

**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD  
HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION COMMITTEE**

*May 8, 2014  
Richland, WA*

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*This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.*

**Opening**

Becky Holland, Health, Safety and Environmental Protection Committee (HSEP) chair, welcomed the committee and introductions were made. The committee approved the February meeting summary.

*Announcements*

The day’s meeting was being held at the Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center so that committee members could garner a first-hand understanding of procedures and protective equipment utilized by Hanford Site workers. The committee would also observe a demonstration of employee protective suiting and unsuiting procedures and review safety training posters. Becky briefly reviewed information and safety protocols relating to HAMMER.

Steve Hudson, Hanford Advisory Board chair, discussed the April Environmental Management Site Specific Advisory Board meeting, and noted that the proceedings introduced very informative graphics and topics, including an excellent presentation on the current state of New Mexico’s Waste Isolation Pilot Plant. Those interested can find the presentations from the meeting, as well as preliminary Fiscal Year (FY) 2015-2016 budget materials, at <http://energy.gov/em/downloads/chairs-meeting-april-2014>.

Steve continued by encouraging committee members to brainstorm topics for the Hanford Advisory Board FY2015 Work Plan prior to the Leadership Workshop. He stressed that only the most important and pressing topics should be incorporated into the Work Plan, and he emphasized that anyone willing to introduce a new topic should also be willing to serve as an issue manager for that topic.

### **Hanford Site Policies and Procedures for Worker Injuries and Illnesses (joint w/ TWC)**

#### *Issue Manager Overview*

Tom Carpenter opened the discussion by providing background into HSEP's interest in policies and procedures for worker injuries and illnesses, which began in February 2014 due to instances of worker exposure to tank vapors. He relayed the importance of this topic, as tank vapors have been demonstrated to be a major risk to health and well-being. Tom noted that the issue of vapor exposure has been relevant at the Hanford Site since the 1980's, and various investigations and reports have been completed on the matter throughout the past 30 years. Recent assessments culminated in strategies to mitigate worker exposure to tank vapors, including better monitoring efforts, the use of special exposure groups, and higher tank stacks. However, despite these strategies, workers continue to face exposure, especially in C Tank Farm, where 28 workers were recently sent for medical evaluation due to vapors. Tom noted that this event demonstrates that, despite this issue already receiving serious scrutiny and attention, there is more work to be done on the matter. Tom encourages HSEP to use information from the agency briefings and resulting discussion to decide if the Hanford Advisory Board (HAB) should work to develop advice on the matter.

#### *Agency Briefing*

Sandy Rock, MD, discussed his role as Risk Communicator at the HPM Corporation (HPMC) Occupational Medical Services (OMS). He stated that many of the questions he receives from workers concern exposure to tank vapors. Sandy's presentation\* discussed the response and evaluation of workers following an exposure; he noted the following points:

- An exposure response team was established and implemented on May 1, 2014 following months of development.
- Policies and procedures relating to worker health and exposure evaluation are "regularly and systematically" evaluated, both internally and externally. These policies and procedures are then adjusted based on best practices.
- Worker concerns are taken into account when it comes to establishing protocols. For example, employees had concerns that they were being placed into a queue of waiting patients. This resulted in changes to the clinic visit process, and exposure incident workers are now prioritized.
- Individual medical histories are important. Different chemicals affect individuals in unique ways. Often, it is difficult to predict how any individual will physically react to chemical exposure.

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\* Attachment 2: HPMC Occupational Medical Services "Exposure evaluation process for Tank Farm workers"

- When evaluating workers, there is a difference between a “sign” and a “symptom.” A symptom is something that the patient senses (i.e. headaches, dizziness), while a sign is something that a healthcare professional can observe (i.e. eye redness, nosebleed).
- Aside from a few specific compounds (e.g. lead and mercury), there are no specific body tissue tests that can determine exposure. Many of the tests that are done on concerned workers (a liver function test, for example) will demonstrate whether body systems are functioning as they are expected to. If they are not, that indicates that something is happening and demonstrates that follow up is needed.
- Medical testing is available but voluntary; workers are not required to submit themselves for testing if they do not want to.
- Return to work is largely dependent upon self-reported symptoms, and return to work evaluations are completed on a case-by-case basis in consultation with workers and managers.

