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Announcements

PerkinElmer Recognized at World AIDS Day in Nairobi, Kenya for Donation

NEW GC Online Resource

What's new in GC Consumables

NEW Blood-Alcohol Analysis Consumables Kit

Upcoming Trade Shows

National Biodiesel Conference & Expo 2007
February 4–7, 2007
San Antonio, TX, U.S.

American Academy of Forensic Sciences (AAFS) – 59th Annual Meeting
February 19–24, 2007
San Antonio, TX, U.S.

Pittcon 2007
February 26–March 1, 2007
Chicago, IL, U.S.

Forum Labo 2007
April 16–19, 2007
Algiers, Algeria

Upcoming GC Training Sessions

To search for GC and GC/MS courses, [click here](#).

Additional Application Information

[GC applications](#)

[GC/MS applications](#)

Welcome to the Winter 2007 edition of GC Know-How Now!

This quarterly e-newsletter from PerkinElmer was created to help you get the most from your gas chromatography system. Here you will find articles about GC applications plus links to PerkinElmer's GC training sessions and other events, announcements and current promotions. We hope you will find it a useful tool.

This issue's featured article

The Importance of GC in Forensics Analysis: High-Accuracy Blood-Alcohol Analysis

Gas chromatography (GC) is important in forensic work for a variety of analyses involving volatile and semivolatile compounds. For example, GC/MS is commonly used for the analysis of blood for drugs of abuse. It may also be used for investigative work for designer drugs or in drug purity analysis. Blood alcohol is one of the most common analyses in a forensic laboratory, using GC with an FID detector. This technique provides rapid, accurate blood-alcohol data for support of case work in this area.



A recent case study in a U.S. forensic laboratory shows the advantage of using a PerkinElmer GC to get excellent long-term precision, leading to more efficient case closures.

Authors: **John Musselman, Anil Solanky, William Arnold, Phoenix Police Department Crime Laboratory, Phoenix, Arizona, U.S.**

Introduction

Accuracy and precision are critical in blood-alcohol analysis because the toxicologist not only has to be confident in his or her results, but also must be prepared to withstand tough cross examination by defense attorneys. Many crime laboratories are challenged with proficiencies that require the results to be within 10% of each other.

Methodology

The Phoenix Crime Laboratory uses the pressure-balanced approach to headspace-gas chromatography (HS-GC). This introduces the sample into the column in the form of a slug rather than a continuous flow. Headspace time plus run time is typically in the area of 6 minutes. However, headspace plus run time was reduced to 2.5 minutes by increasing the column head pressure from 20 psi to 30 psi.

Figure 1 shows the concepts involved in headspace sampling. Volatile compounds are separated from the matrix efficiently, and automatically injected into the GC. The vessels are disposed of after the analysis, minimizing cleanup labor and possible cross-contamination.

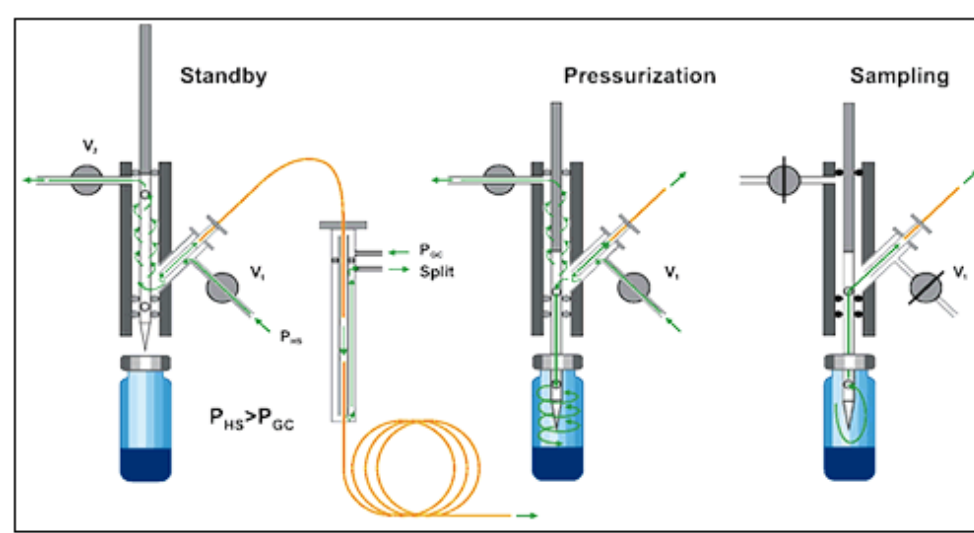


Figure 1. Headspace operation.

Results

Figure 2 shows the excellent precision logged over the course of 18 months at the Phoenix Crime Laboratory. This precision contributes to the laboratory's ability to submit data of exceptional quality to provide the strongest case analysis.

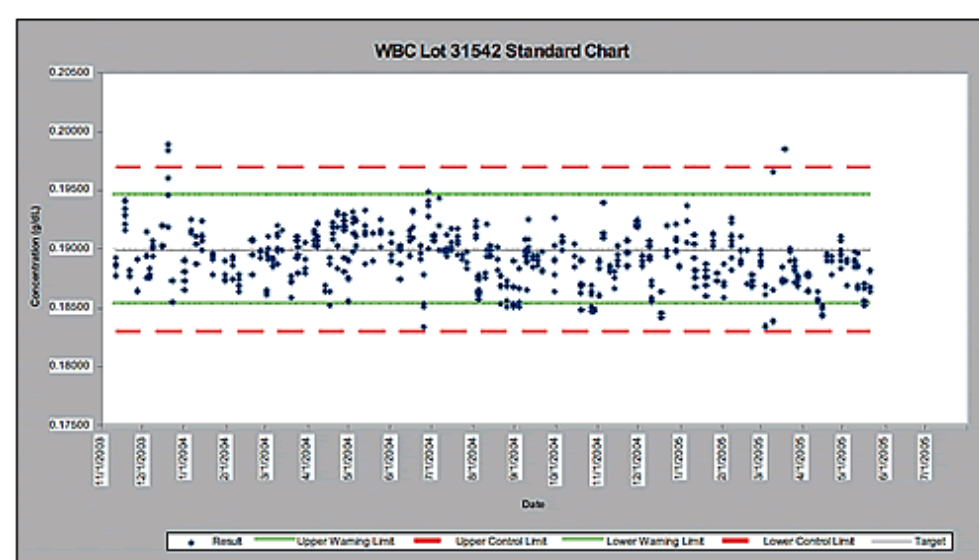


Figure 2. Run-to-run precision over 1.5 years.

Summary

The Phoenix Crime Lab routinely conducts high accuracy blood-alcohol analysis using automated headspace-gas chromatography with a PerkinElmer GC analysis system. By removing much of the variability of conventional HS-GC methods, the pressure-balanced approach achieved an RSD of 1.2% over an 18-month study.

Download the complete case study and sign up for the next issue of GC Know-How Now.

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