Professional Qualifications – David Gossman

PRESIDENT – GOSSMAN CONSULTING, INC
PRESIDENT – CHEMRIGHT LABORATORIES, INC.
MANAGING PARTNER – OPERATIONS – ERATECH GROUP, LLC

David Gossman has a B.S. and M.S. in Interdisciplinary Physical Science and is a Fellow of the American Institute of Chemists (FAIC). He is President, Gossman Consulting, Inc. and President, ChemRight Laboratories, Inc. He has been Manager, Cement Kiln Services for Safety-Kleen Corp.; Manager, Business Development for McKesson Envirosystems; and Technical Director for Systech Corp. He has, over the last twenty-four years, developed a large number of the commercially available systems for utilizing hazardous waste as fuel in cement kilns. Prior to entering the hazardous waste management field in 1980, he held a non-teaching faculty position at the Michigan State University Heavy Ion Laboratory where he worked as an instrumentation engineer. He is currently serving on the American Institute of Chemists Editorial Review Board. He is on various committees for ASTM International including: Sampling and Analysis of Atmospheres; Waste Management; Molecular Spectroscopy; and Chromatography and Occupational Health and Safety. He is also a member of the American Chemical Society, the American Association for the Advancement of Science and has most recently become an Associate Member of the American Bar Association.

Specific experience in hazardous waste management include the following:

- Designed hazardous waste regulations for potential use in a developing country.
- Evaluated a draft waste fuel supply contract between a cement manufacturer and a waste management company.
- Managed HWC MACT compliance testing programs
- Managed PC MACT compliance testing programs.
- Performed a company wide environmental compliance audit including management strategies for more effective compliance.
- Provided an expert witness report on the cause of a railcar explosion at a cement plant HWF facility.
- Provided an expert witness report on the cause of an explosion in the vapor hood space at a hazardous waste fuel storage facility in a cement plant.
- Managed a comprehensive, 2 phase, 4 day RCRA trial burn at a cement plant.
- Evaluated numerous cement plants in Taiwan, United Arab Emirates, Kuwait, Australia, Philippines, United Kingdom and Malaysia for potential use of alternative fuels and raw materials.

- Supervised the QA/QC for a Risk Test Burn at a cement plant under the BIF regulations.
- Wrote and supervised testing at numerous cement plants for dioxin emissions relative to preparing for compliance with the MACT rule.
- Assisted in the development of strategies for compliance with dioxin emission limits under the MACT rule at numerous cement plants.
- Testified at judicated hearings required for a Part B permit for a cement plant using hazardous waste fuel in Texas.
- Assisted in the preparation of testimony for permit hearings.
- Set up the laboratory and trained operating personnel at a waste fuel blending facility in Chilé.
- Assisted in the preparation of a permit application for a new cement plant in the US, specifically made calculated emission estimates for metals and organics based on raw material inputs and process design.
- Assisted in the development of a dynamic model for predicting metal emission rates from a cement plant as a tool for developing operating modes designed to reduce mercury emissions.
- Trained international teams for the performance of feasibility studies for the potential use of waste derived fuels and raw materials in cement plants in developing countries.
- Developed corporate standard quality control procedures for alternative raw materials and fuels for cement plants.
- Assisted in writing a number of Initial Comprehensive Performance Test Plans for plants complying with the new HWC MACT rule.
- Evaluated maximum feed rates for the use of spent aluminum potliner is specific cement plants.
- Developed a report on emissions from cement plants using tire derived fuels compared with baseline emissions.
- As part of a team, performed a comprehensive review of proposed MACT standard for hazardous waste combustors.
- Evaluated three cement plants in Argentina for potential use of hazardous waste fuel.
- Assisted with negotiations to set Part B permit operating conditions for a cement plant burning hazardous waste fuel in Texas.
- QA/QC review of a HAP test for a cement plant using tire derived fuel.
- External QC for EPA funded test to fully characterize PIC emissions from a cement kiln burning hazardous waste fuel.
- QA/QC review of comprehensive testing of a Canadian cement kiln utilizing chlorine containing waste as an alkali reducer.
- Comprehensive lab operations review for on-site hazardous waste testing laboratory.
- Trial burn review for commercial BIF facility.
- Performed a study of metal and particulate emissions for cement kilns using hazardous waste fuel.
- Prepared a Waste Analysis Plan for an oil/solvent recycling facility in Chilé.

