E D I T O R I A L

Dear Reader

We are completely overwhelmed by the level of positive response we have received from you all towards our little newsletter and it is with that spirit we are coming out with the first print of the year – and we promise you, it will not disappoint.

This edition has a lot of to offer to our readers, keeping in mind their sentiments and areas of interest.

For all your formula racing fans out there, see how an analytical sciences company is partnering with #1 racing teams and bringing them glory.

We show you what's common among research areas in the field of cancer, stem cell and developmental biology.

And for the expectant mother, how pre-natal screening can be beneficial to both you and your child.

Finally, we take a retro trip back in time to see PerkinElmer very first gas chromatograph and how it has changed in the past 50 years!

Happy Reading and have a great summer

Marketing-India

WHAT'S Fresh inside...

PerkinElmer drives its way on to competitive racing!

Car racing – the one sport that separates the men from the boys! Admit it, each and every one of us dreams on driving on the professional racing circuit at some point in our lives. And this goes for the women too!

But not all of us have the skill and the stamina to drive 90 laps over and over again. So while we gave up on our formula 1 dream and pursued more "safer" careers, PerkinElmer didn't!

Many of you may or may not know, but PerkinElmer just isn't about safety for food or for environment. We also like to have some fun as well! PerkinElmer has participated with some of the best racing car teams in the world – not as a racing entity though ;) but as a technology provider. Read on more to find out how PerkinElmer and not just fuel is pushing that car to the finishing line!

PerkinElmer Proud to Back Winning Brawn GP Formula One Racing Team

As an official technical partner of the Brawn GP Formula One racing team, PerkinElmer is proud to congratulate Brawn on its well-earned double victory in the 2009 FIA Formula One Constructors' and Drivers' World Championships (subject to official championship results to be published by the FIA).

Advanced PerkinElmer instrumentation was used by Brawn GP last season to enhance the performance and reliability of the team's race cars and to improve troubleshooting analysis, including the analysis of debris in engine and gearbox lubricants and detection of degradation of worn seals.

Since 2001, PerkinElmer has provided scientific expertise and instrumentation for the Brawn GP Formula One team's car performance testing program. To accurately measure and monitor engine and gearbox degradation, Brawn GP maintains a PerkinElmer Materials Testing Laboratory at its headquarters in Brackley, UK, where a diverse range of technologies are employed. PerkinElmer has provided Brawn with exclusive access to its Seer Green (UK) demonstration laboratory, as well as support by Product Specialists for troubleshooting as needed.

Speaking of the recent win, Andy Attwood, vice president and general manager, Analytical Sciences and Laboratory Services, Europe, PerkinElmer, noted, "We are proud to be a technical partner to Brawn GP and help to ensure the integrity of the team's cars and the safety of their drivers. "

He continued, "It's a pleasure working with such a wonderful group of people and, on behalf of everyone at PerkinElmer, I would like to congratulate Brawn GP on securing the 2009 FIA Formula One Constructors' Championship at the Brazilian Grand Prix in Interlagos and to Jenson Button for wrapping up the Drivers' Championship before the final race of the season took place."
PerkinElmer's SpectrumTM 100 Series FT-IR spectrometer is used by Brawn GP to monitor degradation of worn seals and analyse organic debris from engine and gearbox lubricants. The universal attenuated total reflectance (ATR) accessory discovers unknown factors that may impact performance. Lubricants are tested using PerkinElmer's OptimaTM 5300V Inductively Coupled Plasma (ICP) instrument to accurately detect metal content and help determine engine or gearbox wear. To help ensure the cars' integrity, PerkinElmer's Jade Differential Scanning Calorimeter (DSC) and Dynamic Mechanical Analyser (DMA) carry out important quality control checks to ensure that adhesives used to bond carbon fibre components have been cured correctly.

PerkinElmer EcoAnalytixTM Partnership with the Indy Racing League
Official Instrument Supplier & Fuel & Lubricant Certification Partner of the Indy Racing League, IndyCar Series and Indy Pro Series

The IndyCar Series, which has been recognized for its technical leadership in automobile racing, is now the motor sports leader in renewable and environmentally responsible fuel produced in America. With the help of technical expertise from PerkinElmer, the IndyCar Series became the first major series to switch to 100 percent fuel-grade ethanol in 2007.

Ethanol, derived from corn, is significant for the IndyCar Series and Indianapolis 500. The decision to switch to ethanol was also prompted by increased government and industry interest in alternative fuels that can lessen the United States' dependency on oil-based fuels.

