DEPARTMENT OF
ECOLOGY
State of Washington

Response to Comments

Air Permit Changes Needed to Start Waste Retrieval from Hanford Tank AY-102

May 31 – July 3, 2015

Summary of a public comment period and responses to comments

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PUBLICATION AND CONTACT INFORMATION

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https://fortress.wa.gov/ecy/publications/SummaryPages/1505012.html

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If you need this document in a format for the visually impaired, call the Nuclear Waste Program at 509-372-7950. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Response to Comments

Air Permit Changes Needed to Start Waste Retrieval from Hanford Tank AY-102

May 31 – July 3, 2015

Department of Ecology
Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354

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INTRODUCTION

The Washington State Department of Ecology's Nuclear Waste Program (NWP) regulates air pollution sources at the Hanford Site through a permit. The Hanford Air Operating Permit ensures Hanford's air emissions stay within safe limits that protect people and the environment.

The permittee is the U.S. Department of Energy (USDOE) Office of River Protection. The permit is for USDOE's Hanford Site in south-central Washington, north of Richland.

Activities at Hanford's tank farms require occasional changes to the permit as the permittee improves ventilation systems or installs new equipment to support management and retrieval of waste in the underground storage tanks. Through Approval Orders, the permittee can seek, and NWP can approve, certain changes that are later incorporated into the Hanford Air Operating Permit.

The purpose of this Response to Comments is to:

- Specify the reasons for issuing approval order.
- Describe and document public involvement actions.
- List and respond to all significant comments received during the public comment period.

This Response to Comments is prepared for:

Comment period:	*Air Permit Changes Needed to Start Waste Retrieval from Hanford Tank AY-102, May 31 – July 3, 2015*
Permit:	*Draft Approval Order DE11NWP-001, Approval of Notice of Construction Application for the ventilation upgrades needed to start waste retrieval from Hanford Tank AY-102*

To see more information related to the Hanford Site and nuclear waste in Washington, please visit our website: www.ecy.wa.gov/programs/nwp.

REASONS FOR ISSUING THE APPROVAL ORDER

At the Hanford Site, USDOE in engaged in a cleanup effort to address the waste resulting from decades of plutonium production. Much of the waste to be cleaned up is stored in underground tanks near the center of Hanford, several miles from any residence or agricultural land.

The waste in Hanford's double-shell tank AY-102 must be removed because the tank is leaking. Under an Order from Ecology, the waste retrieval must start by March 4, 2016.

In support of retrieving waste from tank AY-102, the USDOE Office of River Protection wants to remove a piece of broken equipment that is restricting air flow in the tank's ventilation system.

The permittee also wants to add an exhauster to the space between the inner and outer tank (annulus space). This exhauster will cool the inner tank's outer surface and send any airborne particulates in the annulus space through high-efficiency particulate air (HEPA) filters.

The Approval Order will approve the project proposed by the permittee, and describe conditions and restrictions they must meet.

PUBLIC INVOLVEMENT ACTIONS

NWP encouraged public comment on the proposed changes for Tank AY-102's ventilation system during a 30-day public comment period held May 31 to July 3, 2015.

To publicize the comment period, Ecology:

- Emailed an advance notice of the comment period on April 30, 2015, to the 1525 subscribers then on the Hanford-Info email list.
- Emailed the public notice on June 1, 2015, to the Hanford-Info list, which then had 1539 subscribers.
- Included the comment period in the "TPA Events" calendar shared with stakeholders in early April and hosted on our website at http://www.ecy.wa.gov/programs/nwp/PI/pdf/TPA_PI_Calendar.pdf
- Posted the comment period on the Department of Ecology's Public Involvement Calendar.
- Displayed copies of the public notice in the lobby of the Nuclear Waste Program building in Richland, Washington.
- Placed a legal classified advertisement in the *Tri-City Herald* on May 31, 2015.
- Posted the comment period's start on Ecology's Hanford Education and Outreach Facebook page.

The Hanford information repositories located in Richland, Spokane, and Seattle, Washington, and Portland, Oregon, received the following documents for public review:

- Public notice
- Application
- Transmittal letter
- Draft approval order DE11NWP-001, Rev. 2

The following public notices for this comment period are in Appendix A of this document:

1. Public notice
2. Classified advertisement in the *Tri-City Herald*
3. Notices sent to the Hanford-Info email list
4. Event posted on Ecology Hanford Education & Outreach Facebook page

LIST OF COMMENTERS

Commenter Identification:

The table below lists the names of organizations or individuals who submitted a comment on the draft Approval Order DE11NWP-001, Rev.2 and where you can find Ecology's response to the comment(s).

Commenter	Organization	Comment Number	Page Number
Green, Bill	Citizen	1-7	4-10
Poirier, Jeanne	Citizen	8	10

RESPONSE TO COMMENTS

The NWP accepted comments on the draft Approval Order DE11NWP-001, Rev. 2 from May 31 to July 3, 2015. This section provides a summary of comments we received during the public comment period and our responses, as required by the Revised Code of Washington (RCW) 34.05.325(6)(a)(iii).

Comments are grouped by individual, and each comment is addressed separately. NWP's responses directly follow each comment in italic font. Verbatim copies of all written comments are in Appendix B.

Comment # 1 from Bill Green, Citizen, dated June 29, 2015
Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Require the permittee to revise the previously submitted Second Tier Review Petition to reflect the huge increases in the concentrations of Mercury in emissions during waste disturbing activities. These huge increases result from transient peaks, according to the Hanford Tank Vapor Assessment Report[1] (TVAR)

Ecology Response:
Thank you for your comment, Ecology offers the following response.

The data presented in the TVAR is not being questioned, but the applicability or relevancy of the data to the Federal Clean Air Act and the Washington Clean Air Act is not clear as the data is lacking important meta-data (e.g. where was the sample collected, how was the sample collected, what protocols were used for sample collection, etc.). Ecology doesn't have access to the actual data presented in the TVAR and can only depend on the information as presented in the report. This raises a question on how relevant the data are for use in determining ambient air concentration data to be compared to ASIL values.

