



The Chemical Consultant

Association of Consulting Chemists and Chemical Engineers, Inc.

Scientific, Engineering, Business & Management Consultants

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FUTURE MEETINGS

None scheduled for winter months.

Watch for email announcements of future meetings.

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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 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.

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

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

This latest issue of our newsletter is the last for 2015, but being issued during January 2016, due to the very busy work and personal schedule of your editor. The President’s Letter from David Manuta can be seen on page 2, followed by a letter from our Executive Director, John Bonacci on page 5.

On page 7, John Bonacci has submitted a thoughtful article on the issues he sees regarding the current education of chemical engineers and his ideas for future improvements.

On page 9, ACC&CE President Manuta has contributed an article about a laboratory accident in China which resembled closely an accident in the US which he had investigated a number of years ago.

LETTER FROM THE PRESIDENT

Dr. David M. Manuta, (Certificate #882), President of ACC&CE

As the calendar turns to the New Year, a sense of optimism occurs in me. The previous year is over. Irrespective of its "Ups and Downs", it is done and it cannot be changed. Learning from the foibles of the previous year facilitates not having to repeat something that clearly did not work.

An example of learning from earlier foibles in my case returns me to the 2013 Chem Show at the Javits Center in NYC. Dr. Bonacci had asked me to speak and I was honored to accept. Although I am a native New Yorker, I have not lived in the metropolitan for more than 40 years. Still, I thought that I could make the relatively short drive from where I was staying into Manhattan in two hours. Driving in Iowa and Ohio does not prepare one for NYC driving!

I called Dr. Bonacci as I was crossing the 59th Street (now named the Ed Koch) Bridge. [He was sympathetic to my plight!] Slaloming my way through the concrete canyons of the Big Apple without neither hitting a pedestrian nor a food truck was a feat that I do not wish to repeat! Finally, I reached Park Avenue. Much like running with the bulls at Pamplona, Spain, I ran south with the cabs through the synchronized traffic lights on Park Avenue (just like in the movies!) until I needed to turn west toward the Javits Center.

I arrived at the Javits Center ten minutes prior to my allotted time. My PowerPoint slides were already projected on the screen. Dr. Bonacci asked me if I was ready to go. My vital signs had returned to a more normal state, so I was very happy to answer Dr. Bonacci in the Affirmative. As I tell others, it was important to get stuck in "the usual Manhattan traffic" in order to vow, "NEVER AGAIN DO SUCH A THING!"

In 2015, I was once again honored to speak at the Javits Center along with Drs. Bonacci, Goodman, Porcelli, and Schauer. This time, "**I cheated**" with regard to getting to the Javits Center. The Number 7 subway line had been extended to within two blocks of the Javits Center in the interim. Once again, I allowed myself two hours to get to the Javits Center. Mass transit "rescued me", enabling my arrival more than one hour early! I was able to check-in, to have lunch, and to relax prior to speaking. Yes, this old dog can be taught new tricks!!

Due to the stewardship of Dr. Bonacci, Duerr, Porcelli, et al., the ACC&CE is in very good hands. We have a good fix on what works and what doesn't work. Mr. Ennis and Mr. Leonard are also working what I define as "technological magic" to enable our meetings to be carried out over the

LETTER FROM THE PRESIDENT—Continued

Internet. These gentlemen know the details on how it all works. I just know that (somehow in this new fangled world) it does all work. Hats off to these colleagues (and to all of their unidentified help) for ensuring that such tasks are seamlessly carried out.

We can always attract new Consultants. As time marches on, the cost to retain knowledgeable professionals on payrolls increases. When we learn about colleagues being let go, we need to let them know that the ACC&CE can enable them "to keep their stirrer in the pot" with intellectually challenging assignments (Clearing House Inquiries). At \$25 for the first year and \$75/year thereafter, the nominal cost of joining the ACC&CE ought to be attractive to these colleagues.

In this vein, I recently met a young woman who may wish to join us. We know what the answer is when we say nothing. Please speak up and please let others know that the best way to stay young is to continue to do what you love to do. Being able to set your own hours plus to actually be listened to are among the benefits of our consultancies and the ACC&CE. May the New Year bring much happiness, robust good health, safety, and success to each of you, those whom you hold dear, and the ACC&CE.

Sincerely,

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MESSAGE FROM THE EXECUTIVE DIRECTOR

John C. Bonacci, Ph.D. P.E., U.S. Patent Agent (Certificate #821) and the Executive Director of ACC&CE

Newsletter for 1—5-16 FROM THE EXECUTIVE DIRECTOR By Dr. John C. Bonacci

I will cover the 1) Chem Show and 2) the Annual, Mtg. in this report.

Chem Show:- This was a success. We had a free booth for three days and we put on a free Seminar.