PerkinElmer has been testing racing fuel since the inception of the IndyCar Series in 1996. For many years, 100 percent methanol was used at the races. In 2006, a blend of 90 percent methanol and 10 percent ethanol was used to transition to the 2007 season, when the IndyCar Series began using 100 percent fuel-grade ethanol.

Ethanol was brought to the league by the Ethanol Promotion and Information

Council (EPIC), a nonprofit alliance of ethanol industry leaders. The league was on-board and PerkinElmer played a significant role with providing the technical expertise and logistics of the transition.

The IndyCar Series and Honda conducted extensive research to determine that the engines would not be compromised by the use of ethanol. Brett Boyer, senior service engineer, PerkinElmer, and IndyCar Series technical staff engineers worked together to determine the blended fuel and placed the engines on a dynamometer to gauge the BTUs and RPMs. The IndyCar Series had an easier transition because the cars were already running methanol. Since Ethanol is also an alcohol fuel, only some minor calibration changes had to be made. To further protect engine integrity, during the races there is a Honda engineer assigned and stationed with every car to troubleshoot engine issues. The IndyCar Series decided to reduce the size of the fuel cell, also known as a fuel tank on standard automobiles, from 30 gallons to 22 gallons, as ethanol is more energy rich than methanol.

Official Instrument Supplier & Fuel & Lubricant Certification Partner

PerkinElmer is the official instrument supplier and fuel certification partner for the Indianapolis 500 and the Indy Racing League. Testing and certifying fuel for purity and consistency ensures that every car racing in the Indianapolis 500 and throughout the 16-race IndyCar Series is on a level playing field. Fuel testing is one of more than 130 check points on a race car - from the safety of neck restraints to tire pressure and engine components - all to ensure that the first cars to cross the finish line got there fairly.

Parked in the track infield inside an IndyCar Series trailer is a sophisticated fuel analysis laboratory. Inside, scientists analyze the fuel composition and certify that it is race-ready. IndyCar Series regulations stipulate that the racing fuel is 100 percent fuel grade ethanol-- a blend of 98 percent ethanol denatured with 2 percent 98 octane unleaded gasoline. The tests are conducted on a PerkinElmer Clarus® 500 gas chromatograph (GC) that is controlled by PerkinElmer's TotalChrom® chromatography data system, which also collects and processes data. The Clarus 500 GC separates the individual components in the fuel and also identifies additional materials that may give one car a competitive advantage over another. The testing takes approximately five minutes and calculates the results to 0.01 percent accuracy.

Brett Boyer runs the onsite testing lab. The PerkinElmer team tests and certifies fuel for purity and consistency from the source of the fuel and through the supply chain to onsite on race day at IndyCar Series races all across the United States.

IMAGING SOLUTIONS FOR BIO RESEARCH

Cancer

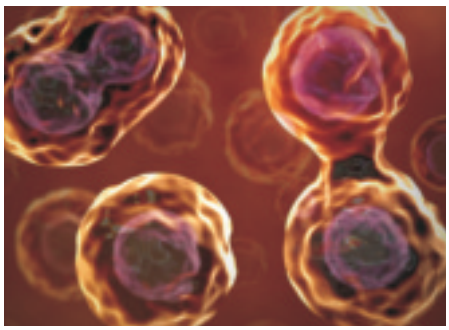
Cancer is a class of diseases in which a group of cells display new properties, such as hyperactive growth and division, protection against programmed cell death, loss of respect for normal tissue boundaries, and the ability to become established in diverse tissue environments.

Cancer research is an intense scientific effort to understand and discover diseases processes and discover possible therapies. Cellular imaging has revolutionized cancer biology by enabling cells to be seen more clearly and in more detail as well as creating meaningful functional assays for the development of drugs which prevent tumor growth and metastasis. Advanced cellular imaging techniques allow us to visualize important aspects of cancer including tumor cell mobility, invasion, metastasis and angiogenesis.

Scientists can distinguish host cells from a tumor with single-cell resolution. Visualization of many aspects of cancer initiation and progression in vivo is now possible, providing greater context and more accuracy to cancer research.

