

From the Desk of...

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Air Compliance Testing Now Offers FTIR

Commonly referred to as FTIR, Fourier Transform Infrared Spectroscopy is the most recent addition to the Air Compliance Testing technological toolbox.

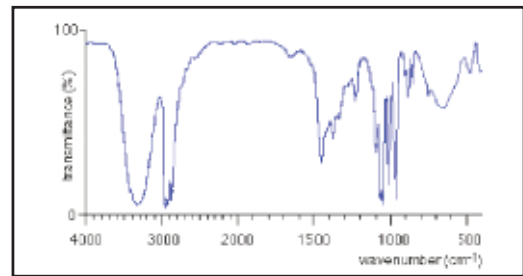
FTIR can be used to identify chemicals from paints, polymers, coatings, spills, drugs, and contaminants (*qualitative analysis*). FTIR is likely the most powerful tool for identifying types of chemical bonds (*functional groups*). The wavelength of light absorbed is characteristic of the chemical bond. Because the strength of the absorption is proportional to the concentration, FTIR can also be used for some quantitative analysis.

FTIR Applications include:

- EPA Method 318: Extractive FTIR Method for the Measurement of Emissions from the Mineral Wool and Wool Fiberglass Industries
- EPA Method 320: Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy
- EPA Method 321: Measurement of Gaseous Hydrogen Chloride Emissions At Portland Cement Kilns by Fourier Transform Infrared (FTIR) Spectroscopy
- Identifying gas stream organic compounds and many inorganic compounds
- Chemical process monitoring and optimization
- On-line process monitoring
- Measuring moisture in corrosive gases
- Reaction end point determinations
- Measuring catalyst efficiency
- Control equipment optimization
- Real time speciated VOC emission analysis
- Indoor air monitoring of VOC's and semi-volatiles at very low levels
- Blending processes optimization
- Ambient air and employee exposure monitoring

By now you're probably wondering how FTIR works: Because chemical bonds absorb infrared energy at specific

frequencies (*or wavelengths*), the basic structure of compounds can be determined by the spectral locations of their IR absorptions. The plot of a compound's IR transmission vs. frequency is its "*fingerprint*" that can be compared to reference spectra to identify the material. FTIR spectrometers offer speed and sensitivity impossible to achieve with older wavelength-dispersive instruments. This capability allows rapid analysis of micro-samples down to the nanogram level in some cases, making the FTIR unmatched as a problem-solving tool in organic analysis.



Typical FTIR "Fingerprint"

Fourier transform infrared spectroscopy is preferred over dispersive or filter methods of infrared spectral analysis for several reasons:

- It is non-destructive
- Solids, liquids and gases can all be sampled
- It provides a precise measurement without external calibration
- It is fast. Most measurements by FTIR are made in a matter of seconds rather than several minutes
- It is mechanical simple. The mirror in the interferometer is the only continuously moving part in the instrument
- Sensitivity is dramatically improved with FTIR. The detectors employed are more sensitive and the optical throughput is higher. This results in lower noise levels, and the fast scans enable the coaddition of several scans in order to reduce the random measurement noise to any desired level

The instruments are self-calibrating.

Contact us to see how we can apply this incredible diagnostic tool to your process improvement or problem.



EPA Revises Standards For Two Categories Of Particulate Matter

EPA announced in September that it is revising the National Ambient Air Quality Standards for particulate matter (PM), addressing both fine and coarse particle pollution. According to the agency, the revisions to the 1997 PM standards are the most protective standards for particle pollution in the country's history.

The standards address two categories of particle pollution: fine particles and inhalable coarse particles. Fine particles are 2.5 micrometers in diameter and smaller (PM_{2.5}); inhalable coarse particles have diameters between 2.5 and 10 micrometers (PM₁₀).

The 2006 standards tighten the 24-hour fine particle standard from 65 micrograms of particles per cubic meter to 35 micrograms of particles per cubic meter of air. EPA is retaining the current annual standard for long-term exposure to fine particles at 15 micrograms per cubic meter and the existing national 24-hour PM₁₀ standard of 150 micrograms per cubic meter.

EPA is revoking the annual PM₁₀ standard because the available evidence does not suggest an association between long-term exposure to coarse particles at current ambient levels and health effects, officials said.

For additional information on the new standards, go to <http://epa.gov/pm/naaqsrev2006.html>

Mary Gade Appointed as EPA Regional Administrator

U.S. Environmental Protection Agency Region 5 welcomed Mary Gade, an environmental attorney with federal, state, and private sector experience, as its new regional administrator.

In announcing her appointment, Administrator Stephen L. Johnson noted "We are excited to welcome Mary Gade back to EPA Region 5 where she began her impressive environmental career. With over twenty years of experience in environmental regulation and enforcement, Mary is well-prepared to lead the Agency's largest regional office."

Since 1999, Gade has been a partner in the national environmental practice group of Sonnenschein Nath & Rosenthal LLP in Chicago. Gade also served as the director

of Illinois EPA under Gov. Jim Edgar. During her eight years there, she was a co-founder of the National Environmental Council of States.

Before her state tenure, Gade enjoyed a dynamic career at EPA with senior management positions in key environmental areas such as emergency response, Superfund cleanup and pollution prevention. Gade holds a bachelor degree from the University of Wisconsin and a J.D. from the Washington University School of Law.