- Assisted in a study comparing proposed HWC (MACT) rules with existing BIF regulations.
- Acted as QA/QC manager for one of the first comprehensive RCRA Trial Burns at a cement plant.
- Performed a comprehensive review of a proposal update to SW-846.
- Performed a detailed QA/QC review of mercury emission data used by EPA to develop/justify MACT controls on cement kilns.
- Performed a detailed QA/QC review of dioxin emission data from cement plants not utilizing hazardous waste fuels.
- Acted as QA/QC manager for 1995 update to ROC tests at multiple cement plants.
- Assisted in development of a comprehensive waste oil/solvent waste fuel program for Chilé.
- Evaluated three cement plants in Spain for potential use of hazardous waste fuel.
- Assisted in the review of a cement plant's waste water run off plans.
- Reviewed the EPA draft *Combustion Emissions Technical Resource Document* (CETRED) and assisted various clients in providing technical comments and corrections to EPA.
- Performed a detailed QA/QC review of dioxin emission data comprising over 20 tests at a single cement plant, both under baseline conditions and while burning hazardous waste.
- Made a presentation at a technical seminar on hazardous waste combustion presented to waste generators and regulatory authorities in the United Kingdom.
- Evaluated two cement plants in Chilé for potential use of hazardous waste fuel.
- Assisted with a community information program for an existing facility undergoing Part B permitting. Helped the public in attendance to understand the Trial Burn Plan process.
- Assisted with the preparation of Trial Burn Plans for a number of cement kilns using hazardous waste. Plans incorporated latest EPA guidance on data required for multi pathway risk assessments.
- Provided hardware support and maintenance for in-house state of the art network system including the networking of the latest 486 and pentium based computer technology, high-end laser printing, CD-ROM, and optical character and voice recognition technology.
- Provided conceptual oversight to the design of a corporate level multi plant emissions database for a major U.S. cement manufacturer.
- Assisted in the review and preparation of client comments on the EPA draft *Dioxin Assessment*. Assisted international clients in dealing with erroneous EPA conclusions found in the draft report in order to prevent the erroneous conclusions from negatively impacting local permitting decisions.
- Designed and set up a new GC/MSD system for testing organic hazardous waste using the latest available technology from Hewlett-Packard.
- Prepared a new Waste Analysis Plan and QA/QC Plan for a cement plant using both liquid and solid hazardous waste fuel.
- Prepared an analysis of existing metal emission data from cement kilns and incinerators burning hazardous waste, and recommended technology based metal

emission standards which have been presented in a petition for rule making to the USEPA by the Cement Kiln Recycling Coalition.

- Assisted in performing a critical review of QA/QC data from an EPA study of cement kiln dust.
- Assisted in responding to regulatory allegations and potential fines for cement plants using hazardous waste fuel.
- Evaluated a number of cement kilns in the United Kingdom for hazardous waste fuel potential and made recommendations to help set project priorities.
- Assisted in the development of a "green grass" waste fuel burning facility in the United Kingdom with special emphasis on appropriate quality control measures, process monitoring permitting and stack testing.
- Developed a detailed GC-MSD technique for determining volatile and semivolatile organics in hazardous waste fuel. The technique is now being used in at least three hazardous waste fuels laboratories.
- Assisted in the development of a petition for rule making submitted to EPA by the Cement Kiln Recycling Coalition.
- Provided technical support on various issues in support of the cement industry's lawsuit against EPA regarding certain aspects of the BIF regulations.
- Assisted in the development of hazardous waste fuel specifications and laboratory testing methods for a cement kiln using hazardous waste fuel in Australia.
- Evaluated and made recommendations regarding a potential hazardous waste fuel project for a cement plant in Indonesia.
- Evaluated cement plants in Thailand for potential hazardous waste fuel projects.
- Performed comprehensive audits of contractor operated laboratories testing hazardous waste fuel at three cement plants.
- Assisted in the preparation of an ISO 9000 (British Standard 5750) certification application for a hazardous waste fuel laboratory in the United Kingdom.
- Prepared a comprehensive report compiling the results of all BIF compliance testing at industrial furnaces commercially burning hazardous waste fuel in the United States.
- Prepared a comprehensive report compiling the results of 20 trial burns at commercial hazardous waste burning incinerators.
- Assisted with presentations to a community advisory panel for a cement plant using HWF in Indiana.
- Prepared a study of recycling opportunities utilizing cement kiln technology for refineries in Venezuela.
- Assisted in drafting two requests for hydrocarbon extensions under the BIF regulations.
- Assisted in presentations to EPA regions and headquarters regarding the BIF regulations and the HC/CO issue in cement kilns.
- Subcontracted metal spiking and process sampling/testing at two BIF compliance tests.
- Managed and wrote the reports for BIF compliance tests/trial burns at four cement plants.
- Prepared revised BIF Precompliance Certifications for three cement plants.

