



NEWSLETTER---

THE CHEMICAL CONSULTANT

Association of Consulting Chemists & Chemical Engineers

Volume 12, Number 3&4

March/April 2000

JOINT MEETINGS FOSTER CROSS-FERTILIZATION

April 27, 2000 marks the third occasion of a joint meeting between The Association of Consulting Chemists and Chemical Engineers (ACC&CE) and The Chemical Consultants Network (CCN).

This kind of get-together makes possible person-to-person networking in congenial surroundings. Old relationships are renewed and new ones formed among people who already have something in common. Business cards change hands and plans are made to investigate new projects. Networking is an important part of a consultant's efforts to promote his practice and discover new ways of furthering it. Some networking is done by mail, e-mail and telephone, but "pressing the flesh" is still vital.

People at this meeting come from two organizations having similar purposes and, in fact, there is some overlap in membership.

ACC&CE, a non-profit company, was founded in New York City in 1928 and has private offices in Sparta, New Jersey, supported by members' dues. The principal professional income of its members is derived from consulting, although some are also engaged in other activities. It holds nine meetings per year, primarily in New York City and Northern New Jersey.

CCN was founded in 1994 and has offices in the Department of Chemistry at the University of Pennsylvania. It states that it is the first and only organization for consultants within the American Chemical Society. It receives support from ACS and the American Institute of Chemical Engineers as well as supplemental fees from members to support a listing on the CCN Internet page.

Recognizing the historic rivalry of New York and Philadelphia, the annual "April Meetings" of CCN and ACC&CE have been held halfway between -- in Princeton. Meetings have been well attended and customarily follow the usual pattern of a mixer-networking session, a good dinner and dinner speaker.

ACC&CE has a history of joint meetings. There was one with The Technology Group of Greenwich, Connecticut in May 1999 and one with the New Jersey Group of Small Chemical Businesses in 1998 as well as another planned for May 2000. ACC&CE is always open to the possibility of sharing a meeting date for lunch or dinner with a speaker afterward. The important factor always is a good matching of the interests of both groups.

With the rapidly changing world of applied chemistry in ferment it would seem that joint meetings of cross-specialty nature will become more common. There is now more chemistry in medical and biological research and development as well as more instances of physics and electronics using the knowledge and methods of chemistry.

Another consequence of the changes in chemical and materials technology is that narrow specialists are being drawn even more to life-long learning and though they may not earn new degrees in new specialties, they learn by attending seminars, short courses and by reading and asking questions. The knowledge and experience they have from their earlier education has been expanded by using it on their jobs or in consulting; now they continue more formal learning in new fields.

Consultants serve their clients by solving problems. When these problems are complex, more than one field of expertise often is needed. The multi-disciplinary consultant often handles the case alone. But it is not uncommon for two or more consultants to meld their diverse skills and knowledge in a combined effort. The joint meeting of members of two organizations may be the place where such consultants find and make such alliances. It may be that additional joint meetings with groups or associations in other fields would be fruitful.

We look forward to meeting and getting to know more consultants and clients. Resolutions were made at the March Council meeting (see page 4) to refocus ACC&CE. One of the means to be explored is redefinition of the membership qualification. Opportunities for technical consultants will extend beyond chemistry and chemical engineering. More joint meetings can aid the efforts directed at adapting to the changed chemical and materials world of the year 2000 and beyond.

This starts a dialog with readers. You are urged to e-mail ACC&CE;with your reactions and, we hope, your suggestions for other associations to approach for a joint meeting. We will see that someone approaches them.

THE MYSTERY OF THE CRACKED BASEBALL-STADIUM SEATS

By Dr. Peter Lantos (Member 597) , head of The Target Group

Injection Molding magazine has a recurrent column that deals with problems involving injection-molded parts, and shows how those problems can be diagnosed using available scientific techniques. After several issues featured one, and only one, approach, namely the use of differential thermal calorimetry, I wrote an article for the magazine to try to show that other tools are also available for diagnosing molding problems. To my pleasant surprise, they accepted the article, which appears on page 123 of the March issue of Injection Molding.

The part in question was a baseball-stadium seat, 30,000 units of which were injection-molded from high-density polyethylene and were installed in a stadium in Japan. Just a few days later, the parts began to crack and eventually the entire lot had to be replaced by a second lot made by the same manufacturer from the same resin. This second lot did not crack and performed well in the stadium. I was retained to determine the cause of failure and decided to approach the problem by exploring the difference between the "good" and the "bad" seats. The cracks were substantial in size, and radiated from the gate area in the center of the seat.

