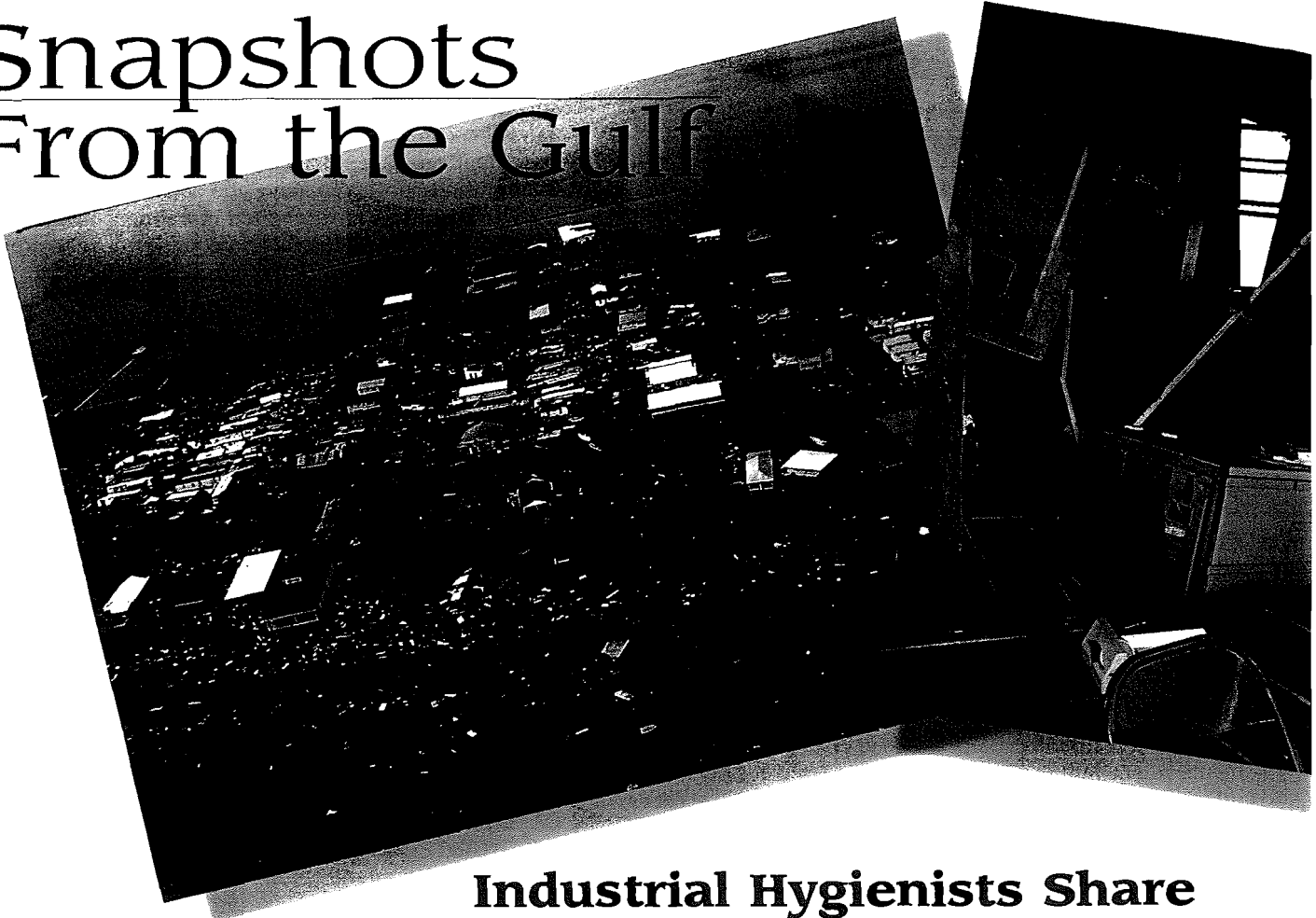


# Snapshots From the Gulf



## Industrial Hygienists Share Post-Katrina Experiences

By Alexandra Walsh

**M**any industrial hygiene professionals spent days or even months in the hurricane-ravaged Gulf States in 2005. For some, it was the disaster for which they spent a career preparing. Others never even had the opportunity to use their IH skills but instead responded to different needs. There were IHs who returned home with survivor guilt, and a few who were so affected by their experience that they plan to change the course of their careers—but all shared awe and sadness at the devastation and loss they witnessed. Here are a few of the stories that have been shared with AIHA.

