



The Chemical Consultant

Association of Consulting Chemists and Chemical Engineers, Inc.

Scientific, Engineering, Business & Management Consultants

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July-September, 2008

FUTURE MEETINGS

OCT 28

Ben's Deli,
New York City

Annual Membership
Meeting

Talk by John Bonacci

DEC 2

Snuffy's Restaurant
Scotch Plains, NJ

*Speaker and Title To Be
Announced*

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.

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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 continued our practice of presenting articles by our members describing some of their experiences as consultants. In addition, our members have review and critique articles of particular interest, or have expressed their views on matters that they perceive as important. Another consultant has submitted his latest newsletter and his web address is included for the information of our readers.

Your editor is grateful that a few more of our members have contributed, and I encourage all of you to submit your own position papers, or alternative views to the submissions of others.

I want to call special attention to another letter from the President of ACC&CE. John Bonacci. He is anxious to hear from you.

Joe Porcelli, Editor

Message from the President

Hello again to all members and friends. Since my last note we have continued to publish member's comments as short articles hoping they would be used with prospective and current clients. This also gives members a chance to use their expertise reviewing general literature on a variety of topics. Keep it up. It will help us all in the long run.

Meanwhile your Board of Directors continues to meet regularly to consider ways to assist the total membership and to encourage more of our fellow scientists and engineers to join us. We welcome any input from you. We seek speakers for our meetings. For the remainder of this year we will have the annual meeting in NYC on October 28 and I will try to review the past year and talk a little about expectations for 2009. We will have a speaker for the Dec. 2 meeting in New Jersey at Snuffy's in Scotch Plains to announce soon. Starting in January we need your help so that Richard Goodman, our VP and myself can schedule speakers you want to hear. We could use six speakers on almost any topic. We like the success we have had with joint meetings with any other group you are in and we welcome other members to be a speaker.

Our last treasurer's report shows we are solvent but it wouldn't hurt to have more ads for the Newsletter and/or contributions along with timely dues payment.

John C. Bonacci, cell # (908) 230-8488 and e-mail at FibonacciJ@aol.com

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Peak Oil – a Red Herring masking the Real Problems We Face as a Nation

By Joe Porcelli

I was a consultant and R&D reviewer for the U.S. Department of Energy for a number of years, primarily assisting them in setting goals for future research aimed at reducing the energy intensity of the U.S. chemical industry. I recognized that improving the U.S. industry was a minor aspect of what needs to be done for the survival of the U.S. petrochemical industry, but that the larger issues dealt with our dependence on energy to generate our electricity, to fuel our motor vehicles and airplanes, and, yes, also to provide feedstocks for our chemical industry.

Whether or not the world has reached the “peak” in oil supply is not the first threat that must be faced by the U.S. For many years to come, there will be enough oil reserves to satisfy the needs of the world. Supply has been largely determined by what the large producers are willing and able to sell. Therefore, the reality is that gradually, oil will come at higher and higher prices, because our recent experience with \$150/bbl oil is an indicator that the amount of oil that producers around the world are willing to sell and/or able to produce was too close to the current global consumption level. Unfortunately, global demand is short-term inelastic, so that the rapid increase in oil prices has only gradually caused a reduction in demand for oil. When demand exceeds (or even approaches) supply, there is no short-term cap on where the price can go on the way up. It is difficult to see how speculation on futures can cause higher prices, although it may be that speculators’ purchases in the anticipation of higher prices to come is a self-fulfilling prophecy, causing those who really need the oil to purchase it at any price.

It is clear that the U.S. consumer has reacted to high gasoline prices by restraining consumption by driving less (a temporary situation until prices come down) and by slowly changing to more economic vehicles (a somewhat permanent change, barring a total collapse in oil prices.) What I fear is that the first sign of lower prices will reverse this reaction, leading us to the same or higher prices before too long. I hope I am wrong

I welcome others’ views.

