Press Statement

Hanford Challenge Response to DOE Press Release on Vapors
“Correcting” King 5’s Coverage

The Department of Energy (DOE), owner of the Hanford nuclear site in southeastern Washington State, recently issued a press statement dated 5/27/2016 to “address and correct factual inaccuracies contained in KING 5’s June 8 report, “Hanford continues to mislead workers about toxic vapors.” The “corrections” made by DOE to King 5 are misleading and contrary to statements made in a recent expert report which DOE and the contractor claim to have accepted.

Background
Hanford Challenge is a regional non-profit organization whose mission is the safe and effective cleanup of the Hanford site, the most contaminated facility in the nation.

On September 3, 2015, Hanford Challenge, along with United Association Local 598, Steamfitters and Plumbers, and the Washington State Attorney General’s office, filed legal actions against the Department of Energy and its contractor, Washington River Protection Solution. The goal of the lawsuit is to compel Hanford to abate the imminent and substantial endangerment of Hanford workers who are continually exposed to inhalation risks from toxic chemical vapors emitted from Hanford’s underground waste tanks.

In the past several weeks, over 56 workers have recived medical evaluations as a result of chemical vapor exposures following a recent transfer of high-level nuclear waste.

Hanford Challenge offers this rebuttal to DOE’s “corrections,” using the October 2014 Savannah River Tank Vapor Assessment Team (TVAT) report.

DOE:
“Concerning the tank farms workers who have visited HPMC (Hanford’s on-site medical support) since April 28, not all of them smelled odors but some went to make sure they did not exhibit any symptoms because they were working at the same time others (who did smell odors) went to medical. Also of note is that smelling an odor does not necessarily mean tank vapors are present; other sources could be the cause of a detected odor. Workers are encouraged to go to site medical when they have a concern.”

1 Note that DOE’s press statement is dated eleven days before the King 5 story appeared.
Hanford Challenge Comment:

It is interesting how Hanford officials insist on using the term “odors.” Many of the chemicals in the list of chemicals of potential concern do not have an odor at all. Mercury, for instance, is odorless, and is toxic in tiny amounts. Hanford seems to believe that continually referring to chemical vapor exposures as odors lessens the seriousness of the issue.

In 2014, WRPS hired an expert team, the Savannah River Tank Vapor Assessment Team, or TVAT, to look into the tank vapor exposure issue. In October 2014, the TVAT released its report, whose findings and recommendations WRPS accepted. Here is a quote from that report that rebuts the WRPS assertion above:

- “Management must acknowledge the health risk associated with episodic releases of tank vapors. While the ability to measure and document exposures may currently be inadequate, workers are nonetheless being affected by vapors on the tank farms. Acceptance of this observation should be communicated to all internal and external stakeholders.” p. 15-16.
- “Reported symptoms in workers (i.e. upper respiratory tract irritation, coughing, headaches, nose-bleeds etc.) appear to be consistent with the known acute chemical effects associated with respiratory exposures for a number of the head space COPC.” p. 52
- “For acute effects that may be associated with higher concentrations of vapors/gases the potential for additive, synergistic, potentiation or antagonistic interactions from the complex vapor mixture are feasible and need to be more fully evaluated.” p. 52

DOE:

“All tank farms workers who received a medical evaluation in connection with an Abnormal Operating Procedure (AOP-15 event) Response to Reported Odors or Unexpected Changes to Vapor Conditions were released to return to work by HPMC, the site medical provider. This initial release is based upon inability of HPMC to detect any symptoms and allows workers to return to work outside of tank farms pending a blood test. All workers evaluated since April 28 have additionally been cleared by those blood tests to return to work in areas for which vapors may be present, as well.”

Hanford Challenge Comment:

Notice the careful wording in this statement. Previous statements from the company implied or said that all workers had returned to work. This statement is careful to say that all tank farm workers were “released to return to work.” They then go on to state that the “initial release” was based on HPMC’s “inability to detect any symptoms.” What this statement doesn’t say is that HPMC has limited abilities to detect symptoms or biological evidence of a chemical exposure. Many workers did present with symptoms, which even WRPS documentation admits…bloody noses, headaches, sore throat, burning lungs, inability to breathe properly, and other such symptoms.

