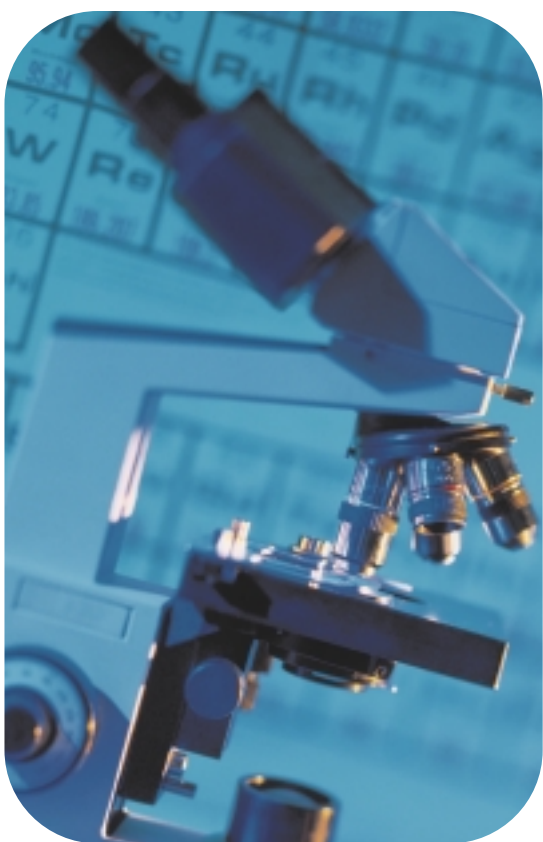
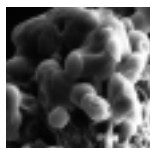
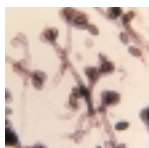


Industrial Hygiene and Environmental Laboratory Services

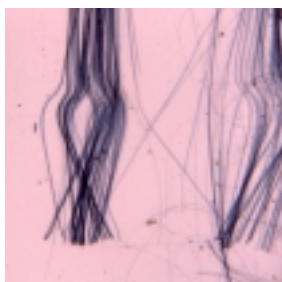


**Forensic Analytical
Laboratory Services Division**

Forensic Analytical Experts in Public Health

Since 1986, Forensic Analytical has offered high quality industrial hygiene and environmental laboratory services to professionals throughout the United States. Originally founded in 1986 as an asbestos laboratory, the company has grown to be one of the country's largest analytical laboratories. Since its beginnings, Forensic Analytical has served over 5000 different individuals and entities including industrial hygienists, environmental management firms, insurance companies, public agencies, schools, facility managers and attorneys.

Forensic Analytical's Laboratory Services Division includes two accredited locations specializing in the analysis of mold, bacteria, asbestos, lead and other heavy metals, hazardous waste, and particulate. The laboratories hold



Crocidolite

accreditations from the American Industrial Hygiene Association (AIHA), the National Voluntary Laboratory Accreditation Program (NVLAP), and by several different state accrediting bodies. The laboratories strive to exceed the quality control guidelines set forth by these organizations.

The company's staff of almost 150 professionals includes some of the most respected names in the industrial hygiene community. Each scientist at Forensic Analytical is committed to providing data that is understandable, accurate, and legally defensible. In addition to an outstanding staff, Forensic Analytical stays actively involved in professional associations, the legislative arena, and scientific research.

Asbestos Laboratory Services

Many years of experience in the analysis of asbestos in air, bulk material, water, and particulate samples by phase contrast microscopy, polarized light microscopy, and transmission electron microscopy has provided Forensic Analytical with an in-depth level of knowledge.

Phase Contrast Microscopy (PCM) Laboratory Services

Phase contrast microscopy (PCM) is used to determine fiber concentrations in air. Forensic Analytical commonly performs PCM analysis for contractors and industrial hygienists performing area and personnel



Chrysotile

monitoring during asbestos removal projects. All asbestos analyses are performed in strict compliance with the NIOSH 7400 Method, counting rules A. Fiberglass is determined using the same method and counting rules B.

Polarized Light Microscopy (PLM) Laboratory Services

Forensic Analytical's polarized light microscopy (PLM) laboratory is highly experienced in methods used to determine asbestos fiber concentrations in bulk building materials and soils.