The objective of the Hanford Tank Vapor Assessment Team is stated on page 12 of 153 of the TVAR as "WRPS asked the Savannah River National Laboratory (SRNL) to assemble and lead the Hanford Tank Vapors Assessment Team (TVAT) 2014 to determine the adequacy of the established WRPS program and prevalent site practices to protect ***workers*** *from adverse health effects of exposure to the chemical vapors on the Hanford tank farms."* [Emphasis added]

This Approval Order is being issued under the Clean Air Act (CAA) and its amendments regulating ambient air. Ambient air is defined in 40 CFR Part 50.1 (e) as "… that portion of the atmosphere, external to buildings, to which the ***general public*** *has access."* [Emphasis added] *In addition, WAC 173-460-070 requires compliance with the state TAPs requirements to be demonstrated "in any area to which the applicant does not restrict or control access." The Hanford site is land owned or controlled by the source and to which general public access is precluded by a fence or other physical barriers. The air above the Hanford Sit doesn't qualify as ambient air. Therefore, the State TAP requirements are not required to be met within the boundaries of the Hanford Site. However, on-site personnel are covered by other laws, rules, and regulations in regards to their personal safety.*

Accepting the TVAR data as reported, and acknowledging it was gathered in reference to worker protection and not general public protection, the highest percent increase presented in the TVAR is ~2,300 %. A comparison of the emissions parameters submitted in the original application for the permit to the TVAR reported increases must be examined to determine if the ~ 2,300% percent increase creates a condition outside of the bounding assumptions used. If the TVAR data is within the bounding assumptions, then the emission release rate and modeling is still valid and no change in the permit is needed.

The original application and Health Impact Assessment were based on a number of conservative assumptions designed to overestimate emissions:

1. *The highest emission rate from any given tank for each toxic air pollutant (TAP) was assumed to be the same for all tanks in the Double Shell Tank (DST) tank farm. This results in a 'worse case tank' in regards to TAPs emitted.*
2. *When a TAP had values below the laboratory detection limit, the laboratory detection limit was assumed to be the TAP's value.*
3. *Based upon mixer pump tests in DST 241-AZ-101, it was assumed the headspace concentrations increased by a factor of 10 during waste mixing activities.*
4. *The maximum per tank emission rate was multiplied by a factor of 10 for each assumed mixing tank and 1 for each quiescent tank.*
5. *The AY/AZ tank system has four tanks, so the multiplication factor was 22 (2 mixed tanks for 20 and 2 quiescent tanks for 2 more, yielding 22). However, the AP tank farm contains 8 tanks and has a multiplication factor of 26 (2 mixed tanks and 6 quiescent tanks) for a multiplication factor of 26. As 26 is the more conservative value, 26 was used as the multiplication factor for all emission values.*

The concentration of all of the TAPs were standardized to mg/m^3 at 25°C to allow for uniformity and then multiplied by the flow rate from the tank (provided by the exhauster) and converted to a flux per tank in grams per second (g/s). The flux is multiplied by the dispersion factor determined from the approved modeling program to yield the maximum offsite concentration in µg/m^3. This value was directly compared to the Acceptable Source Impact Levels (ASIL) from Washington Administrative Code 173-460-150.

The results indicated that dimethyl mercury was the only compound that had a calculated value in excess of the ASIL value (3.23E-08 µg/m^3 and 1.00E-99 µg/m^3 respectively). It was for this exceedance the permittee applied for a Tier 2 analysis.

The next two TAPs closest to exceeding an ASIL limit are n-Nitrosodimethylamine (2.17E-4 µg/m^3 ASIL and 6.82E-5 µg/m^3 calculated) at ~ 31.4% of the ASIL and Chromium Hexavalent (6.40E-5 µg/m^3 ASIL and 2.63E+0 µg/m^3 calculated) at ~38.8% of the ASIL.

The multiplication factor of 26, which was applied to the model input data used in developing NOC Approval Order DE11NWP-001, Rev. 2, yields a 2,600% increase to the highest values of quiescent tank waste. This 2,600 % increase is greater than the 2,300 % increase shown in the TVAR and indicates the model assumptions used in the Approval Order have not been exceeded by the TVAR's reported values and still fall within the bounds of the anticipated scenario.

The 26 multiplier comes from the assumption of a multiplication factor of ten applied to two separate tanks being retrieved at one time (see item 5 above). However, the analysis indicates if the permittee were to retrieve two tanks at one time, the potential exists for an emission requiring a multiplication factor of 48 (two tanks at a factor of 23 (from the TVAR data) and two tanks at a factor of 1 (e.g. 23+23+1+1=48)). Thus retrieving two tanks at one time would result in the model assumptions not providing a large enough multiplication factor to ensure the models input factors exceed empirical sampling data.

In order to ensure the model assumptions are still bounded under the anticipated scenario and using the TVAR data percentage increase, the permit needs to be changed to restrict retrieval to only one tank at a time per exhauster. This change will be reflected by changing the Approval Order's Operational Limits of 1.2.2, 1.2.3, and 1.2.4 to allow no more than one tank be under active retrieval at a time.

As discussed above, the assumptions used in preparing the modeling for the Approval Order also cover the emission levels presented in the TVAR. Therefore, the limits in the Approval Order haven't been invalidated (with the change to allow only one tank to be under active retrieval), and no change beyond the correction of Operational Limits in 1.2.2, 1.2.3, and 1.2.4 is required to the Approval Order. Ecology will make the correction in the issued Approval Order.

Comment # 2 from Bill Green, Citizen, dated June 29, 2015
Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Require the permittee to revise its application to include huge increases in the concentration and composition of head space gases and capture expected during waste retrieval operations.

Ecology Response:
Thank you for your comment, Ecology offers the following response.

As presented in response to Comment # 1 above, the increases in vapor emissions presented in the TVAR is less than the bounding conditions of the permittee's application for all compounds of concern (head space gases and vapors). With the data presented in the TVAR indicating the assumptions used in preparing the model haven't been invalidated (with the change to allow only one tank to be under active retrieval), no change beyond the correction of Operational Limits in 1.2.2, 1.2.3, and 1.2.4 is required to the Approval Order. Ecology will make the correction in the issued Approval Order.

Comment # 3 from Bill Green, Citizen, dated June 29, 2015
Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Revise Findings 9 and 11 in this Order to reflect increases in emissions expected from waste disturbing activities associated with Waste Feed Delivery operations.

Ecology Response:
Thank you for your comment, Ecology offers the following response.

As presented in response to Comment # 1 above, the increases in vapor emissions presented in the TVAR is less than the bounding conditions of the permittee' s application for all compounds of concern (head space gases and vapors). With the data presented in the TVAR indicating the assumptions used in preparing the model haven't been invalidated (with the change to allow only one tank to be under active retrieval), findings 9 and 11 and also still valid and no change beyond the correction of Operational Limits in 1.2.2, 1.2.3, and 1.2.4 is required to the Approval Order. Ecology will make the correction in the issued Approval Order.

Comment # 4 from Bill Green, Citizen, dated June 29, 2015

Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Revise Conditions 1.2.4, 3.1.1, and 3.4 to reflect the huge increases in concentration of Ammonia emissions resulting from waste disturbing activities associated with Waste Feed Delivery operations.

Ecology Response:

Thank you for your comment, Ecology offers the following response.

