



**CHIA-HWA (CLEM) TAO, Ph.D., P.E.**

**SUMMARY**

Highly experienced Environmental Engineer with expertise in petrochemical, chemical, and industrial plant engineering, from major grass-root installations to modification / revamping of existing operating facilities. Overall project responsibility in:

**Environmental compliance and permitting:** Obtaining Federal EPA – NPDES, PSD, NESHAP, RCRA Part B, state and local environmental construction and operating permits.

**Project Strategy, Execution, and Oversight:** Setting-up project environmental design criteria and supervising environmental system design for new plant facilities.

**Detailed Engineering Design:** Process design and engineering specifications of pollution abatement systems, particularly wastewater collection, secondary and advanced wastewater treatment, process emission control, incineration and hazardous pollutant destruction.

**WORK EXPERIENCE**

FIRM	POSITION	DURATION
LXDE Corp.	Consultant	2000 - Present
HEI Environmental Engineering	Consultant	1985 - 2000
ABB Lummus Crest Inc.	Principal Engineer	1976 - 1985
Bechtel Corporation	Engineering Specialist	1970 - 1976
	Senior Engineer	1966 - 1967
Kimberly-Clark Canada, Ltd.	Design Engineer	1962 - 1965

**START-TO-FINISH MAJOR-FACILITY ENVIRONMENTAL SYSTEM DESIGN**

Overall Project Responsibility for environmental design criteria, environmental permitting, and environmental engineering for major grass-root plants listed below.

Responsibilities (extending from project inception through to successful permitting and plant startup) included project-wide environmental compliance and permitting, conceptual/process design of wastewater treatment and process emission abatement systems from project kick-off through review/approval of equipment vendor design documents, and supervision of detailed engineering.

FACILITIES	CLIENT
Fuel Ethanol Plant, Baton Rouge, Louisiana	Agrifuel Corporation
Basrah Petrochemical Complex No. 1	Ministry of Industry & Minerals, Iraq
PVC Plant, West Baton Rouge, Louisiana	Firestone Plastic Company
HDPE & LDPE Plant Sarnia, Canada	Union Carbide Corporation
SNG Plant, Morris, Illinois	Northern Illinois Gas Company
Fiberglass Plant, Albany, New York	Owens-Corning Fiberglas Corporation
Kraft Paper & Converting Plant, Albany Georgia	Procter & Gamble Company

## ENVIRONMENTAL ENGINEERING – OTHER MAJOR PROJECTS

In charge of wide range of environmental engineering projects encompassing environmental permitting, air and water pollution abatement system design, solid and hazardous waste management.

<b>Project</b>	<b>Client</b>	<b>Responsibilities</b>
Process Technology Environmental Assessment – Bloomfield, New Jersey	ABB Lummus Crest Inc. – Lummus Technical Division (LTD)	Evaluating process technologies offered by LTD for environmental regulatory compliance.
MTBE Process Study – Yanbu, Saudi Arabia	Mobile Oil Corporation	Scoping design of water and wastewater treatment systems
Tobolsk Petrochemical Complex – Western Siberia, USSR	Joint Venture – WESPEC	Project-wide environmental compliance and OSBL waste treatment system design.
Taoyuan Refinery Plant – Wide Safety Early Warning System – Taoyuan, Taiwan	Chinese Petroleum Corporation	Process/facility review for safety monitor sites.
Binary Chemical (QL & DC) Production Facilities – Pine Bluff, Arkansas	U.S. Department of Defense	Regulatory compliance: RCRA Part B, PSD & NPDES Permits and System Hazard Analysis
Petrochemical Complex No. 2 – Al Musayyib, Iraq	TECHCORP	Overview of central waste water treatment system design
Basrah Petrochemical Complex No. 1 – Basrah, Iraq	Ministry of Industry & Minerals	Design and installation of 1,000 m <sup>3</sup> /h RO and demineralization plant for Re-start of Complex after Iran-Iraq War
Fuel Ethanol plant – Jasper, Tennessee	Tennol Energy Co.	Investigation of non-compliance of PSD & NPDES Permits  Redesigned boiler baghouse control and plant waste water collection & primary treatment systems and accomplished complete environmental compliance and permit approval.

## ENVIRONMENTAL ENGINEERING – OTHER MAJOR PROJECTS (continued)

In charge of wide range of environmental engineering projects encompassing air and water pollution abatement, solid and hazardous waste management.

<b>Project</b>	<b>Client</b>	<b>Responsibilities</b>
Shady Point 300 MW Co-generation Plant Panama, Oklahoma	Applied Energy Co.	Obtained approval of Federal and State environmental permits.  Completed process design of Environmental systems through Definitive estimate.
Rio Blanco Shale Oil Project – Aurora, Colorado	Rio Blanco Shale Oil Co.	Environmental Manager, Demonstration Project – Environmental permits and environmental system design  Engineering Manager, Commercial Shale Oil Project – Regulatory compliances

### EDUCATION

B.S. (Mech. Eng.)	National Taiwan University
M. Eng.	McGill University
Ph.D.	City University of New York

### PROFESSIONAL AFFILIATIONS

Member – American Society of Mechanical Engineers

### LICENSE

Registered Professional Engineer – New York, New Jersey

### CERTIFICATION

American Academy of Environmental Engineers

### LISTED IN

*WHO'S WHO IN ENGINEERING*  
*WHO'S WHO IN ENVIRONMENTAL ENGINEERING*



LXDE

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