In addition, it is used to determine asbestos concentrations in serpentine rock by California Method 435, and in building materials by NESHAP methods.



Standard turnaround time for all PCM and PLM samples is 24 hours, with faster turnaround times available.

Transmission Electron Microscopy (TEM) Laboratory Services



The most definitive method for analyzing asbestos is transmission electron microscopy (TEM). It provides absolute mineral identification and low method sensitivity. Forensic Analytical's transmission electron microscopes include

a Phillips CM12 and a Hitachi 600AB both equipped with energy dispersive spectrometers (EDX). Air sample preparation is carried out in class 100 HEPA-filtered clean benches to prevent contamination.

A variety of analytical protocols are available for determining the concentrations of asbestos fibers in air samples including AHERA and Yamate analyses. The laboratory is also capable of performing a number of special TEM asbestos analyses including microvac analysis, quantitative bulk weight percent analysis, and drinking water analysis. Forensic Analytical's TEM laboratory has become the choice of asbestos professionals that seek accurate, reliable, and defensible data.

Standard turnaround time for all TEM samples is 24 hours, with faster turnaround times available.

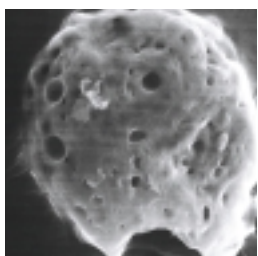
Quality Assurance/Quality Control of Asbestos Laboratories

A comprehensive Quality Assurance/Quality Control (QA/QC) program is followed to monitor laboratory analyses and performance, report generation, sample custody, sample storage, and disposal. The analysts undergo advanced training in the science of asbestos identification by light microscopy and are required to complete a NIOSH 582 course. The optical and electron microscopy asbestos laboratories have Quality Assurance/Quality Control plans that are available for review to ensure clients of exacting data, and consist of the following:



- Participation in AIHA's PAT round program & NVLAP's Proficiency Testing program
- AIHA and NVLAP Accreditation
- Weekly blind performance evaluation samples (PCM)
- Twice-daily contamination checks at each workstation (PLM)
- Monitoring of the QA program by a designated quality control coordinator
- Replicate analysis of 10% of clients submitted samples (PLM)
- Inter-laboratory round robin sample exchange programs
- Review of all client-submitted samples containing less than 1% of asbestos and floor tiles containing less than 5% asbestos (PLM)
- In-house audits
- Course work completed by TEM analysts in the principles of TEM, Asbestos Analysis by TEM, Selected Area Electron Diffraction, Energy Dispersive x-ray analysis, and Bulk Asbestos Analysis (TEM)

Particulate Characterization, Consultation and Special Projects



*Coke dust particle,
SEM micrograph, 2000x*

A team of microscopy experts with a wide range of experience, training and an array of analytical instrumentation are available to supplement investigative teams in the field of forensics, biology, geochemistry, failure analysis and semiconductor characterization.

Particle identification is useful for indoor air quality studies, comparisons of specific particles, calculation sources of particles, percent of respirable particles, product evaluations, and forensic investigations. Particle characterization and trace particle analysis projects are performed on an unlimited variety of materials. The primary tools used for particle identification are light microscopy, scanning electron microscopy and micro-fourier transform infrared spectroscopy.

Inorganic Laboratory Services

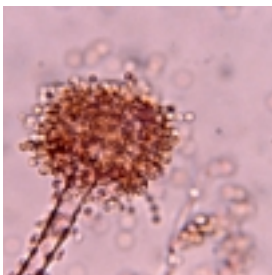
A wide variety of inorganic elements and matrices are analyzed by atomic absorption spectroscopy (AAS). AAS is the method of choice for precise quantitative determination of single inorganic elements in air, water, soil, paint and other matrices. The laboratory's primary instruments are equipped with flame and graphite furnace analytical capabilities. Flame analysis is suitable for most analytes and matrices including paint, wipes, soils and air samples. Graphite furnace procedures dramatically decreased detection limits and is appropriate when testing drinking water and some elements other than lead. The laboratory also maintains a mercury analyzer with excellent detection limits for mercury in a variety of matrices. All instruments are fully complemented with hot plates and other sample preparation equipment.