As presented in response to Comment # 1 above, the increases in vapor emissions presented in the TVAR is less than the bounding conditions of the permittee' s application for all compounds of concern (head space gases and vapors), including ammonia. With the data presented in the TVAR indicating the assumptions used in preparing the model haven't been invalidated (with the change to allow only one tank to be under active retrieval), no change beyond the correction of Operational Limits in 1.2.2, 1.2.3, and 1.2.4 is required to the Approval Order.

In regards to the TVAR discussion of the use of time-weighted average exposure versus bolus exposure, the TVAR states in section Technical Issues, EA Technical Issue 1, first paragraph, "… vapors are from intermittent and very short-term (seconds duration) exposure in breathing zones…). Hazardous Air Pollutants (HAPS) have values averaging periods listed in WAC 173-460-150. These periods are TAP specific and have a duration of 1-hour, 24-hours, or 1-year, dependent on the HAP. By definition, the analysis of emissions in WAC 173-460-150 is performed on a 'time-weighted' average (e.g. averaging period).

As the Washington Clean Air Act regulates TAPs in ambient air over a time-weighted averaging period, the TVAR on page 35 of 153, last paragraph of EA Technical Issue 1, Observations, indicates that even with a potential "Bolus" exposure event occurring, the samples on a time-weighted-average didn't indicate overexposure to workers. "We have been advised of 3 instances (all occurring in 2014) in which monitors were worn while symptoms were reported. The circumstances of and data from these few exposure examples have been varied and somewhat incomplete, and there has been ***no clear indication of overexposure*** *from these samples."* [Emphasis added] *Thus the report itself indicates the time-weighted-average samples collected did not provide clear indication of exposure, so the time-weighted-average methodology used in WAC 173-460-150 is valid for this application and shown to be within the bounds of the applications conservative approach presented in response to Comment # 1.*

For the above reasons, no change, except for the changes identified in response to Comment # 1, is required in the permit. Specific to this comment, Ecology will make the correction in the issued Approval Order by changing Condition 1.2.4 as follows:

At no time shall more than one of the three tanks within the 241-AY and 241-AZ Tank Farms [241-AY-101, 241-AZ-101, and 241-AZ-102] be under active mixing and Waste Feed Delivery operations.

Comment # 5 from Bill Green, Citizen, dated June 29, 2015

Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Revise draft approval Conditions 1.2.2, 1.4.3, and 3.2 to reflect the huge increases in composition and concentration of VOCs expected from transient spikes associated with waste-disturbing activities contemplated by this draft Order.

Ecology Response:

Thank you for your comment, Ecology offers the following response.

As presented in response to Comment # 1 above, the increases in vapor emissions presented in the TVAR is less than the bounding conditions of the permittee's application for all compounds of concern (head space gases and vapors), including ammonia. With the data presented in the TVAR indicating the assumptions used in preparing the model haven't been invalidated (with the change to allow only one tank to be under active retrieval), no change beyond the correction of Operational Limits in 1.2.2, 1.2.3, and 1.2.4 is required to the Approval Order.

In regards to the TVAR discussion of the use of time-weighted average exposure versus bolus exposure, the TVAR states in section Technical Issues, EA Technical Issue 1, first paragraph, "… vapors are from intermittent and very short-term (seconds duration) exposure in breathing zones…). Hazardous Air Pollutants (HAPS) have values averaging periods listed in WAC 173-460-150. These periods are TAP specific and have a duration of 1-hour, 24-hours, or 1-year, dependent on the HAP. By definition, the analysis of emissions in WAC 173-460-150 is performed on a 'time-weighted' average (e.g. averaging period).

As the Washington Clean Air Act regulates TAPs in ambient air over a time-weighted averaging period, the TVAR on page 35 of 153, last paragraph of EA Technical Issue 1, Observations, indicates that even with a potential 'Bolus' exposure event occurring, the samples on a time-weighted-average didn't indicate overexposure to workers. "We have been advised of 3 instances (all occurring in 2014) in which monitors were worn while symptoms were reported. The circumstances of and data from these few exposure examples have been varied and somewhat incomplete, and there has been ***no clear indication of overexposure*** *from these samples."* [Emphasis added] *Thus the report itself indicates the time-weighted-average samples collected did not provide clear indication of exposure, so the time-weighted-average methodology used in WAC 173-460-150 is valid for this application and shown to be within the bounds of the applications conservative approach presented in response to Comment # 1.*

The transient peaks discussed in the TVAR on pages 26 and 27 do show the difference between the concept of time-weighted-average and intermittent 'spike' releases. However, as discussed in the paragraph above and in response to comment # ,1 talking about the conservative assumptions used for the application (a 2,600% increase in the most conservative composite tank emissions), no change is required for the permit

For the above reasons, no change, except for the changes identified in response to Comment # 1, is required in the permit. Specific to this comment, Ecology will make the correction in the issued Approval Order by changing Condition 1.2.2 as follows:

At no time shall more than one of the three tanks in the 241-SY tank farm (241-SY-101 through 241-SY-103) be under active mixing and Waste Feed Delivery operations. Waste Feed Delivery operations are defined as those which mix and transfer waste, including transfers to the Waste Treatment and Immobilization Plant.

Comment # 6 from Bill Green, Citizen, dated June 29, 2015

Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Update the list of expected TAPs and associated concentrations to reflect increases resulting from transient spikes and current sampling information. Revise sampling to utilize recommendations in the *Hanford Tank Vapor Assessment Report*[1] (TVAR).

Ecology Response:

Thank you for your comment, Ecology offers the following response.

Please see response to Comment # 1, # 4, and # 5 above.

1. *The application used conservative estimates to provide inputs for the modeled exposure values to the general public in ambient air. These estimates, as discussed above, provide for a 2600 % increase to the highest observed quiescent value. These values are in excess of the reported TVAR percent increase values. Therefore no change in the permit is required.*
2. *WAC 173-460-150 is based upon a time-weighted-average. Even with the transient spikes in emissions, the permit properly utilizes time-weighted-averages in accordance with the WAC. Therefore, no change in the permit is required.*
3. *Episodic short-term exposures are related to transient spikes and discussed above. The application properly used the time-weighted-average method to determine risks to the public in ambient air. Therefore, no change in the permit is required.*
4. *The permit is established on the concentration the general public is exposed to in ambient air. These values are taken from the discharge point (stack) and occur after all processes are applied (e.g. HEPA filters, 'dilution', etc.). The point of the permit is not to measure what is in the tank itself, but what is emitted from the tank at the discharge point. Therefore, no change in the permit is needed.*
5. *The current conservative assumptions in the application bound existing sample data. Sampling recommendations in the TVAR are designed to gather information in regards to worker protection, which is not part of the Clean Air Act. Additionally, as sample information is collected, it is added to the entire sample data population for analysis. If sample data indicates concentrations in excess of the assumptions presented in the applications, at that point a re-evaluation of the permit would be required. Until that time, no change in the permit is needed.*

For the above reasons, no change, except for the changes identified in response to Comment # 1, is required in the permit. Specific to this comment, Ecology will make the correction in the issued Approval Order by changing Condition 1.2.3 as follows:

At no time shall more than one of the eight tanks in the 241-AP Tank Farm (241-AP-101 through 241-AP-108) be under active mixing and Waste Feed Delivery operations.

