



The Chemical Consultant

Association of Consulting Chemists and Chemical Engineers, Inc.

Scientific, Engineering, Business & Management Consultants

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January-April, 2010

FUTURE MEETINGS

May 27, 2010

Richard L. Schauer, Ph.D.,
Schauer Associates
*The Importance of Science
and Engineering in
Agriculture*

**Gourmet Hot and Cold
Buffet Dinner Included**
Snuffy's Restaurant
Scotch Plains, NJ

June 24, 2010

Dr. Michael M. Blumenthal,
Libra Technical Center LLC
*Differential Scanning
Calorimetry*

**Gourmet Hot and Cold
Buffet Dinner Included**

Snuffy's Restaurant
Scotch Plains, NJ

ABOUT THE ASSOCIATION

The Association of Consulting Chemists & Chemical Engineers (ACC&CE) is a network of senior-level consultants with a broad range of functional expertise and many years of experience in the chemical and allied industries.

The purposes of the organization are:

To furnish support to its members as they conduct their consulting practices.

To offer prospective clients a "clearing house" which they can use to find the most qualified consultants or team of consultants whatever their particular problem may be.

This newsletter is intended to support those purposes as well as to educate prospective new members and prospective client organizations about ACC&CE, and how we can be most helpful to them.

The ACC&CE has an interactive website – www.chemconsult.org, that allows prospective clients either to input their problem or to search for those consultants most skilled in their area of concern.

IN THIS ISSUE

In this issue, we have included Part 2 of the old article entitled "The ACC&CE and the Need for Consultants in the Chemical Industry". This article as was mentioned last time, was retrieved and updated by Dan Kruh.

Also returning in this issue is our guest author, Gerry McDonald. We have the second part of his article, "Let's Revisit the Science behind Carbon Dioxide Control"

We also have a Spring Letter from the President, Richard Goodman,

Keep reading and let us know what you think. Best of all, please send in items, or your personal opinions on issues that you feel strongly about.

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SPRING MESSAGE FROM THE PRESIDENT

It is well to review the changes, if any, in the status of ACC&CE since my last newsletter message in February. All of our recent evening programs continue to receive excellent reviews from the attendees. The Thursday evenings have proven slightly more convenient for members and the buffet at Snuffy's is quite special. So, my first question: do you prefer meetings on Tuesdays or Thursdays?

As President I can testify that I received an inquiry through our website which has led to a contract for consulting services. I hope that other members will also be so fortunate.

We have instituted some significant cost savings in the operations of ACC&CE. Nevertheless, ACC&CE is still facing a serious financial problem: our membership remains small enough now that our dues do not cover our expenses. Do we seek merger with another group and if so which group? To help understand this issue I attended the Spring 2010 ACS National Meeting in March as a Councilor from the New York Section. Unfortunately the atmosphere there was not encouraging- poor attendance at the Small Chemical Business "Consulting Sessions" and little foot traffic at their booth regarding info for consultants. Further, the number of positions available for chemists compared to those looking for work was at a near all-time low ratio.

We will explore possibilities to offer continuing education courses (or short courses) for consulting training and mentoring within the ACS or AIChE structures to help get ACC&CE out there to chemists.

Again I solicit our members to tell me why they are members of ACC&CE. If you know of any colleagues who could be but are not members of ACC&CE I want to know why they aren't. Perhaps we can use the responses from both groups to guide our recruitment of new members..

Thank you for reading this message.

Richard M. Goodman

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A Contribution from the Past—Part 2

The following article was presented on August 21, 1984, to a meeting of the AIChE in Philadelphia. It was written by former ACC&CE members Lewis B. Weisfeld (# 575) and Harry J. Prebluda (# 539). Parts of the article or the ideas presented were used in 1999 by an Internet service in the UK (chemweb.com, courtesy of an editor, Brian Rothery) as online publicity associated with ACC&CE's 70th anniversary. Certain portions have been updated.

(Continued from Volume 21-4, September—December 2009)

The original purposes of the founders of this nonprofit membership organization remain the present day objectives of the Association. In over 80 years of its existence, the group has gained international prominence in advancing the practice of the consultant engaged in chemical-related professional work. The Association has built great stature in service to businesses both large and small while advancing the practice of consulting chemists and chemical engineers in conformance with the highest principles of ethical and professional conduct.

Members of the Association have been the leading consultants who have contributed substantially to chemical and chemical engineering technology not only in the United States but in many countries throughout the world. Some past members who were most prominent in the development of the chemical industry include J. V. N. Dorr (filtration and engineering equipment), W. L. Badger (distillation), William Grosvenor (sulfuric acid production), R. E. Hall (water treatment), Phillip B. Hawk and Bernard Oser (foods), Arthur Linz (molybdenum), Marvin Udy (chromium), Charles A. LaWall (pharmaceutical chemistry), Francis M. DuPont (manufacturing), B. T. Brooks (petroleum), Robert Schwarz (brewing), Roger Williams, Jr. (chemical marketing research), Foster D. Snell (analytical chemistry), Lincoln Work (chemical Engineering), and Frank G. Bryer (metallurgy and electrolytic processes).