Richard Urie, DOE-Office of River Protection (ORP), provided a baseline update on the established programmatic pieces of the Occupational Health Program. Highlights from his presentation\* included:

- The engineering controls currently operating within Hanford Site tank farms. These include active ventilation, stack extensions, hard-piping continuous air monitor cabinets, sealing emission sources, and radial filters.
- The administrative controls currently operating within Hanford Site tank farms. These include vapor control and reduction zones, Chemical Hazard Awareness Training, and encouraging voluntary respiratory protection. There is an emphasis on education and training; the more workers know, the less anxiety they feel.
- Many tank odors are not picked up by sensors. Workers are often the first to notice odors, and odor thresholds for common chemicals are far below occupational exposure limits.
- There are multiple tiers involved in the Occupational Health Monitoring Program.

Brian Harkins, DOE-ORP, discussed the currently evolving independent tank farm review conducted by a panel of experts from Savannah River National Laboratory and industry. The review outcome will include strategies for keeping tank vapors out of worker space. The review will aim to be independent and transparent as well as include perspectives from the public, current tank farm workers, and former tank farm workers.

#### *Committee Questions and Responses*

*Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.*

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\* Attachment 3: DOE-RL Presentation “Improvement to the Occupational Health Program: Upgrades to engineering controls, administrative controls, worker training, industrial hygiene procedures, occupational medicine programs and oversight 2009-present”

C. It is clear that workers have been injured over the past several months; this demonstrates that the current system is not working. Unless something is changed, the system will continue to put workers in harm's way. Mitigating exposure after the fact is a poor strategy when compared to stopping exposure. Future strategies need to focus on engineered solutions to tank vapor release and stop workers from facing exposure in the first place.

Q. There is a lack of data demonstrating long-term health effects on tank farm workers. Have any statistical analyses been done on former Hanford Site workers that may help to demonstrate long-term exposure effects?

*R. [HPMC OMS] No, there have been no cohort studies done at the Hanford Site. There have been a few studies carried out which have suggested a slightly higher instance of illness in former Hanford workers; however, these results are likely not statistically significant. Individual accounts are not helpful from a scientific standpoint, as they do not incorporate experimental controls.*

C. There are several examples of individuals with lasting neurological damage following exposure to tank vapors. The Hanford medical community does not seem to recognize those who have been permanently affected by exposure. It is difficult to listen to so many presentations that do not recognize the chronic effects stemming from tank vapor exposure.

Q. There are roughly 1,800 known chemicals in tanks, and the list of chemicals of concern only covers around 60 of those. It was noted that medical testing is not available to address even these. How are chemicals and chemical data related back to medicine and healthcare?

*R. [HPMC OMS] If it is known that an individual has been exposed to a chemical (e.g. nitrosamine), efforts are then focused on that chemical. Medical providers will look for abnormalities in blood tests. Patient history becomes important as symptoms are examined; synergistic effects between chemicals are largely unknown. It is difficult to generalize symptoms and signs from chemical exposure, as everyone reacts differently.*

Q. Vapor control has been the subject of many past reports. Is DOE making efforts to engage those experts who have prior experience working with tank vapors at the Hanford Site?

*R. [DOE-ORP] DOE is making an attempt to bring in those who have worked on the matter in the past. The new review team will also have access to all data and reports from past efforts.*

Q. What sampling information does DOE have from the April tank vapor exposure?

*R. [DOE-ORP] The information that DOE has from the April 28<sup>th</sup> exposure event is as follows: seven workers, returning from sampling, suffered symptoms from vapor exposure. Stack sampling data and personal breathing apparatus sampling data demonstrated that chemical exposure (including ammonia, mercury, nitrous oxide, and others) levels were very low (in most cases, less than 4% of their worst case limit). However, despite this, symptoms still presented themselves. This demonstrates that we need to attack the problem from a preventative direction.*

Q. When workers who have been exposed complain of symptoms, are they offered alternatives to returning to locations where exposure occurred?

*R. [DOE-RL] Yes.*

Q. Is eye redness indicative of something more serious? Should more emphasis be placed on eye protection?

*R. [HPMC OMS] Everyone exists along a bell-curve. Some individuals may have eye problems (including redness) from exposure to vapors, others may not. At the moment, statistics on eye redness from exposure are not known, but those numbers could be retrieved if there is interest.*

C. Even with additional stack heights, it is concerning that the major mechanism for vapor control is natural dispersion. It is nearly impossible to fully control for or to predict weather changes. Engineered dispersion solutions need to be explored.

C. Workers are continually being exposed to low-levels of chemicals. Keep in mind that they can accumulate in the body over time.

C. Prevention needs to be first and foremost. Tank vapor exposure is, at its heart, an engineering problem. It makes sense to look at this issue not only from a reactive, epidemiological perspective, but also from a preventative, engineering perspective.

