



NEWSLETTER---

## THE CHEMICAL CONSULTANT

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Association of Consulting Chemists & Chemical Engineers

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### **LETTER FROM THE PRESIDENT, Ernest Coleman, member #684**

Let me explain how this Consulting Association is run. I run a Council meeting every month (a rich experience) and have good feelings about it.

Your Council is independent and very concerned with the workings of ACC&CE and jobs for members, and they never let me forget that. We spend a lot of time discussing how to do more for our members so that all members receive value for their membership dues.

Charlie Davidoff (Member 167 and the one with most membership years) points out that we are one of the very few, if not the only, consulting organization that is organized around the members. Each member is an independent contractor and we band together to help each other. Many other consulting groups are run by individual owners or small groups of owners. Consultants served by them have no say in the organization and these owners add 10-40% to the fees for the individual consultants as their charge.

In ACC&CE, everyone is an owner and is asked to make a 5% contribution for jobs found through the organization, but that is only one way to a job lead. When a member of ACC&CE helps another connect with a job there is no charge payable to ACC&CE. The lead came from networking and sometimes it is recognized with a voluntary contribution, sometimes by a later reciprocal referral.

Many of us don't get many jobs through the ACC&CE Clearing House. BUT, WE DO GET JOBS FROM OUR FELLOW ACC&CE MEMBERS. Another unique feature of ACC&CE is the number of volunteer workers we have. Your Officers, Council members and Committee Chairs receive no compensation for their efforts. Only the Executive Secretary is a paid employee of the Association.

Editing the Newsletter, developing our new Web Page, verifying of new member credentials, Marketing, Program, and many other jobs are done by volunteers. These members do these jobs because of the value they find in working together for the benefit of ACC&CE. They get to know and trust each other. The experience teaches them about networking.

When ACC&CE was young, it was centered in Manhattan. Now as things change and the chemical industry moves away from NYC, we are reaching out to our far-flung membership to recapture that original camaraderie and fellowship among professional colleagues. When members travel, they look up members at their destination and get to know them. They talk to each other on the phone and by E-mail. I've had many conversations via E-mail with members like James Divine in the great

state of Washington.

We can all serve our clients better by finding consultants for them when we are not the best person for the job. Networking is the key to this. All ACC&CE members have been checked out before they were allowed to join. Their activities are reviewed by our ethics and CHI Committees from time to time. We maintain a high level of standards so that each of us can be proud of our fellow members and refer them without reservation.

Let's continue to build a better ACC&CE.

Call me when near Stamford and we'll get together (203-329-3693, 203-595-0866 for fax) Eric Coleman also offers favorite web page addresses.

See INTERNET SITES OF INTEREST.

### **WAR STORIES - ROTTEN SEEDS**

We believe that there are many real-world examples of consulting successes told by our readers. We call them War Stories. You are invited to send short accounts of your triumphs. Here is one from the editor, Peter Hay.

ROTTEN SEEDS - This was a case where a seed company sued the supplier of a fungicide. I was retained by the seed company's lawyers to examine "discovery documents" and advise on technical aspects of the case. The successful outcome for our side came from my finding in those documents certain technological failings on the part of the supplier. These stood out for me but went unnoticed by the lawyers. I will tell you what they were later.

The attorneys for our side followed up my lead by taking depositions of the defendant's employees, finding facts that verified my opinion. Their own employees' words demonstrated that the chemical supplier had introduced substantial changes in the procedure for formulating the fungicide active ingredient. They and the seed company had tested the performance of the trial batch and had approved the change.

The seed processor then agreed to use the chemical to treat an entire season's corn seed stock. They did this with fungicide from subsequent large-scale production. The seed was sold to farmers, many of whom lost their Spring crop from low germination.

When I entered the case, before trial had started, the attorneys were hung up on the validity of each side's germination tests. To my outsider's eye, both sides had equivalent results, inasmuch as repeat tests showed a broad scattering of numbers. The records were poorly kept and the replications were few. None of them showed a totally worthless fungicidal effect.

The case was settled out of court in the favor of the seed company. My contribution was to lead the plaintiff's attorneys to look at the poor manufacturing practice of the supplier. The new process introduced a preliminary step in which the active substance was dissolved in sodium hydroxide using heat and then precipitating it in a very fine-particle suspension by neutralization. In running a trial batch at the producer's pilot plant, conditions of time, temperature and agitation were carefully

controlled.

But, when the larger production batches were made the producer chose to farm the work out to a toll processor 2,500 miles away. The records from the toll processor did not show that control tests, batch by batch, were run, as would be standard in any reliable chemical plant. The only quality control data found were from the germination tests, and these, as I said, were of questionable reliability. The defense attorneys saw that their case was weak and decided to settle.

