

The Chemical Consultant

Association of Consulting Chemists and Chemical Engineers, Inc.

Scientific, Engineering, Business & Management Consultants

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January - April, 2013

FUTURE MEETINGS

Sep 17

Bernard Ennis, P.E.

Pres. EGT Enterprises, Inc.

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

Oct 24

Annual Meeting

All are welcome

Snuffy's Restaurant

Scotch Plains, NJ

6 p.m. Networking/Cash

Bar; 6:30 p.m. Dinner;

7:30 p.m. Presentation

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 again have letters both from our Executive Director, John Bonacci (page 2) and by our President, (also your editor), Joe Porcelli (page 3). We are also welcoming one new member and one former affiliate member who has become a full member, to the organization. You can learn about these members on page 5. On page 8, our Executive Director, has written a commentary on some of the types of inquiries (CHIs) which have been addressed by some of our members. On pages 10 and 11, President Porcelli has submitted an excerpt of a column he wrote for Catalyst Review, the monthly periodical of a Pennsylvania-based consulting organization named The Catalyst Group. It deals with the controversy surrounding whether or not to allow unlimited exporting of LNG. Comments pro and con from our readers will be welcome.

As always, your editor is seeking feedback and if appropriate, alternative views on these issues and others of interest to you. We'd like to hear from all of you. Email jvprii@jvporcelli.com. Joe Porcelli, Editor

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LETTER FROM THE PRESIDENT

Dr. Joseph V. Porcelli, (Certificate #906), President of ACC&CE and Editor of our newsletter.

First of all, I would like to take this opportunity to again thank all of our council and other members who are stepping forward to help us maintain the new momentum of ACC&CE. It is difficult to “manage” a volunteer organization; the only way is to explain to everyone what we are trying to accomplish, and then allowing them freedom to help make it happen.

We’ve made progress in a number of areas since the newsletter. For one, we have laid the framework for what we hope will be a very successful joint meeting to take place on September 17th, with our partner in this effort being the New Jersey section of AIChE. That group also meets at Snuffy’s, which makes the collaboration a “no brainer”. We will be furnishing the speaker for this meeting, our member, Bernard Ennis of EGT ENTERPRISES, INC. He will be discussing the challenges associated with the commercializing of new chemical processes from the perspective of an independent developer, a case study based on his own experiences.

Secondly, and thanks to a suggestion by Bernie, we have established a “press release” describing the ability of ACC&CE to be a resource for the outplacement staff of any organizations undergoing downsizing or termination, offering consulting as a second career option. We have made approaches to two organizations that are undergoing such restructuring in the New Jersey and surrounding area. We would appreciate it if anyone learning of such unfortunate occurrences would convey that information to us.

I welcome suggestions from our members and other readers for ways in which ACC&CE may be more useful and effective for its members and for the industries it serves. Please contact me at (917) 912-9804 or at jvpri@jvporcelli.com.

Thank you and best wishes for a busy and productive summer, as well as a happy and healthy one.

Joe Porcelli

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- < Process and Environmental engineer with experience covering conceptual process design and development both in the petrochemical and environmental industries, Alternative Fuels, Waste Heat Recovery, and startup of chemical plants.
- < Combustion research, applied quantum chemistry. Gel Propellants
- < Responsibilities included the project engineering of assigned tasks. •Ability to prepare complex technical reports. Statistical Analysis of data. •
- < Equipment Design experience: Chemical Reactors, Combustion Devices, Gas Absorbers, Air Spargers, Vessels •
- < Fluent in Spanish, read French.
- < Latest bProjects: --Biodiesel Plant Revamp --Bioethanol Plant design --Reactor Design & Scale Up --Low temperature Organic Rankine Cycle --NOx SCR Catalyst Recovery facility Technology Assessment ---Technology Review for Corn-to Ethanol Producers (EPA mandate)

G f k v q t ô K x' P m 'v g t c p u h g t t g f " h t q o " C h h k n k c v g " v q " O g o

Professional Liability Insurance for Chemical Consultants




As a chemical consultant, can you afford a \$65,000 lawsuit? That is the average cost of defending yourself for a single professional liability claim. Even if a claim is false or fraudulent, the related time and costs can be devastating to a private practice. You deserve peace of mind.

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ACC&CE Client Activity ô Special Newsletter Commentary

By John C. Bonacci, PH D, PE, US Patent Agent ô Certificate #821

This special report hopefully highlights some of our successes in this key client-consulting area. The inquiries come in a number of ways but mainly through the website which potential clients find by Googling for a consultant.

The selected ACC&CE consultant agrees to a fee independently with the clients and then he or she pays 5% of what is received to ACC&CE. We tend to get one or more inquiries per month from these sources. A description of the inquiry as received is distributed to the entire membership and they can make their contacts directly. The client decides who to give the work to.

Some successes have been :

- Develop water based thixotropic conditioner
- Minimize VOC's and smoke for better air quality
- Electrochemistry assistance
- Calculate Heats of Reaction for a special scrubber
- Improve Al₂O₃ process

Some typical requests being looked at are:

- Design vent system for HF gases
- Design diesel sulfur analyzer
- Determine market size for a specialty chemical
- Optimize a cyclone separator
- Improve a personal care deodorizing product
- Use animal fats for biodiesel
- Expert witness for cosmetics

In one of our recent Newsletters (see it on the website), Dr. Manuta wrote a brief column detailing some of his approaches to succeeding with these inquiries. It ought to be required reading for all and in addition Dr. Riley is available to mentor new members.