C. There is a lot of discussion about hard science, and which strategies will cause what effects. However, this is not a conversation to have when active harms are occurring, as they currently are. This issue has reached the point where testing is no longer a viable action and active mitigation needs to occur. The HAB should issue advice on the matter, encouraging engineered solutions and the immediate implementation of operational controls during those times when vapors are most likely be released (e.g. low atmospheric pressure). This advice is needed soon to safeguard workers.

*R. This advice would be timely. If there is an opportunity for the HAB to address these concerns and then elevate them, it should.*

*R. Is this more appropriate in the form of advice or as a letter? There may not be enough time to compose quality advice before the next Board meeting. If this is the case, the HAB could issue a letter.*

*R. This is an urgent matter; however, a letter may be the most appropriate way to move forward at the moment. It may be helpful to wait on releasing advice until DOE's panel releases their findings.*

The HSEP committee closed discussion and thanked Doctor Rock, Richard, and Brian for their informative presentations. The committee agreed to continue their conversation pertaining to committee actions and potential next steps during the safety culture briefing later in the agenda.

## **Radiation Primer: Understanding Radiological Terms (joint w/ TWC, PIC, and RAP) \***

The following are highlights and notes from the site demonstration of protective suiting and unsuiting procedures and respirator protocol at the Hazardous Materials Management and Emergency Response (HAMMER) facility. The demonstrations were a continuation of the February HSEP Radiation Primer discussion.

### **Suiting/Unsuiting Demonstration**

- Staff: Drew Bebe, HAMMER
- Highlights include:
  - A description of protocol surrounding Radiation Areas (RA), Contamination Areas (CA), Radiological Buffer Areas (RBA), Radiologically Controlled Areas (RCA), and Radiological Work Permits (RWP)
  - A step-by-step walkthrough of the suiting/unsuiting process for entering and exiting RAs & CAs
- Key Discussion Notes:
  - Specialized suiting/unsuiting procedures are created for those who require accommodation.
  - A state-licensed, commercial laundry facility handles all protective garment cleaning for the Hanford Site. Many other locations are moving to disposable garments, but this generates waste that needs to be disposed of appropriately.

### **Respirator Demonstration**

- Staff: Randy Coleman, HAMMER
- Highlights include:
  - A demonstration of the range of respirators, from simple dust masks to Full Facepiece Self Contained Breathing Apparatus (SCBA).
  - The SCBA respirator is what workers currently wear for entry into the tank farms. The accompanying air tank weighs 23 lbs. and contains around 30 minutes of air.
  - Just over 3,000 workers have completed core health and safety courses, and training is good for a single year.
- Key Discussion Notes:
  - A common dilemma with respirator protection is that cumbersome units introduce additional hazards to workers. This demonstrates why avoiding exposure in the first place is vital.
  - Pacific Northwest National Laboratory is not included within the respirator training numbers because they use their own, National Institute for Occupational Safety and Health approved qualifications and standards.
  - Respirator trainings at the Hanford Site are done through grants and the use of worker-trainers.

## Safety Culture (joint w/ TWC)\*

### *Issue manager framing*

Tom introduced the topic of safety culture at the Hanford Site, recognizing that day's conversation would center on safety culture as it related to tank vapors. He began the conversation by recognizing the loss of knowledge at the Hanford Site due to a lack of institutional memory and rigor. In his opinion, one way to ensure that history does not repeat itself is to ensure that institutional safety culture is robust. For workers in the tank farms, their health and concerns need to be top priority. Tom recognized that these workers should be involved in the conversation concerning safety culture, and he worried that those dealing with health issues stemming from exposure were being pressured into coming back to work sooner than their health allowed.

Liz Mattson encouraged discussion on the topic, and she reminded the committee that the discussion should work to clarify and define goals for the HSEP regarding safety culture and tank vapors.

### *Committee Questions and Responses*

*Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.*

C. This is a topic that has been brought up repeatedly; one reason is that the folks at the Hanford Site do not seem to be able to go back to the original purpose and idea of safety culture—avoiding injury. Those in charge are very data- and theory-driven; this culture can be traced back to the very beginnings of the Hanford Site. If objective evidence of harm cannot be found, even when people are being hurt, there appears to be an institutional failure to recognize and address the danger. The HAB should work to develop advice recognizing this issue.

C. The safety culture at the Hanford Site is not poorly designed; the situation there is simply very hazardous. As this matter has progressed, management seems to think that raising the stack heights is the solution to the problem. However, this strategy does not go far enough. It may mitigate vapor exposure in most situations, but it does not stop vapors from impacting tank farm workers and their spaces. There needs to be a change in the tank farms themselves. There are so many chemicals, and the tanks are so complex, that there is probably no perfect solution. If an engineered solution were simple or straightforward, one of the previous contractors would have implemented it. This should not stop or deter future efforts.

