



The Chemical Consultant

Association of Consulting Chemists and Chemical Engineers, Inc.

Scientific, Engineering, Business & Management Consultants

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September-October, 2009

FUTURE MEETINGS

OCT 27

Ben's Deli,
New York City

Annual Membership
Meeting

Talk by
Dr. Richard M. Goodman

SPECIAL ANNOUNCEMENT

Non-members are invited,
so they may learn about
ACC&CE and how to be-
come a consultant

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

ACC&CE Officers

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Daniel Kruh, Secretary
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J. Stephen Duerr, Treasurer
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William Hoffman, Past-
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In this issue, we have included information on the forthcoming election for officers and council members, to take place at our Annual Dinner on October 27.

We have continued presenting articles by our members describing their experiences as consultants. There is a surprise photo that you are invited to identify.

Your editor has NOT included a piece on the climate change and related items, but I hope to have an interesting article on a different viewpoint for the next edition. I would still like to hear from our readers as to how we can make this newsletter better.

Joe Porcelli, Editor

Council Elections—October, 2009

Ballots are currently in the mail for the election of Council Officers and the Class of 2012 Council Members, for the October 2009/September 2010 year. The current slate, which is most likely to be voted in (barring a major write in campaign), is as follows:

Officers for Year 2010 (1 year term):

President: Richard M. Goodman, #747

Vice President: Thomas B. Borne, #817

Secretary: Daniel Kruh, #830

Treasurer: J. Stephen Duerr, #592

Council (3 year term):

David C. Armbruster, #622

William A. Hoffman, #908

David M. Manuta, #882

David W. Riley, #591

Richard L. Schauer, #811

Other Council Members not up for re-election this year

Council Members (through 2010)

James R. Divine, #769

Kelvin B. Domovs, #820

Richard Ehrenreich, #763

Joseph V. Porcelli, #906

William E. Swartz, #835

Ronald Zager, #742

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Experiences of our Member Consultants

David W. Riley, Extrusion Engineers, Certificate #591, contributed this article describing some early experiences as a consultant.

The Flow of Polymer Melts

For those who worry about getting their first job as a consultant, let me tell you of my initial experience. In December of 1980, I contacted a wire and cable company in Clark, New Jersey. By talking with their president, I knew that they were in trouble. He referred me to the Director of Engineering and Processing. In January of 1981 the Director said that they were in the process of re-assigning engineering jobs and he would get back to me. In May he indicated that they were desperate for help. Originally I expected that I would help with only the extruders. So I canvassed the 18 extruders and found that not only were the extruders in various stages of needing repair, but the PVC formulas were out of whack. So in July I essentially took over the company. I had weekly meetings with the engineering staff, instructing them on what was needed. I employed another person to run some tests for me, namely, ASTM D 3364, a Melt Flow test that I invented and, as an officer of ASTM D20 on Plastics, I had incorporated into the ASTM System.

With the cooperation of all the engineers and officers, I turned the company around in three (3) months. The normal rejection rate for profitable wire and cable companies is 4 %. When I appeared and started to work for them, the rejection rate was 20%. In that time frame we went from 20 down to 4%. The Director said to me: "We have never had a consultant that was this effective."

How did I do it? A systematic approach to the whole system. I started with the raw materials and found that they did not have the controls needed for assuring good processing. The D 3364 was the basic control that corrected that problem. All PVC formulations must have consistent flow in D 3364. In one case where the PVC burned up in the extruder, someone had left out the plasticizer.

The next move after the formulations were under control, I measured all of the extruder components: the screw, the die, and the hopper. Most of the screws were worn out and had to be replaced—the operators and the engineers did not have any standard for measuring these—but they do now. Then I had the PVC formula measured by D 3364 both for the material going into the hopper and coming out of the die. Both have to be controlled.

What confuses most people about PVC materials is that when PVC goes into the processing machine, they do not realize that the molecular weight goes down 10% in the first shear effort in the screw or the die. After it decreases, the molecules have acquired free radicals at the broken ends. These then react with the most available substance close to the radicals (a stabilizer or a plasticizer or another PVC molecule for example); This reaction must be controlled or real damage occurs. If one gets bad results, gel particles ruin the product. If one gets good results, it improves the tensile and flex strength making a better product. The D 3364 allows one to interpret all of these actions. Good control results.

How do we know these facts? From infrared spectroscopy we see the molecules growing, consistent with the flow test results. If necessary, liquid chromatography can detect the level of increase in molecular weight. Solubility studies give further confirmation.

As a result of my success, the company gave me a long term monthly consulting contract. And they continued to profit from my experience. After a year of keeping the original company under control, a subsidiary in Phoenix Arizona was in trouble with their foam line. They sent me down there for a week to see what could be done. I walked into the plant and watched the whole process. The foaming was very inconsistent. I went over to the mixing equipment, a cement mixer. They had just poured the low density polyethylene in and added the foaming agent, a colorful solid powder. For fifteen minutes I watched the mixer do its job. The foaming agent remained on the top. That was their problem. By redesigning the mixer to a V shaped mixer, the difficulty was solved.