Developmental Biology

Developmental biology is that branch of life science, which deals with the study of the process by which organisms grow and develop. Studying the growth and development of organisms covers a variety scientific disciplines and has significant



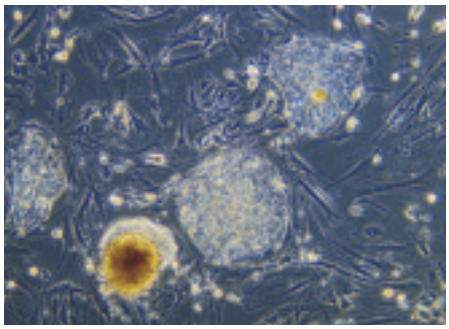
implications for human health, such as the prevention and treatment of human developmental abnormalities. This research area can involve the study of cell differentiation and embryonic development including stem cells as well as the examination of cell cycle, cell growth and cell proliferation. Common applications in developmental biology research include Zebrafish and C. Elegans which are used for the study of cellular differentiation, gene function and developmental processes in an intact organism.

Imaging-based assays have been used

by developmental biology researchers for many years because they provide the power to really understand complex developmental processes. Researchers recognize the need to quantify and visualize in real-time at a sub-cellular resolution and analyze several events simultaneously.
Drawing on many years of experience, PerkinElmer offers a range of cellular imaging and analysis solutions to developmental biology researchers across the globe. Our dedicated team of specialists have an in-depth knowledge of imaging-based developmental biology applications and will help you select the right solution for your research.

Stem Cell Research -

Stem Cell Research - Stem cells can now be grown and transformed into specialized cells with characteristics consistent with cells of various tissues such as muscles or nerves through cell culture.



Pituispheres expressing a marker of several early embryogenic progenitor and stem cell types, rendered in 3D using Volocity. Image courtesy of Dr. Fauquier and colleagues, National Institute of Medical Research, London.

Stem cell research has the potential to make a huge impact on a wide range of human health problems. Stem cell research could facilitate the development of new treatments for human diseases such as diabetes and Parkinson's, aid the treatment and prevention of medical conditions resulting from abnormal cell division and cell differentiation, and enable the testing of new drugs without the need for animals or human testers. It could also provide a renewable source of replacement cells and tissues to treat diseases such as Alzheimer's disease, stroke, heart disease, osteoarthritis and rheumatoid arthritis.Cellular imaging has a crucial role to play in stem cell research as it enables scientists to visualize and analyze these complex cellular processes. Identifying and characterizing cells in their various stages of development, from pluripotent embryonal cell to progenitors and differentiated organ specific cells, and to distinguish them from surrounding stroma, is a recurring task – from basic research to quality control of transplants.

For this fast paced area of research, PerkinElmer provides state-of-the-art imaging and high content screening solutions to stem cell researchers all over the world. Our dedicated team of imaging specialists have an in-depth understanding of the imaging-based stem cell applications and will help you choose the right solution for your research requirements.

PerkinElmer offers a full range of solutions for Stem Cell Research solutions that can be tailored by our team of experts to meet your lab's needs:

- UltraVIEW VoX - 3D Live Cell Imaging System
- Opera - High Content Screening System
- Operetta - Compact High Content Screening System
- Columbus - High Volume Data Management and Analysis System
- cell::explorer - Automated High Content Screening System
- Volocity - High performance 3D Imaging Software
- Volocity LE - The core of Volocity for free!
- Acapella - Image Analysis Software

Evolution of the Gas Chromatograph – 50 years from PerkinElmer

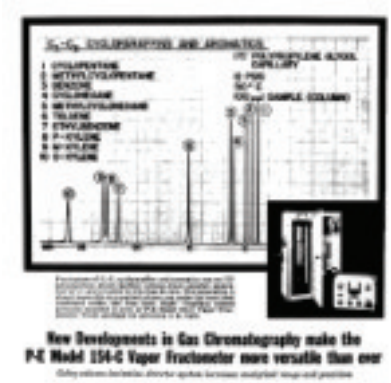
Back in 2005, PerkinElmer completed 50 years of the Model 154 Vapor Fractometer – the very first gas chromatograph (GC) developed by The Perkin-Elmer Corporation.

This instrument heralded the era of this versatile technique, which changed the way chemical analysis is carried out. It also represented the first truly automated, complex analytical instrument that did not need specially skilled scientists for its operation and could be used by practically every laboratory.

