, L. H. Kieth Ed., "Separation of Trace Organic Compounds from Water," Chapter 8, 113-133 Ann Arbor Science Publishers Inc. (1976).

Biodegradation of Phthalate Esters in River Water and Activated Sludge, Applied Microbiology, 31 (1), 29-34, (1976).

Activated Sludge Degradation of Adpic Acid Esters, Applied Microbiology, 31(6), 746-9, (1976).

Accessing Potential Ocean Pollutants, A Report on Assessing Ocean Pollutants, Ocean Affairs Board, Commission on Natural Resources, National Research Council, "Synthetic Organic Chemicals", Chapter 4, 64-224, National Academy of Sciences, Washington, DC, (1975).

Activated Sludge Primary Biodegradation of Polychlorinated Biphenyls, Bulletin of Environmental Contamination of Toxicology, 14(6), 703-13 (1975).

Migration of Polychorinated Biphenyls in Soil Induced by Percolating Water, Bulletin of Environmental Contamination and Toxicology, 13(1), 86-93, (1973).

Phthalate Esters Undergo Ready Degradation, Plastics Engineering, 29(8), 46-9 (1973)

Assessing Potential Ocean Pollutants, Ocean Affairs Board, Commission on Natural Resources, National Research Council, National Academy of Sciences, Chairman, Synthetic Organic Chemicals Section, Marine Biological Laboratory, Woods Hole, MA, Oct. 29 - Nov. 2, (1973).

Biodegradation of Phthate Esters, Regional Technical Conferences, Society of Plastics Engineers, Invited Technical Paper, 105-13, Lake Kamesha, NY. Mar. 20-22. (1973).

Assessing Potential Ocean Pollutants, Ocean Affairs Board, Commission on Natural Resources, Nation Research Council, National Academy of Sciences, Study Panel Member, July (1972).

Assessment of the Biological Persistence of Polychlorinated Biphenyls, President's Council on Environmental Quality, Interdepartmental Task Force on Polychlorinatined Biphenyls, Invited Industry Advisor, Washington, DC, May 15, (1972).

Spectrophotometric Determination of Cobalt with Benzyl Mono(2-Pyridyl) Hydrazones, Analytical Chemistry, 43(3), 458-9, (1971).

Atomic Adsorption Spectroscopy, American Chemical Society, Midwest Regional Meeting, Section Chairman, Manhattan, KA, Oct. 31 - Nov. 1 (1968).

An Analytical Investigation of Some Mono(2-Azaaryl) Hydrazones, 1-163, Dissertation Abstracts, 29(2), 511-2, (1968).

Spectrophotemetric Determination of Cobalt with Benzyl Mono(2-Pvirdyl) Hydrazone, American Chemical Society, Midwest Regional Meeting, Technical Paper, University of Missouri, Columbus, MO, Nov. 2-3, (1967).

Spectrophotometric Determination of Iron in Strong Alkalies, Analytical Chemistry, 38(3), 1980-1, (1965).

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