

ETV ✓



# Return on Investment: Why Participate in the ETV Process?

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Oak Ridge National Laboratory

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Presented at the Lead in Dust Vendor Meeting

Washington DC June 27, 2001

ETV ✓



- ❑ Dept. of Energy multi-program laboratory.
- ❑ One of several across the United States
- ❑ Located on the 35,000 acre Oak Ridge Reservation in central East Tennessee, 25 miles NW of Knoxville
- ❑ Like all the DOE national labs, managed for the DOE by a private contractor (eg. UT-Battelle, LLC).
- ❑ ~4000 employees, including 1300 R&D professional, more than half of which have Ph.D.'s



# Why Us?

(Sampling and Analysis Group at ORNL)

- Involved with field analytical technology for more than 20 years for DOD, DOE, and EPA.
  - As developers
  - As users
  - As evaluators





# What Your \$8K and Your In-Kind Contribution Buys You

- Use of a wealth of samples
- Rigorously designed test plan
- A heavily "QA'd" data set that you can use immediately
- Access to a group of the nation's experts (tech panel)
- Definitive Performance Verification Report
- "Advertising" in the form of Outreach
  - Internet Brownbag Seminars
  - Visibility at Scientific Conferences that experts will present your performance data
  - Visibility on ETV and ORNL Web sites
  - Mention in ETV electronic newsletter, the ETVOice

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Office of Research and Development Washington, D.C. 20460		ETV
<b>ENVIRONMENTAL TECHNOLOGY VERIFICATION PROGRAM VERIFICATION STATEMENT</b>		
TECHNOLOGY TYPE:	POLYCHLORINATED BI-PHENYL (PCB) FIELD ANALYTICAL TECHNOLOGY	
APPLICATION:	MEASUREMENT OF PCBs IN SOLIDS AND SOLVENT EXTRACTS	
TECHNOLOGY NAME:	RAPID-GRAV SYSTEM FROM PCB ANALYSIS	
COMPANY:	STRATEGIC DIAGNOSTICS INC.	
ADDRESS:	11 PETERSON DRIVE NEWARK, NJ 07102-3322	
PHONE:	(908) 495-8700	

The U.S. Environmental Protection Agency (EPA) has created a program to facilitate the deployment of innovative technologies through performance verification and technical demonstration. The goal of the Environmental Technology Verification (ETV) program is to foster environmental protection by enhancing the accuracy and use of approved and new non-destructive technologies. The ETV Program is intended to assist and inform those involved in the design, distribution, promotion, and evaluation of environmental technology. This document summarizes the results of a demonstration of the Strategic Diagnostics Inc. (SDI) Rapid-Grav System for polychlorinated biphenyl (PCB) analysis.

**PROGRAM OPERATION**  
The EPA, operating with regional testing organizations, directly and extensively evaluated the performance of a number of technologies. Together with the field participants, the testing included: test design plan, conduct tests, collect and analyze data, and report findings. The evaluation was conducted according to a rigorous demonstration plan and established protocols for quality assurance. EPA's National Environmental Research Laboratory, which conducts demonstrations of field demonstration and monitoring technologies, with the support of the U.S. Department of Energy's Environmental Management program, selected Oak Ridge National Laboratory (ORNL) as the testing organization for the performance verification of PCB field analytical techniques.

**DEMONSTRATION DESCRIPTION**  
In July 1993, the performance of an PCB field analytical technique was demonstrated under field conditions. Each technology was independently evaluated by comparing field analysis results to those obtained using approved reference methods. Performance evaluation (PE) samples were also used to assess independently the accuracy and comparability of the technology.

The demonstration was designed to assess and measure PCBs in soil and solvent extracts. The demonstration was conducted at ORNL in Oak Ridge, Tennessee, from July 27 through July 29. The study was conducted under two testing conditions. The first set are soil samples, with naturally fluctuating temperature and relative humidity conditions. The second set was made a controlled environmental chamber, with precisely control temperature and lower relative humidity. Multiple soil types, collected from sites in Ohio, Kentucky, and Tennessee, were analyzed in the study. Performance of PCBs were also analyzed for polychlorinated biphenyl congeners. The results of the performance verification of PCBs were also discussed in a separate technical bulletin, also available. The results of the performance verification of PCBs under field conditions by the technology, was compared with results from analysis of ETV samples.

