Accurate News

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Happy Holidays!
Thanks for a great year...

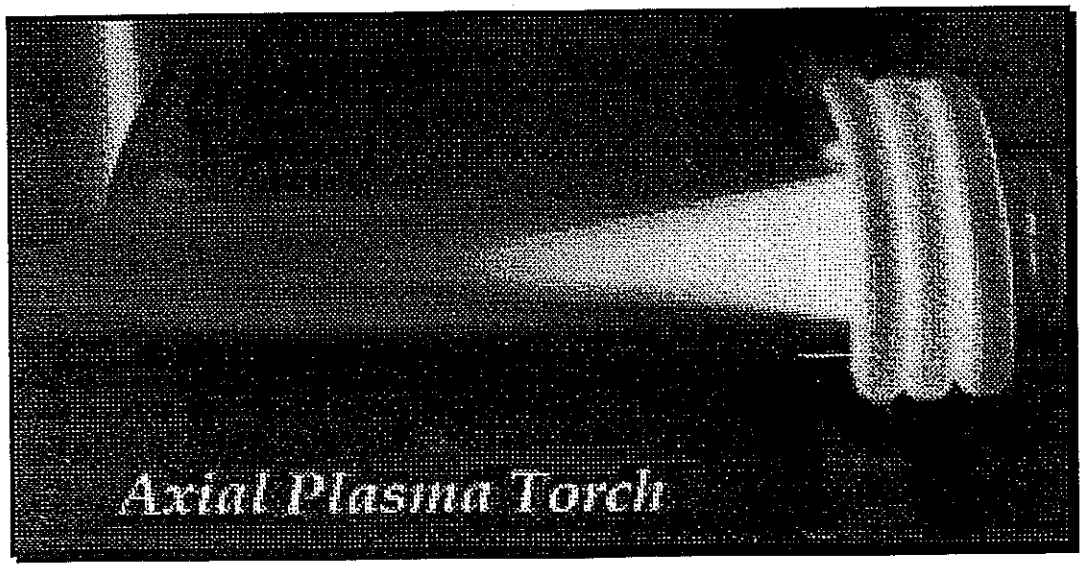
New ICP Up and Running

In the July/August issue we reported that Accurate had just acquired a new ICP, a Thermo Jarrel Ash high resolution IRIS AP. Since then, Ron Fazel and Sherri Murie of our Metals department have completed extensive training programs learning how to operate this sophisticated tool, and they have put the instrument through its paces confirming that it works beautifully.

Accurate Labs is one of the first four labs in the country to get this new model and, as far as we know, the first environmental lab to have one. Yes, this is the most expensive instrument Accurate Labs has ever purchased, but what does this mean to you...what can this ICP do that justifies its six figure cost?

...see "ICP" page 2.

Axial Plasma is a highlight of our new ICP. It allows greater sensitivity when analyzing your samples for trace levels of metals.



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ICP continued

Let's look at some of the features of the instrument and explain how they are different from previous ICPs.

Foremost, this new ICP, or Inductively Coupled Plasma analyzer, is a *simultaneous* ICP meaning that it can see many wavelengths, analyzing for several metals at the same time. Our other ICP, the Perkin Elmer 6500, is a *sequential* unit able to look at only one metal at a time. The new unit is much faster with its simultaneous capability. Though its speed is a virtue, the IRIS AP doesn't sacrifice quality for quickness. In fact, quality is improved with this unique analytical feature.

Seeing several wavelengths at once offers many benefits. Many times, metals emit light at more than one wavelength. This can cause interference problems and false positives or negatives when light from one metal covers another wavelength. Some instruments address this problem with various kinds of background correction software. Or, the analyst may choose, if a problem is suspected, to reanalyze the sample at a different wavelength, an alternate, checking for any interference. However, a better solution to this interference problem is initiated by the new IRIS AP. Using its ability to simultaneously record many wavelengths, the analyst can examine several alternates during the same analysis making it possible to select one of these alternates or use the information for background correction. If needed, the instrument can be programmed to perform these tasks automatically.