The Model 154 represented the first in a series of gas chromatographs, descendants of which are still manufactured by the Life & Analytical Sciences division of PerkinElmer. With that in mind, we would like to showcase a timeline of the evolution of the GC instrumentation from PerkinElmer

The Model 154-B Gas Chromatograph. The column oven is behind the door on the left-hand side of the unit. On the right-hand side, heating controls are on the top panel; pneumatic controls, as well as controls of the thermal-conductivity detector, are on the lower-right panel, while a flow meter is installed in the middle. The heated injection port for syringe injection is at the lower left. The potentiometric recorder

was usually housed in a separate, equal-size cabinet. The Model 154-A had the same
look as this instrument.



Believe it or not, what you see on the left is an advertisement of the Model 154-C Gas Chromatograph shows the instrument with the oven door open. The capillary column and the flame ionization detector are mounted in the oven. The amplifier of the FID is in a separate box. The chromatogram illustrates the full separation of ethylbenzene and the
three xylene isomers.

Clearly there was a need for greater PR and commercial push for those GCs! But it worked in 1955.

Dr. M.J.E. Golay (1902-1989), pioneering scientist in scientific instrumentation and the inventor of open-tubular (capillary) columns.

1955

Routine gas chromatography laboratory at Esso R&D Co., in early 1958. This room contained at that time eight Model 154 Gas Chromatographs. Except for the unit attended by the operator, the potentiometric recorders were placed directly under each chromatograph. (From W.A. Dietz, Instrument News, Spring 1958 edition.)

1957

The Model 188 Triplestage Gas Chromatograph. The sample was introduced through the injection port of the leftmost unit and was then conducted by the carrier gas through three columns in series, each in a separate oven at different temperatures. Each had a thermal conductivity detector at the column outlet, making separate records of the particular fraction analyzed in that column.

1959

The Model 213 Hydrocarbon Analyzer. It was a portable unit, permitting the analysis of atmospheric samples for the total organics content, with help of a flame-ionization detector.

1960

The Model 154-D. In this unit, the amplifier of the flame-ionization detector was incorporated in the upper part of the recorder cabinet (right). The rotary-type gas sampling valve, originally introduced with the Model 154-B, is mounted on the left side of the instrument cabinet.

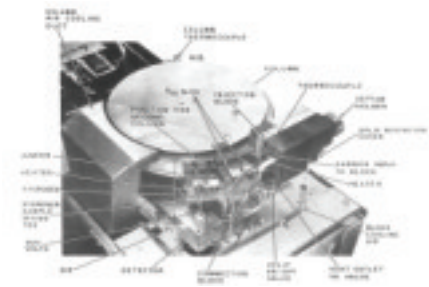
1960

The Perkin-Elmer-Shell Model 212 Sorptometer was developed for the determination of the surface area of solids according to the BET method, using a GC-type measurement. The sample holder was placed in the Dewar flask on the right where adsorption took place at liquid-nitrogen temperature.

1961

The Model 222 Temperature Programming Accessory for the Model 154 Gas Chromatographs. The resistance-heated column is behind the vertical "chimney." The injection port (for syringe injection) is just below the chimney.

1962



Configuration of the capillary column and heater of the Model 226 Gas Chromatograph. The heater is the disk at the bottom, while the capillary column is embedded in the disk above it.

1963

The Model 810/820 Gas Chromatographs. These represented advanced versions of the Model 800 Gas Chromatograph, originally introduced in 1962, offering, for the first time, dual-column baseline compensation in programmed-temperature operation, with differential flame-ionization detectors or with a dual thermal-conductivity detector. The Model 810 (on the left) is the FID and the Model 820 (on the right) is the TCD version.

1967

The Model 900 Gas Chromatograph. The column oven opens on the top left, with two FIDs in the wire cage to its right. Behind this are the controls for three gases, the carrier gas (helium), as well as hydrogen and air for the FIDs. The dual injection port is left of the name plate. The various knobs represent temperature controls and controls for the detector electronics.

1974

The Model 3920 Gas Chromatograph. Its design represented an advanced version of the system originally incorporated in the Model 900.

1977

The microprocessor-controlled Sigma 1 Gas Chromatograph is shown with its data system on the right.

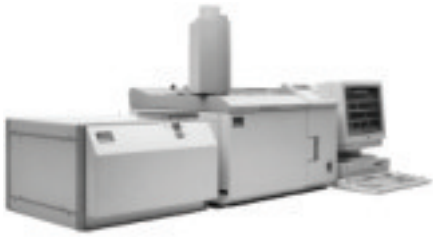
1982

The Sigma 2000 was an electronically controlled gas chromatograph with a built-in display of the method and the actual conditions. Shown in the middle are the four injection ports that permitted the installation of four columns simultaneously.