Comment # 7 from Bill Green, Citizen, dated June 29, 2015
Ecology is only showing the first paragraph of this comment in this summary. For the complete comment with all citations, footnotes, and explanations, please refer to Appendix B.

Revise all active Orders of Approval to include sampling recommended in the *Hanford Tank Vapor Assessment Report*[1] (TVAR). Require the permittee to revise all Second Tier Review petitions to account for emissions resulting from transient spikes. Revise all Health Impact Assessments to utilize the best sampling analyses available.

Ecology Response:
Thank you for your comment, Ecology offers the following response.

As discussed in responses to the previous comments, Ecology has determined the conservative assumptions in the original application are still valid and the regulations are based upon a time-weighted-average method. As the assumptions are still valid, no need exists to revise all active Approval Orders to account for transient spikes or analytical data.

No change to the permit is required beyond those identified in Response to Comment # 1.

Comment # 8 from Jeanne Poirier, Citizen, dated May 6, 2015
Please add my name to the concerned citizens living in proximity to Hanford. While challenge for clean up, please adhere to EPA rules on clean air standards. Good monitoring of potentially harmful emissions is critical to safety at Hanford.

Ecology Response:
Thank you for your comment, Ecology offers the following response.

This permit is in compliance with EPA rules on clean air standards and the Hanford Site is required to abide to the terms and conditions in the permit.

APPENDIX A: COPIES OF ALL PUBLIC NOTICES

Public notices for this comment period:

1. Public notice
2. Classified advertisement in the *Tri-City Herald*
3. Notice sent to the Hanford-Info email list
4. Event posted on Ecology Hanford Education & Outreach Facebook page

Air Permit Changes Needed to Start Waste Retrieval from Hanford Tank AY-102

The Washington State Department of Ecology invites you to comment on a modification to an air emission permit for the AY/AZ Tank Farm ventilation unit.

The formal name for this change is the "Approval Order for Notice of Construction." It will revise the already issued Approval Order DE11NWP-001, Rev. 1.

Waste Retrieval from Tank AY-102

The waste in Hanford's double-shell tank AY-102 must be removed because the tank is leaking. Under an order from Ecology, the waste retrieval must start by March 4, 2016.

In support of retrieving waste from tank AY-102, the U.S. Department of Energy Office of River Protection (the permittee) wants to remove a broken piece of equipment that is restricting air flow in the tank's ventilation system.

The permittee also wants to add an exhauster to the space between the inner and outer tank (annulus space). This exhauster will cool the inner tank's outer surface and send any airborne particulates in the annulus space through high-efficiency particulate air (HEPA) filters.

Decision Process

When the comment period closes, Ecology will consider the comments received and revise the permit as needed. Then we will issue the Approval Order and Response to Comments. The approval order will become part of the permit during a future update.

Information about the public comment period is on the right.

Permittee/Site Owner

U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, WA 99352

WHY IT MATTERS

The Hanford Air Operating Permit ensures that Hanford's air emissions stay within safe limits that protect people and the environment.

Public Comment Period

May 31 – July 3, 2015

Submit Comments

Send comments or questions by email (preferred), U.S. mail, or hand deliver them to:

Philip Gent
Department of Ecology
3100 Port of Benton Blvd.
Richland, WA 99354
HanfordAir@ecy.wa.gov

Public Hearing

A public hearing is not scheduled, but if there is enough interest, we will consider holding one.

To request a hearing or for more information, contact:

Dieter Bohrmann
Department of Ecology
800-321-2008
HanfordAir@ecy.wa.gov

Special Accommodations

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 509-372-7950.

Persons with impaired hearing may call Washington Relay Service at 711.

Persons with speech disability may call TTY at 877-833-6341.

Information Repositories and other document review locations

Online

www.ecy.wa.gov/programs/nwp/PI/pages/info-repositories.htm

Richland

Ecology's Nuclear Waste Program Resource Center
3100 Port of Benton Blvd.
Richland, WA 99354
Contact: Valarie Peery
509-372-7950
Valarie.Peery@ecy.wa.gov

Dept. of Energy Administrative Record
2440 Stevens Drive, Room 1101
Richland, WA 99354
Contact: Heather Childers
509-376-2530
Heather_M_Childers@rl.gov

Department of Energy Reading Room
2770 Crimson Way, Room 101L
Richland, WA 99354
Contact: Janice Scarano
509-372-7443
DOE.reading.room@pnnl.gov

Portland

Portland State University
Branford Price Millar Library
1875 SW Park Avenue
Portland, OR 97207
Contact: Claudia Weston
503-725-4542
Westonc@pdx.edu

Seattle

University of WA Suzzallo Library
P.O. Box 352900
Seattle, WA 98195
Contact: Cass Hartnett
206-685-3130
Cass@uw.edu

Spokane

Gonzaga University Foley Center
502 E Boone Avenue
Spokane, WA 99258
Contact: John S. Spencer
509-313-6110
spencer@gonzaga.edu

Information for Public Review

Ecology invites you to review and comment on the documents for our decision to change the permit.

- The application letter
- The draft approval order, conditions, and restrictions
- State Environmental Policy Act documentation

These documents are at the locations listed on the left.

Air Pollution Regulations

Ecology is following Washington Administrative Code 173-400, General Regulations for Air Pollution Sources, to process the U.S. Department of Energy's request to change the permit.

Washington Administrative Code Section 173-400-171 covers how we conduct this public comment period. It outlines when, where, and how we notify the public and provide the proposal for review.

Waste leaked from inner liner to annulus space of tank AY-102.

Classified Legals

The Washington State Department of Ecology invites you to comment on a modification to an air emission permit for the AY/AZ Tank Farm ventilation unit.

The public comment period runs from May 31 to July 3, 2015.

The formal name for this change is the "Approval Order for Notice of Construction." It will revise the already issued Approval Order DE11NWP-001, Rev. 1. The approval order will ensure that Hanford's air emissions stay within safe limits that protect people and the environment, and allow waste retrieval from AY-102 to proceed.

The waste in Hanford's double-shell tank AY-102 must be removed because the tank is leaking. Under an order from Ecology, the waste retrieval must start by March 4, 2016.

In support of retrieving waste from tank AY-102, the U.S. Department of Energy Office of River Protection (the permittee) wants to remove a broken piece of equipment that is restricting air flow in the tank's ventilation system.