Needless to say, the company continued to profit from my presence, ---and I with them.
The moral of the entire story is that we learn from our experiences.

Experiences of our Member Consultants (Cont'd)

Kenneth Annan, ChemCon Incorporated, Certificate #944, contributed this article describing his consulting business. In Volume 21-1, he had been listed as our newest member.

ChemCon Incorporated is a chemical consulting business, formed at the commencement of 2009, to provide other businesses services in chemical expertise. The company is based in the midwest at Romeoville, Illinois, in the south western suburb of Chicago. ChemCon Inc. offers a broad range of very personal and highly dependable chemical consulting services to businesses in the midwest. Although ChemCon Inc. will do business with chemical operators in other states all over the country and abroad, our operations currently concentrate mainly on chemical operators within Illinois and nearby states.

ChemCon Inc. is run by Dr. Kenneth Annan, with a specialty in the preparation and applications of polymers, quantitative and qualitative chemical analysis, as well as a broad range of chemical experiences from working to address regulatory requirements of the industry over the years. ChemCon provides a reliable, readily available and cost effective service to chemical operators, packagers, importers, distributors and wholesalers, legal services as well as other businesses that have to deal with chemical issues in one form or other in helping to meet regulatory compliance.

ChemCon Inc. strives to equip its customers with the most essential information and the guidance they need to achieve regulatory compliance, do the right thing, and cut through the red tape. The company aspires to be very responsive to the clients' specific requirements, and design tailor - made resolution that incorporates a flexibility to satisfy the clients' needs and budget.

The company's service areas include provision of remedial know-how in times of excess workloads or staff shortages. It is well-informed and proficient at what it does, and clients can rely on its expertise on an as and when needed basis. The company offers services on a full-time, part-time, and on as needed basis and may be reached at the company website at www.chemcon-inc.com or via phone on (866) 644-0645 in the USA or (815) 768-4886. email: ken.o.annan@chemcon-inc.com.

Experiences of our Member Consultants (Cont'd)

Shri Thanedar, Certificate #775, submitted two issues of the newsletter published by his firm, Chemir Analytical Services.

You may click on his website, www.chemir.com, to get onto his electronic mailing list. "Teasers", or summaries of two of the items from the current issue appear below. See the website to be able to read the articles or other articles of possible interest to you.

- **Digestion Techniques for Difficult Sample Matrices**

Before analyzing compounds, it is often necessary to destroy the matrix. This is so the analytes of interest will be released from their chemical bonds and can be contained as part of the digestate. This article discusses various digestion techniques for difficult matrices.

- **Case Study: Possible Product Recall**

A food manufacturer found a broken pill capsule in a can of nuts and needed to know if they had to issue a product recall. The scientists at Chemir utilized multiple techniques to identify the unknown pill and provided a toxicological risk assessment report, allowing the manufacturer to make an informed decision.

Chemical Analysis Services



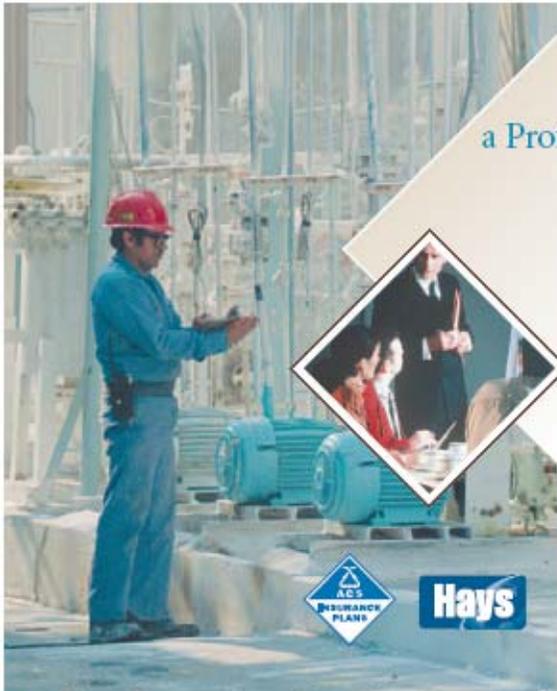
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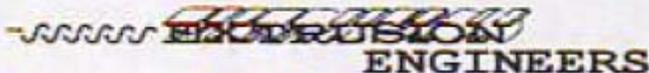
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Experiences of our Member Consultants (Cont'd)

Girish Malhotra, EPCOT International, Certificate #861, would like to share the following: it and many others of his publications can be found by accessing his blog address—
<http://pharmaceuticalcoatings.blogspot.com/>.