804-108-0011 The accompanying notice is a copyright notice of the verification statement. August 1993



# Your Participation Entitles You to Access to Samples and Lab Analyses

- Based on current design, you will use
  - \$6200 worth of wipe samples
  - ca. \$1000 - \$4000 worth of laboratory analyses





# A Lot of Effort Goes into the Experimental Design to Insure that the Performance Verification Tests will Generate Useful Information

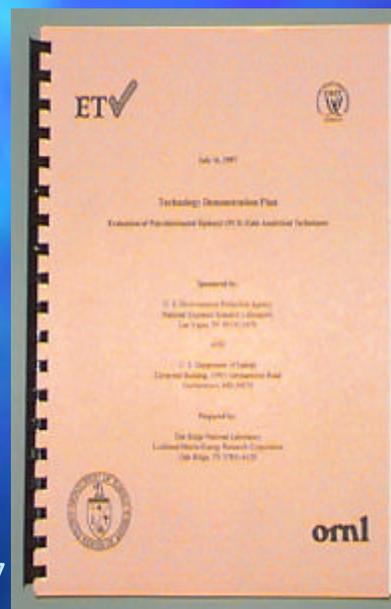
Statisticians

Project Officers

Vendors

Chemists

Stakeholders



ET ✓

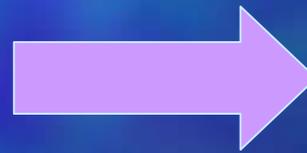
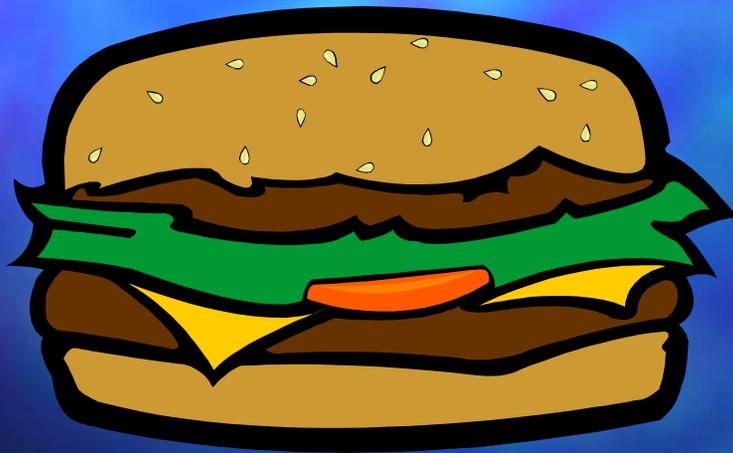
# QA Audits Conducted During Verification Testing Documents the High Quality of Data Being Generated



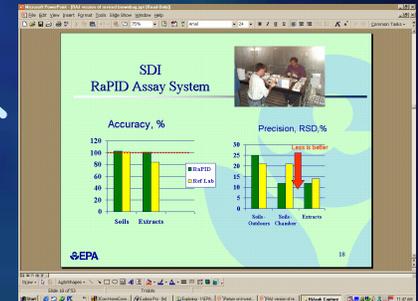
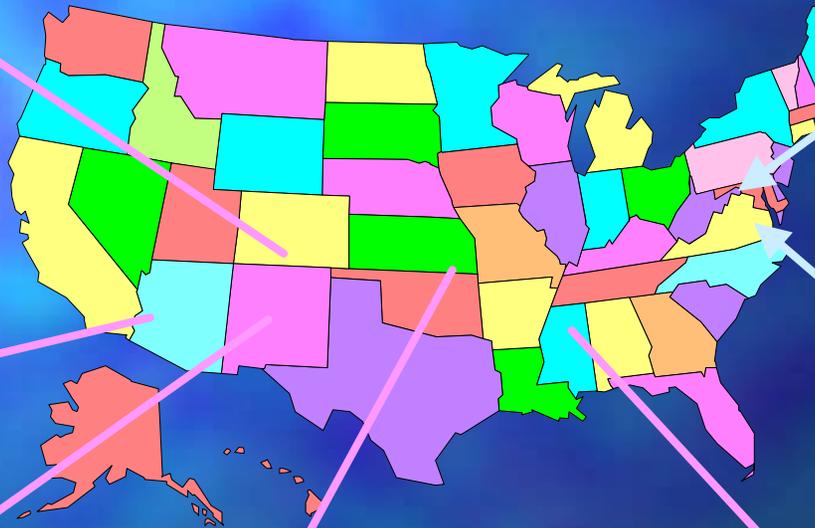