The Association's offices and staff can be contacted at PO Box 297, Sparta, NJ 07871, Phone: 973-729-6671 Fax: 973-729-6671 but please call first; Website: <http://www.chemconsult.org/>; email accce@chemconsult.org. Companies with problems and potential clients are offered the free service of the ACC&CE's "Clearing House". They can phone, fax, email, write or access the website online to describe their problem. Alternatively, they can search for consultants from the member directory at the website using its "Find A Chemical Consultant" feature where key words can be entered to yield a list of qualified consultants. All Clearing House Inquiries are given prompt, courteous and careful attention, and all arrangements between consultant and client are treated with the strictest confidentiality.

The ACC&CE published a directory of Consulting Services until 1998 and has since incorporated its features into its website: <http://www.chemconsult.org/>. The website contains one page summaries or "Scope Sheets" on each member. These summaries provide information about the educational and experience background, areas of expertise and current practice of the consultant members along with all inclusive contact information. With this online resource, coupled with the Find A Chemical Consultant feature, it becomes a simple task for the user to target specific consultants who can solve their problem.

A triannual electronic newsletter, "The Chemical Consultant", is published by the Association.

A Contribution from the Past—Part 2 Continued

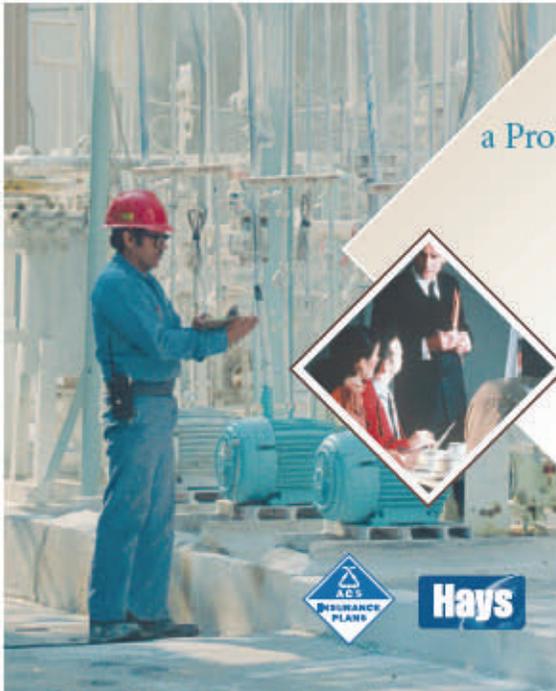
It highlights activities of the organization and its members' practices and experiences as well as important technical developments. Interested parties can keep up with ACC&CE by adding their email addresses to the list. Simply contact the offices noted above.

In recent years, ACC&CE members have been visible presenting public symposia and tutorials on how to form a consultancy, business advantages of same, solutions to potential problems, topics like how to be a consultant in the next millennium, along with key experiences of its members. Such formats as the ChemShow and regional meetings of the AIChE and ACS have been used to enhance the organization public perception.

One of ACC&CE's most helpful features has been its Mentoring program. An experienced member is available to each new member to help get them started, to amplify their experience in the vicissitudes of consulting, and, generally, "show them the ropes". Applicants for membership have joined for just such Mentoring.

Undoubtedly, the most valuable service the ACC&CE affords its members is "association", the chance to convene and communicate. With the availability of email, geographical limitations are not hindrances. You get dividends from all such organizations according to the time you invest in them, and ACC&CE is no exception. The elected directors of the Association meet several times a year (usually prior to the regular Association dinner and speaker meetings on the 4th Tuesday of the month) and these Council meetings are open to all members. Members in different states (or countries) can still participate in helping to run the organization as there are no geographical limitations on elected directors. Copies of Council meeting minutes are sent to all directors. Feedback and involvement are encouraged.

ACC&CE prides itself in providing a recognized consultant network which helps clients keep in touch with chemical and chemical engineering specialists and for mutually beneficial interaction. ACC&CE promotes this interaction by promoting workshops, meetings, and public relations with the chemical industry. The great need today is finding a way to do more with less, and successful companies are finding that the periodic visit of the chemical consultant is not only a joy to management but is a great stimulus to the professional staff. The technical consultant provides the services of a full-time scientific manager at a part-time cost. But the rewards for all, client and consultant, financial and intellectual, are great.



