

A Publication of the Environmental Restoration Program

Travis Air Force Base, California

July 2011

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## NOTICE

*Remedy selection is a long* and detailed process, but one of the most important tasks in this process is the solicitation of public comments on the proposed remedies. In other words, we want to know what you think about them. To ensure that you can learn about and comment on these potential actions, Travis AFB will publish a **Proposed Plan** in October 2011. The Plan will describe each proposed remedy and offer several ways to get your comments to the base. Your participation will help Travis AFB pick the best solutions to its environmental challenges.



**Gas Check:** A field technician calibrates a helium gas detector before starting an air exchange test in an unoccupied building. The detector collects and analyzes air samples at a predetermined rate and records the results. The two canisters with the blue risers collect air samples for SF6 analysis.

# Breathing Life into Science

Travis Hosts Air Exchange Test to Validate New Air Procedure

## By Lonnie Duke

Travis Environmental Project Manager

It may surprise some people to learn that buildings breathe. Depending on the building's design and the direction and flow of outdoor air, the air inside a building can be exchanged with fresh air either very quickly or slowly. The rate of this air transfer is called an Air Exchange Rate (AER).

Over the last 10 years, the Environmental Protection Agency has become more concerned about human health risks from the possible migration of volatile chemicals from the subsurface into overlying buildings. The movement of contaminated gas into the breathing air of a building is known as Vapor Intrusion. Often, the contaminated gas comes from contaminated groundwater that flowed beneath the building from another location.

Why is a building's AER important? Because this lets risk assessors know how quickly a building can purge itself of harmful gases. A high AER is important for industrial facilities, because it promotes worker safety and comfort. So, it is critical to accurately measure the AER of a building and to predict the AER of a new building design or the remodel of an existing building to protect the health and wellbeing of its inhabitants.

Unfortunately, it is not easy to accurately measure or calculate AERs, because there are a number of ways for error to creep into the measurements. ASTM International (formerly the American Society for Testing and See **AIR** page 3

Visit our Environmental Restoration Program web site at http://www.travis.af.mil/enviro



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The Guardian is published by the 60th **Civil Engineer Squadron's Environmental** Restoration Program. The newsletter is designed to inform and educate the public about the base's ongoing environmental cleanup program. Contents expressed herein are not necessarily the official views of, or endorsed by, the U.S. government, the Department of Defense, or the Department of the Air Force. Additional information about the program can be obtained from the public web site at

http://www.travis.af.mil/enviro. Questions and comments about the program may be sent to this address:

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Questions and comments about the environmental web site may be sent to:

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VIEWPOINT

## Giving

How would you feel after learning that you had just won the California lottery? Would you feel elation that so many problems (bills, college tuition, mortgage, etc) are now things of the past or worry that you just swapped one set of problems for another (taxes, unwanted publicity, visits from previously unknown relatives, etc.)?

You might then think about what to do with all of that money. What do I and the others around me need? You could give to those that helped you get to where you are today (parents, siblings, friends), or you could share your good fortune with the community (charities, church, college).

Although we cannot pay for cleanup activities with lottery winnings, the Travis Environmental Restoration Program has attracted a number of studies and demonstration projects that did not cost the base one thin dime. Previous Guardians are filled with descriptions of vegetable oil and tree studies, bioreactor demonstrations and solar powered treatment facilities that were hosted by Travis AFB but were designed and built under separately-funded technology demonstration programs.

Thanks to alternative funding, primarily from the Air Force Center for Engineering and the Environment (AFCEE), we have accomplished a lot of cleanup and completed the field work needed to evaluate and choose the most appropriate cleanup technologies.

We are proud of our track record and the respect that Travis AFB receives from the Environmental Restoration (ER) community. This recognition has led to several awards, such as the Gen. Thomas D. White Restoration Award in 2010, and positive articles in local newspapers and technology magazines. These are examples of our good fortune.

So, how do we share our good fortune with the ER community, which includes other Department of Defense facilities and private industry?

By sharing our secrets for success with other program managers who face similar environmental challenges. And, by participating in research projects and technology tests that benefit everyone.

Getting the word out on how to succeed

## Back, Travis-Style



## VIEWPOINT

Mark H. Smith Travis AFB Remedial Program Manager

in this business started last year when my two project managers (Mr. Lonnie Duke and Mr. Glenn Anderson) were invited to be keynote speakers at the 2010 AFCEE Technology Transfer Workshop in San Antonio, as described in the July 2010 Guardian. I co-presented a class on Lessons Learned from a Restoration Program Manager at this year's Technology Transfer Workshop. And on page 3, you will read that Mr. Anderson represented the Air Force on an international panel of experts at last month's Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies.

Ironically, by attending environmental symposiums and networking with the right people, we attract even more opportunities to host academic studies that look for better ways to clean up the environment. It is hard to say "NO" to free money!

Even if we get no direct financial benefit from a research project, we've seen many other benefits from our participation. We helped beta-test AFCEE's Sustainable Remediation Tool, a free Excel-based program that compares the impact of several commonly used cleanup technologies on the environment. We completed our part of a multi-year U.S. Environmental Protection Agency pilot study that focused on the sustainability evaluation of environmental cleanup technologies, known as footprint analysis. And I just returned from a week of testing a web-based environmental management software tool that the Air Force uses to oversee its entire environmental restoration program.

Of course, this involvement cannot take the place of our primary cleanup work. But, by setting an example of high standards, hard work, and honest communication with regulatory agencies and community members; the opportunities usually show up at our doorstep. And we do not even have to buy a lottery ticket!