# Performance Verification Reports and Statements are Our Most Important Product

They Form the Substance of Rest of Our Outreach Program



# ETV 8 Internet Brownbag Seminars have Reached 600+ State and Local Regulators, Gov't Employees, and Environmental Consultants





# The Main ETV Web Site Gets 42,000 Hits per Month

Performance Verification Reports are Posted There

The screenshot shows the ETV website in a Microsoft Internet Explorer browser window. The address bar displays <http://www.epa.gov/etv/>. The website header features the EPA logo (United States Environmental Protection Agency) and the ORD logo (US EPA Office of Research & Development). The main heading is "The EPA's Environmental Technology Verification Program" with a large "ETV" logo and a green checkmark. A left-hand navigation menu includes buttons for "What's New", "Home", "Pilots", "Partners", "Calendar", "Verifications", "Documents", and "ORD Home". The main content area is titled "What is the ETV Program?" and contains a paragraph: "EPA's Environmental Technology Verification Program - or ETV - was instituted to verify the performance of innovative technical solutions to problems that threaten human health or the environment. ETV was created to substantially accelerate the entrance of new environmental technologies into the domestic and international marketplace." Below this is a section titled "What is the Program Process?" with a bulleted list of five points: 1. ETV, which began in October 1995, operates through public/private testing partnerships to evaluate the performance of environmental technology in all media - air, water, soil, ecosystems, waste, pollution prevention, and monitoring. 2. Market input is conveyed by the active involvement of stakeholder groups consisting of technology buyers, sellers, permittees, consultants, financiers, exporters and others within each sector, over 900 Americans participate in 18 groups at the present time. 3. Any technology vendor within each technology category selected by stakeholders for verification is welcome, but in no way required, to participate. 4. All test/quality assurance plans and protocols are developed with the participation of technical experts, stakeholders, and vendors; available prior to testing; peer reviewed by other experts, and updated after testing, as appropriate. 5. All test procedures, technology performance reports, and verification



# At ORNL, We Maintain our Own ETV Web site [www.ornl.gov/etv](http://www.ornl.gov/etv)

The screenshot shows a Microsoft Internet Explorer browser window displaying the ORNL ETV website. The browser's address bar shows the URL <http://www.ornl.gov/divisions/casid/etv/ornl-etv.htm>. The website content includes the ETV logo, the program name "EPA's Environmental Technology Verification Program Site Characterization and Monitoring Technologies (SCMT) Center", a brief description of the program, a navigation menu, a photo gallery, and contact information for Roger Jenkins and Amy Dindal at ORNL.

**ETV** ✓  
EPA's Environmental Technology Verification Program  
Site Characterization and Monitoring Technologies (SCMT) Center

In this program, ORNL partners with EPA to accelerate the user community's adoption of novel commercial technologies through performance verification.