Experiences of our Member Consultants

Shri Thanedar, Certificate #775, submitted the most recent issue of the newsletter published by his firm, Chemir Analytical Services. It contains a number of articles of general interest. You may click on his website, www.chemir.com, to obtain a copy or to get onto his electronic mailing list. One of the items from the current issue is reproduced below. See the website for more articles of interest. This is a good lesson for all of us who seek to promote the visibility and value of our businesses.

Case Study: Food Contamination Emergency

A food manufacturer noticed that their product had a strange odor after processing. It smelled like a cleaning product, and they were concerned that the batch was contaminated with a potentially toxic substance. Answers were needed quickly to prevent plant shutdown and production delays. They requested that Chemir analyze “good” vs. “bad” product samples for contaminants and perform a toxicity risk assessment. With millions of dollars of perishing inventory at stake, the results were needed over the weekend to prevent production downtime.

Analysis

Three analytical methods were used to compare the off-odor and control product samples, looking for chemical differences that would account for the strange odor. All three methods were used to analyze volatile materials from the control and suspect samples.

Static Headspace Gas Chromatography/Mass Spectrometry (GC/MS)

First, materials were analyzed by Headspace GC/MS. To prepare the samples, our scientists heated them in sealed containers to release potentially odiferous compounds. The gaseous headspace of the sealed container was then sampled directly. The Gas Chromatograph separated the components based on volatility and polarity, and then the Mass Spectrometer detected and identified the components. The fragmentation patterns obtained from the GC/MS analysis were used to identify the chemistries through library matching and spectral interpretation.

Purge and Trap GC/MS

An alternative technique, Purge and Trap GC/MS analysis, was also used to remove volatile components from the samples. The samples were warmed and an inert gas was bubbled through them. The purpose of this was to drive the volatile materials out of solution. The entire gas stream was then purged through a tube packed with an adsorbent material used to collect (trap) the volatile components. After a predetermined amount of purge time, the adsorbent material was heated to drive off the volatile components, introducing them into the GC/MS.

(Continued on next page)

Experiences of our Member Consultants (Continued)

Solid Phase Microextraction (SPME)

Lastly, our scientists used a sampling technique called Solid Phase Microextraction (SPME). This is a more sensitive extraction technique for most volatile components. Using this method, sample components were collected on a fiber coated with an appropriate material designed to adsorb volatile compounds. After a predetermined adsorption time, the fibers containing the volatile material were inserted into the injection port of the Gas Chromatograph where the volatiles were thermally desorbed and then analyzed. The mass spectral data was then collected and interpreted.

Results

Over 100 different compounds were detected in the off-odor food product, yet only 10 were of toxicological interest. Chemir Analytical Services worked closely with a toxicologist well versed in toxicity assessments. He reviewed the results and concluded that none of the compounds were present at a level of concern, and he provided a certificate to the manufacturer reporting these findings.

The client received their results on Monday morning and was able to resume operations on schedule. Chemir's emergency analytical services and timely results, along with the toxicity risk assessment, saved the manufacturer from costly production downtime and product recalls. Moreover, the analysis assured the manufacturer there was not a toxic risk to the public.

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One Consultant's Opinion—What do you think?

Girish Malhotra, member # 861, EPCOT International, submitted the following review and commentary on an article that appeared in the September 15, 2008 issue of Business Week.

[Pharmaceutical companies and their effort to improve profits.](#)

Implications

The Business Week article "[Outsourcing the Drug Industry](#)" gives the impression that screening of the potential drugs in India or China would ultimately reduce the cost of drugs for the patients. This would be an incorrect conclusion. Drug costs can only be lowered if the patent-centric model (limited customer base) changes to customer-centric model i.e. serve the global medicine needs. Customer-centric model might have much higher profits than the current blockbuster model (patent-centric model).

Analysis

Ethical drug companies are hoping that their current strategy will continue and allow them to develop new blockbuster drugs, a failing model. Until recently, the model has given them high returns. For the last five years and not much growth, monies are being invested to discover new drugs blockbuster, marginally improved or lifestyle enhancing drugs.