*R. Many industrial stacks across the U.S. are vertically striated into three distinct textures. These striations are indicative of additions to the stacks as U.S. airborne contaminant laws evolved; the stacks were elevated to move pollution first out of the community, then out of the county, and then finally out of the state. Only once the problem of air pollution became an interstate matter were regulations put into place that treated industrial exhaust rather than simply pushing it away. Does something like this need to happen at the Hanford Site to precipitate change?*

Q. Are there any examples of successful institutional safety culture examples that the Hanford Site could draw from?

*R. DuPont is an example that comes to mind. The owner of the company put his home next to the factory; if anything were to happen at the factory, it would have direct impact on the owner and his family. This culture came from inside of DuPont in this case.*

*R. Fairchild Semiconductor is another example. In this case, a robust safety culture system was deliberately and directly created from inside the company. If those who make the decisions believe that they are personally at risk of harm, they will make the necessary decisions to keep things safe and healthy. At Fairchild, it was a different way of running a business; there was a culture that fostered safety and productivity.*

Q. A good definition of safety culture may be “behaviors that can affect safety.” If an employee has been exposed to tank vapors and then is asked to go back to work, that is an error in safety culture. That behavior also goes against what the committee heard from DOE earlier in the meeting. Are workers being required to go back to work if they are displaying symptoms?

*R. Yes. Workers exposed to tank vapors who are still displaying symptoms (e.g. nosebleeds, headaches) are being given Tylenol and throat lozenges and are being told to go back to work. Despite this, there were many workers in the recent vapor exposure group who did not go back immediately. This is frustrating—people were being told that everyone who had been exposed was fine and back at work, but that was not accurate. As we heard earlier, if workers do not show any signs (observable signs, not to be confused with symptoms) from exposure, then they are deemed to be fine. Workers also have a fear of reporting injury. R. Workers may not be required to go back to work, but they are being pressured into returning to work sooner rather than later with repeated phone calls. Some attitudes at the Hanford Site are dismissive of symptoms stemming from vapor exposure.*

Q. There are three things the committee has just heard that are indicative of a compromised safety culture: (1) a reluctance to report injury, (2) intimidation to return to work, and (3) job security if workers are injured or permanently disabled by vapors. Is this truly safety culture?

*R. It is DOE’s policy that any type of fear, intimidation, or reprisal detracts from safety culture.*

C. The contracts between Washington River Protection Solutions LLC (WRPS) and DOE are available on <http://www.hanford.gov>, and they are very telling. If WRPS completes C Farm on time, for example, they get a 40% incentive. An effective focus on health and safety will only get them 3%. These numbers demonstrate where contractor priorities lie.

C. If there is a safety culture sin being committed, it is important to recognize who the sinner is. There are things that WRPS and DOE can influence (e.g. back to work policy). If the HAB develops any advice, it must recognize the sinners and speak to them.

C. Workers who are injured by tank vapors are not included in injury statistics if they are given a clear by medical practitioners. For workers to fight this diagnosis, lawyers would need to be brought in. This simply is not an option for most people in most cases.

Q. A hard truth that needs to be addressed—how could safety culture adapt to unproductive employees looking to take advantage of a sympathetic system?

*R. If there is no exposure in the first place, this becomes a non-issue.*

*R. One problem is that managers who do not care about their employees tend to view their workers in a negative light. The question comes down to appropriate leadership at the higher levels.*

Q. Should the HAB work to put advice forward on the matter at the June Board meeting?

*R. The Board cannot advise contractors, so advice would have to go to DOE-ORP. Advice would need to recommend that DOE look into their practices and analyze past examples.*

*R. Perhaps a letter is a better option than advice. Per the committee's earlier discussion, the Board should wait until after the DOE panel report is published to weigh in on the matter with concrete advice. Advice at this time may be premature as DOE is currently involved in ongoing efforts concerning this topic and employees are currently being engaged.*

*R. In terms of focusing on solving safety problems at their origin, the time is right for HSEP to present advice in June. It is important that this problem be solved at the earliest opportunity. The Board needs to encourage preventative steps as opposed to the current, reactive ones.*

*R. The Board often uses letters as a cop-out. Advice gets a stronger response than letters do. Letters should not be sent in place of advice simply because they are easier.*

C. There is valid concern that there is not enough time to adequately prepare advice before the upcoming June Board meeting; the agenda is full already. Also, the Board has had conversations recently concerning its recent advice being poorly crafted. It is important that the Board has enough time to accurately develop and hone advice so that it receives the best response possible.

