

Ralph H. Weiland, Ph.D.

Chemical Engineering Consultant

Background & Core Competencies

BASc, MASc, PhD (University of Toronto) chemical engineer with broad experience of 50+ years in most aspects of the profession. Background includes:

- 25 year academic career teaching virtually every subject in chemical engineering,
- 25+ years in corporate R&D, product marketing and sales, business startups.
- Commercial R&D in solvent-based gas processing, carbon capture, fluid mechanics, immobilized enzyme catalysis and poisoning, tray and packing hydraulics and mass transfer, development of new tower internals, sedimentation, solids handling

Experience

Optimized Gas Treating, Inc., Buda, TX (Founder)

- Chairman (2020 – present)
- President (1992 – 2020)
- Development of ProTreat® and SulphurPro® simulators

Taylor, Weiland & Associates, Potsdam, NY (sold to ChemShare, 1991)

- President (1984 – 1990)
- Development of GASPLANT™ and GASPLANT-PLUS™ software

Koch-Glitsch LLC, Wichita, KS

- Principle Research Engineer, Tray R&D (1998 – 2007)
- ULTRAFRAC® and Kittel™ tray development
- Design of SUPERFRAC® trays and downcomer treatments
- Development of downcomer choke flood model

University of Newcastle, Newcastle, NSW, Australia

- Professor (1990 – 1994)

Clarkson University, Potsdam, NY

- Associate Professor/Professor (1980 – 1990)

University of Queensland, Brisbane, Australia

- Senior Lecturer (1970 – 1980)

University of Western Australia, Perth, Australia

- Post-doctoral Fellow, Applied Mathematics (1968 – 1970)

Publications & Patents

- 350+ peer reviewed papers and articles in trade journals
- Hundreds of conference presentations
- Several US and European patents in tray technology

Consulting

- Ampol Oil Refining Company, Brisbane, Australia. Advice on operation of catalytic cracking unit and product analysis (1974)
- Trout, Bernays & Tingle, Solicitors. Analysis of probable cause of timber-drying kiln fire (1975).

- Queensland Cement & Lime Company, Brisbane, Australia. Advice on gravel dredging operations (1975).
- Power & Power, Solicitors, Brisbane, Australia. Analysis of possible causes of fire to Ferrari motor vehicle (1979).
- Mitchell Engineering Ltd., Brisbane, Australia. Analysis of low performance of vaporizer and design of new equipment (1979).
- Consolidated Fertilizers Ltd., Brisbane, Australia. Development of procedure for design of CO₂ and NH₃ stripping column (1980).
- Dow Chemical U.S.A., Midland, Michigan and Freeport, Texas, Gas Treating Technology (1981-85).
- New York State Electric & Gas Corp., Binghamton, NY. Sedimentation of fine coal produced in mechanical desulfurization (1982-84).
- United Technologies Corp., Windsor Locks, CT, Breathable controlled-atmosphere technology (1984-86).
- Mitsubishi Heavy Industries, Tokyo, Japan, DEA treating of natural gas (1987).
- Hudson Engineering, Inc, Houston, TX, CO₂ Recovery from flue gas (1987).
- Texas Eastman Chemicals, Longview, TX, Synthesis gas production (1988).
- Texaco Chemical Company, Austin, TX, Blended amine treating technology (1989).
- Fluor Daniel, Inc, Irvine, CA and Glitsch, Inc, Dallas, TX, Development of a computer model for selective H₂S removal from natural gases in HIGEE contactors (1989-93).

Positions Held:

Principal Research Engineer, Koch-Glitsch LP, 4900 Singleton Blvd., Dallas, Texas, (1998-2007).

Professor of Computer Science, Southeastern Oklahoma Stat University, Durant, Oklahoma, (2001-02).

Adjunct Professor, School of Chemical Engineering, Oklahoma State University, Stillwater, Oklahoma, (1994-95).

Professor of Chemical Engineering, The University of Newcastle, Newcastle, New South Wales, Australia (1990-94).

Professor of Chemical Engineering, Clarkson University, Potsdam, New York (1983-90).

President, Taylor, Weiland & Associates, Inc., Technology Development Center, Potsdam, New York (1984-89).

Associate Professor of Chemical Engineering, Clarkson College of Technology, Potsdam, New York (1980-83).

Senior Lecturer in Chemical Engineering, University of Queensland, Brisbane, Queensland, Australia (1971-80).

Group Leader, Summer School Research Program, Queensland Alumina Limited, Gladstone, Queensland, Australia (1972)

Visiting Research Scientist, The Johns Hopkins University, Baltimore, Maryland (1977-78).

Assistant Professor of Chemical Engineering, University of Calgary, Calgary, Alberta, Canada (1970-71).

Post-Doctoral Fellow, Department of Mathematics, University of Western Australia, Perth, Western Australia, Australia (1968-70).

Student Engineer, Du Pont of Canada, Maitland, Ontario, Canada (Summers 1962-63).

Consulting:

Ampol Oil Refining Company, Brisbane, Australia. Advice on operation of catalytic cracking unit and product analysis (1974)

Trout, Bernays & Tingle, Solicitors. Analysis of probable cause of timber-drying kiln fire (1975).

Queensland Cement & Lime Company, Brisbane, Australia. Advice on gravel dredging operations (1975).

Power & Power, Solicitors, Brisbane, Australia. Analysis of possible causes of fire to Ferrari motor vehicle (1979).

Mitchell Engineering Ltd., Brisbane, Australia. Analysis of low performance of vaporizer and design of new equipment (1979).

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Fluor Daniel, Inc, Irvine, CA and Glitsch, Inc, Dallas, TX, Development of a computer model for selective H₂S removal from natural gases in Hige contactors (1989-93).

Business Ventures:

Formed Optimized Gas Treating in 1991, in partnership with J. C. Dingman (formerly with Texaco Chemical). Company is a Texas C-corporation whose business is software development, marketing and sales, and engineering and consulting services in gas processing. Company's main products are *ProTreat®* and *SulphurPro®*, Windows-based computer programs for process flowsheet simulation in the area of gas treating for carbon dioxide and sulfur removal and sulfur recovery. The unique technical feature of this software is its use of mass and energy transfer rate models for separations.

Formed Taylor, Weiland and Associates, Inc. in 1984 in partnership with several individuals. Company's assets were sold to ChemShare Corporation in 1991. Company was a closely held New York corporation whose business was development, marketing, sales and support of computer software. Position as president (held until August, 1989) lead to close technical and business contact with a large number of companies in the oil, gas, chemicals, engineering and construction industries.

Memberships: Association of Professional Engineers (Ontario) 1964-1977
Australian Mathematical Society, 1976-81
Fine Particle Society, 1980-89
Filtration Society, 1981-90
American Institute of Chemical Engineers 1980-2007

Awards: Top Researcher Award, Clarkson University, 1983
American Institute of Chemical Engineers Award, 2014
Hanlon Award, Gas Processors Association, 2015

Publications: Over 250 publications in peer reviewed and trade journals