### Camp Chevron

It was not a complete surprise to Debbie Brown when she got the message to be at the Chevron oil refinery in Pascagoula, Miss., by Sept. 4, 2005. At the time, Brown was a Chevron EHS advisor and member of a preparedness team based in Houston. She had been on standby since Hurricane Katrina hit, but she soon found that this was an assignment for which nothing could have prepared her.

When Brown reached Pascagoula, armed National Guard surrounded the perimeter of the refinery. Inside she found only a skeleton work crew; the refinery had a very tight-knit employee community and as soon as people began to trickle back to work, the leadership team sent them out to look for those for whom there had been no accounting.

Brown's priority was to begin sampling so she could assess the safety of

the facility and oversee the cleanup of toxic substances. It soon became clear that she had another priority as well—the emotional well-being of the work force. This was not business as usual. She couldn't focus solely on health and safety when workers really needed to tell their stories about how they survived and what they'd lost. The personal toll was huge, and Brown felt enormous compassion for them.

Shortly after her arrival, Brown heard that Chevron was building a displaced persons camp for the many employees and their families whose homes were gone or uninhabitable. She decided to check it out. What she found was a city being erected on an airstrip between a refinery and gas storage tanks.

The construction health and safety issues she confronted at "Camp Chevron" were staggering. Building contractors were climbing on tent



All photos courtesy of Chevron.

(l.) Aerial photo taken near Pascagoula, Miss., in the wake of Hurricane Katrina.

(m.) Damage to Chevron's dock offices in Pascagoula, Miss., after Hurricane Katrina.

(r.) One reason there was no reliable electronic communication after the storm.

beams and operating cranes around power lines that may not have been dead. Brown considered closing the job down, but the crew was working under enormous pressure to get the camp built—they had orders to move on to New Orleans to construct a temporary morgue that could hold 10,000 people. And, thousands of Chevron's employees had no homes.

Also on Brown's list of worries were snakes, the lack of an emergency response plan, fire protection, medical response, waste water and food inspection. The only solution was to leverage what resources existed; ultimately, a team of safety and environmental professionals was assembled and sent to Camp Chevron. Brown herself spent the rest of her time in Mississippi working at, and eventually moving into, the camp.

When it was time to leave she realized that although she was emotionally

worn out, she had loved every minute of her two weeks in Pascagoula. She has an adventurous spirit that served her well but, she acknowledges, she also had a ticket home. Looking back, Brown says she learned a lot of lessons. First, don't build a city when you can use RVs. In addition, good emergency response efforts are highly organized and controlled. However, the most valuable lesson she came away with was the importance of seeing the big picture and using people skills.

Brown left with an enormous sense of accomplishment from being with so many people who were working so hard under such difficult conditions for a common cause. As a result, she wants to make emergency response a greater part of her professional life.

Brown evacuated in advance of Hurricane Rita 48 hours after her return home to Houston.

## A Day at the Morgue

When Dan Woody's company, ATC Associates, told him he would be deployed to New Orleans in 48 hours to conduct air monitoring for an array of contaminants and chemicals in the aftermath of Hurricane Katrina, he believed he had an understanding of what he was walking into. He began to prepare himself mentally.

Woody decided to drive down to the Gulf so he could bring supplies and provisions. As he traveled closer to Biloxi and Gulfport, the magnitude of the devastation began to hit him hard. For Woody, the large boat in the middle of the highway was not as surreal as the pine trees. It wasn't the beating they had taken from the hurricane-force wind—it was the 15- to 20-foot-high line on every tree, below which everything had turned brown from the storm surge.