1983

The 8000 series instruments permitted realtime screen graphics, data handling and method development through the control of a single keyboard.

1990

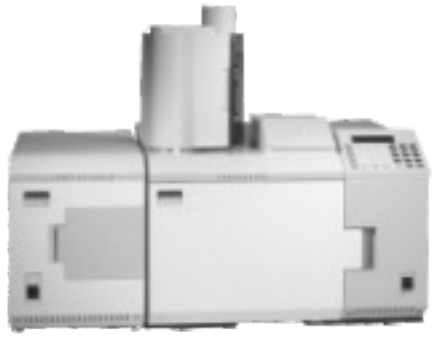


The Q-Mass 910 Quadrupole Mass Spectrometer coupled with the AutoSystem GC. The Q-Mass 910 offered the fastest pumpdown in the industry, providing the analytical laboratory high uptime and efficiency of operation.

1996

The HS 40XL Automatic Headspace Sampler was the seventh generation of headspace samplers. On the left is the carousel where the samples are placed. The tower on the right side is where the vials are heated and the volatiles transferred to the gas chromatograph.

1997



The TurboMass Mass Spectrometer is a quadrupole benchtop mass spectrometer with a standard mass range of 2-1200 daltons. It interfaces through the left side of the AutoSystem XL Gas Chromatograph, as shown in this photo.

2000

The TurboMatrix HS 110 (left) and TurboMatrix Automated Thermal Desorber (right). An intuitive, color touch-screen user interface provides instant access to system functionality. They can be interfaced to almost any GC system, giving access to PerkinElmer's proven technology, regardless of the GC brand or model.

2002

The Clarus 500 GC/MS system includes a quadrupole MS with the mass range of 1-1200 daltons, providing very fast scan speed, up to 60 scans/second, and permits Selected Ion Full Ion (SIFI™) monitoring in the same run, simultaneously acquiring data in full scan together with Selected Ion Monitoring (SIM).

2003

The TurboMatrix HS 110 Trap provides built-in analyte-trapping capabilities that maximize the extraction and transfer of headspace vapor into the GC column, thereby lowering the detection limits by up to 100 times.

2005

The PerkinElmer-Arnel Model 4088 Beer Analyzer. This system includes a PerkinElmer-Arnel Clarus GC with FID detector, coupled with a TurboMatrix HS Trap for off-flavor testing.

About the author

Dr. Leslie S. Ettre, a graduate of the Technical University of Budapest, Hungary, has been active in the field of gas chromatography for almost 50 years, in both research and instrument development. His main field had been in the theory and practice of open-tubular (capillary) columns. Dr. Ettre had been associated with The Perkin-Elmer Corporation for over 40 years,

retiring at the end of 1990, as a senior scientist. From 1988 until last year, he has been associated with the Department of Chemical Engineering of Yale University, first as an adjunct professor and, since 1995, as a research affiliate. In 1994, he was a guest professor at Johannes Kepler University, in Linz, Austria. Dr. Ettre has lectured throughout the world on chromatography and received numerous national and international awards. He is best known as the co-author of the basic textbook Static Headspace Gas Chromatography and the contributor of the series on Milestones in Chromatography published regularly in LC•GC Magazine.

Training Calendar April to June, 2010

Course Name	Code	Days	Apr	May	Jun
Flame Atomic AA with AA Win Lab Software	AA-C001	3			9, 10, 11
Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)	ICP-C001	3	21,22,23		30
Fourier Transform Infrared Spectroscopy (FTIR) / FTNIR / Microscopy	FTIR-C002	3			7, 8, 9
Fundamentals of Gas Chromatography (GS) GC-C001		2		13, 14	
High Performance Liquid Chromatography (Basic) + UPLC + Chromera	LC-C001	3		26,27,28	
Gas Chromatography and Headspace Technologies	GC-C002	2		19, 20	17, 18
Differential Scanning calorimeter (DSC) TGA	TA-C002	3			2, 3, 4

First Trimester Screening for Trisomy 21 (Down Syndrome) Trisomy 13 and Trisomy 18: Maternal Serum Screening & Nuchal Translucency Sonogram

Frequently Asked Questions:

