



Summary of the Expert Panel Review of CH2M Hill's Technical Basis Report on Chemical Vapor Exposure at Hanford

September 2008

Introduction

The Industrial Hygiene Chemical Vapor Technical Basis Review (Tech Review) conducted by an independent panel of experts finds that CH2M Hill does not meet its goal “to identify all chemicals within a waste vapor source that are potentially hazardous and might be released into worker breathing zones” (*Tech Review*, p. 5), thus putting workers at risk. *Hanford Challenge* sees this reported failure as an important first step towards acknowledging and addressing the inconsistencies between what the models say and what the workers experience.

The Expert Panel appointed by the [Hanford Concerns Council](#) was tasked with reviewing and analyzing the adequacy of the approach used by Hanford contractor, CH2M Hill to protect workers from exposure to potentially harmful chemical vapors emitting from underground nuclear waste tanks.

The review is the product of a year and a half of study and meetings with contractor, public interest and Concerns Council personnel who joined together in this unique effort to resolve the dispute over the effectiveness of the current industrial hygiene program. The review was provided to *Hanford Challenge* and CH2M Hill Hanford Group on July 9, 2008. This summary focuses on highlights of the review Hanford Challenge found especially important.

The Expert Panel focused on the methodology laid out in CH2M Hill's Technical Basis, which lays the foundation for monitoring chemical vapors and establishing exposure limits. Throughout its review the Expert Panel gives its analysis and makes recommendations for improvement.

Findings

The Expert Panel found that CH2's Technical Basis methodology is sound only *if* the assumptions reinforcing that methodology are correct. Where the assumptions prove incorrect, the methodology is undermined and worker health and safety are at greater risk. “In general, the greater the uncertainty, the greater the health concerns” (*Tech Review*, p.16). Quality of data attracted the most uncertainty during the panel's review due to;

- “Inadequately representative source and exposure data” (*Tech Review*, p. 31)
- Lack of a comprehensive sampling strategy (*Tech Review*, p. 11)
- Improper sample storage prior to analysis (*Tech Review*, p. 12)

- Underestimated quantities of chemicals (*Tech Review*, p.13).

The panel states that the quality of input data is “perhaps most important in the risk assessment process” (*Tech Review*, p. 2) and greatly impacts risk characterization. “If the data used as the foundation of the risk assessment (e.g., head space concentration data) are inadequate then the resulting risk characterization can be incorrect” (*Tech Review*, p. 2). This can lead to inappropriate risk management decisions (*Tech Review*, p. 8) which tend to jeopardize worker health and safety.

The panel made many recommendations to improve the quality and representativeness of data, including;

- adopting a systematic approach to sampling in tank headspaces and work areas (p. 3)
- developing a framework “for periodically updating the Technical Basis document to reflect new data, as well as the interpretation of the new data” (*Tech Review*, p. 17)
- annually re-evaluating the Tech Basis’s data and conclusions (*Tech Review*, p. 31)
- developing “a statistically representative tank headspace and breathing zone sampling strategy” (*Tech Review*, p. 30)
- “revaluating the source, area and personal exposures using a systematic sampling strategy” (*Tech Review*, p. 32).

Another key finding of the review states that: “The committee is unable to conclude that the protective measures are sufficiently conservative to protect worker health” (*Tech Review* p. 4). The panel made some vital recommendations to increase the *Tech Basis’s* conservatism including:

- Adding all known or suspected carcinogens to the Chemicals of Potential Concern list (*Tech Review*, p. 31)
- “Lowering the threshold for inclusion as Chemicals of Potential Concern from 10% to 1%” (*Tech Review*, p. 3)
- “the size of the control zone around breather filters should be expanded until new exposure data are generated” (*Tech Review*, p. 28)

These findings vindicate the concerns of workers and outside experts, as reported by *Hanford Challenge*, most explicitly in the September 2003 report, *Knowing Endangerment: Worker Exposure to Toxic Chemical Vapors*. Released when we were still the Nuclear Oversight Program of Government Accountability Project, *Knowing Endangerment* lays out our analysis of the situation which, sadly, looks today much like it did in 2003. Put simply, workers are still getting sick from chemical vapors although the official company models proclaim this cannot be true. CH2M Hill Hanford Group, caught in an apparent financial conflict of interest, has chosen to believe its models over the evidence presented by its own sick employees. Employees are thus usually routinely denied compensation for vapor exposure claims filed under the Washington State worker comp program, administered by Hanford itself.

Next Steps

On October 1, 2008, a new contractor will assume management of the Hanford tank farms. Washington River Protection Solutions has an opportunity to use the Expert Panel's recommendations to improve the Technical Basis for worker protection and take the next steps to review real-world implementation using outside experts, preferably the expert panel hired by the Hanford Concerns Council, and apply their advice and recommendations.

Currently the only effective protection workers have is to wear heavy, cumbersome supplied air systems. Many workers experience supplied air as an *additional* safety hazard that is "breaking our backs," and "causing heart attacks." It is worth noting that many of the operators are in their forties and fifties. It is not safe to ask them to lug around heavy tanks all day while they are working.

We believe that there are workable alternatives. With the right amount of creativity and investment Hanford Challenge believes it is possible to eliminate vapor exposure. One proposal that was raised, and inexplicably dropped, was to collect and pump the vapors out of the tank farms and into a remote area, miles from workers. Getting the vapors away from the workers will certainly minimize exposure.

There appear to be some alternatives to the heavy supplied air tanks. *Hanford Challenge* has identified and suggested exploration of a design used by the military that is much lighter to wear while moving around, with small air tanks that last 12 minutes. A longer use option is a supplied air system with hoses. So far these are just ideas. In the meantime, workers need protection and their safety concerns need to be treated seriously.