Friday, August 21, 2009

A Pharmaceutical Challenge for Technocrats

Pharmaceuticals have their own unique technology and pricing positions compared with the other chemical products. Can we introduce innovative development and manufacturing technologies for the pharmaceuticals sector? The answer is unequivocal 'yes!' We just need to understand the roadblocks and overcome them.

Since we want to live forever, we are willing to pay the demanded price for a drug. Our willingness to pay for long life along with the monopoly during the life of the patent has been the primary driver for setting drug pricing. Drug prices are set at the highest level the market will bear. Once the patent expires, brand companies move on to invent new drugs.

The above two factors ensure the desired profit margins for the pharmaceutical companies. Any costs due to regulatory mandate are passed on to the consumer. Thus, the need for product, process development and manufacturing technology innovation has been minimal. Inefficiencies are an accepted part of doing business. Generics have followed ethical (brand) companies in their modus operandi.

Regulatory bodies have cajoled pharmaceutical companies toward innovation by creating PAT, CMC, QBD and other TLAs. However, these cannot be forced or mandated unless some other event takes place, which will have a financial return. [We are familiar with the phrase "you can lead the horse to water but cannot make it drink."]

There has to be a solution for this dilemma. Only an "economic incentive" will result in innovation.

Latent blame for the lack of innovation is placed on regulatory agencies. This is unjust. The repeatability of quality at the active pharma ingredients (API) and the final formulated drug stages is mandated- as it should be. However, the "path to quality" should not be mandated. Companies should be held responsible for "quality failure". Penalty for quality failure has to be severe. Companies should have the freedom to choose the "path to quality" as it is the road to innovation and creativity.

Providing manufacturers with the freedom to choose their "[path to quality](#)" is the equivalent of stopping the sampling of intermediates" for quality. This will force everyone to "drink the water". Companies will save significant money, which will be additional incentive for pharmaceutical development and manufacturing technology innovation.

Stopping intermediate sampling could be encouraged and even mandated. It will happen only if we understand "everything about the raw materials and intermediates but were afraid to ask." I am quite confident that based on the education and training that chemical engineers and chemists receive they can become the proponents of "stopping the sampling of intermediates." With their backing we will arrive at the destination where the regulators want us to go. Technology innovation is not hard and for the technocrats it is the most exhilarating experience.

Experiences of our Member Consultants (Cont'd)

A Pharmaceutical Challenge for Technocrats (Cont'd)

We need to keep API and drug formulation as separate processes and that will simplify innovation. In general, many articles discuss pharmaceutical process improvements. These do not include API manufacturing process improvements but only refer to formulation process improvements. [McKinsey](#) in a recent report suggests that the pharmaceutical companies have an opportunity that exceeds about \$65 billion through productivity improvements in the drug formulation area. Based on my review of the API segment, I believe that the opportunity in the API sector based on yield, technology improvements and conservation far exceeds \$65 billion.

The question is: "Are the chemists and chemical engineers ready and willing to take the challenge?" I know the answer and it is "Yes we can". If we do, many of the TLAs would become irrelevant.

Girish MALHOTRA, PE

President

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**Do You Recognize These Guys and What They're Holding?
(Submitted by Dan Kruh, Certificate #830)**

Several years ago, longtime member Bob Manley (# 514) and I visited the Greater NY Dental Exhibit at the Javitz Center, NYC. We had mutual interests in dental technology and decided this was the appropriate setting for us to update ourselves and also to explore potential consulting opportunities. A rep at a booth exhibiting dental instruments was taking candid Polaroid photos. As we stopped by, he directed our attention to an *elephant tooth extractor* and suggested we display the item while posing for the photo below..



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FUTURE PRESENTATIONS

ACC&CE Annual Membership Dinner Meeting, Tuesday, October 27, 2009
Ben's Deli, 209 West 38th Street, New York, NY

Speaker: Dr. Richard M. Goodman

Incoming ACC&CE President Richard M. Goodman offers a *special invitation* to non-members of ACC&CE to come to Ben's Deli and attend the 81st Anniversary annual meeting of the Association of Consulting Chemists & Chemical Engineers, Inc. (ACC&CE). First, Ben's Deli is a very special place and the cost for the dinner is a real bargain. Second, with the downturn, many chemical businesses are cutting back on their full-time employees. It would serve many career chemists and chemical engineers well to attend our meeting to find out how to become a consultant. President Goodman will describe the nature of the consulting business with the aid of our many successful members. You just aren't an educated career professional until you've learned what it takes to become a consultant.

If you apply for membership at the ACC&CE meeting, we will comp your dinner. We look forward to seeing all of our members and guests at our 81st Anniversary annual membership meeting.

6 pm Networking/Cash Bar, 6:30 pm Dinner/Presentation

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