The TVAT report addressed this issue in its October 2014 report:
• “Of the issues facing the current IH program, the one causing the vast majority of reported worker exposures requiring medical treatment comprise short-term and acute (bolus) exposures, which cause immediate symptoms in the workers and may or may not develop into medical signs of chemical exposure. The current program is not designed to detect and is incapable of detecting and quantifying this type of transient exposure event.” p. 17 (emphasis supplied)

DOE

“Workers have the option of seeking additional evaluation from their personal medical provider and/or may be away from work on personal sick leave for unspecified medical conditions that are protected by healthcare privacy laws.”

Hanford Challenge Comment

Has DOE or its contractor followed-up with these workers to determine why some workers “may be away from work on personal sick leave for unspecified medical conditions? Symptoms of certain types of exposures may show up days or weeks after an exposure. Why is Hanford so intent to not even look for a connection between the exposure and the medical conditions being experienced by workers?

DOE

“Personal monitoring data is representative of air in the workers’ breathing zone, which can be visualized as a hemisphere about 6-9 inches around the worker’s face. Standard equipment to monitor the worker’s breathing zone is an air pump the worker wears that takes air samples from the zone. It provides the most representative data for assessing exposure and efficacy of controls. As such, this data has been available on WRPS’ internal website, and is now also available on the company’s publicly accessible webpage.”

Hanford Challenge Comment

Most workers do not wear the referenced personal monitoring devices to which DOE refers to above. Only a few select workers wear those devices. The devices are not capable of measuring most of the Chemicals of Potential Concern on the WRPS list of dangerous chemicals….a list that experts have said is likely incomplete. Here is an excerpt from the Savannah River TVAT report on that issue:

• “While the selection of the 59 COPCs with assigned OELs was a necessary and extensive undertaking, it now appears to be incomplete for purposes of characterizing health risks associated with potential releases from the tank head spaces. The present list of COPCs appears to rely on several assumptions all of which may not be valid at all times, including:
  • an assumption that the head space is well mixed in each tank (while the head space may be well mixed under quiescent conditions, it is not apparent that this assumption holds during retrieval activities or even during some infrequent tank upset conditions)
an assumption that the head space composition is stationary over time

an assumption that characterization of the head space during quiescent conditions is reasonably representative of conditions while the waste materials are being disturbed

an assumption that emissions from the head space are always subject to dilution by active ventilation.” p. 25

DOE
“Surveys of affected areas are performed whenever there is an AOP Response to Reported Odors or Unexpected Changes to Vapor Conditions event. Notification letters are sent to employees, medical and the Site Wide Industrial Hygiene Database Administrator by the industrial hygienist when a survey report is finalized. Industrial Hygiene data is posted on the internal WRPS website. Personally Identifiable Information is removed from personal data in posted files.”

Hanford Challenge Comment:

Such surveys only look for two to three chemicals (ammonia, total organic compounds, and sometimes elemental mercury). The surveys are almost invariably taken well after the exposure event has taken place. Here is what WRPS’s own expert panel (Savannah River Tank Vapor Assessment Team, Oct 30, 2014) has said about those surveys:

- “Management must acknowledge the health risk associated with episodic releases of tank vapors. While the ability to measure and document exposures may currently be inadequate, workers are nonetheless being affected by vapors on the tank farms. Acceptance of this observation should be communicated to all internal and external stakeholders.” p. 15-16.

- “Of the issues facing the current IH program, the one causing the vast majority of reported worker exposures requiring medical treatment comprise short-term and acute (bolus) exposures, which cause immediate symptoms in the workers and may or may not develop into medical signs of chemical exposure. The current program is not designed to detect and is incapable of detecting and quantifying this type of transient exposure event.” p. 17 (emphasis supplied)

- “Relying primarily upon long-term monitoring, after-the-fact grab samples, or non-chemical-specific direct readings is inadequate. The information transfer protocol and review approaches need to be redesigned to assure industrial hygiene personnel are consulted before each evaluation so that the limitations and relevance of the available exposure data can be appropriately considered before Labor and Industry claims are denied and work-relatedness determinations are made….. A presumption of work-relatedness is consistent with Occupational Safety and Health Administration (OSHA) guidance. Previous medical determinations should be re-visited based on a
more thorough understanding of the uses and limitations of the monitoring data.” p. 18

DOE:
“KING 5 cites sampling records that show readings far above OELs. The data cited by KING 5 is classified as “source” data, meaning it is from the ductwork comprising the exhaust systems prior to release and dispersion. It is not representative of either area data where individual workers are present or personal exposure data.