- The booth had many visitors. We have a flip drive list ,which I need to convert to an Excel file so Charlie can mail out a Thank You and also a copy of the new Newsletter.
- We had two requests for articles. One will print in February for 25,000 high school guidance counselors. A copy is in the Newsletter also. The other has been drafted and sent to Chemical Engineering Magazine. It will treat “How to be a Consultant”
- We are getting at least one new application for membership from Gideon Barney. I will distribute it to the Council soon. There may be 4 or 5 other new members from interest expressed.
- The Seminar had 35 present in the audience and thus was well received. We thank Bonacci, Manuta, Goodman, Porcelli and Schauer for their presentations. Again we thank Bernie Ennis and Charlie Leonard for the internet Webex connection. Please let them know if you used and liked this.

Annual Meeting -

The meeting was called to order by Dr. Manuta at 5:05 pm, and the 2016 budget was approved. We then adjourned to a New York restaurant for dinner and discussion. We thank Bernie Ennis for the arrangements as well as Webex.

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CHEMICAL ENGINEERING TRAINING: TODAY AND THE FUTURE

**John C. Bonacci, Ph.D. P.E., U.S. Patent Agent (Certificate #821) and
the Executive Director of ACC&CE**

A basic 4-year Chemical Engineering degree is one of the four basic engineering original degree programs. The others are Civil, Electrical and Mechanical. However in recent years there has been a take-off of specialties and actually renaming of Engineering Departments such as Environmental, Materials, Bio, etc.

These specialties are well and good but really ought to be reserved for graduate training. It just seems to confuse young people and perhaps get them to declare themselves too early in their education.

Let's address the Chemical Engineering programs because that is of most interest to me. The basic curriculum in a 4-year CH.E. Program has math, chemistry and physics along with a liberal arts course and mechanical drawing for the first year. The second year has the most important starting Chemical Engineering course which deals with processes and flow sheets. I have found in the past that many non-engineering students take this course because of its value for systems approaches to problems. In fact I introduced a summer course in 1988 at Rutgers University in New Jersey and found a very good reception by a variety of students. The rest of the 4-year curriculum includes quite a bit of Chemistry and other engineering courses. There are laboratory courses in Chemistry and Unit Operations (i.e. processes). This type of program helps develop a great capacity for "problem solving" which is a skill that industry wants and needs.

When one looks at the courses for various Engineering Schools you will find a number of options. Overall though, most educators and students see a Chemical Engineering degree as the most scientific one of the major disciplines. In fact the statistics show that more Chemical Engineering students go on to graduate school after they obtain their B.S. degree. A number I have seen is about 25%.

This provides a great degree of flexibility to both average and above average students and industry really likes these students. For example at my undergraduate school, about 95% of the students get jobs every year.

Although it is reasonable that the chemical and Allied industries hire Chemical Engineers, they are also actively sought by companies like GE, IBM and a host of computer oriented companies. I was first employed by the USAF for a while before joining the DUPONT Company and later Mobil Oil. Many Chemical Engineers make a career in design as well as Mechanical Engineers and these are interesting careers with large Engineering firms.

Although it is not necessary, Chemical Engineers do get PE (professional engineers) licenses even if they go on to graduate school. The scientific nature of a basic Chemical Engineering degree also serves as a good entry into the teaching profession once an advanced degree is pursued... After 10 or so years the career opportunities open up in management and Presidents of

<p style="text-align: center;">CHEMICAL ENGINEERING TRAINING: TODAY AND THE FUTURE (Continued)</p>
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large companies have Chemical Engineering degrees.

The Consulting Field is also wide open for Chemical Engineers especially those with a graduate degree. Most chemical engineers enter consulting in their later years or as part of job transitions that are always occurring. One specific organization is the Association of Consulting Chemists and Chemical Engineers, Inc. (ACCCE) which is a national organization operating out of the New York/New Jersey area with members in the South and as far as Hawaii. About one-third of the members are Chemical Engineers who have developed specialties in computers, pharmaceuticals, etc.

This brief commentary is intended to get the guidance counselors to encourage prospective college students to check out the listed courses in the colleges of most interest to them. The options and opportunities to meet special needs are certainly available and most schools are flexible.

As a final note, students should consider a 2-year A.B. degree from a community college and then transfer to a 4-year college. The colleges readily recruit and accept such transfers.

Dr. Bonacci is currently Executive Director of ACCCE, Inc. and operates his consulting business as Fibonacci Consulting, LLC. He can be contacted at e-mail Fibonacci@aol.com.

LABORATORY ACCIDENTS—A LESSON NOT LEARNED?

Dr. David M. Manuta, (Certificate #882), President of ACC&CE

A few days before Christmas I received an e-mail prompt from Chemical & Engineering News (C&EN). The editor of C&EN (Dr. Rudy Baum) is a gent who often exhibits political positions on some of the major scientific issues of the day that are 180 degrees out of phase with mine. Climate Change is a good example of an issue where our respective positions differ.

As I have gotten older, I try to be less confrontational with others whom I disagree. This is especially true for the Christmas and New Year's holidays. When Dr. Baum reached out to me, I recognized that it must be on an issue that would unite, rather than divide, us. One of his key writers, Dr. Jyllian Kemsley had informed him that there had been a terrible laboratory accident in China. A post-doctoral fellow had been killed.