Staying with the current model, the drug companies do not have many options to improve return on their investments. Outsourcing of drug discovery and screening is one option as the big ethical (mostly US drug companies) try to extend their R&D dollars to discover new drugs. That is all it does. If there are successes in this attempt, ethical drug companies will also outsource their drug safety and efficacy trials [Phase I, II, and III] and studies.

Selling price of the ethical drugs will not be lowered through the outsourcing exercise. Since drug pricing is based on the highest price market can bear, an average consumer is not going to get the ethical and/or generic drugs at significantly lower cost. Drug prices may be slightly reduced when the drugs are out of patent and/or become a commodity.

(Continued on next page)

One Consultant's Opinion—What do you think? (Continued)

Drug companies have another option to improve and/or retain their profit margins. It is through reducing the costs of drugs through the development and implementation of improved manufacturing processes. Since the ethical and generic drug makers, due to the prevailing pricing strategies, can achieve their profit margins, there is no or low incentive for the companies to improve their manufacturing processes. This has been well recognized by USFDA. USFDA is encouraging companies to improve their manufacturing technologies but it has been slow process. Current batch manufacturing processes are not the best technologies.

Manufacturing technologies practiced by the Chinese and/or Indian companies on an average are marginally better than similar technologies practiced in the developed countries. Their cost gains come from 1) labor costs (they are 50-67% lower than the labor costs in the developed countries) and 2) lax safety and environmental laws. If Indian or Chinese companies can incorporate manufacturing technology improvements as stipulated by regulatory agencies, they can make huge gains. This will strengthen them further. This would further increase competitiveness of the external partners/collaborators. It could make them an excellent acquisition candidate or they could become acquirers.

A maverick company could improve its manufacturing technologies, reduce manufacturing costs, and pass the savings to customers while increasing its margins and total profits by serving a larger customer base. It would be interesting, if it comes to fruition.

Girish Malhotra

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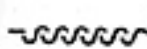
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Training Holistically or Technically-!!

There is some current discussion on broadening basic technical education. PE magazine of the NSPE in August 2008 discusses this with specific regard to Engineering education. The positions of course extend to the entire scientific field of chemistry, physics and math.

As usual, protagonists of these views get carried away. They have placed themselves in the *“sound-bite” world of TV and even print media*. I could exclude the Internet users except those who simply blog for their own type of sound bites. Let me just make a few simple points in the short space available here for what more properly should be a treatise or a panel discussion.

We have to know our fundamentals well *before* we try to work with a multi-discipline team when it is truly necessary or advantageous to have a multi-discipline team perform a project. *Why be on the team if you can't contribute specific knowledge? How many purely technical writers do you need to portray a final answer? Do you need more than one generalist to lead the team?*

In a four-year basic education in any of the sciences we have always traditionally taken some liberal arts courses. Those of us who have gone on to get advanced degrees or entered intense professional work know when we really gained an understanding of the “basics” in any of the technical disciplines. It occurs after a great deal of hard work and research and in-depth thinking. It does take longer than the typical course to grasp how to use thermodynamic laws, basic chemistry and mathematics. What we need in formalized training is more application-oriented courses in tandem and immediately following the most primary of basic technology. We need to apply the fundamentals that can be gained as undergraduates and dig deeper into them before we try to communicate to others.

If we have to short the liberal skills for a period of time, then so be it. That is where extra-curricular activity can come in under the guidance of teachers and other experts. We all know what commencement day means. It means to start to apply what we have learned and to continue to learn in a myriad of ways.

Finally I simply propose- *“Don't weaken the technical content so early in ones career”*. Make it stronger. Develop our scientists and engineers to break through the myths presented in local, state, national and international political venues. Someone has to explain the material continually showing up in the printed media and TV so that the country does not spend its money or talent foolishly. Perhaps we should all go to work in the U.S. Patent Office for a while as Einstein once did. Do you think that helped him extend his fundamental knowledge in the proper direction?

Respectfully submitted

John C. Bonacci, B.S., M.S. PhD, PE and U.S. Patent Agent

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