DOE collects air samples in multiple locations at the Hanford Site. Air samples from inside tanks and from inside exhaust stacks may be above occupational limits, but these are not areas where workers are breathing. All air samples analyzed from the breathing zone of workers since 2005 have been below occupational limits. While discharge from stacks may enter the breathing zone, modifications have been made in recent years to extend the height of the ventilation stacks, moving vapors farther away from workers’ breathing space. The stacks range in height from 19 to 55 feet.”

Hanford Challenge Comment:
Here is the TVAT report on this issue:

- “Breathing zone sampling of workers, who subsequently reported an inhalation exposure while being monitored, is rare.” p. 35

- “…The exposures are to acute, intense concentrations. In four of the six exposures where personnel experienced upper respiratory issues, field measurements at the source found irritants at concentrations far exceeding the OEL.” p. 43

- “Management must acknowledge the health risk associated with episodic releases of tank vapors. While the ability to measure and document exposures may currently be inadequate, workers are nonetheless being affected by vapors on the tank farms. Acceptance of this observation should be communicated to all internal and external stakeholders.” p. 15-16.

- “Of the issues facing the current IH program, the one causing the vast majority of reported worker exposures requiring medical treatment comprise short-term and acute (bolus) exposures, which cause immediate symptoms in the workers and may or may not develop into medical signs of chemical exposure. The current program is not designed to detect and is incapable of detecting and quantifying this type of transient exposure event.” p. 17 (emphasis supplied)

- "Further, the program should not rely on stack or exhauster sampling results to understand the possible releases as these samples represent mixtures of tank contents exhausted through a mutual stack or exhauster that have been diluted during the process.” p. 16
• “Using these industrial hygiene data alone in determining whether an acute transient exposure has occurred and reporting that “no exposure greater than 10% of the OEL” has been measured for the worker or his or her assigned similar exposure group is insufficient to communicate the limitations of the data and undermines the credibility of the industrial hygiene function and the systems the industrial hygiene data support.” p. 17-18

• “[T]he IH (professional and technician level) resources available are not sufficient to properly characterize and assess worker vapor exposure in the tank farms.” p. 19

• “Monitoring and sampling policy appears to be inadequate with respect to detecting short-term episodic exposure. The current policy does not address the potential for wafting plumes or puffs of chemical vapors in relatively high concentrations... Furthermore, the short duration of the event would likely preclude detection of a given puff by the follow up monitoring and sampling program, in that the puff would have dissipated.” p. 30

• “For short and intermittent but high concentration releases, the current personal and work zone EA is largely an exercise in futility and is consuming significant resources. The current strategy has not provided data adequate to clarify the exposure agents, concentrations and dose rates in the tank vapor events.” p. 33.

DOE
“KING 5 reported that “it is up to the employees to choose what type of personal protective equipment” is required. Required personal protective equipment (PPE) is determined based on an extensive job hazards analysis conducted for each task. Additionally, more PPE (full protective gear w/self contained breathing apparatus) is required during waste-disturbing activities and always in certain tank farms. Additionally, the tank farm contractor has established vapor control zones in certain areas of the tank farms. Different levels of PPE are required for these vapor control zones.

Tank farms workers always have the option to upgrade the level of PPE they are wearing during work, unless the wearing of PPE would reduce overall worker safety for the work (e. g. if a worker needed to conduct work that required climbing a ladder, it would be less safe to do so wearing full PPE. in such cases additional protective measures are put in place.)

KING 5 reported that “Dimethyl mercury is so toxic there are no safe amounts tolerated in the state of Washington.”

Hanford Challenge Comment
Hanford cannot balance risks of wearing versus not-wearing SCBA when it does not have the ability to monitor, characterize or control the emission of a mixture of chemicals coming out of tank at unpredictable times. The current program at Hanford is not designed to protect the workers from the type of exposures they are getting. The TVAT found:
• “Of the issues facing the current IH program, the one causing the vast majority of reported worker exposures requiring medical treatment comprise short-term and acute (bolus) exposures, which cause immediate symptoms in the workers and may or may not develop into medical signs of chemical exposure. The current program is not designed to detect and is incapable of detecting and quantifying this type of transient exposure event.”