## AIR STUDY July 2011 -- GUARDIAN 3 Panel for Your Thoughts

## Air

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Material) published a procedure in 2000 for measuring the AER of a building. The ASTM method uses a tracer gas released into the building at a constant rate. This has proved to be an accurate way of measuring an AER. Unfortunately, this procedure is cumbersome, costly, and requires specialized equipment. Even worse, the procedure uses sulfur hexafluoride (SF6) as the tracer gas, and SF6 is a powerful greenhouse gas that is being phased out.

To get a better understanding of AERs and to evaluate the viability and cost-effectiveness of a new, simpler procedure, the Air Force Center for Engineering and the Environment (AFCEE) is sponsoring a multi-base AER study. If the new procedure is shown to provide accurate results that are comparable to the older ASTM procedure, it can be used at other government and industrial facilities to support Vapor Intrusion assessments.

Travis AFB has a long history of supporting state-of-the-art environmental research and participated in this study by offering the use of an old abandoned facility that is currently on the demolition list. Facility 1130 was built in the 1950's and once housed an ultra-high frequency radio transmitter for the Communications Squadron. Like many old facilities at Travis AFB, it is no longer needed for its original purpose but will serve the Air Force one last time to the betterment of the scientific community.

"By using a building that is unoccupied, the field team carried out its research without interfering with the work of base employees," said Mr. Mark Smith, Travis Restoration Program Manager. "Also, sources of error from air conditioning system operation and personnel activities were eliminated, which improved the overall quality of the study."

At Facility 1130, the AER field team simultaneously measured the AER using the old ASTM method and the new method to compare the results. The new method uses helium as a tracer gas and is very simple to implement. At Facility 1130, four cylinders of compressed helium were placed inside the building, and their

## By Merrie Schilter-Lowe Travis Environmental Public Affairs

Well, it finally happened. After ribbing Lonnie Duke, Glenn Anderson and Mark Smith about having all the fun at symposiums and other training venues while I stay behind and write about them, they invited me to the Battelle International Bioremediation and Sustainable Environmental Technologies Symposium in Reno, Nev. last month. Boy, was that an eyeopening experience!

The symposium brought together several hundred regulators, scientists, environmentalists, engineers, and industry leaders from universities, government, research and development agencies and service firms from 31 countries.

While Lonnie and Glenn attended the entire event, I only got to hear a panel discussion on integrating society into sustainable remediation decision making. Glenn represented the Department of Defense on that international panel along with a community activist and representatives from industry, a state regulatory agency, the U.S. Environmental Protection Agency, and a European company.

The discussion covered issues such as best practices for informing the community about environmental problems and remediation decisions, how and when to engage the community in the decisionmaking process, and the constraints and limitations on community desires.

But when the audience asked for tips to develop trust in a community where trust doesn't exist or disappeared because of past situations, racial tension, or ethnic problems; I came to appreciate how easy my job on Travis really is.

I thought at that moment how lucky Travis is. Lonnie, Glenn and Mark do a lot to ensure that the community knows what they are doing every step of the way as they clean up the 18 contaminated groundwater sites on the base.

The guys meet twice each year with the Restoration Advisory Board to provide updates. They also publish this quarterly newsletter and post information on the Travis environmental public website.

Regular readers of this newsletter know about some of the Green and Sustainable

Remediation technologies used on Travis, including solar powered groundwater extraction and treatment systems, and injections of emulsified vegetable oil to stimulate the growth of bacteria that break down solvents into harmless byproducts.

So while Travis is leading GSR technologies in the Air Force, I learned that some countries are just getting started.

For instance, an associate professor in civil and environmental engineering at a university in South Korea told me it's only now that the media have gotten involved that citizens and his government have turned attention to the contaminated soil and groundwater sites left at two former U.S. military bases in his country.

He said the argument is so contentious between the United States and his government about who is responsible for cleanup and restoration of these sites that it will be years before the situation is resolved.

I also met a doctoral candidate with the University of New South Wales who is trying to develop substances such as EVO for use in his country's bioremediation programs. He said the country's laws are so restrictive that they can't import EVO or similar substances. They have to develop them themselves.

Another panelist, Mr. Alessandro Battaglia, works for a global technical and management support services firm. He said the United States is fortunate to have so many cleanup and restoration options. "I wish I could say the same thing about Europe," he said. He said 27 countries make up the European Union, and each has its own approach to GSR practices.

After the panel discussion, I spoke with Mr. Battaglia. He said that while U.S. environmental regulators argue over acceptable levels of contamination in soil and groundwater, people in most of the countries he visits are just trying to survive.

"I just returned from Cairo, Egypt, where they are using pigs to clean up the landfills, and then the people eat the pigs for food," he said.

I wish other countries had people like Lonnie, Glenn and Mark. I knew they worked hard. Now I realize so much better just how hard that is. Thanks guys!

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**Mitchell Memorial Library** 

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Saturday: 12 p.m. - 6 p.m.

**Sunday:** 12 p.m. - 6 p.m.

510 Travis Boulevard

Travis AFB, CA 94535

(707) 424-3279

Friday: Closed

- 9 p.m.



Branch did its part to improve our understanding of contaminant behavior in the environment and our methods to deal with environmental challenges.

Along with Cape Canaveral Air Force Station, Fla. and the former Kelly AFB, Texas, the Environmental Restoration

provide. Most of the sample analysis took place in an off-base laboratory, but some gas samples were tested right away while other samples from the same batch were tested at a later time. This identified any impact on data accuracy if there is a delay in transporting a gas sample to the lab.



valves were opened, releasing the helium

helium was measured as it dissipated out

into the building air. The concentration of



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Mark Smith, (707) 424-3062. You can also view our web site at http://www.travis.af.mil/envivo

 $\eta$  hon month like more information or need special accommodations for the RAB meeting. please contact

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