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The project that will forever stick in his mind from his time in New Orleans was assessing hazards in the morgue at Charity Hospital. The basement morgue had been completely under water at one point. What remained was oily goop; black mud with an intense odor and thousands of gallons of water in pocketed areas, sometimes as deep as five feet, and certainly enough in which to drown. It was essential to use the buddy system, and as he and his partner went to work in the pitch dark, Woody kept an eye out for asbestos and ceiling tiles that might be ready to fall as well as for animals and body parts. For protection, he wore a Tyvek suit and respirator, and he also carried a good flashlight of which he soon became very fond.

Woody was sampling for everything from lead and asbestos to bloodborne pathogens. The air handling system was off, and he was getting elevated hydrogen sulfide levels from stirring up the mud; released gas pockets caused them to evacuate several times. Mud samples soon confirmed fecal contamination. As he worked in pitch blackness, Woody thought about the physicians and staff, many of whom he knew had been in the black water without any PPE before outside help arrived.

He strived to stay on task to stave off depression. He knew if he began to process how many people had lost their lives, it would be very tough. Woody admits to some post-stress recovery on returning home and the need to decompress from constantly thinking about the safety of what he was doing or eating. It took him a while to stop reaching for the bottled water.

He also came home feeling grateful for what he had and for the opportunity to help. As an IH professional, he is used to helping people, but to be able to use his skills and talent to ensure people would be safe when they returned to work in New Orleans is something he'll never forget.

## Take-Out PPE

As a resident of Louisiana, 50 miles outside Baton Rouge, Joe Tudor was on the ground just hours after the hurricane moved on. Tudor's home lost power for only six hours, but many of his fellow employees at the petrochemical plant where he works 25



Construction at the displaced persons camp built for workers, their families and contractors at Chevron's Pascagoula, Miss., refinery.

miles outside New Orleans were not so lucky. Within 24 hours, Tudor was back at work, along with 50 of the plant's 2,000 employees. The plant had no power and only a single cell phone that management was using to try to determine if missing workers were safe. It would be three weeks before all of them were located.

Tudor's first priority was to check air quality. The automatic air monitoring systems outside the plant were down, so he drove around the community taking samples. Hazmat teams stood at the ready, but the air samples proved normal.

As it became clear that the plant had little structural damage and the community and plant workers were not at risk, Tudor turned his attention to the workers' needs. Five days after the hurricane, people began to trickle back into the plant. Some of their homes had only a few inches of flooding, but in others the damage went up 10 feet and some of their homes were permanently uninhabitable. A few workers were borrowing boats in an effort to get back to their homes and came to ask Tudor what they should do to stay safe and how they would know if their homes were safe for their families' return.

Tudor, a member of the AIHA Protective Clothing and Equipment

Committee, came up with the idea of assembling safety kits for employees with flooded homes. Each package contained goggles, heavy nitrile gloves, two pairs of thin nitrile gloves, 10 pairs of earplugs to protect against the noise of chainsaws and demolition and multigas/P100 disposable half-mask respirators. He also included an OSHA handout on voluntary respirator use and a pamphlet he previously put together on mold.

The first week, 40 employees a day came to Tudor to pick up their home PPE packages. By Thanksgiving, he was still giving them away.

## From Chemicals to Cannonballs

Justin DeLille spends most of his time handling marketing and business development for the Center for Toxicology and Environmental Health LLC in Little Rock, Ark. However, with a background in emergency response and hazmat experience, he was soon asked to travel to the Gulf to work with the Mississippi Department of Environmental Quality and another contractor to assess damage to several chemical plants.

On Aug. 30, 2005, the day he began his trip south, all the media

reports regarding the hurricane were bad. As he approached Hattiesburg, Miss., he began to see downed trees and long lines of people waiting to get into stores. Farther south, there was no one and nothing but darkness and trees blocking the road. He was able to get through to his on-site contacts by satellite phone, and they guided him to his home away from home in a Home Depot parking lot. DeLille spent a very hot night sleeping in his truck, afraid he would run out of gas if he tried to run his air conditioner.