**ORNL ETV Home**  
Program Description  
Announcements  
Verified Technologies  
PCB (soil/extracts)  
Decision Support Software  
Explosives (soil/water)  
Technologies Undergoing Verification  
PCB (soil/extracts/ul)  
Explosives (soil)  
Test Plans/Protocols  
Presentations  
Photo Gallery  
PCB Field Technologies  
Decision Support Software  
Explosives Detection Field Techniques  
Links

For more information:  
Roger Jenkins Amy Dindal  
865-574-4371 878-344-5505  
Oak Ridge National Laboratory



# Presentations at Scientific Meetings

List of Major Conferences where Technology Performance has been Presented

- OnSite (every year since 1998)
- National Environmental Monitoring Conference (2000)
- Green Brownfields (2000)
- Air and Waste Management Association (every year since 1998)
- PittCon (every year since 1998)
- ConSoil 2000 (International)
- Field Screening Europe 2001 (International)
- Innovative Clean-up Approaches (1999)
- American Statistical Society (every year since 1998)
- Special Courses (New Mexico Environmental Health Conference;  
Association of Engineering Geologists,  
National RCRA Meeting, TechnoVentions)

**Upcoming:**

- ER TEC 2001 (July)
- DOE TIE Workshop (Nov)

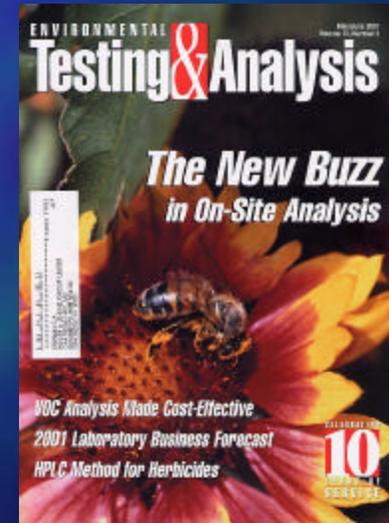
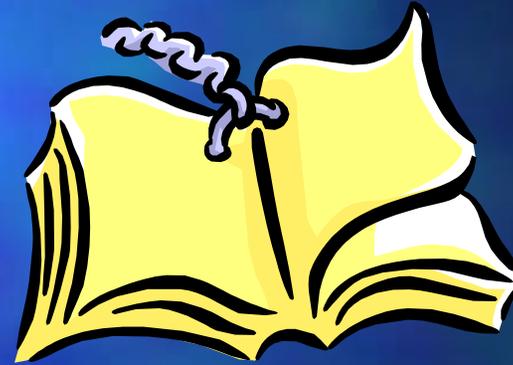




# Some Relative Costs of Advertising

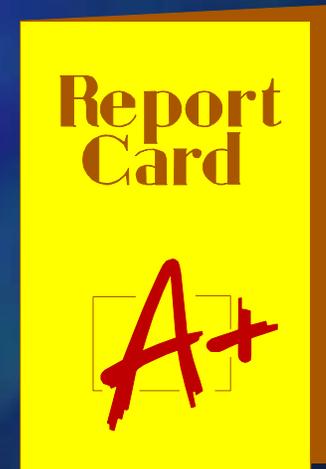


- Smallest Yellow Pages Ad in Knoxville (population: ca. 400,000): \$2,000
- Full page ad in one issue of Environmental Testing and Analysis: \$4000
- Full page ad in LC/GC Magazine: \$9265
- Recall that with advertising, there are no guarantees.





# What \$8K Does NOT Buy You





# This is NOT a Bake-Off!! Different Jobs Require Different Tools

Factor	Overall Performance for Selected Technologies								
	1	2	3	4	5	6	7	8	9
Accuracy	●	●	●	●	●	●	●	●	●
Precision	●	●	●	●	●	●	●	●	●

● Good    ● Mediocre    ● Poor





# Lessons Learned: Sources of Poor Performance

- Vendors who forget they aren't in graduate school any more, ie., it takes more than one experiment to prove something.
- Vendors who aren't prepared for rigorous field testing.
  - Lack of "field" experience
  - Testing a commercially-available field-portable instrument that has never been tested in the field by the vendor (this really happens)
  - Not enough horsepower in the field
- "I want you to test my instrument, not a method."
- Lack of independent evaluation





# Participation in the ETV Program Does Involve a Commitment





# We Keep Dancing Until the Music Stops

Once You Begin Participation in the Testing Phase, a Performance Report Will be Written