The inquiries come from individual inventors and small businesses as well as larger organizations.

Regards, John C. Bonacci

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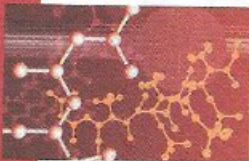
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THE ARGUMENTS FOR AND AGAINST LNG EXPORTS

Dr. Joseph V. Porcelli, (Certificate #906)

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Anyone who keeps up with the chemical print or on-line press has seen a multitude of articles agreeing or disagreeing with the December 2012 report put out by the U.S. Department of Energy (DOE) regarding the likely impact of unlimited LNG exports on the U.S. economy. The DOE report, "Macroeconomic Impacts of LNG Exports from the United States" was based on two studies by two different organizations. The first, performed by the U.S. Energy Information Administration (EIA) was entitled "Effect of Increased Natural Gas Exports on Domestic Energy Markets". This study, contracted for by DOE, asked EIA to "focus its analysis on the implications of additional natural gas demand on domestic energy consumption, production and prices". The second study was contracted for by DOE and performed by NERA Economic Consulting. NERA was asked to evaluate "the macro-economic impact of LNG exports on the U.S. economy using a general equilibrium macroeconomic model of the U.S. economy with an emphasis on the energy sector and natural gas in particular." The overall conclusion of the combined study was that under all scenarios studied, "the US was projected to gain net economic benefits from allowing LNG exports", with the benefits increasing with increased LNG exports".

Within days after the DOE report was issued, Dow Chemical stated that it believed there were flaws in the study, and that although they were not opposed to LNG exports, it should be allowed to grow slowly with prudence so that "policy makers can understand the implications and protect the country's interests". More recently, ExxonMobil Chemical's president is quoted as stating that "Increased demand for gas due to LNG exports would likely encourage increased supply. Conversely, if government arbitrarily restricts demand and attempts to cap prices, supply would likely shrink."

A review of the two DOE-sponsored reports reveals some flaws that Dow had referred to. DOE's mandate to EIA, in August 2011, was to base their work on EIA's *2011 Annual Energy Outlook (AEO2011)*. This document projects future energy demands and prices, starting with data for 2009, for four scenarios. Therefore, the basis of the overall study was about four years old when the study was published in January 2013. As a result, the natural gas price in 2010, the first year of the study, was projected to be about \$4/Mcf, whereas prices in 2013 are close to 33% lower than that. Secondly, in mid-2011, there were "a few" applications for LNG export terminals, with total capacity of about 5 Bcfd; in early 2013, there are at least 15 LNG export terminals with completion dates in the 2015-2018 time frame, with total capacity of more than 15 Bcfd.

When the study was commissioned by DOE, the instructions were to study two levels of additional export; 6 Bcfd and 12 Bcfd, deployed either at the rates of 1Bcfd or 3Bcfd/year, starting

(Continued on next page)

THE ARGUMENTS FOR AND AGAINST LNG EXPORTS (Continued)

in 2015. If all 15 terminals were completed in the 2015-2018 period, this would be a much more rapid deployment to a higher level than modeled by EIA, and the results show a very substantial peak price increase under such an event.

It is likely that not nearly all of the 15 terminals will be erected, certainly in that time frame, just as it is likely that not nearly all of the many ethane-based ethylene plants planned or under construction, intended to use the cheap ethane from shale gas, will be built either.

The models used by EIA and later by NERA each had to be manually adjusted to be used for the purposes of their studies, but in the end, the results and conclusions are probably at least qualitatively correct. If no limit is put on LNG export terminals, natural gas prices would be higher than they would be if exports were limited, but the US as a whole will benefit, as measured by GNP growth or value of exports. But, as the study states, the benefits will be concentrated in the energy sector, by raising the revenues from LNG export and labor associated with this activity, while depressing both real wages and the return on capital in all other industries.

A favorably low price for methane is of interest to US producers of methanol and ammonia, while the olefin producers are interested in similarly low prices for ethane and propane. To the extent that the natural gas prices are driven upward by the additional demand for LNG exports, the feedstock price expectations that are driving the current investment decisions will be less favorable than when the projects were started, which would depress profits and reduce the current shale gas advantage.

Regarding limiting the volume of LNG exports, the NERA study rightly states that at a minimum, the price advantage of shale natural gas will be set by the need for return on capital on the construction of the export terminals, the energy costs associated with liquefaction in the US, and the shipping costs to the destination nations. For one of the destinations, Japan, at the end of 2012, the LNG import price was about \$15.00 per million Btu, while the Henry Hub price was about \$3.50. Overall costs from US wellhead to Japan was estimated in the NERA report to be about \$6.00/MM Btu, which would set a cap on the natural gas in the US of about $\$15 - 6 = \$9.00/\text{MM Btu}$. Such a price would destroy the US chemical industries. For Europe, the third highest priced region after Japan and China/India, the LNG import price was about \$9.00/MM Btu, the wellhead to Europe cost was estimated at \$5.00/MM Btu which would impose a cap on US prices of about \$4.00/MM Btu. Thus it would not take much of an increase in natural gas prices to discourage export to Europe, thus putting a limit on total LNG exported.

It would seem most appropriate for the government to NOT limit export of LNG, but both the US chemical producers and the LNG exporters should recognize the dangers of too many new projects being installed at nearly the same time.

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