The next morning, he was up early preparing his instruments, but as events transpired, his mission was short-lived. As soon as he reached the first chemical plant, the safety professionals on site assured him there were no problems with any of the plants, and they had everything under control. DeLille returned to his parking lot pondering the irony of not being able to put his IH skills to work in the midst of so much disaster. But shortly thereafter, an EPA criminal investigator put out a call for individuals who could help with a special assignment. He jumped at the chance to be productive and soon found himself traveling through what remained of Gulfport and Biloxi.

The assignment turned out to be a salvage operation at one of the few

historical sites that survived the hurricane—Beauvoir House, Jefferson Davis's home and presidential library. The home and library were barely left standing, but all the other buildings had been obliterated. The entire front of Beauvoir had been sheared off, leaving two floors of exposed rooms. Evidence of the deadly storm surge could be seen in debris lodged in the upper branches of the old trees.

DeLille and many others spent the day picking up artifacts. Cannonballs, muskets and other guns, artifacts and paintings were scattered everywhere. They took pictures of the artifacts and put them in a pile for restoration experts to examine. Paintings and furniture from the house were moved to a secure area within the historical site. It was a race against time to recover all the historical treasures that sat exposed to the elements.

Happy to have made a valuable contribution—if not to health and safety, at least to the historical legacy of the country—DeLille headed home the next day. On the way back, he gave away his surplus gas and water to evacuees trying to head home and reflected on the many concerned responders he met who had rushed down to help, unprepared for the magnitude of the devastation and the total absence of infrastructure. He also

thought about how strangers had pulled together and worked so well as teams. He's proud to have been a part of the recovery effort.

## Houston, We Have a Problem

Every day of Stephen Kastensmidt's 28 years in incident management was put to the test when he was placed in charge of risk management for the evacuation of Louisiana as part of the National Response Plan following the hurricane. But even decades of knowledge can't prepare someone for the largest evacuation the country has witnessed since the Civil War.

On Aug. 31, 2005, it was decided that 23,000 evacuees from the New Orleans Superdome would be moved to Houston until they could return home. The world's largest shelter was put together in 19 hours in the Reliant Astrodome to shelter them, and the evacuation began the next day.

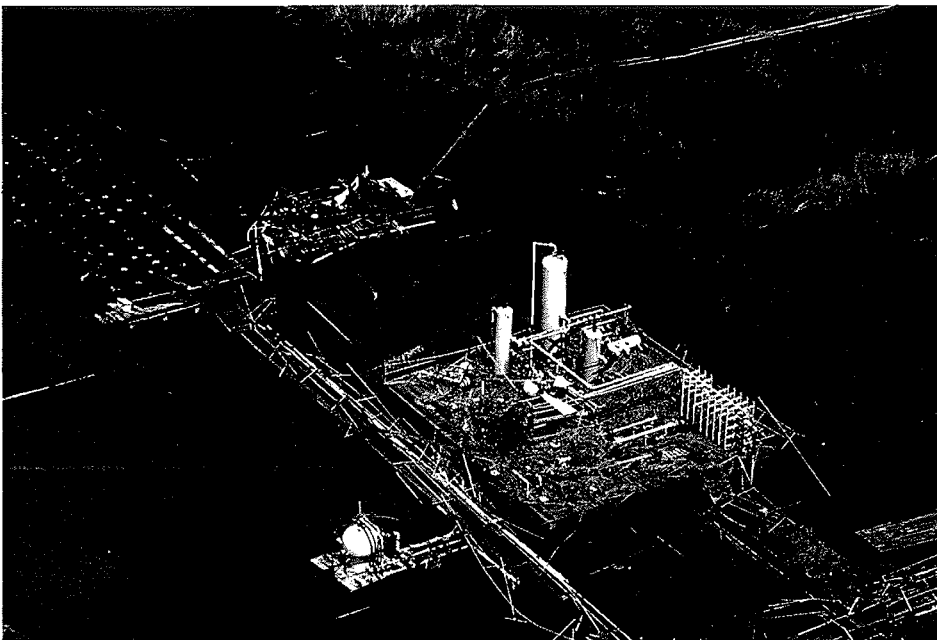
One of the first transports to arrive was a stolen bus driven by a 15-year-old. The in-processing began with instant amnesty—evacuees had two minutes to empty their pockets into a trash can before law enforcement officers patted them down. Next, a disaster medical assistance team conducted a quick medical and psychological assessment. The 23,000 evacuees from the Superdome, and many more who were stranded on highways and picked up en route, were processed in the early hours of the evacuation.