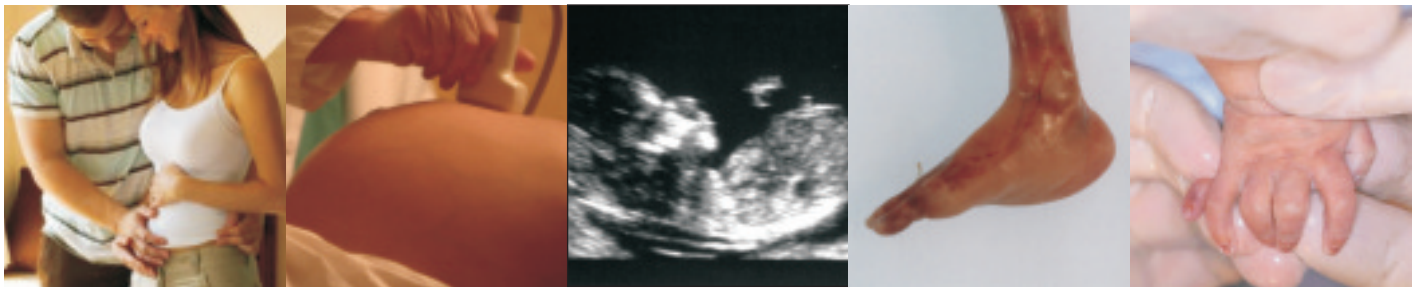
What are Down syndrome, trisomy 13, and trisomy 18?
Down syndrome and trisomies 13 & 18 are chromosomal disorders that cause mental retardation and birth defects. Babies with Down syndrome have an extra chromosome #21 (trisomy 21) which causes mental retardation and various medical problems involving the heart, digestive tract, and/or other organ systems. Trisomy 18 (having an extra chromosome #18) and trisomy 13 (having an extra chromosome #13) are more severe disorders which causes profound mental retardation and severe birth defects in many organ systems. Few babies with trisomies 13 or 18 survive more than a few months. Anyone can have a baby with these chromosome abnormalities, however, the chance increases with the mother's age

What can first trimester screening tell me about my pregnancy?
First trimester screening is not a diagnostic test, which means it cannot tell you whether your baby has Down syndrome, trisomy 13, or trisomy 18. Instead, the screening provides a probability that the baby might have Down syndrome, trisomy 13, or trisomy 18. This probability, or chance, is based on three criteria: your age, information obtained on a sonogram (ultrasound), and blood test. The screening results can either alert you and your doctor that your baby is at an increased risk for one of these chromosome disorders or be reassuring that your baby is at a lower risk for these conditions.

How is First Trimester Screening performed?
This screening includes a sonogram and maternal blood work performed between 11 1/7 - 13 6/7 weeks of pregnancy. The sonogram will confirm how far along your pregnancy is. In addition, a measurement of the fluid underneath the skin along the back of the baby's neck, called the nuchal translucency (NT), will be taken. A maternal blood sample is used to analyze two chemicals called free beta-human chorionic gonadotropin (hCG) and pregnancy associated plasma protein-A (PAPP-A), which are found in the blood of all pregnant women. In some pregnancies when the baby has Down syndrome, trisomy 13, or trisomy 18, there is extra fluid behind the baby's neck and/or the hCG and PAPP-A results are higher or lower than average. Combining your age-related risk with the NT measurement and blood work provides you with one risk figure for Down syndrome and one risk figure for trisomy 13 or trisomy 18.

How accurate is First Trimester Screening?
Because this is a screening test, a positive result (showing an increased risk) does not mean that your baby has a problem, only that further diagnostic tests are options for you to consider. Also, a negative or normal result (one that shows a decreased risk) does not mean that the baby will not have a chromosome abnormality. The first trimester screen's detection rate is about 78% for pregnancies in which the baby has Down syndrome, and is somewhat higher for pregnancies with trisomy 13 or trisomy 18. A nuchal translucency sonogram can be performed without measuring hCG and PAPP-A; however, the detection rate is reduced to about 70%. Finally, this screen is not designed to provide information about the possibility of other chromosome conditions, nor about many other genetic syndromes, genetic disorders, birth defects, or causes of mental retardation.