The committee ended discussion with the decision to move forward with a letter to DOE-ORP encouraging the implementation of engineered solutions to prevent worker exposure to tank vapors. Dirk, Steve, and Tom will work on a draft; Cathy McCague, EnviroIssues, will forward a draft of the letter to the HSEP committee prior to the June Board meeting.

### **Open Air Demolition (joint w/ RAP)**

Richard Bloom reported to the committee on the April HSEP site visit, which included stops at the 300 Area, the Environmental Restoration Disposal Facility, and the Plutonium Finishing Plant (PFP). Some takeaways from the visit included:

- The crater remaining in the 300 Area following the removal of the 340 Vault. The bottom of the crater was only 15 feet above groundwater.

- The lack of airborne controls at the PFP. When PFP demolitions commence, there will need to be predications done concerning the movement of dust.
- The lack of change to the PFP demolition plan. Strategies are essentially the same as they were two years ago.

### **Committee Business**

#### *Complete 6-Month Accomplishment Table\**

The committee visited the HABFY2014 Work Plan to briefly assess their progress and efforts. HSEP noted that they have addressed many of their assigned topics through advice, fruitful committee discussions, presentations, site visits, and demonstrations.

#### *Update the 3-Month Work Plan\**

HSEP updated its 3-Month Work Plan and will not request a meeting in June. Topics to be considered at the August meeting include:

- Employee concerns program, including a briefing on the program from the new director, challenges and opportunities that the program presents, and the program's implications on safety culture.
- Quality Assurance/ Quality Control (joint w/ TWC), including a follow up to Advice #275, an overview of the cradle to grave process, and discussion on ensuring Waste Treatment Plant component pedigrees.
- Double-Shelled Tanks Flammable Gas (joint w/ TWC), including an update on tank flow monitoring reports and follow up on committee concerns relating to tank pressurization alarms.
- Tank vapors, including a debriefing on the external review team panel and a debriefing on the independent tank farm assessment.
- Safety culture, including an update on the Health Safety and Security reports from the December and January visits.

#### *Identify Potential Topics for the Executive Issues Committee (EIC) Leadership Workshop\**

The committee identified several potential topics for the EIC to discuss at the annual Leadership Workshop, as well as potential topics for the HAB FY2015 Work Plan:

- Open air demolition of the PFP

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\* Attachment 5: Hanford Advisory Board FY2014 Work Plan

\* Attachment 6: Health, Safety, and Environmental Protection Committee 3-Month Work Plan

\* Attachment 1: Transcribed Flipchart Notes

- Tank vapor issues, including responding to the internal DOE review report and looking into the protocol HPMC checklist for workers
- The Beryllium program, including a general update and employee statistics
- Discussing how news (both good and bad) is reported to both the public and Hanford Site workers (Public Involvement Committee lead)

## **Attachments**

**Attachment 1:** Transcribed Flipchart Notes

**Attachment 2:** HPMC Occupational Medical Services “Exposure evaluation process for Tank Farm workers”

**Attachment 3:** DOE-RL Presentation “Improvement to the Occupational Health Program: Upgrades to engineering controls, administrative controls, worker training, industrial hygiene procedures, occupational medicine programs and oversight 2009-present”

**Attachment 4:** Respirator Use and Qualifications and Respirator Types

**Attachment 5:** Hanford Advisory Board FY2014 Work Plan

**Attachment 6:** Health, Safety, and Environmental Protection Committee 3-Month Work Plan

## Attendees

### Board Member and Alternates

Richard Bloom	Rebecca Holland	Larry Lockrem
Tom Carpenter	John Howieson	Liz Mattson (phone)
Shelley Cimon	Steve Hudson	Maynard Plahuta
Samuel Dechter	Mike Korenko	Bob Suyama (phone)
Dirk Dunning (phone)	Bob Legard	Margery Swint

### Others

Steve Beehler, DOE-ORP	Madeleine Brown, Ecology	Alex Nazarali, CTUIR
Brian Harkins, DOE-ORP		Randy Coleman, HAMMER
Glyn Trenchard, DOE-ORP		Sandy Rock, HPMC OMS
Richard Urie, DOE-ORP		Keith Klein, Longenecker & Associates, Inc.
Ed Parsons, DOE-RL		Sharon Braswell, MSA
Kristen Skopek, DOE-RL		Mark McKenna, MSA
Darius Slade, DOE-RL		Tom Rogers, W-DOH
		Cathy McCague, EnviroIssues
		Brett Watson, EnviroIssues