Some of the evacuees were in large family groups of up to five generations. Some had been homeless before the hurricane, and some had not eaten in nearly a week. The screening teams encountered everything from dehydration to gunshot wounds. Eventually, 229,000 evacuees arrived in Houston, and 106,000 people volunteered to assist them.

So, how do you manage resources to meet the needs of evacuees in four of the largest shelters ever established? Kastensmidt began with an "I can" attitude and a few 26-hour shifts. The days became a blur of constant decision-making and emergencies, but the "evacuee cities" worked.

A 120,000-foot hospital was set up adjacent to the Astrodome, with 5,500

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*Aerial photo taken near Pascagoula, Miss., in the wake of Hurricane Katrina.*

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*In Chevron's Pascagoula, Miss., refinery, damaged insulation covered some areas with potentially asbestos-containing material.*

licensed medical providers and 30 mental health specialists on hand. Many evacuees were so shattered that the sound of rain on the roof of the Astrodome made them anxious. The hospital had X-ray machines, MRIs and 48 ambulances; drug prescriptions were ready in 15 minutes, and prescription glasses were done in an hour. During the two most hectic days, 15,000 prescriptions were filled.

Sanitation was of key importance. Thousands of gallons of hand sanitizer were made available, and health teams roamed the shelters looking for anyone with symptoms who might need to be medically quarantined. Biohazard crews constantly mopped the floors.

Kastensmidt believes the evacuation effort provided a huge learning experience in what the government is, and is not, capable of doing and a valuable opportunity for agencies and groups to build relationships. He now has a strong belief that disaster response on this scale necessitates better use of the military, the need to change laws and logistical improvements. He also took away ideas to improve the health and safety of sheltered evacuees such as epidemiologist strike teams, TB task forces and medical surveillance and response groups as well as noting ways to improve immunization passports and enhance

environmental cleanup. And, he came away very proud to have been part of such an effective team.

### **Supporting the Home Team**

Carter Ficklen works for a contractor responsible for IH and safety support for the NASA Langley Research Center. Fulfilling these responsibilities rarely brings Ficklen in contact with NASA VIPs, let alone sharing a Lear Jet with them en route to the Gulf Coast. But that's exactly where he found himself days after Hurricane Katrina.

Having manned the NASA Langley Emergency Operations Center for the recovery effort following Hurricane Isabel in 2003, Ficklen was no stranger to hurricanes and the occupational health issues that arise in their wake. He also had participated in a video conference call a week after Katrina in which the medical and environmental impact on two of NASA's facilities, Stennis Space Center in Mississippi and Michoud Assembly Facility outside New Orleans, had been discussed. Although both facilities had staff IH teams, at Stennis many of the team members had evacuated with their families or were unable to work due to storm-damaged homes. As a result, there was only one IH trying to manage all health and safety operations and clearly, he was overwhelmed.

Ficklen stayed for two days, sleeping on the floor of the occupational health clinic. He was part of a team that would rotate through the facilities for a month, providing IH support until the facilities were operating at full capacity.