The permittee also wants to add an exhauster to the space between the inner and outer tank (annulus space). This exhauster will cool the inner tank's outer surface and send any airborne particulates in the annulus space through high-efficiency particulate air (HEPA) filters.

Decision ProcessWhen the comment period closes, Ecology will consider the comments received and revise the permit as needed. Then we will issue the Approval Order and Response to Comments. The approval order will become part of the permit during a future update.

The Permittee/Site Owner is U.S. Department of Energy Office of River Protection, P.O. Box 450, Richland, WA 99352

To submit comments, send comments or questions by email (preferred) to HanfordAir@ecy.wa.gov. You also can send them via U.S. mail, or hand deliver them to:
Philip Gent
Department of Ecology
3100 Port of Benton Blvd.
Richland, WA 99354

Public meeting.
A public hearing is not scheduled, but if there is enough interest, we will consider holding one. To request a hearing or for more information, contact:
Dieter Bohrmann
Department of Ecology
800-321-2008
Hanford@ecy.wa.gov

Information for Public Review
Ecology invites you to review and comment on the documents for our decision to change the permit.

- The application letter
- The draft approval order, conditions, and restrictions
- State Environmental Policy Act documentation

These documents are at the locations listed below.

Air Pollution Regulations
Ecology is following Washington Administrative Code 173-400, General Regulations for Air Pollution Sources, to process the U.S. Department of Energy's request to change the permit.

Washington Administrative Code Section 173-400-171 covers how we conduct this public comment period. It outlines when, where, and how we notify the public and provides the proposal for review.

Information Repositories and other document review locations **Online** *www.ecy.wa.gov/programs/nwp/commentperiods.htm*

Richland
Ecology's Nuclear Waste Program Resource Center
3100 Port of Benton Blvd.
Richland, WA 99354
Contact: Valarie Peery
509-372-7950
Valarie.Peery@ecy.wa.gov

Dept. of Energy
Administrative Record
2440 Stevens Drive,
Room 1101
Richland, WA 99354
Contact: Heather Childers
509-376-2530
Heather_M_Childers@rl.gov

Department of Energy
Reading Room, Room 101L
2770 Crimson Way,
Richland, WA 99354
Contact: Janice Scarano
509-372-7443DOE.reading.room@pnnl.gov

Portland
Portland State University
Branford Price
Millar Library
1875 SW Park Avenue
Portland, OR 97207
Contact: Claudia Weston
503-725-4542
Westonc@pdx.edu

Seattle
University of WA
Suzzallo Library
P.O. Box 352900
Seattle, WA 98195
Contact: Cass Hartnett
206-685-3130
Cass@uw.edu

Spokane
Gonzaga University
Foley Center
502 E Boone Avenue
Spokane, WA 99258
Contact: John S. Spencer
509-313-6110
spencer@gonzaga.edu
#15-8788 5/31/2015

From: Brown, Madeleine (ECY)
Sent: Thursday, April 30, 2015 3:27 PM
To: hanford-Info@listserv.wa.gov
Subject: Advance notice – 2 approval orders for changes to Hanford's air permit

This is a message from the Washington Department of Ecology.

Ecology will start two comment periods on May 31. Both are for "Notice of Construction Approval Orders." If approved, the Notices of Construction orders will be added to the Hanford Air Operating Permit during its next update sometime next year. The comment periods will run through July 3, 2015.

Rotary Core Sampler – This proposed change is to allow the U.S. Department of Energy Office of River Protection (ORP) to install up to two rotary core sampling systems for Hanford's underground waste storage tanks. The core sampler is needed to collect samples of solid materials in the tanks for analysis, so they can be managed safely in the tanks and eventually the Waste Treatment Plant. The waste characterization also supports a Tri-Party Agreement requirement for closing single-shell tank farms.
The emissions from the sampling systems will be lower than the thresholds that trigger a public comment period, but since there is a high level of public interest in vapors at Hanford's tank farms, we are holding this comment period.

This comment period was set to start in November, but was delayed because of discussions between ORP and the state Department of Health on the Radiological Air Emission License for the rotary core sampler.

Support for waste retrieval from tank AY-102 – This approval order will cover two actions. First, in support of retrieving waste from leaking double-shell tank AY-102, the permittee (ORP) wants to remove a broken piece of equipment that is restricting air flow in the tank's ventilation system.
Second, the permittee wants to add an exhauster to the space between the inner and outer tank (annulus space). This exhauster will cool the inner tank's outer surface and send any airborne particulates in the annulus space through high-efficiency particulate air (HEPA) filters.
More information on the proposed changes will be available on Ecology's website, the Hanford Public Information Repositories, and other document review locations when the public comment periods start.

Email Hanford@ecy.wa.gov or call 800-321-2008 for more information.

From: Brown, Madeleine (ECY)
Sent: Monday, June 01, 2015 3:23 PM
To: hanford-Info@listserv.wa.gov
Subject: Comment periods underway!

Washington's Department of Ecology invites you to comment on proposed changes for air emissions from Hanford's tank farms. The formal name of the changes is "Approval Order for Notice of Construction," and two separate change packages are open for public comment.

The comment periods run May 31 through July 3, 2015.

Proposed Changes

Rotary Core Sampling Systems for Hanford's tank farms

The change would allow the US Department of Energy Office of River Protection (permittee) to install up to two rotary core sampling systems for Hanford's underground tanks. The rotary core sampling systems are needed to collect samples of solid materials in the tanks so the waste can be managed more safely.

Please send comments by email (preferred), U.S. Mail, or hand deliver them by July 3 to:

Philip Gent
3100 Port of Benton Blvd.
Richland, WA 99354
Hanford@ecy.wa.gov

Air Permit Changes to Begin Waste Retrieval from Hanford Tank AY-102

In support of retrieving waste from Tank AY-102, the permittee wants to remove a broken piece of equipment that is restricting air flow in the tank's ventilation system.

The permittee also wants to add an exhauster to the space between the inner and outer tanks (annulus space). This exhauster will cool the inner tank's outer surface and send any airborne particulates in the annulus space through high-efficiency particulate air (HEPA) filters.

Two U.S. Department of Energy offices are applying jointly for the permit. The Richland Operations Office has the lead.

Please send comments by email (preferred), U.S. Mail, or hand deliver them by July 3 to:

Philip Gent
3100 Port of Benton Blvd.
Richland, WA 99354
HanfordAir@ecy.wa.gov

A public hearing is not scheduled, but if there is enough interest, we will consider holding one. To ask for a hearing or for more information, contact:

Dieter Bohrmann
509-372-7950
Hanford@ecy.wa.gov

You can review the proposed changes and supporting information at Ecology's Nuclear Waste Program **website**.

The proposal and supporting info are also at the Hanford Public Information Repositories.