Back in 2009, another terrible laboratory accident had occurred at the University of California at Los Angeles (UCLA). A young woman had been killed while conducting her graduate-level research. Dr. Baum sought my opinion in his editorial and he included a Letter to the Editor of mine in the C&EN issue after Dr. Kemsley had summarized much of what she had learned. Attached please find: CEN 100509.pdf

I've investigated incidents where fatalities had occurred. It is disheartening to drill down and to learn that the incident could have been prevented or the consequences greatly mitigated.

Whether we lose a graduate student (UCLA) or a post-doctoral fellow (China) is less important to me than the loss of a young creative mind. These young creative minds that are forever lost to us denote a greater loss to society writ large; possibly 100 combined years of discovery, innovations, etc.

The UCLA fatality had been thoroughly investigated. While the decedent cannot be brought back to life, the awareness/sensitivity of how to prevent or mitigate such tragedies is now much more engrained in the DNA of university mentors et al., who are tasked with training our next generation of engineers and scientists.

I am much less sanguine about what the results of the investigation of the fatality in China will reveal. Dr. Kemsley had forwarded a translation of "the University's statement" to me. The indication was that a hydrogen cylinder had exploded and that the post-doc died from a severe leg injury.

At this time, there isn't any way for me to corroborate this explanation.

When I learned about hydrogen being involved in the fatality in China, "my mental Rolodex" returned me to previous hydrogen explosion investigations that I'd been a part. Hydrogen has its explosive/flammability limits (by volume in air) at 4% (low) and 75% (high). By this reckoning, "pure" hydrogen will not explode, but in the event of a leak, as I've told previous clients, "hydrogen is unforgiving."

LABORATORY ACCIDENTS—A LESSON NOT LEARNED?

Continued

The damage done when hydrogen is liberated is almost beyond belief. When I investigated the release of hydrogen gas in an industrial building where there were many compressors, the observation of all of the outlet elbows blown out is permanently etched in my mind.

I had mentioned to Dr. Kemsley about a welding accident on a rainy day. Two welders had the misfortune of not knowing that there was powdered aluminum and magnesium in the duct work to be taken down. Turning on the torch enabled these reactive metals to displace the hydrogen from the relative humidity (water vapor) in the air. An estimated 10,000 square feet of this building was flattened. One of the welders was killed and the other welder was off work for nearly two years.

My emphasis, as we emerge from the Season of Goodwill toward our fellow man (and on to the promise of what the New Year holds for us), is that we all have something special to contribute; first to ACC&CE, then to our clients, and ultimately to society writ large. As I recently told Dr. Kemsley, no one in the community where the powdered aluminum and magnesium contributed to the massive hydrogen explosion, will do such a tear-down job again without first having done what I refer to as "a fuel inventory."

Making a positive difference for each other, our clients, and society writ large is what drives me. It is also what keeps the ACC&CE going in its vital mission. A happy, healthy, safe, and successful 2016 to all.

Sincerely,

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Letter from the Editor (and immediate Past President)

By Joseph V. Porcelli, (Certificate #906)

First of all, I apologize for the lateness of this issue - it was due to unavoidable business and personal time commitments.

In the last newsletter, I inadvertently tested the suggestion to put all our ads in the back part of the newsletter, and asked for comments. I only received one comment, and it was to continue to disperse the ads through the various pages of the newsletter as we had been doing for some years, so starting with this issue, we have reverted to that procedure.

In November, a number of us spoke at a “consulting seminar” which we presented in the afternoon of the second day of the 2015 Chem Show at Javits Center. Our talks were well attended and appeared to be well-received. That evening, we moved to a Mexican restaurant nearby for dinner and our Annual Meeting. The company was good, and some creative ideas for the future were brought up, to be discussed at future council meetings.

One suggestion was made that if we could emphasize the consulting opportunities (CHIs) that came in through the last year, most of which were not followed up by any members, we might encourage members to pay more attention to these opportunities and if they are not qualified themselves, to suggest non-member colleagues to try to obtain these jobs, perhaps working as a subcontractor to our member. Even more important, we hope that non-member readers of this newsletter might find that they could be qualified and encourage them to join ACC&CE.

We received 11 CHIs (Clearing House Inquiries) since November, 2014, with one resulting in a major job for one member, and a second being pursued by at least one member. The expertise being sought ranged from:

- reverse engineering of dental products for a producer;
- sourcing and compounding of fragrances;
- seeking an additive to accelerate drying mud for drywalls;
- analyzing potential competitive advantages of synthetic magnetic products for various applications;
- finding technology for the production of p-phenylene diamine from p-nitro aniline;
- formulating an alcohol-free brush cleaner;
- advising on setting up a small-scale caustic soda flake production facility;
- formulations of car washing chemicals;
- market study of value of minerals obtained during sea-water softening;
- and assist in improving formulation of water-based, weather-resistant coatings.

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