Ficklen helped the center's IH triage the buildings for asbestos damage, chemical management issues, water intrusion and mold—typical post-storm issues. What was not typical were the health and hygiene issues resulting from sheltering thousands of evacuees during and after the storm. Stennis, located in an isolated, rural area, felt obligated to open its gates to evacuees who had nowhere else to go.

Amidst facilities and people, the team tried to weed out and prioritize the real threats. Topping the list was infection from injuries caused by nails jutting out of the two-by-fours that lay everywhere around workers' homes and also from exposure to flood waters, as well as the potential for unsafe food. Numerous tetanus and hepatitis B shots were given at the Stennis occupational health clinic.

Even though the Stennis facility came through fairly unscathed, a number of employees lost their homes. Nearly half of them lost everything. In the short time Ficklen had before he left for the Gulf, he used the checklist posted online by the AIHA Emergency Preparedness and Response Task Force to put together pamphlets for employee homeowners to keep them safe during personal recovery efforts.

Like Brown, Ficklen found that almost everyone was eager to tell his or her story. A nurse had injured her arms holding her grandmother for hours, waiting for rescue. Another person heard screaming for hours and then nothing, knowing there probably had been no rescue. Ficklen was exhausted and emotionally drained when he finally headed home.

What stayed in his mind after he got back were these stories and how unbelievable it was that this had taken place in the United States. He also took home a better understanding of how to provide help to other facilities when staff IHs are out of commission. He knew not to ask why something wasn't being done, but instead to ask, "What do you need? What can I do?"

## The Carnival From Hell

Bill Ringo, a disaster response reservist with FEMA, was assigned to the agency's Mississippi Operations for Hurricane Katrina recovery. As described in the federal government's National Response Plan, Ringo's role is to be FEMA's safety coordinator for the disaster, keeping response and recovery workers safe and healthy. But, he pointed out, that weight is shared by his counterpart at OSHA, with whom he has a very collegial relationship. FEMA and OSHA have been working together on response worker safety in Mississippi since Sept. 1, 2005, with a combined staff of up to 50 health and safety professionals, including IHS, safety engineers, sanitarians, nurses and medical consultants.

Ringo first arrived in Mississippi two days after the hurricane. What he saw broke his heart. Nothing worked. Municipal and commercial buildings were destroyed, houses were crushed or moved off foundations and there were boats on top of Wal-Mart.

Ringo believes Mississippi received resources on a scale never before seen—but the need was also unprecedented. In that state alone, 80,000 evacuees were in need of housing, and they were pouring into FEMA centers at the rate of 5,000 a day. Health issues were plentiful for recovery workers, as many worked 14-hour shifts and slept in cars or tents during the first month. In the FEMA family, there might be 1,000 to 2,000 workers on any given day, including full-timers, temporary employees, reservists and Americorps members. An additional unknown number of responders were contractors and their subs and volunteers.

Because usable buildings were almost nonexistent, FEMA resorted to setting up circus tents in a parking lot. One was designated a mess tent, two provided supplies, another became a hospital and so forth. To Ringo, it looked like a carnival from hell.

Some of the health and safety solutions were as basic as changing the spacing between cots to prevent communicable diseases and getting food inspectors on board. Recordable injuries were not that extensive, but preventing communicable diseases was a huge potential problem. Ringo pushed workers to use

N95 masks with exhale valves when appropriate and to use hand cleaner constantly. All recovery workers were offered tetanus, hepatitis and flu shots. If the flu had hit and only 10 percent of camp residents had become sick, the local medical system would have been overwhelmed completely.

On a daily basis, Ringo tracked six clinics for general trends in illnesses and injuries. He did see a fair amount of upper-respiratory problems that evolved into sinusitis, perhaps from something airborne or from the change of season. The camps were inspected daily. Additionally, industrial hygienists went out with work crews, preventing spider bites, isolating victims of chicken pox, investigating confined-space issues and checking air quality in buildings used for housing and relief services.