Ecology's Hanford Education & Outreach Network

Published by Madeleine C. Brown [?] · 15 hrs ·

You can comment on two air emission change comment periods that started Sunday and run through July 3. Visit our comment periods website to learn more.
http://www.ecy.wa.gov/programs/nwp/commentperiods.htm

NWP Public Comment Periods

For more information on any of the comment periods, email hanford@ecy.wa.gov or call the Hanford Cleanup line at 800-321-2008. In addition to what's available on our website, documents open for public comment are available at the Hanford Information

ECY.WA.GOV

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APPENDIX B: COPIES OF ALL WRITTEN COMMENTS

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DEPARTMENT OF ECOLOGY
NWP - RICHLAND

ENTERED

June 29, 2015

Central Files Air / AOP
File Name:
Cross Reference:

Mr. Philip Gent
Department of Ecology
3100 Port of Benton Blvd.
Richland, WA 99354

Re: Public comments, draft order DE11NWP-001, Rev. 2

Dear Mr. Gent:

Enclosed are my comments on draft order of approval DE11NWP-001, Revision 2. This draft order approves installation of two (2) mixer pumps per tank farm during Waste Feed Delivery operations. These comments generally note that Ecology has not considered findings in the *Hanford Tank Vapor Assessment Report*[1] (TVAR) when determining sampling under this order and when modeling to ascertain risk to the public from activities associated with Waste Feed Delivery operations. In fact, the permittee's application and Second Tier Review Petition were prepared more than three (3) years before the TVAR was published.

The TVAR was prepared by an independent panel of experts. This independent panel of experts recommended a sampling program that doesn't include time-weighted-averaging[2], but does include enhanced chemical characterization[3]. Under the experts' sampling plan "sufficient samples should be obtained under quiescent and waste disturbing conditions to determine statistically the probable concentration ranges emitted for both routine and retrieval/transfer operations."[4]

In preparing the TVAR the independent panel of experts was given full access to data and Hanford Site personnel without influence from any Hanford Site contractor or the U.S. Department of Energy. The Washington State Department of Health (Health) also participated. Hanford Site personnel were also given an opportunity to review a draft of the TVAR. The Hanford Site has not publicly challenged the TVAR. Health has not publicly challenged the TVAR. It is now problematic for Hanford to ignore or to reject findings and recommendations expressed in the TVAR. Unless Ecology wishes to challenge the independent panel of experts, Ecology is obligated to implement their recommendations, particularly with regard to sampling needed to accurately characterize emissions. To do otherwise will result in using emission data and sampling techniques

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[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014., at 27. Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf
[2] "[A] time weighted average concentration of less than 10 ppm can be thousands to tens of thousands of ppm when delivered as a bolus." *Id.* at 35 and ". . . using a time-weighted average (TWA) can allow a brief but concentrated bolus exposure to go undocumented." *Id.*
[3] *Id.* at 16
[4] *Id.* at 17

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known to be inaccurate and unrepresentative, a situation which only perpetuates the level of ignorance that necessitated preparation of the TVAR.

Until accurate sample analyses are available, Ecology should require the permittee to revise its application and Second Tier Review Petition to reflect the best emission information now available. For example, the experts examined analyses of samples taken from Tank C-101 before waste transfer, at the start of waste transfer, and mid-way through the waste transfer operation. During these periods, Mercury emissions increased more than 900% of the *occupation exposure limit*; emissions of N-Nitrosodimethylamine (NDMA) increased more than 2,300% of the *occupational exposure limit*; Formaldehyde emissions increased slightly more than 64% of the *occupational exposure limit*; and emissions of Ammonia increased of more than 18% of the *occupational exposure limit*[5]. The ill-defined sampling for TAPs contemplated in this draft Order overlooks such transient spikes. These transient spikes need to be considered when determining risk to the public from Waste Feed Delivery operations.

It is hoped Ecology will use results obtained from the best science available when it arrives at public exposures to toxic air emissions expected from activities permitted at Hanford's Tank Farms.

I hope Ecology finds my comments useful.

Regards,

Bill Green
424 Shoreline Ct.
Richland, WA 99354

Enclosure

[5] *Id.* at 27

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Comment 1: (Second Tier Review Petition) **Require the permittee to revise the previously submitted Second Tier Review Petition to reflect the huge increases in the concentrations of Mercury in emissions during waste disturbing activities. These huge increases result from transient peaks, according to the *Hanford Tank Vapor Assessment Report*[1] (TVAR).**

The experts examined analyses of samples taken from Tank C-101 before waste transfer, at the start of waste transfer, and mid-way through the waste transfer operation. During these periods, Mercury emissions increased more than 900% of the *occupation exposure limit*.[2] [Emissions of N-Nitrosodimethylamine (NDMA) increased more than 2,300% of the *occupational exposure limit*; Formaldehyde emissions increased slightly more than 64% of the *occupational exposure* limit, and Ammonia emissions increased more than 18% of the *occupation exposure limit* .[3]]

> "It is the head space composition that determines the composition of the vent, stack, and most fugitive emissions. . . .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."[4]

and:

> "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, which may be occasional and isolated in nature."[5]

Because the initial Second Tier Review Petition pre-dated the TVAR by more than three (3) years, and because past sampling did not accurately address head space characterization, the permittee's past petition could not have consider either findings in the TVAR or accurate head space emissions information. Any petition for Second Tier Review and any follow-on Health Impact Assessment (HIA) must be based on accurate emission information. Such information includes the huge increases in the concentration of Mercury in emissions resulting from the waste-disturbing activities contemplated by this draft Order.

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[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (This federally-funded report was prepared by an independent panel of experts, commissioned through the Savannah River National Laboratory. Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
Based on this report Attorney General Bob Ferguson sent a Notice of Endangerment and Intent to Sue the U.S. Dept. of Energy, and its contractor, Washington River Protection Solutions, for failure to control hazardous chemical vapors that continue to jeopardize worker health and safety.
[2] *Id.* at 27
[3] *Id.*
[4] *Id.* at 23
[5] *Id.* at 30

Comment 2: (Incomplete application) **Require the permittee to revise its application to include huge increases in the concentration and composition of head space gases and vapors expected during waste retrieval operations.**

Washington Administrative Code (WAC) 173-400-111 (1)(b) requires: "

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> [a] complete application contains all the information necessary for processing the application. At a minimum, the application must provide information on the nature and amounts of emissions to be emitted by the proposed new source or increased as part of a modification,. . . " . WAC 173-400-111 (b)

Missing from this application is head space characterization information that accurately captures chemicals in the head space and their concentrations, and accounts for transient wafting plumes of chemical vapors in relatively high concentrations.

