

Respirators keep workers safe around Hanford waste tanks

During the week of March 15, CH2M HILL Hanford Group had three separate vapor exposure events. The company practice is to offer medical evaluation to all employees who report unusual smells, and if symptoms are present the medical evaluation is mandatory. Immediately following each of the events of that week, workers were taken to the Hanford Environmental Health Foundation and later returned to work.

On March 25, three additional situations occurred in which workers who originally declined a medical evaluation were concerned enough about odors later the same day that they requested and received medical evaluations. Those employees were released back to work without restrictions.

Because of the recent events, the vice presidents of the company's Waste Feed Operations and Closure Project organizations began requiring the use of respirators for all work within tank-farm boundaries. Senior management of CH2M HILL



Respirators are now required for employees working within tank farm boundaries.

Hanford Group and its government customer, the U.S. Department of Energy's Office of River Protection, fully supported their actions and announced that all tank-farm work, both essential and nonessential, would be performed with respirators.

Tank-farm workers have played a key role in finding solutions to the vapor challenge. An employee group called the Chemical Vapor Solutions Team meets regularly to deal

with the issues and advise management on further precautions that might be taken. They post answers to questions they receive on an internal Web page.

Employee suggestions have covered a range of topics, including: additional engineering changes; better configuration of trailers where workers change into and out of their protective clothing; additional equipment to monitor for

vapors; and the use of masks and cartridges.

These near-term actions were taken recently as a result of the worker suggestions:

- Procuring additional respirators, including powered air purifying respirators (PAPRs) with hoods
- Scheduling and providing training for personnel who need PAPR training, and those who are not currently respirator-trained
- Procuring additional field equipment to provide continuous monitoring of various tank-farm areas
- Procuring and deploying additional personal sampling devices

CH2M HILL Hanford Group has also taken the step, unprecedented for Hanford, of assembling a panel of national experts to review the company's procedures.

"We want the best minds in the country to help us find ways to work with the site medical provider to improve our medical monitoring and surveillance process," said CH2M HILL Hanford Group President Ed Aromi.

Organic fumes have been detected around Hanford's waste tanks for decades, and it's likely that the release of vapors will continue. But there's a strong CH2M HILL safety culture at Hanford, and the problem of exposures is being addressed through upgrades in engineering, industrial hygiene and medical support programs.

Safety paramount at nuclear-waste reservation

At the Department of Energy's Hanford Site in southeastern Washington, CH2M HILL Hanford Group is a key contractor in a multi-billion-dollar environmental cleanup project. The company is safely managing 177 underground tanks containing highly radioactive nuclear waste, some of which has been stored there since World War II.

By last August, the company had moved 98 percent of the "pumpable" liquid waste from aging single-shell tanks into newer, safer double-shell tanks. And CH2M HILL is preparing to feed waste to a vitrification plant now under construction, where the waste will be turned into glass logs for safe disposal. Steady progress is being made toward eventually emptying and closing the tank farms.

The safety of tank-farm workers is a challenge and a primary concern—more important than any schedule or deadline. While many CH2M HILL employees have worked at Hanford for decades and are accustomed to dealing with radiological hazards, there are occasional unpredictable releases of chemical vapors. The tanks "breathe" through filtering systems, and changes in barometric pressure can trigger an unexpected vapor release. Upon finding that some workers are sensitive to the ammonia and other organic fumes released, the company began an intensive program to prevent exposures and safeguard the workers' health.





Teamwork places Hanford project in the 'black,' ahead of schedule

How did CH2M HILL Hanford Group take the Tank Farms Restoration and Safe Operations from \$11 million over budget in May 2002 to \$1 million under budget at the end of December 2003 and advance project completion by as much as six months? Answer: teamwork.

Begun in 1997, the Tank Farms Restoration and Safe Operations, known as Project W-314, is a \$285 million project that provides infrastructure to support waste transfer from the double-shell tank farms to the Waste Treatment Plant which is now under construction and supports improvements to bring tank farm facilities into compliance with environmental regulations. CH2M HILL came to the Hanford Site in 2000.

The planned end date of Project W-314 is June 30, 2005, and project completion supports fulfillment of a major milestone of the Tri-Party Agreement, the agreement among the U.S. Department of Energy, the U.S. Environmental Protection Agency and the Washington State Department of Ecology that governs the cleanup of the Hanford Site. At this time, CH2M HILL expects to complete the project early, as early as the first quarter, 2005.

"From senior management, engineering and construction, to procurement, work planning and scheduling, our employees worked together to modernize management techniques and implement a willingness to change for the better," said Ed Aromi, president and general manager of CH2M HILL Hanford Group. "Working closely with our client, DOE's Office of River Protection, and our subcontractors, we have turned Project W-314 around, and have been accomplishing work safely and under budget every month since May 2002."

Improvements in the conduct of work on Project W-314 have led CH2M HILL to reduce cost of the project from \$285 million to \$240 million and to predict the completion of work three to six months early. As of Dec. 31, 2003, CH2M HILL had completed about 90 percent of the work.



Bill Baden, left, and Gary Cooper prepare to work on the W-314 Project upgrade of the 222-S Laboratory's mixed-waste system, an area shown in the inset photo.

Project director Ken Jordan cited the following actions that contributed to the turnaround:

- Improved use of competitive bidding and subcontractor performance incentives
- Improved project control performance
- Establishment of a construction management organization that facilitated the prompt resolution of problems in the field and proactive planning for design and construction work
- Significantly improved communications among client, CH2M HILL and subcontractors.

"The encouragement and advice we received from CH2M HILL and Office of River Protection senior management helped us turn the corner," said Jordan.

Joel Eacker, vice president, Project Delivery credits the team's hard work, "They identified the challenges that were leading to inefficiencies in the field and found solutions to those issues. The team's performance is impressive and their safety record is solid."

Flexible workforce safely accomplishes analytical lab upgrade

Getting Project W-314 on schedule and under budget was a major accomplishment for CH2M HILL Hanford Group. One milestone that the project recently met on time involved an upgrade to the mixed-waste tank system at the 222-S Laboratory, the analytical services laboratory for the Hanford Site. The job had to be completed without disrupting the analytical work at the lab or compromising safety.

It took teamwork to pull off this feat. All the samples that come into

the lab go through hot cells with drains to the tank system where the upgrade work was to be done, and the sink where liquid waste is discharged to the system was affected as well. Operations personnel, radiological control staff members, Project W-314 subcontractors and the analytical production staff had to understand each other's needs and work together.

Through meetings, discussions and lots of rearranging of schedules, the job was completed with no

adverse impacts on the lab's mission, and no safety problems. The Analytical Technical Services radiological control staff supported both the lab's requirements and the work of the Project W-314 crew. Radiological control technicians worked overtime supporting the Project W-314, sanitary water line replacement, tank waste analysis and off-unit waste receipts. Waste activities were moved to swing shift. The analytical production personnel arranged their schedules to

fit the availability of the radiological control technicians while still making progress on vitally important sample analysis.

"The workforce remained flexible—switching shifts, and working weekends and holidays when required by the project staff," said Barbara Hill, director of Analytical Technical Services. Flexibility and a little creative scheduling, Hill said, resulted in both the analytical staff and Project W-314 personnel completing their projects on time.