



TRILLIUM'S **Two Scents**

Independent Consultants in Environmental and Forensic Chemistry

Volume 6, Issue 1, Summer 2006

President's Corner

James S. Smith, Ph.D., CPC, President/Chemist

Dedicated to the Memory of Leslie Eng, Ph.D.

This issue of *Two Scents* is dedicated to Leslie Eng, Ph.D. Les was the editor of this newsletter from its inception in the Spring of 1997 to our last published issue in the Winter of 2002. He was my “no” man (as opposed to a “yes” man) from 1989 when he agreed to join Trillium if, and only if, Trillium had something for him to do. To put into words all of the things Les meant to his Trillium colleagues is an impossible task.

We lost him on February 6, 2003, from a ruptured aorta. I have written this many, many times in my mind, but just could not put it onto paper because he was so much more than a coworker and a friend.

Les loved science, especially chemistry. He received a B.A. in Chemistry from The Johns Hopkins University in 1965 and his Ph.D. in Organic Chemistry from The Pennsylvania State University (more commonly known as Penn State) in 1970, working under Dr. Skell. His resume is very impressive:

- | | |
|---------|--|
| 1970-73 | Captain, U.S. Army, working on personnel protection devices against chemical warfare agents. |
| 1973-77 | Chemist, Chemical System Laboratory of the U.S. Army at Edgewood, investigating decontamination methodologies for chemical warfare agents. |
| 1977-84 | Chemist, U.S. Army Toxic and Hazardous Materials Agency, where Les was responsible for environmental surveys, development of analytical methods for munitions, and contract laboratory quality assurance |
| 1984-89 | He was a manager in the Roy F. Weston environmental laboratory before joining Trillium. |

With Les, there was always more. (Pardon some old humor between two old chemists.) On top of his work for Trillium, he taught “Environmental Analytical Chemistry” and “Chemistry of Natural Processes” at The Johns Hopkins University School of Continuing Studies and Part-Time Graduate School. He enjoyed teaching and was exceptionally good at it, but he was tough on and demanding of his students.

(See Les on page 2)



Les

(continued from page 1)

But still I have not touched on who this man really was. My memory of Les is that he was a lover. He loved and admired his wife and best friend, Kathie. They were buddies at Baltimore Ravens' football games and on Camp Jeep vacations. After complaining about Kathie's vacation plans, he enjoyed recounting stories about how much fun he had. Oh! I forgot their boat. Les would get motion sickness, but loved being on their boat in the Baltimore Harbor and out on the Chesapeake Bay. His stories centered on the pride of his life, who was his daughter, Rachel, then her husband, T.J., and, most delightfully, his grandchildren, Jessica and Zack. Fishing with Jessica off the boat dock really made his weekend.

Les loved gadgets of all kinds. He had motorcycles, sports cars, GPS devices, and computers—always the latest thing. Once, he had so much yard equipment that was not running that he decided to go to the local county college and take a course on how to fix a single-piston Briggs and Stratton engine.

Trillium employees and clients had the benefits of his brilliant mind. Les was honest and true to the principles of science, logic, and experimental testing. As a “no” man, he questioned every opinion and wanted to hear all of the details. However, his real value was in being a good listener and taking the time to listen. Les fixed problems for his coworkers, whether it was science, computer hardware, software, rants, perspectives, or whatever.

He had some good sayings:

“If you have struggled with a problem for half an hour and have not found a solution, then it is time to call someone.” I called him many, many times.

“When there isn't enough money to do it right the first time, there is always enough money to do it right the second time.” We all heard this numerous times when we were planning our scopes of work.

Dr. Eng enriched us all. We will continue his love and passion for science, environmental chemistry, Trillium, Trillium's clients, and his *Two Scents*.

Jim Smith, Chemist and Friend



Some people come into our lives and quickly go.

Others move our souls to dance.

They awaken us to new understanding with the passing whisper of their wisdom.

They stay in our lives for awhile, leaving footprints in our hearts.

And we are never quite the same

Author Unknown



Why do I get “Alphabet Soup” with my sample results? Part I - Inorganics Analyses

You send a sample to a laboratory for metals analysis and the results are returned to you on a data reporting form, often called a “Form I” based on contract laboratory program (CLP) lingo. This form presents the results of each analytical test in numerical form with the appropriate units. No problem so far, right? But then comes another character, most often a “U” or a “J,” but sometimes a “D,” “N,” “E,” or even a “*.” What are you supposed to do with *this* information?

The two most recent CLP statements of work (SOWs) for inorganics analysis (ILM05.3, 3/04, and ILM06.x, Draft 11/05) specify three types of qualifiers that may appear on your Form I. *Concentration qualifiers* (“J” and “U”), *quality qualifiers* (“E,” “N,” “*,” and “D”), and *method qualifiers* (“P,” “MS,” “CV,” “AV,” “AS,” and “C” in both SOWs; ILM05.3 also lists “NR” and “ ”). Sound like a lot? The lists used to be about twice as long!

Let’s start with the easy one, *method qualifiers*. These entries don’t tell you anything about your result that you shouldn’t already know, i.e., how it was generated. For example, a “P” means the sample was run by ICP, an “MS” means ICP-MS, and “CV” means manual cold vapor AA. Since you requested the analyses, these entries should simply reiterate that the work was done by the method you requested. A complete list of the method qualifiers used by the laboratory in your data report and their interpretations should be in your data package.

Concentration qualifiers tell you something about the magnitude of the reported result. If there is no qualifier in this column, then the value is greater than the contract required quantitation limit (CRQL) or limit of quantitation (Lq) for that analyte. If this column contains a “J,” the value is below the CRQL or Lq but above the method detection limit (MDL) or critical level (Lc). And, if this column contains a “U,” then the analyte was not detected above the reported value.

These concentration qualifiers reflect some noteworthy changes from earlier SOWs. The term “CRQL” was previously associated only with organics analyses, with “CRDL,” or contract required detection limit used for the inorganics. The terms “Lq” and “Lc” are new to ILM06.x. And, there used to be no “J” qualifier associated with inorganics. Instead a “B” flag met this same definition. So, if you are getting data from a laboratory that is working under an old SOW, you just might see a “B” or two on your Form Is. Still with me?

Quality qualifiers give you a hint about the success of the quality control analyses associated with your data set. An “E” tells you that you should consider the reported value to be an estimate due to the presence of an interference, as determined by unacceptable results for the serial dilution

analysis. An “N” means that the matrix spike recovery was outside acceptance limits, and a “*” means that the duplicate analysis results were unacceptable. If you see a “D,” you know the reported value came from a diluted analysis.

Note that the quality qualifiers do not tell you what the actual quality control results were. They simply tell you that the acceptance criteria were not met for that analyte - a hint that there may be a problem you need to know about.

So, what do you do with all of this? Well, if you find lots of quality qualifiers attached to your data, it would be a good idea to check some of the other summary forms that should be in your data package to determine just how far out of specifications your quality control results really were. They might be so far “out” that you should not rely on the data. If you have lots of “J” values, it might be wise to check the results for the associated blanks to see if your results actually represent artifacts rather than true sample components.

Out of your comfort zone? Well, this is where an experienced data validator might come in handy, to help you digest the “alphabet soup.” Bon appetit!

Carol Erikson



Trillium flexipes

(610) 383-7233
(610) 383-7907 fax
<http://www.trilliuminc.com>
e-mail
jsmith@trilliuminc.com

28 Grace's Drive
Coatesville, PA 19320

TRILLIUM, INC.