- Developed sample preparation methods for homogenizing non-homogeneous samples of liquid and solid HWF prior to analysis.
- Developed and wrote a screening method for radioactive material contamination of HWF.
- Developed laboratory testing methods to screen HWF for selected pesticides.
- Updated RCRA Operating Plans for three cement plants using HWF to comply with new BIF regulations.
- Prepared BIF Precompliance Certification for a cement manufacturer using HWF.
- Prepared and made presentations at public meetings in Texas and Colorado regarding the use of HWF in cement kilns.
- Provided expert witness testimony during legislative hearing in Texas regarding bills on hazardous waste management and facility permitting.
- Developed and wrote a comprehensive laboratory operations manual for use at multiple HWF testing laboratories.
- Designed and set up a new laboratory for HWF testing in Ohio. Subsequently trained the new lab manager to operate and maintain the lab in accordance with EPA guidelines.
- Performed studies of the impact of the proposed Boiler and Industrial Furnace regulations and other regulations on the hazardous waste/cement kiln market.
- Prepared and made presentations to representatives from the oil refining industry regarding opportunities for reusing hazardous waste in cement kilns.
- Developed laboratory operating procedure that allows for the determination of sub-ppm levels of mercury in HWF in less than two hours using EPA SW-846 methodology.
- Developed a comprehensive database of health and safety information on over 400 compounds known to have been found in hazardous waste fuel.
- Designed and set up a new laboratory for HWF testing in Tennessee. This is the first HWF laboratory designed specifically to comprehensively test solid HWF prior to acceptance and is the first to use x-ray fluorescence spectroscopy to determine metals.
- Assisted client companies in evaluating technical personnel for positions involved in hazardous waste operations and laboratories.
- Co-directed a series of courses on Solvent Recycling and Reuse taught in the United States and Europe.
- In conjunction with Southdown Corp., performed a study to determine the viability of proposed EPA stack testing methodology for HCl emissions. Results indicate that ammonium chloride and other chloride salts produce false positives using the methodology.
- Performed technical and market evaluations to determine the suitability and made recommendations regarding the resource recovery opportunities available to various cement plants throughout the United States as well as Great Britain, Venezuela, and South East Asia.
- Performed comprehensive laboratory based study, including field sampling, of cement kiln dust and cement clinker stored and generated at cement plants throughout the country.

- Developed and managed the implementation of stack testing plans for cement manufacturers using or planning on the use of hazardous waste fuel. Tests were performed to satisfy state air permit authorities as well as provide data to be used for future EPA requirements.
- Performed a comprehensive evaluation of the potential for utilizing spent aluminum potliner as a fuel in cement kilns. Evaluation included facility design criteria and concepts based on the study's technical findings.
- Evaluated various resource recovery opportunities for client companies relative to technical feasibility, worker health and safety impact, environmental impact, and regulatory requirements.
- Helped to design a system to perform a detailed market analysis of selected types of hazardous waste within a regional market.
- Performed RCRA and CAA audits of existing cement kilns utilizing HWF.
- Performed a study of various alternatives for the introduction of solid hazardous wastes into cement kilns including the potential for pyrolysis or thermal separation prior to cement kiln introduction.
- Provided detailed calculations of potential limits on metals in hazardous waste fuel based on proposed BIF regulations and stack dispersion models.
- Wrote a complete set of RCRA operating plans for a RCRA interim status hazardous waste fuel storage facility located at a cement plant.
- Guided the engineering design of a bulk liquid HWF facility for a client cement company including tank farm, truck and rail transfer, and laboratory.
- Developed a comprehensive community information program and implementation plan for a client cement manufacturer considering the use of hazardous waste fuel.
- Performed the first comprehensive, published study on the fate of trace metals in the cement manufacturing process. The study provided special insight on how recirculating loads, as well as the point of introduction, can effect the fate of metals in cement kilns.
- Authored a series of published reviews of proposed EPA Boiler and Industrial Furnace regulations. These reviews included specific technical analysis of potential impacts on cement kiln waste fuel operations with suggestions and guidance for providing comments to EPA.
- Managed the economic planning and all stages of business operations of HWF programs for Safety-Kleen, which included marketing and sales strategies.
- Developed an additional HWF facility for Safety-Kleen at a cement plant in South Carolina. This facility has the largest storage facility capacity of any in the country.
- Participated in corporate lobbying efforts through representation of Safety-Kleen at meetings of the Hazardous Waste Treatment Council and National Association of Solvent Recyclers.
- Developed and managed a "green grass" HWF facility at the largest cement kiln in the world. This process included permitting, community relations, facility design, construction, personnel hiring, training and management, contract negotiations with the cement manufacturer and training of marketing and sales personnel. The facility was on line burning HWF within five months after a decision was made by both companies to pursue the project. This HWF facility