The IRIS AP's new *CID chip* is what makes possible this simultaneous wavelength analysis. This one chip is the single detector used to see all wavelengths and represents a "quantum leap" in technology which renders obsolete the multi-detector units of old. Though this new IRIS AP is not the first simultaneous ICP, it is the first to employ *only one detector* for all wavelengths. Older units with multiple detectors were larger, with each expensive detector consuming much of the limited space available. As each detector was added, the machine became larger and less practical to use in a modern lab. A limited number of detectors meant a restricted analytical range of the ICP. Consequently, scientists and manufactures realized the need for a new kind of detector. IRIS AP's new small CID chip gives it unprecedented analytical power and allows the instrument a much smaller chassis than its predecessors. What once appeared the size of a small bread truck now sits comfortably on a lab bench.

It's smaller; it's faster; can it get any better? Yes. It's more sensitive with axial plasma (AP) technology. The plasma torch, which takes the sample and heats it to tremendously high temperatures, is positioned on its side allowing the high resolution optics to view the torch barrel, a larger portion of the plasma. The more plasma viewed, the greater the sensivity. Now, the analyst can detect at lower levels than was ever possible with conventional ICP technology. In fact, this new ICP's sensitivity for many elements is the same or greater than the sensitivity of graphite furnace AA.

IRIS AP has many wonderful features--many of them we are still discovering--but I should mention two which can be particularly useful to us and our clients:

1. *"Snapshot" function.* At the special request of a customer, the analyst can use the IRIS AP to view all the wavelengths and record this data in computer memory. Then, if the client needs to re-examine this sample or look for additional elements, the analyst can retrieve the information and electronically reanalyze it. Normally, the actual sample would be needed for re-analysis making it nearly impossible to examine again samples which were very old.

..."ICP" continued on page 3.

TCLP: What You Should Know... (part 2)

As we explained in the first part of this series on TCLP testing--Sept./Oct. edition--TCLP testing is just one of four tests used to determine the hazardous nature of a sample. Reactivity, Corrosivity and Ignitability are the other three tests relevant to this process.

Reactivity tests the chemical stability in a waste sample. This is important for hazardous waste determination because some wastes tend to *react violently* when exposed to certain conditions. For example, if a material is cyanide or sulfide bearing and exposed to acidic conditions, it can generate toxic gases and vapors. This is important information to know about any waste.

Corrosivity is another test which can identify characteristics of a waste which make it hazardous to humans or the environment. *Highly corrosive* substances can destroy skin and other tissues as well as damage equipment used in storage or tranportation of the substance. In landfills, corrosive metals when mobilized can bond with other materials increasing their corrosive nature.

Ignitability, the last of the four tests we are addressing, examines the fire hazard of a material. This testing assesses the *immediate* fire danger of a substance during routine storage, disposal, or transportation and determines *potential* fire dangers of a substance, those that might allow an existing fire to spread and become more violent.

So, why is all of this testing needed; when do you need to consider these four types of analysis on waste material?

Many of our clients occasionally need TCLP and R.C.I. testing. For municipal customers operating waste water treatment plants and dealing with sludge monitoring regulations, complete TCLP testing is required each year to characterize the sludge. Yet, they do not have to analyze for R.C.I. Some customers, however, generate potentially hazardous waste in their industrial process or have simply discovered a quantity of some unknown solid or liquid waste in a drum, or sediment in a wash pit. In these cases the customer usually considers disposal in a conventional landfill or hazardous waste landfill and now must, according to regulation, test this waste by TCLP and R.C.I. analysis to determine which destination is appropriate for the waste.

In part 3 of this series on TCLP testing, we will explain the testing methods and what it means to pass or fail this analysis.

...by M.Crosswhite, Y.Dallenbach, and T.Unruh

ICP continued

2. *Semi-quantitative analysis.* With this new ICP Accurate Labs can analyze a sample for a large group of metals in one run and report the results for every metal using a "quick and dirty" method. No, this quick method is not as accurate as the standard method, but it is fast and offers a much less expensive option (approx. 1/3 regular price) for customers who need to screen unknowns or generally identify which metals may be present in a potentially contaminated sample.

We have been looking forward to using this instrument for a long time, and we are excited about its capabilities. Accurate Labs has *21st century technology in use today*. Let us use this tool to help you.

...by G. Drye

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