EPA Proposes Changes To New Source Review

EPA proposed changes to the New Source Review (NSR) Program in September. The changes include the final set of proposals from EPA's 2002 recommendations to the President on how to clarify the NSR program. According to EPA, existing permit limits on emissions would not be affected, and the proposed changes will simplify the process facility owners and operators must follow in determining whether plans to modify their facility would trigger NSR requirements.

The proposal targets three specific areas of the NSR permitting program:

1. Debottlenecking: EPA is proposing to change how NSR applies when an owner or operator modifies only one portion of a facility, but the change results in increased production or throughput in other unchanged portions of the facility, increasing overall efficiency of the facility. This type of modification is known as a "debottlenecking" project. Under the proposal, unchanged portions of the facility would not be subject to NSR if emissions from those portions have already been taken into account in a prior permit or regulatory action, officials said.

2. Aggregation: EPA is proposing to clarify how NSR applies when multiple projects are implemented at a facility. EPA is proposing that projects that are related should be treated as a single project (*e.g. aggregated*) if one of them is dependent on another. The rule provides additional information about how EPA makes this determination.

3. Project Netting: EPA is proposing to simplify the step in the calculation used to determine whether NSR applies when emissions increases and decreases are added together (*called "netting"*).

Additional information on the proposal can be found at <http://epa.gov/nsr>.

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Revisions to Ambient Air Monitoring Regulations

EPA has changed its national air quality monitoring regulations as part of a strategy to update technology and keep pace with more advanced approaches to air quality management. Reflecting extensive independent scientific review and public input, the rule will change the locations of some types of monitors, add new monitors for some pollutants, and allow states and tribes to shut down unneeded monitors for some pollutants. The rule also will add more monitors capable of providing real-time measurements for some pollutants.

The changes affect monitoring for six common pollutants known as "criteria pollutants" (*ground-level ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particle pollution (also called particulate matter), and lead*) and the pollutants that form them.

Some of the changes include:

- Adding about 75 multi-pollutant monitoring stations around the country. Monitoring multiple pollutants at the same site will help EPA improve air quality management by enhancing the Agency's ability to model and forecast air pollution. The sites also will provide real-time data for some pollutants, including particle pollution and ground level ozone. EPA will locate 55 of these sites in urban areas and 20 in rural areas in order to enhance our understanding of how pollution travels and of the differences between air quality in urban and rural areas.
- Moving some PM2.5 monitors. Every-day sampling will be required for some sites where ambient concentrations of PM2.5 approach the 24-hour standard for PM2.5, while other sites will operate every third or sixth day.
- Adding measurement of "inhalable coarse particles," (*i.e. PM10-2.5*) at the 75 multi-pollutant monitoring sites.
- Monitoring Carbon monoxide at the 75 new multi-pollutant sites.
- Shutting down the vast majority of existing nitrogen dioxide monitors in the country could be shut down, once EPA approves, because all areas of the country meet EPA's air quality standards for this pollutant.

You can download the notice from EPA's web site on the Internet at: <http://www.epa.gov/pm/actions.html>.

EPA Orders Destruction of Banned Confetti String

EPA ordered five national retail chains to pull cans of illegally imported confetti string products that contain banned hydrochlorofluorocarbons (*HCFCs*) from their shelves. These substances deplete the earth's protective stratospheric ozone layer and increase the risk of skin cancer. Millions of cans of these novelty items — all imported from China or Taiwan and known by various names such as Zany String, Crazy String and Party Streamer — have been sold illegally in the United States.

Dollar Tree, American Greetings Inc., Dollar General, Target, and Too, Inc. have complied with EPA's orders by taking the banned products off their shelves and shipping them to a commercial incinerator for destruction. More than 2.7 million cans will be incinerated under EPA's compliance orders. The companies also agreed to audit their operations and adopt new policies to ensure that these problems do not arise again.

More information on HCFCs and these enforcement orders can be found at:

<http://www.epa.gov/compliance/resources/cases/civil/caa/confettistring.html>.

"You do not really understand something unless you can explain it to your grandmother."

~ Albert Einstein

Get Clotheslined!

Depending on how much you pay for electricity, and how many loads you dry a week, your clothes dryer could be costing your household anywhere from \$75 to \$300 a year. Compare that to the one-time cost of a new clothesline, which is generally under \$5.00.

In addition to saving energy and money on electric bills, line-dried clothes last longer. Drying in a dryer for 40 to 50 minutes involves wear and tear. The lint you find at the end of a dryer load is the fiber from your clothes, which are slowly disintegrating.

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Our Mission Statement:

To be a high quality provider in the Environmental Services Industry that is focused on growth and on diversification through new products and acquisitions.

Our Core Values:

Customer Satisfaction
Flexibility
Rigorous Attention to Detail
Employee Empowerment and Accountability
Continuous Improvement

Upcoming Events...

16th Annual Business & Industry's Environmental, Health and Safety Symposium. March 28 – 29, 2007.
Cincinnati, Ohio. Go to www.MECseminars.com for more information.

Air & Waste Management Association's 100th Annual Conference & Exhibition. June 26 – 29, 2007.
Pittsburgh, Pennsylvania. Go to www.awma.org for information.

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