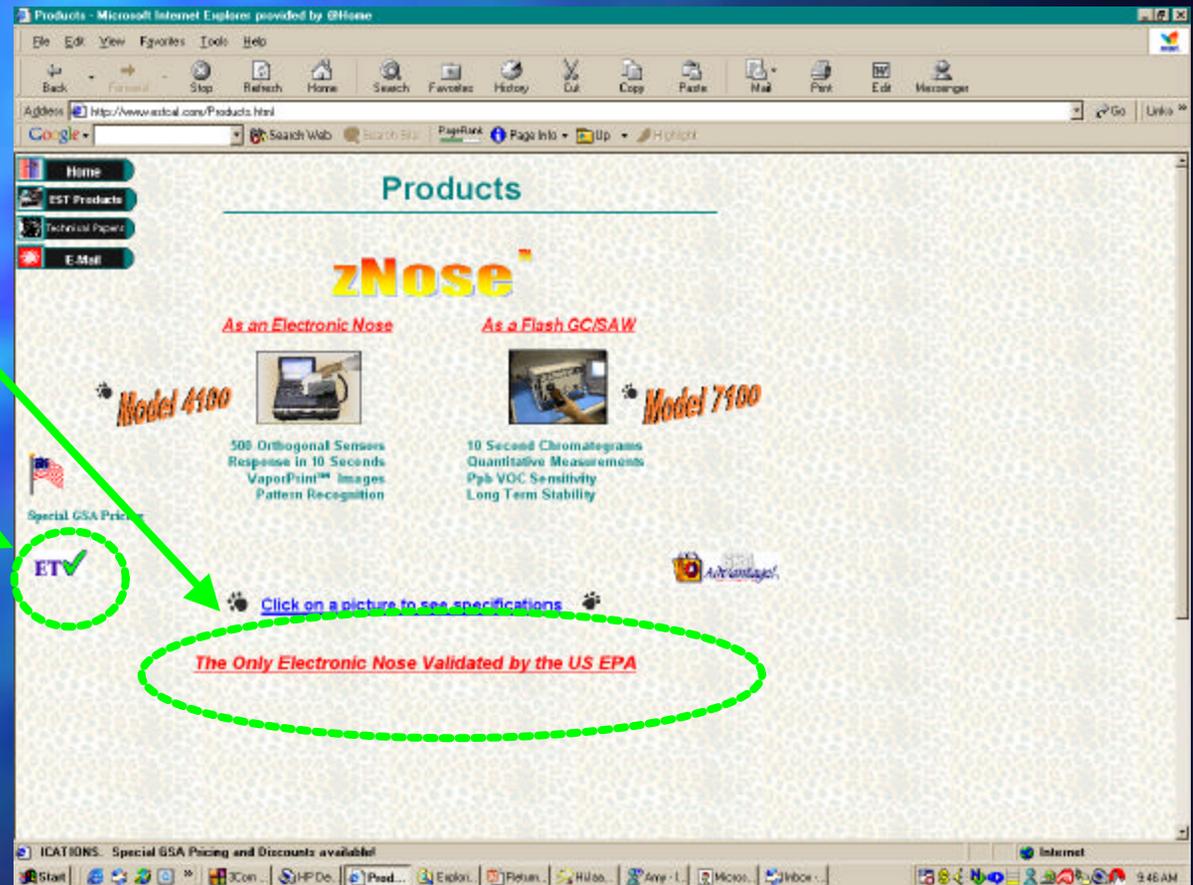




# How **NOT** to Use the Logo, etc



EPA/ETV does not "validate" technologies, we verify performance



“Our eNose is the first to be *approved* by the EPA for air, water, and soil testing .....



# How **TO** Use the ETV Logo

- Encouraged to use the ETV logo on web sites, publications, trade show exhibits, even products, provided it is used appropriately
- Logo usage guidance and marketing materials (ETV disk) will be provided upon verification completion
- Can not claim EPA endorsement or approval - we'll be happy to review any proposed materials