permitted McKesson Envirosystems revenue and profitability growth to record levels and was one of the key reasons for Safety-Kleen's acquisition of McKesson Envirosystems.

- Assisted in the development of McKesson Envirosystems standard analytical procedures, QA/QC program and health & safety evaluation system.
- Performed a comprehensive systems analysis at three McKesson Envirosystems solvent recycling/waste fuel-blending facilities to improve efficiency and QA/QC. Negotiated corporate purchase of laboratory equipment and computers worth $250,000 to standardize plant labs.
- Developed and implemented a new comprehensive hazardous waste stream qualification program for McKesson Envirosystems. The system provided a 50% increase in the number of qualifications and added $500,000 in corporate revenues for qualification analysis services.
- Assisted in the technical development and marketing of a cement kiln waste fuels outlet in Puerto Rico, the first and only in the Caribbean. Developed and helped to equip a laboratory for HWF testing in Puerto Rico and trained laboratory personnel.
- Supervised the technical, regulatory and safety aspects of test burns in cement kilns in Illinois, Pennsylvania, California, Kansas, Ohio, and Ontario, Canada from 1982 to 1985.
- Participated in community relations programs for HWF facilities in California, Texas, Ohio, and Ontario, Canada.
- Designed and set up new laboratories for HWF facilities in California and Kansas. Trained chemists and managers for both facilities.
- Co-developed the first quantitative model for evaluating relative health & safety risk from compounds found in HWF. This model has been copyrighted by Systech Corp. and continues to be utilized in evaluating potential hazardous wastes for inclusion in their hazardous waste fuel program.
- Managed the corporate safety and regulatory compliance program for Systech Corp. This program included review of all pre-shipment analysis for Systech for over five years. This review process included a comprehensive toxicological review of each compound identified in every waste stream.
- Developed the first comprehensive HWF specification, which met the needs of product (cement) quality, environmental protection and personal health & safety in 1980.
- Developed the first comprehensive and field tested system for determining the chlorine specification for HWF used in cement kilns. This system remains proprietary to David Gossman. The system takes into account a wide variety of parameters including raw material and current fuel chemistry as well as kiln system design.
- Developed the first analytical methodology for identifying volatile and semi-volatile compounds with potential health & safety impacts in HWF. Later enhanced this methodology by utilizing wide bore capillary chromatography and multiple detector systems.
- In 1983, provided the initial design and system specifications for an on-site computerized shipment receipt and invoicing system at multiple commercial

RCRA, TSDFs. The system provided significant manpower savings and paid for itself with interest income from faster invoice receipts within one year.

- Developed the first three-tiered hazardous waste testing program in 1981 including pre-shipment testing, shipment receipt testing and blended waste testing. By using such a multi-tiered system, this program was the first to effectively deal with the QA/QC issue relative to testing at RCRA facilities.
- Developed a complete operations and safety manual for use at RCRA permitted hazardous waste fuel facilities.
- Developed a comprehensive laboratory and operations training program for the Paulding, Ohio HWF facility which has subsequently been used at five additional RCRA permitted hazardous waste fuel facilities.
- Developed and published the first high speed methodology for determining metals in HWF utilizing organic matrix dilution and direct aspiration into an atomic absorption spectrophotometer.
- Developed and published the first analytical methodology to utilize ion chromatography to determine F, Cl, Br, S, and P in HWF.
- Developed and published the first analytical methodology specifically designed to determine PCBs in HWF. The method was eventually expanded to utilize computerized, graphics based pattern recognition.
- Managed the first commercial hazardous waste fuel (HWF) blending facility operating at a cement plant. The facility in Paulding, Ohio was the first of its kind with a complete on-site laboratory and storage facility operating in full compliance with RCRA in 1980.