Forensic Analytical's metals laboratory regularly uses inductively coupled plasma spectroscopy (ICP) for industrial hygiene as well as environmental sample analysis. The ICP enables the laboratory to analyze over 26 metals and detect multiple metals in all types of matrices. Due to this



unique capability, it is an effective industrial hygiene tool when investigating multiple metals in welding fumes, paint pigments, or water. It is also the primary analytical technique used when performing regulated hazardous waste characterization, such as Cal-WET CAM 17 or RCRA 8.

Quality control is extensive at each step of the analysis. It includes analyst training, instrument maintenance and optimization, analysis of spiked matrix samples, duplicates and replicates, blanks and standards, and validation studies for element and matrix all overseen by a full time in-house certified industrial hygienist laboratory director. The inorganic laboratory is a successful participant in the American Industrial Hygiene Association's (AIHA) Proficiency Analytical Testing (PAT) program and is accredited by AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP).



Penicillium

Mold and Bacteria Laboratory Services

The investigation and analysis of mold can be an extremely complex task. The risk in performing these services is great since many mold contamination projects can be highly litigious. Actions

based on erroneous data can dramatically impact occupants of a building, and the professionals involved in an investigation or remediation project. When choosing a laboratory to perform this type of work, it is crucial to find one with vast experience, a focus on quality and integrity of data, and one that can provide superior service to help a project progress smoothly.

Staffed by trained microscopists and supervised by Ph.D. mycologists, the laboratory's complete focus is on the generation of quality data. Also, rigorous QA/QC programs are implemented to ensure that clients receive the most accurate and legally defensible results possible. The laboratory's devotion to quality is reflected in its becoming one of the first



accredited by the American Industrial Hygiene Association Environmental Mold Laboratory Accreditation Program (EMLAP). This provides clients the assurance that the laboratory has met defined standards for performance based on a rigid examination of many criteria. Forensic Analytical is pleased to be in the company of an elite and leading group of laboratories that achieve and demonstrate a high level of technical proficiency in this new and important field.

Rapid Quantitative Analysis of Mold by Real-time PCR

In recent years, advances in molecular biology, genetics, and techniques used to characterize deoxyribonucleic acid (DNA) have grown at an extremely rapid pace. The technology used to detect and identify DNA in molds has become very accurate, reliable, and cost effective. It has opened the possibility of speciating mold



in indoor air quality applications in a manner that has never been accomplished before on a commercial level. To date, scientists have relied on years of training, experience and direct microscopic examination to arrive at the correct name in the identifications of fungal molds. While mycologists have identified over 100,000 different types of mold, traditional mycology can be a daunting task. Additionally, traditional techniques require samples to be cultured in a suitable medium for 1-2 weeks (sometimes longer) for enumeration and identification. Traditional mycology can be a very labor-intensive and time-consuming task, even to the most experienced mycologists.

Molecular biology is changing this. Instead of samples being cultured for long periods of time, samples can be turned around rapidly (1 - 2 days). A Real-time Polymerase Chain Reaction Sequence Detection System performs the identification and quantitation of mold. The end result is a faster and more accurate analysis than by conventional culture-based methods. In the instance of water intrusion molds such as *Stachybotrys*, *Penicillium* and *Aspergillus*, accurate identification and measurement are crucial to an effective mold assessment. Additionally, this method offers flexibility of sampling, as media is not specific to the target mold.

Unmatched Customer Service

Convenient and reliable analytical services matched with state-of-the-art instrumentation, experienced professionals, uncompromising quality and a commitment to excellence have made Forensic Analytical the West Coast's leading industrial hygiene laboratory. Building upon our reputation, we are continually expanding our capabilities, searching for ways to help you complete your projects with the quality, speed and cost effectiveness you need.

Our value-added services include:

- Toll-free customer service number, 24 hours a day
- 24-hour standard turnaround for most analyses
- Rush service available on all analyses
- After hours drop box
- Electronic deliverables
- Free overnight courier services (with 10 or more samples)
- Wide array of sampling media
- Technical support from industry leaders



Forensic Analytical Laboratory Services Division

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