Since all other factors were identical (material, mode of installation, use conditions), I hypothesized that molding conditions must have been different. Furthermore, the type and location of cracks suggested that stresses had been locked in during the molding of the "bad" parts.

Chemical analytical testing showed that the problem seats contained moieties one would obtain from the oxidative degradation of PE while the good seats had no such degradation products. Furthermore, physical testing showed that the problem seats had only 50% of the Izod impact strength of the good ones, and microscopic examination of the seats disclosed that the polymer of the problem seats had a fine spherulitic structure which would result from very rapid cooling in the mold (the good seats had much larger spherulites) and we concluded that such rapid cooling would generate locked-in stresses

A final test centered on making measurements of the seats and then exposing the parts in an oven. In this test we noted that the problem seats, in contrast with the good ones, had considerable warpage even before the oven exposure, that they deformed even more during the heating, and that the cracks became much wider as a result of the heating. This again indicated the presence of locked-in stresses. We concluded that the "problem" seats had cracked because of locked-in stresses and because they had lower than normal impact strength.

INTERNET SITES OF INTEREST

POLYSORT bills their site as your first stop for Plastics and Rubber Industry information and your Internet Marketing experts. The site has news releases as well as many links within the polymer industries.

<http://www.polysort.com>

CHEMCONNECT says it is the world's largest global Internet exchange for chemicals and plastics. It also contains links to news stories and a library section with lots of links to industry publications, including Injection Molding, the magazine mentioned on page 3. This site should be good for keeping up with the dot.comification of the chemical and allied businesses.

<http://www.chemconnect.com>

GURU is an internet exchange for connecting independent professionals with contract projects. You are invited to create a Guru Profile to enable you to showcase your professional experience and background. The site will host your Guru Profile at no cost and include it in their searchable Guru Directory, so that potential clients may find and hire you.

<http://www.guru.com>

GOOGLE is another search site and this one has a very useful extra feature. This is that your search delivers not only links to a number of possible sites where your search terms were found but also may present an option to look at a facsimile of an article that appeared in printed form somewhere. They call this a Google Cache. Due to its cached nature, this is likely not to be the most recent version of the page, but it can save time in evaluating the character of that particular site.

<http://google.com>

SPEAKERS CORNER MARCH 2000

Speaker Gary F. Danis's topic was *How to Minimize a Consultant's Risk of Suit*.

Mr. Danis, a chemical engineer and attorney with Cooper, Rose and English, LLP of Summit, New Jersey, described some risks of suit and outlined some of the essential parts of a contract between consultant and client that may help reduce further misunderstandings. For instance, contracts can specify the scope of the work, indemnification in case of future litigation, insurance details and agreed limits to the amount and type of financial liability. He also discussed types of insurance policies, such as the one available to ACS and AIChE members advertised on the home page. As usual, the audience joined in a lively question and answer session.

DIGITAL BRAIN DRAIN

In September 1999 a New York Times columnist, Claudia Deutsch, wrote about a trend in technical education. She reports the experiences of some people who caution that the hard sciences are not attracting the new students to the subjects that would equip them to become the scientists and engineers needed in the future. Nor are the students experiencing the personal returns coming from hands-on problem solving combined with the mental processes of learning and applying theory that is part of traditional science education.

One troubling case was a young man at Pennsylvania State University, a business major who will graduate from college without ever having taken a chemistry course. His high school in Montville, NJ did not require chemistry, and his adviser at Penn State says he can skip it there, too -- provided that he signs on for more computer science courses. His father told Duetsch "It's truly sad that kids can graduate today without getting exposure to the fun of physical sciences."

Paul Saffo, a director of the Institute for the Future, a research group in Menlo Park, CA told Duetsch a different but similar concern. "Everyone wants to start an Internet business today, but they don't realize that the science moguls of a decade down the road will be the biotechnologists. And that means a good chance that the biotechnology moguls a decade from now will be foreign-born."

Deutsch brought up another problem, the distortion caused by the teaching of chemistry and physics on computers in the classroom. Deutsch quotes Eric Gruenstein, a professor of molecular genetics at the University of Cincinnati Medical School. "Computers can teach information, but they don't teach a way to ask questions or conduct experiments where you don't know the correct answer ahead of time."

Saffo, the futurist, put it more succinctly. "Computers done right can open entirely new educational horizons," he said, "but computers done wrong will turn our high schools into trade schools."

Warren Hein, associate executive officer of the American Association of Physics Teachers, cites a similar trend. "The number of undergraduate majors in physics is at a post-Sputnik low," he said. "Kids are saying, 'Why should I go into something as demanding and rigorous as physics when I can take computer science and make more money?'"

We are not against making money, but maybe we should be paying more attention to what is going on in our schools and colleges these days.