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POLITICIANS AND SCIENTISTS

This article was contributed by John C. Bonacci, PhD, PE, US Patent Agent, Fibonacci Inc., Certificate #821

I will present some views about scientists both in politics as candidates and elected and appointed officials. But first let me provide some background. I won two consecutive elections, first as a Democrat and then as an Independent. I am currently serving my 4th year as a Councilman in Berkeley Heights, NJ.

I do believe we can't help but carry our science and engineering backgrounds and training with us in office. It will be exasperating most of the time because if 99% of the people you dealt with in the past liked you and helped you, you will find that as a political office holder the best you can do is 50 % give or take a point or two. It's true.

Now let me briefly present a view of current national politics regardless of which party you are with. Isn't it ridiculous that in the House and the Senate they are voting straight party lines? What ever happened to compromise and moving forward in the general interest? How many times has it ever been this bad? Well the 1993 budget vote, the Civil War and maybe you know of a few others.

On the Local scene you have heard that "all politics is local". Well it is just about as bad at the State, County and municipality levels. Here are a few examples.

1. A chemical process was to be selected for a Sewer Plant and the choice was to install a system costing \$750,000 in equipment plus typical operating and installation cost (a million dollar project). I found out some one was doing this chemically for about \$25,000 and the 20-year payout was tremendous as you might expect. They fought me for 6 months and were finally tricked into a test run for a \$17,000 investment. Naturally chemistry being chemistry, the process worked and received State approval. What the non-technical politicians did not know was that the test set-up actually also served as the final sizing and the system is still running two and a half years later and out Town saved one million dollars.
2. I also chaired the budget finance sub-committee and did get 3 other Councilmen to vote with me (one Republican, one Democrat and two Independents). We presented a zero tax rate increase budget and it just passed by a 4 to 2 required vote. The two who voted no were apparently staunch Republicans (i.e. conservatives) and guess what –they ran for re-election later that year and actually won, trying to defeat in the following year another low tax budget. GO figure!

These examples are just a few of a dozen or so of equal ilk in a 4-year period. Nonetheless, I have gone on TV and encouraged young people and fresh faces to get involved in public service. There I said it. It should be "public service" not politics.

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Let's Revisit the Science behind Carbon Dioxide Control—Part 2

Climate Change and its Impact on Industrial Production

This article is contributed by a guest, Gerry McDonald. Mr. McDonald is a retired petrochemical engineer with 50 years' experience in energy management. He can be contacted at GerryMcDonald@Comcast.net. Because of its length, I have cut it into two parts, and the following is Part 2. Part 1 appeared in our last Newsletter, Vol. 21—4.

Part 2

Thermal Pollution

The principal cause of Global Warming is "**Thermal Pollution.**"

When we drive our car and consume one gallon of gasoline, 113,400 Btu is released. 70% of that energy is conducted directly to the atmosphere through the radiator and exhaust pipe (we all know how hot those get!). The remaining 30% drives the wheels but that 30%, in the end, is also dissipated as heat through braking and friction. The same principle applies to airplanes, power plants, cooling towers, factories, even the lighting our homes. Every single Btu or calorie that is released from any energy source results in Thermal Pollution that heats up our planet. But is that amount of heat enough to cause global warming ?

The answer is a resounding **YES:**

Every day we burn fossil fuels equivalent to more than 230 million barrels of oil³, which release about 500 "Quads" of heat (*Quadrillion Btu per year.*)

The weight and heat capacity of the earth's crust, atmosphere and oceans, which are affected by this release of heat, are well known.

By applying basic physics we find that 500 Quads will cause a temperature increase of **0.6** Co per century - almost exactly the increase² actually observed by climatologists.

(Full calculation and text references are available from: GerryMcDonald@Comcast.net. It could be noted that the increase in atmospheric CO₂ concentration predicted by the Thermal Pollution calculation also corresponds closely to that actually observed every winter.)

Global warming, which became evident only after the industrial revolution caused an enormous increase in energy release, is explained by Thermal Pollution without invoking questionable arguments about CO₂.

Let's Revisit the Science behind Carbon Dioxide Control—Part 2 (Cont'd)

McDonald (Cont'd)

reducing the Greenhouse Effect. While the Accord's intentions are praiseworthy they will have little positive effect on Global Warming and possibly a major negative effect on the Global Economy. Lomborg⁴, after extensive analyses, shows that world wide implementation of the Kyoto restriction will reduce global gross product by as much as \$350 Billion per year in 2010 but is predicted to lower global temperature by only 1°F in 2100. This is a waste of global resources that could be applied to improving our world's health, education, and living standards.