Secondly, Hanford does not always have the SCBA available for workers who request an upgrade. There have been instances where workers have reported being taken off the job because they requested SCBA, and replaced by other workers willing to work without the SCBA.

DOE:
“While it’s true that DMM is a toxic substance, Washington State does establish limits as noted here. You can find information from 2011 about the Washington State Department of Ecology’s review of DOE’s ventilation upgrades for double-shell tanks (and specifically addressing the issue DMM) here. Washington State regulates mercury and dimethyl mercury emissions and these emission standards are being applied to the discharge of gases from stacks on facilities that promote dilution effects for both chemical and radiological hazards. Many of the chemicals of concern are toxic substances, but are well below Operational Exposure Limits (the exposure limits set by OSHA and ACGIH – note that the Federal action level is 50% of OEL and WRPS’ administrative control level is 10% of the OEL) within the tanks. The highest concentrations of these substances in the tanks are less than OELs.”

“KING 5 reported that after WRPS took over as the Hanford tank farms contractor, dimethyl mercury was taken off the list of chemicals to be concerned about.”

“DMM is not found in concentrations high enough to be on the COPC list per the protocol established by the IH program. In 2005, when limited data on DMM in the tanks was available, DMM was included on the initial list of COPCs. Since then, extensive testing has shown that the trace amounts of DMM in tank headspaces (several orders of magnitude lower than the OEL) do not meet the COPC criteria.”

“The 2005 version of the Industrial hygiene technical basis added DMM to the COPC sampling list because “it was recently detected for the first time in tanks and its maximum concentration was deemed too uncertain to be omitted from the COPC List.” The results from the collection of 131 DMM samples from 2005 – 2008.”

“DMM is still tracked and monitored as part of regular Toxic Air Pollutant sampling performed by WRPS’ Environmental Protection organization. Also, the COPC list is in the process of being updated this year in accordance with Tank Vapor Assessment Team recommendations.”

Hanford Challenge Comment

DMM is occasionally tested for by Hanford at the insistence of the State’s Department of Ecology for environmental compliance purposes only. It is not being tracked or tested for worker exposure purposes.
Washington State’s standards for permissible exposure are so low as to be considered zero. In fact, even detecting DMM means that the standard has been violated, since that standard, (1.00E-99 micrograms per cubic meter of air. That’s ninety nine zeros before the 1).

Dimethyl mercury was detected in and around the tank farms in the time frame of 2003-2008. The levels of acceptable exposure are incredibly small and problematic to detect. It is of major concern that Hanford has stopped testing for it years ago for purposes of worker protection, especially given the criticisms of the TVAT team:

The TVAT report dismantles any notion that past sampling for any of the chemicals monitored for at Hanford is reliable:

- “Waste disturbing activities can greatly alter the concentration and composition of the head space gases and vapors. Past head space characterization did not evaluate the effect of waste disturbing activities on the chemicals in the head space and their concentrations. Emissions from waste disposal sites, maintenance activities, and other miscellaneous sources may or may not be similar in character to emissions from the tanks. The occupational exposure limit (OEL) development process and design of the industrial hygiene program flowed from the tank characterization studies. Gaps in that characterization inevitably produced gaps in the Tank Waste Inventory System (TWINS) database, the OEL list, the chemicals of potential concern (COPC) list, the Tank Vapor Information Sheets and the industrial hygiene surveillance program. These gaps, whatever they may be, have existed for decades. Thus, systematic deficiencies in the chemical control program such as it is have also persisted for decades. A comprehensive revaluation and revision of the characterization is crucial to the IH evaluation and control program, and possibly to the evaluation of environmental hazardous air pollutants.” p. 23

This reevaluation referred to in the TVAT report has not been completed.

**Concluding Comments:**

Hanford management has failed to demonstrate that it has truly accepted the recommendations of the recent Savannah River report. Officials continue to dismiss serious exposure symptoms as “odors” and “irritants.” Worse, DOE and contractor officials turn a blind eye to those workers who develop serious conditions such as lung and brain illnesses that doctors have diagnosed as related to toxic chemical exposures, and which in many cases have resulted in the payout of compensation to those workers for disabilities.

Hanford Challenge will continue to bring pressure on the DOE to implement effective and meaningful reforms that protect the workforce that is conducting one of the most extensive, complicated and dangerous cleanups occurring on the planet today.