Should I still have the second trimester screening (triple/quad screen)?
The second trimester maternal serum screening test, also known as the "triple screen" or "quad screen", is performed between 16-20 weeks. Both of these screens measure chemicals in the mother's blood. Like the first trimester screening, results from a second trimester "triple screen" or "quad screen" can be used to statistically adjust a women's age-related risk for Down syndrome and trisomy 18 (not trisomy 13). In addition, the AFP portion of the screen can identify pregnancies at an increased risk for open neural tube defects such as spina bifida, which first trimester screening does not include. While these screens are certainly an additional screening option after having first trimester screening, it is unclear how to interpret results of the second test



in light of the first. Currently most laboratories do not combine results from first trimester and second trimester screening into one overall adjusted risk figure.

What if the screening shows an increased risk for one of the conditions?
If the screening results indicate that your baby is at an increased risk for either Down syndrome or trisomy 13 or 18, this does NOT mean that your baby necessarily has one of these conditions. A genetic counselor is available to go over your result and to discuss additional testing options such as chorionic villus sampling (CVS) and amniocentesis. CVS and amniocentesis are diagnostic tests that can tell you with greater than 99% accuracy whether or not a baby has a chromosome abnormality. Also, extra fluid behind the baby's neck (a larger than expected nuchal translucency) is known to be associated with other birth defects like congenital heart defects and skeletal problems.

Source: Adapted from: John Hopkins Medicine: http://womenshealth.jhmi.edu/ob-rasound/patients/nt_info.html

Got Gas?

Whether you are in the food or pharmaceutical industry, you cannot operate without compressed gas and gas cylinders. Don't be fooled by that all is well when you see your local distributor "roll" the cylinder on the floor and you think that "Hey, it's all kid's play"!

Compressed gases present both mechanical and physical hazards. If a cylinder valve is accidentally broken, a standard 330 cubic foot cylinder at approximately 2600 psi becomes a rocket attaining speeds of several miles per hour.

The contents of the cylinder may represent additional hazards due to flammability, reactivity, toxicity or asphyxiation. Exposure to corrosive gases such as chlorine, ammonia, and nitrogen dioxide can do irreparable damage to the lungs. Cryogenic gases such as liquid nitrogen can cause tissue damage from extreme cold.

The following list of prudent practices for the safe handling and use of compressed gas cylinders is accordingly presented for your review.

- Ensure that cylinder contents are properly labeled. Do not depend on manufacturer color codes!
- When transporting a cylinder, insure that the protective cap is in place and securely strap the cylinder to a hand cart. Never drag or slide the cylinder.
- Cylinders must be secured firmly at all times. Firmly belt or chain cylinders individually to a wall, cylinder cart, cylinder rack or rigid structure.
- Keep incompatible gas classes stored separately. Examples would include separating flammables from reactives, which include oxidizers and corrosives (i.e. oxygen, fluorine, chlorine). Oxygen and nitrous oxide cylinders must be separated from flammables or fuel gas cylinders and combustible materials by a minimum of 20 feet, or by a 5 feet high barrier with a fire rating of at least one half hour. Segregate gas storage from all other chemicals.
- Do not expose cylinders to an open flame or to any temperature above 125° Fahrenheit.
- Attach the regulator securely before opening the valve. Open cylinder valves slowly. Do not use a wrench to open or close a hand wheel type valve. If it can not be operated by hand, it should be repaired by the vendor or qualified individuals. Spring loaded pressure relief regulators should be used. When used with hazardous, flammable, or toxic gases, the valve should be vented to the fume hood.
- Under NO circumstances should oil or grease be used on regulator valves or cylinder valves. These substances may be reactive with some gases such as oxygen. Regulators used with oxidizing agents must be carefully cleaned to avoid the possibility of explosion due to contact of the gas with any reducing agent or oil.
- Never leave cylinder valves open when not in use. Segregate empty cylinders from full. When the cylinder is no longer in use, shut off the valves, relieve the pressure in the gas regulators, remove the regulator and cap the cylinder.
- Cylinders should never be emptied to a pressure lower than 170 kpa (25psi) because the residual contents may be contaminated with air if the valve is left open.
- If a cylinder leaks and the leak can not be stopped by tightening a valve gland or packing nut, close the leaking valve, replace the valve cap and move the cylinder to a well ventilated area (i.e. outdoors). Tag the cylinder as dangerous, rope the area off, and notify a supervisor.

It is important that you know and understand the properties, uses, and safety precautions of the gas before use. Cylinder safety devices must be maintained in proper operating conditions to function correctly. Only qualified, gas-supplier personnel should service or correct associated problems with cylinders.

EVERYONE IS CHECKING

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