Congress has already introduced a "Cap and Trade" program, whereby "polluters" purchase emission entitlements. This program does not reduce CO₂ emissions -it merely redistributes them. The only beneficiaries will be the promoters, entrepreneurs, and traders who will establish a market for trading entitlements and the resulting derivatives - the commodity exchanges are already preparing for this bonanza. Gas-fired utilities will enjoy windfalls of millions of dollars of unearned income by selling pollution entitlements. The cost of such programs will fall on every citizen in increased cost of electricity, gasoline and every other commodity and will produce little or no environmental benefit.

Well-intentioned environmentalists promote segregation and sequestration of CO₂. The gas is released from autos, power plants and other sources at a high temperature (>350°F) low pressure (~1.0 psi) and low concentration (~10%) so extraction and segregation will involve major increases in capital and operating costs. The annual release of CO₂ requires segregated storage equal in volume to 270,000 Empire State Buildings after the gas is compressed to 1,000 psi - another costly and also hazardous operation. **Such operations are clearly impractical.**

Revitalize: the Economy through Energy Efficiency

There is a practical solution. Global Warming is principally caused by Thermal Pollution from the burning of fuels. Burn less and there will be less global warming - and we can easily burn less. The U.S. releases about 93 Quads of Thermal Pollution each year and globally the figure is 480 Quads. This can be reduced by the use of more efficient autos, trucks and power plants supplemented by solar and wind energy and other "green" sources. The technology is already available and our prolific inefficient end-use of energy provides abundant further opportunities.

A gasoline engine is about 23% efficient and therefore 67% of the fuel directly heats the atmosphere without producing any motion. A modern diesel engine can be over 45% efficient producing about half of the Thermal Pollution of a gasoline engine, while yielding twice the miles per gallon. But still every drop of fuel burned contributes to Thermal Pollution

Let's Revisit the Science behind Carbon Dioxide Control—Part 2 (Cont'd)

McDonald (Cont'd)

About 50% of the fuel burned in the U.S. is for electric power generation. Modern gas-fired combined cycle plants operate at close to 60% thermal efficiency (40% Thermal Pollution) while older plants operate in the 30% to 35% class (65%-70% Thermal Pollution) and are amenable to modernization. Conversion of coal-fired plants to dual cycle gasification processes could double efficiency and half Thermal Pollution. Enhanced efficiency plus contributions from wind and solar sources can reduce Thermal Pollution from power generation by 15 Quads (~16%).

Enforcement of a mandate that all passenger cars produced after 2010 yield 45 mpg (as already attained by safe full-sized diesel-hybrids) would do more for the global environment than all the Kyoto proposals. Thermal Pollution in the U.S. would be reduced by at least 10% (8 Quads) by this single action. Redesigning our automobile fleet, and related activities will revitalize that struggling industry and put thousands back to work - probably the most beneficial application of stimulus funds. Transitioning gasoline based oil refining to diesel based will provide further employment in a heavy industry, which cannot readily be exported.

Proponents of the CO₂ greenhouse effect do not have to abandon their devotion to reducing all pollutants. Increased efficiency of any form of energy conversion will reduce Thermal Pollution and all other emissions more effectively than any other practical method.

Economics.

Our nation, and the globe, is in a severe economic depression. For example, the U.S. foreign trade deficit is about minus \$675 Billion per year. Over half of that deficit is due to the purchase of 5.0 Billion barrels of crude oil per year costing, at \$60/bbl - over \$300 Billion. Increasing the efficiencies of our cars would reduce crude oil imports by almost 2 Billion barrels per year and reduce the outflow of U.S. dollars and reduce our foreign debt by \$120 Billion per year. The very threat of a reduction in U.S. purchases of oil will depress the price of oil and further increase the benefit to all buyers. The whole world will gain.

The U.S. Credibility can be Restored

There is a foreign policy implication. The U.S.A. has been ostracized for having refused to ratify the Kyoto Accord for the good reason that it unfairly penalizes that country and its working people. Part of that treaty and its requirements are based on the false assumption that CO₂ is the principal cause of global warming. If the United States would enthusiastically embrace the concepts of Thermal Pollution and Enhanced Efficiency we would have a scientific, non-political,

Let's Revisit the Science behind Carbon Dioxide Control—Part 2 (Cont'd)

McDonald (Cont'd)

basis for modifying Kyoto and an opportunity to present realistic alternative, solutions and targets. These would benefit both environmentally and economically, the developed and the developing nations. Instead of standing aloof from the global community, the U.S. could regain its credibility as a world leader.

We should boldly abandon the false belief that CO₂ is the principal cause of the Global Warming and initiate a worldwide program to reduce Thermal Pollution by more efficient utilization of global energy resources. The forthcoming U.N. Climate Change Conference in Copenhagen will present the U.S. with an opportunity to take the lead in the second Kyoto period and recover our nation's credibility and prestige.

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