Here we see what can happen when one sends work to a toll operator and fails to require the same high quality of operation as one's own and how a technical consultant can assist attorneys without being in court as an expert witness.

### **MEMBER SPEAKS ON TECHNOLOGY TRANSFER**

A.O. (Abe) Zoss (member #719) addressed the Technology Transfer Forum at the September ACS National Meeting in Las Vegas. The title of his talk was "TECHNOLOGY TRANSFER ON A GLOBAL SCALE".

He discussed his personal experiences involving 26 countries. He demonstrated how an organized active effort at scouting can be essential to being aware of what is going on outside one's own organization. The organization may be industrial, a private research outfit, a government agency or a consultancy.

Technology transfer can be considered to be an extension of internal R & D and commercial development functions. It takes the place of reinventing or duplicating products or processes already completed elsewhere or being caught unaware of the state of a competitor's progress in your field. Beware of NIH (not invented here). The objective is completion of the project in a timely and cost-effective manner.

### **INTERNET SITES OF INTEREST**

#### **ERNIE COLEMAN'S PICKS**

PATENT INFORMATION: <http://www.patents.ibm.com/ibm.html>;  
<http://patents.uspto.gov/>

PLASTICS INFORMATION: Additives: <http://www.pmad.org/> Processing:  
<http://www.lexmark.com/ptc/ptc0.html>

#### **EDITOR'S CHOICES**

INSTANT CHEMICAL <http://chemfinder.camsoft.com/> <http://webbook.nist.gov>  
COMPOUND INFORMATION:

### **NITROGEN IN A FIX**

Many of us reading this were brought up on industrial chemistry firmly rooted in the past. In our careers we have learned that some of the traditional reaction processes for making a valuable product have stood the test of time. Take nitrogen compounds. Converting the abundant stores of atmospheric nitrogen into commercial quantities of useful compounds has been done mainly in two ways. Some processes have made nitric oxides using electric arcs. Others combine nitrogen and hydrogen at high pressure and temperature to make ammonia.

Living species have been doing nitrogen fixation for a lot longer than the chemical industry. Nitrogen-fixation bacteria that attach themselves to plant roots accomplish it. This makes nitrogen available for plant growth at the site where it is needed.

It has not been possible to manufacture large amounts of nitrogen compounds this way, though. What has been going recently in nitrogen fixation research is studying the catalytic processes of living systems and trying to simulate them in vitro. The hypothesis is that the biological energy for splitting the dinitrogen bond is made available by adenosine triphosphate (ATP) acting with other organic compounds. This is facilitated by such natural catalysts such as an iron-molybdenum-sulfur complex.

Recent publications in Science magazine (Vol. 279, 506-507 and 537-532) report work with organometallic compounds of tungsten, ruthenium and vanadium that give the background of this story and some recent experimental results. It is too early to speak of industrial scale-up.

## **COVERAGE OF INTERNET SEARCH ENGINES**

Those who search the World Wide Web on the Internet have a choice of readily-available search engines. It is easy to assume that any of them will search the entire web in response to one's command. A paper in Science magazine (Vol 280, p.98-100, April 3, 1998) reports that this is far from true. In December, 1997 two researchers at NEC Research Institute analyzed the results of searches based on sending 575 queries to six engines.

Because of differences in the systems used by the 6 search engines and the differences among the ways the developers of individual web sites chose to arrange their information, the researcher had to make some simplifying assumptions. Add to that the fact that many details of the technology of the Internet are constantly being changed and upgraded. The analysis being reported here should be regarded as a snapshot rather than a lasting evaluation of the effectiveness of specific search engines.

The researchers found that the relative coverage, as they call it, of the estimated 320 million pages of the Internet (as of December, 1997) the engines were as follows: HotBot, 0.34; AltaVista, 0.27; Northern Light, 0.2; Excite, 0.14; Infoseek, 0.10; Lycos, 0.025. They base this on the compound figure of 1.0 as the coverage delivered by all 6, overlapping as they do with their duplicate returns.

The authors suggest that searching with more than one engine using the same search terms will increase the thoroughness of coverage and they mention that there are already sophisticated compound engines such as the one found at [www.metacrawler.com](http://www.metacrawler.com). They refer to work that has been done to develop "search robots" ("softbots") that work through a sequence of actions, rather than a single response upon finding a match between the search terms and site contents. The authors

touch on the problem that any good search engine finds large numbers of sites that make it necessary to eliminate duplicates and sort for relevance.

Users of search engines develop their own strategies for locating useful information. It seems that the day of really speedy and accurate locating of the information one needs is still a long way off.