The stress response and recovery workers were under took its toll. Many experienced survivor guilt from spending day after day confronted with the enormous loss of others. FEMA employees at the disaster recovery centers were an easy target for a public that wasn't getting answers and was becoming increasingly frustrated. Everyone was experiencing high anxiety levels. To help, FEMA had on hand many contractors licensed in critical stress incident management.

Ringo believes there were a lot of successes and a lot of lessons learned in the aftermath of Hurricane Katrina. For instance, consider the military in operation, where each person knows who's who. In Mississippi, everyone was running around in golf shirts and Ringo couldn't tell who the go-to people were. Although lists were published and circulated every 48 hours, it took a couple of weeks to identify the key problem solvers. He strove to be one of them.

Katrina was the one for which Ringo always had trained. He is happy to report that not a single recovery worker died on the job, and there was not a single incidence of spreading communicable diseases from the beginning of September to the end of December.

## Where the Money Goes

Gary Ganson manages environmental health and safety for a consulting firm that assigned him to help several Gulf Coast banks that had been impacted by surge and water intrusion from the hurricane. Ganson knew very little about the banks' conditions from reconnaissance photos, but he knew they were flooded and there would be extensive security issues. Before heading to New Orleans, he developed health and safety guidelines for the

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*A men's tent at the displaced persons camp constructed for displaced workers, their families and contractors at Chevron's Pascagoula, Miss., refinery.*



An image from the community of Pascagoula, Miss., following Hurricane Katrina.

recovery teams that identified hazards they might encounter and physical injuries they might sustain.

The recovery team Ganson worked with comprised 30 individuals, including National Guard, law enforcement, bank executives and personnel from environmental cleanup firms. Once on site, the recovery teams broke into two groups. The first team entered banks that had been flooded by at least a foot of water or that were totally submerged and did an initial reconnaissance to identify any health and safety hazards. Then, the environmental contractor came in to shovel out the inevitable five to six inches of sludge. Finally, the second team of bank executives and security personnel entered to breach the vault and wrap and remove the safety deposit boxes, cash

in the cash drawers, night deposit and drive-in teller boxes, the daily deposit records and other paperwork and the contents of the computers. Everything was transported to a secure warehouse; later, contaminated money was sent to the Federal Reserve to be exchanged.

When sampling the water from the vault and the safety deposit boxes, which were neither water-tight nor airtight, Ganson found high counts of *Escherichia coli* and other bacteria. He remembers the smell as a blend of rotting fish and sewage. Where the water had receded, he found

mold spore counts as high as 300,000 per cubic meter.

At the secure warehouse, the safety deposit boxes were wiped down and Ganson gave team members guidelines on how to open the boxes when customers came to retrieve them. The bank built privacy stalls in the warehouse and when a customer arrived, one environmental and one security team member would breach the box while the client observed from a safe distance. The extracted contents were sealed in a bag and given to the client with instructions on how they should be cleaned.

Usually, any papers kept in the boxes had been destroyed. Some people left without saying a word, while others wept. One family had lost all memorabilia of their father when they

lost their home and had been hoping desperately that they could salvage something from the safety deposit box, but they could not.

Ganson worked side by side with people who had lost their homes or had at least sustained massive damage. Some seemed depressed and some seemed in denial. Many were staying in hotels or with relatives, and Ganson was astounded at the level of cooperation. He had to wonder how helpful and cooperative he would have been if the situation had been reversed.

Ganson and his wife previously had scheduled a vacation in New Orleans, and before he left to return home, he began to see signs of revival in the city. He's optimistic he'll be vacationing in the French Quarter yet. ☞

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- **CR 301**, "Lessons Learned From Hurricane Rita," Monday, May 15, 10:30 a.m.-noon.
- **RT 209**, "The National Response Plan Worker Safety and Health Support Annex Activation for Hurricanes Katrina and Rita—Successes, Lessons Learned and Changes Made for the Future," Tuesday, May 16, 10:30 a.m.-noon.
- **RT 237**, "Recovering From the Hurricanes," Thursday, May 18, 8 a.m.-noon.

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photo courtesy of FEMA

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