In the *Hanford Tank Vapor Assessment Report*[1] (TVAR) an independent panel of experts informs that analyses of samples taken from Tank C-101 reveal a huge increase in certain TAPs during waste retrieval operations. Samples were taken before the start of waste retrieval operations, at the start of waste retrieval, and mid-way through the waste retrieval operation. The pre-start, start, and mid-way analyses reveal an increase of more than 900% of the *occupational exposure limit* for emissions of Mercury; an increase of more than 2,300% of the *occupational exposure limit* for emissions of N-Nitrosodiethylamine; an increase of more than 64% of the *occupational exposure limit* for emissions of Formaldehyde; and an increase of more than 18% of the *occupational exposure limit* for emissions of Ammonia.[2]

Further, the independent panel of experts found that:

> "Past head space characterization did not evaluate the effect of waste disturbing activities on the chemicals in the head space and their concentrations."[3]

and:

> "active venting occurs during retrieval operations which disturb the waste materials. Disturbance of the waste materials may alter the chemical processes taking place in the tank, as well as release vapors trapped in the salt cake or sludge."[4]

The application and this draft Order also do not consider excess emissions associated with episodic venting due to shut down of exhausters.

> "The exhausters used for active venting occasionally shut down . . . Although the waste disturbance activities have ceased, the head space then being vented through the inlet vents and fugitive pathways is potentially at orders of magnitude greater concentration of vapors than during routine passive venting. This venting of higher concentration emissions is through a relatively short stack and without the motive force of the exhausters to assist in dispersion."[5]

Because the application relied upon for this Order of Approval was created more than three (3) years before the TVAR was available, that application could not have reflected huge increases in emissions due to waste disturbing activities or those emissions attributable to exhauster shutdowns, as these were recently "discovered" by the independent panel of experts. Such waste disturbing activities will accompany Waste Feed Delivery operations.

---

[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
[2] *Id.* at 27
[3] *Id.* at 23
[4] *Id.* at 27
5 *Id.* at 28

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Comment 3: (Order Findings 9 and 11) **Revise Findings 9 and 11 in this Order to reflect increases in emissions expected from waste disturbing activities associated with Waste Feed Delivery operations.**

In the *Hanford Tank Vapor Assessment Report*[1] (TVAR) an independent panel of experts found that huge increases in concentration and composition of toxic vapors and gases in the head space accompany waste disturbing activities.

> 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."[2]

and:

> Disturbance of the waste materials may alter the chemical processes taking place in the tank, as well as release vapors trapped in the salt cake or sludge."[3]

and:

> "In briefings received by the TVAT while visiting the Hanford site, it was reported that transient spikes are observed in vapor concentrations at the beginning of retrieval operations. This observation calls into question assumptions of the head space being well mixed and head space composition being constant over time. It further calls into question any assumption that sampling during quiescent conditions would be reasonably representative of conditions while the waste materials are being disturbed. <u>We understand that the transient spikes were reported to be as much as three orders of magnitude[a] greater than the baseline quiescent levels.</u> An assumption that releases are always diluted is questionable in that most of the passively ventilated SSTs are not subject to active ventilation. Furthermore, the tanks that are subject to active ventilation periodically revert to a passively vented condition due to both planned and unplanned power interruptions."[4] (emphasis added)

> [a] "[A]n increase of one order of magnitude is the same as multiplying a quantity by 10." An increase of three orders of magnitude is the equivalent of multiplying by 1,000, or 10^3. (http://whatis.techtarget.com/definition/order-of-magnitude)

Because the application relied upon for this Order of Approval and the Second Tier Review Petition was created more than three (3) years before the TVAR was available, that application and petition could not have reflected the huge increases in emissions due to waste disturbing activities that was recently "discovered" by the independent panel of experts. Waste disturbing activities include activities associated with Waste Feed Delivery operations.

[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
[2] *Id.* at 23
[3] *Id.* at 27
[4] *Id.* at 26

Comment 4: (Approval Conditions 1.2.4, 3.1.1, and 3.4) **Revise Conditions 1.2.4, 3.1.1, and 3.4 to reflect the huge increases in concentration of Ammonia emissions resulting from waste disturbing activities associated with Waste Feed Delivery operations.**

Condition 1.2.4 sets pounds-per-day emissions limits for Ammonia applicable to the operation of two (2) tanks being mixed per Tank Farm. Condition 3.1.1 specifies

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Ammonia stack concentrations be sampled at lease three (3) times using an appropriate Draeger tube to arrive at a time-weighted average for Ammonia emissions. This condition does not specify when in the Waste Feed Delivery operation these samples are to be taken. Condition 3.4 requires a quarterly assessment of the sampling, presumably to determine compliance with the pounds-per-day limits.

Overlooked in this sampling regimen are findings in the *Hanford Tank Vapor Assessment Report*[1] (TVAR). The TVAR was prepared by an independent panel of experts, and was published more than three (3) years after the application for this draft Order and the associated Second Tier Review Petition were submitted. Thus, neither could have reflected findings expressed in the TVAR.

The sampling contemplated in this draft Order (DE11NWP-001, Rev. 2) does not consider huge variations in concentration attributable to waste disturbing activities. The experts examined analyses of samples taken from Tank C-101 before waste transfer, at the start of waste transfer, and mid-way through the waste transfer operation. During these periods, Ammonia emissions increased more than 18% of the *occupation exposure limit*[2].

The independent panel of experts determined time-weighted-averaging of emissions understated actual emissions.

> "[A] time weighted average concentration of less than 10 ppm can be thousands to tens of thousands of ppm when delivered as a bolus." [3]

and:

> ". . . using a time-weighted average (TWA) can allow a brief but concentrated bolus exposure to go undocumented." [4]

Rather, the experts recommended enhanced chemical characterization[5] using "sufficient samples [ ] obtained under quiescent and waste disturbing conditions to determine statistically the probable concentration ranges emitted for both routine and retrieval/transfer operations."[6]

Ecology should revise sampling conditions to utilize sampling recommended by the independent panel of experts.

---

[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
[2] *Id.* at 27
[3] *Id.* at 35
[4] *Id.*
[5] *Id.* at 16
[6] *Id.* at 17

Comment 5: (Approval Conditions 1.2.2, 1.4.3, and 3.2) **Revise draft approval Conditions 1.2.2, 1.4.3, and 3.2 to reflect the huge increases in composition and concentration of VOCs expected from transient spikes associated with waste-disturbing activities contemplated by this draft Order.**

The permittee's application and estimated emissions of VOCs contained therein preceded, by more than three (3) years, publication of the *Hanford Tank Vapor Assessment Report*[1] (TVAR). In this report, an independent panel of experts observed

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that previous monitoring and sampling was inadequate to detect huge transient spikes in emissions. Thus, the monitoring and sampling data used in the permittee's application is now known to be flawed. Specifically, the independent panel of experts stated:

> "[m]onitoring 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, which may be occasional and isolated in nature."[2]

and:

> "The adverse health effects, e.g., upper respiratory irritation, are not representative of chronic exposures resulting from the current interpretation of personnel monitoring data (that is, eight-hour time-weighted averages) but are the result of transitory exposures to relatively high concentrations of chemicals."[3]

While the experts' findings pertain to toxic exposures suffered by some Hanford workers, these same emissions are used by modelers to predict risk to the public. The endemic under-characterization of vapors and gases and their relatively high concentrations in these transitory events also have the potential to harm the public.

The experts analyzed samples from Tank C-101. These samples were taken before the start of waste retrieval operations, at the start of waste retrieval, and mid-way through the waste retrieval operation. These pre-start, start, and mid-way analyses reveal an increase of more than 2,300% of the *occupational exposure limit* for emissions of N-Nitrosodiethylamine and an increase of more than 64% of the *occupational exposure limit* for emissions of Formaldehyde. [Mercury emissions increased more than 900% of the *occupational exposure limit* and Ammonia increased of more than 18% of the *occupational exposure limit.* [6]]

Even under passive ventilation there can be huge spikes in emission concentrations over a short period of time. In examining continuously monitored emission data from single shell tank (SST) SX-103 the experts found that, over about an hour, concentration spikes of "over 40,000 ppb of organic compounds with the isobutylene response factor."[7] [The experts noted that "[t]he point of [the] illustration is not to comment on the potential health effects of the [isobutylene] spike shown but rather to underscore the reality of transient peaks in the release rate from tank vents. . . we saw no indication that isobutylene is a component of the head space mixture; rather it was used to calibrate the direct reading instrument."[8]]

These increases underscore the underestimated emissions in the permittee's application and as reflected in this draft Order. These huge increases occurred whether the tank was passively ventilated or actively ventilated.

Condition 1.2.2 sets average tons-per-year limits on emissions of VOCs based on operation of two (2) tanks being mixed per Tank Farm. With regard to time weighted averaging, which Condition 1.2.2 requires, the experts stated:

> "[A] time weighted average concentration of less than 10 ppm can be thousands to tens of thousands of ppm when delivered as a bolus."[4]

and:

> ". . . using a time-weighted average (TWA) can allow a brief but concentrated bolus exposure to go undocumented." [5]

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Thus, time weighted averaging is expected to greatly underestimate the concentration of the actual emissions.

Condition 1.4.3 requires an unspecified number of stack samples along with contemporaneous recording of temperatures and stack flow rates to determine mass release rates in pounds-per-year (not tons/yr. as in Condition 1.2.2). These mass release rates are to be assessed annually (Condition 3.2). Here also, these conditions are at odds with the TVAR. Given that time-weighted-averaging grossly understates emissions, the panel of experts recommended a sampling program that doesn't include time-weighted-averaging[9], but does include enhanced chemical characterization[10]. Under the expert's sampling plan "sufficient samples should be obtained under quiescent and waste disturbing conditions to determine statistically the probable concentration ranges emitted for both routine and retrieval/transfer operations."[11]

Unless Ecology doesn't believe the independent panel of experts, Ecology must revise draft approval conditions 1.2.2, 1.4.3, and 3.2 to reflect the huge increases in composition and concentration of VOCs expected from transient spikes associated with activities approved under this draft Order.

---

[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
[2] *Id.* at 30
[3] *Id.* at 15
[4] *Id.* at 35
[5] *Id.*
[6] *Id.* at 27
[7] *Id.* at 26
[8] *Id.*
[9] *Id.* at 35
[10] *Id.* at 16
[11] *Id.* at 17

Comment 6: (Approval Conditions 1.2.3, 1.4.4, and 3.3) **Update the list of expected TAPs and associated concentrations to reflect increases resulting from transient spikes and current sampling information. Revise sampling to utilize recommendations in the *Hanford Tank Vapor Assessment Report*[1] (TVAR).**

As noted above, the permittee's application and Second Tier Review Petition were submitted several years before an independent panel of experts published the TVAR. Findings in this report undercut all emissions-related information in the application in addition to all sampling suggested to verify such emissions. Because estimated emissions are so grossly understated, modeling that uses these estimates to determine risk to the public also underestimates public exposures to toxic air pollutants associated with this activity.

The submitted application and resulting conditions in this draft Order, minimally:

1. Overlook huge increases in the concentration and composition of head space vapors and gases resulting from a bolus event.[2] These toxic head space vapors and gases freely pass through a HEPA filter.[3] Such huge increases occur whether the particular tank is passively ventilated or actively ventilated[4];

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2. Overlook that time-weighted-averaging of emissions does not account for the transient spikes in head space emissions[5];
3. Overlook past sampling did not detect short-term episodic exposures[6];
4. Overlook that samples taken from stacks or exhausters have been diluted by the process and, thus, understate the releases[7];
5. Overlook sampling recommendation of the independent panel of experts[8].

Because current knowledge completely repudiates sampling results and underlying assumptions used to prepare the application, the Second Tier Review Petition, and the conditions of this draft Order, Ecology should require the permittee update the list of expected TAPs and associated concentrations to reflect current knowledge. Ecology should further follow recommendations advanced by the independent panel of experts, particularly with regard to sampling.

---

[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)
[2] *Id.* at 9, 23
[3] *Id.* at 22
[4] *Id.* at 9, 23, 26, 27
[5] *Id.* at 9, 35
[6] *Id.* at 9, 23, 27, 30
[7] *Id.* at 16, 23
[8] *Id.* at 16, 17

Comment 7: **Revise all active Orders of Approval to include sampling recommended in the *Hanford Tank Vapor Assessment Report*[1] (TVAR). Require the permittee to revise all Second Tier Review petitions to account for emissions resulting from transient spikes. Revise all Health Impact Assessments to utilize the best sampling analyses available.**

Now that Ecology is aware all previously-submitted applications and Second Tier Review Petitions so grossly understated emissions, Ecology is obligated to take all actions necessary to ensure these permitted activities do not pose an unacceptable risk to the public.

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[1] W.R. Wilmarth et al., *Hanford Tank Vapor Assessment Report*, SRNL-RP-2014-00791, Rev.0, Oct. 30, 2014. (Available at: http://srnl.doe.gov/documents/Hanford_TVAT_Report_2014-10-30-FINAL.pdf)

From: jeannepoirier@yahoo.com
Sent: Wednesday, May 06, 2015 11:05 AM
To: Hanford (ECY)
Subject: Hanford

Please add my name to the concerned citizens living in proximity to Hanford.
While a challenge for clean up, please adhere to EPA rules on clean air standards.
Good monitoring of potentially harmful emissions is critical to safety at Hanford.

Regards,
Jeanne Poirier
Cashmere, WA