

Hanford Tank Waste Operations & Closure (H2C) (Thomas Beam)

Please see attached file for comments on draft Approval Order DE26NWP-002 from Hanford Site contractor, Hanford Tank Waste Operations & Closure. Thank you.

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Ecology Nuclear Waste Program Air Permitting Staff;

Hanford Tank Waste Operations and Closure (H2C), appreciates the opportunity to review and provide formal comments on draft Air Approval Order No. DE26NWP-002. As the prime contractor responsible for tank waste management and closure operations at the Hanford Site, H2C is committed to regulatory compliance, worker safety, and environmental stewardship throughout all phases of waste processing and facility operations.

H2C has completed a comprehensive review of the draft approval order, its operational constraints, and the associated technical support documents to ensure the final permit conditions are technically practical, legally defensible, clear, and aligned with tank waste mission schedules while maintaining compliance with applicable federal and state environmental requirements. Enclosed are detailed comments addressing specific technical, monitoring, and administrative provisions within the draft order.

We respectfully request that the Department of Ecology consider these comments and incorporate the proposed clarifications and revisions into the final Air Approval Order. H2C technical staff welcome the opportunity to meet with Ecology to discuss these issues and provide additional operational context to support development of a clear and executable final approval order. If you have any questions or need additional information regarding this submittal, please contact Tom Beam at (509)376-9016 or thomas_g_beam@rl.gov.

Thank You,

Tom Beam, Manager
H2C Environmental Permitting

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Comment #1: Condition 5.a.iv. is technically unjustified.

As discussed in Section 4, paragraph 7, of the Technical Support Document (TSD), which states that “The expectation is the enhanced VOC result will be around 20% less than the FID given the enhanced VOC test analyte list accounts for approximately 80% by mass of the expected VOCs....,” Ecology is requiring enhanced VOC testing to verify total VOC emissions estimated by flame ionization detection (FID) using analytical methods capable of generating quantitative data for multiple organic compounds, including TAPs, from exhaust samples collected using a sorbent tube or SUMMA canister. That requirement is not technically justified because quantitative speciated analysis cannot validate FID measurements; the two methods measure fundamentally different analytical parameters and are not interchangeable.

An FID is specifically designed to measure total volatile organic compounds by responding to the total carbon present in a sample. It operates by combusting the sample in a hydrogen-air flame and measuring the ions produced from carbon-containing compounds. This method is widely accepted for VOC measurement because it provides an accurate, reliable, and defensible determination of total VOC concentration, with high sensitivity, broad applicability, and a wide linear range. The FID result is therefore the appropriate measure of total VOCs for purposes of evaluating compliance with a total VOC emission limit.

By contrast, speciated analytical methods are designed to identify and quantify individual compounds, not to measure total VOCs as an aggregate parameter. The compounds reported depend on the sampling media, target analyte list, analytical method, detection limits, and compound recoveries. Even where broader methods are used, such as EPA Methods TO-15 or TO-17, the analysis remains limited to compounds that can be captured, identified, and quantified under the selected method. Those methods may be appropriate for characterizing constituent compounds or evaluating specific TAPs, but they do not provide an equivalent measurement of total VOC concentration as measured by FID.

Ecology’s stated rationale that speciated quantitative data can be used to validate monthly FID measurements is therefore technically flawed. A summed speciated result cannot be expected to match, confirm, or “validate” an FID total VOC result. At most, speciated analysis provides a partial accounting of selected compounds detected under the applicable method. It does not measure all carbon-containing compounds present in the sample, and it cannot capture unknown, unlisted, co-eluting, poorly recovered, or otherwise unquantified constituents. Accordingly, even if the carbon contribution of detected compounds were calculated and summed, the result would still not be comparable to the direct total VOC measurement generated by FID.

Moreover, attempting to reconcile total VOC concentrations by summing individual speciated compounds would impose substantial burden without producing technically meaningful information. Such an exercise would require assumptions regarding compound identification,

H2C Public Comments - Draft Air Approval Order DE26NWP-002

carbon content, and completeness of compound capture that are inherently inconsistent with the purpose and operation of FID analysis. Because it is not possible to identify and quantify every organic species that may be present in the exhaust stream, speciated analysis cannot provide a complete or equivalent basis for comparison to total VOC concentrations measured by FID.

In short, FID and speciated analyses serve different analytical purposes. FID is the appropriate method for measuring total VOCs. Speciated methods are appropriate only for identifying and quantifying individual compounds or compound classes. Requiring speciated testing for the stated purpose of validating FID-based total VOC measurements is therefore not supported by the underlying science, is not necessary to demonstrate compliance with the total VOC emission limit, and would impose an undue and unjustified burden on the H2C without improving the accuracy, reliability, or defensibility of the compliance demonstration.

Requested Change: H2C requests that Ecology remove Approval Condition 5.a.iv and all related references from Approval Order DE26NWP-002.

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Comment #2: H2C Cannot Comply With Approval Conditions 5.a.iii.D and 5.a.iv.B

H2C cannot comply with Approval Conditions 5.a.iii.D and 5.a.iv.B as currently written because it requires enhanced VOC testing on the same calendar day as total VOC testing. The list of analytes to be tested in Approval Condition 5.a.iv.B requires a minimum of six separate sampling methods and a minimum of six days to complete. Due to the operational conditions associated with tank farm work, compliance with these Approval Conditions are not physically feasible. In addition, due to the nature of the tank farms and the safety measures taken to protect workers from radiological and chemical exposures, H2C has safety considerations that result in a more rigorous environment with additional requirements.

- Each exhauster has one viable sampling port. The viable sampling port is chosen based on space limitations, ergonomics and safety considerations. It is also tested for flow dynamics. Other ports are not conducive to sampling because of height, location and/or issues with obstructions. Due to space constraints, only one crew can set up one sampling event on an exhauster at a time.
- When taking multiple samples, there are air flow issues to be taken into consideration. Each sampling method has specific air volumes which must be met and which are method specific. An air volume for a specific method may not be compatible with other sampling methods and may require the sampling pump to be calibrated at a different range. If the air flow is too low, the minimum detection limit will not be met. However, if the air flow is too high, the sorbent tube can become overloaded resulting in breakthrough and loss of sample.
- Sampling pump(s) must be calibrated as soon as practical before and after use, respectively, on the same shift as the sampling. Once calibrated, the pump(s) must be used for the calibrated range. This can make it difficult to mix and match flow rates to meet different requirements for various methods. For example, NIOSH 2522 and TO-11a have higher flow rates than TO-17, NIOSH 1606, and NIOSH 2000 and are not compatible to be sampled the same day. As a result, this limits the number of samples that can be taken during a shift.
- Only one sampling event can be conducted at one time, although it may be possible to sample one media in the morning and a second in the afternoon. There is preparatory work for each sampling event, such as preparing the media, updating the database, labeling samples, etc. This preparatory work is generally performed on the workday prior to sampling. On the day of sampling, three personnel are required: one employee fills out forms and maintains associated paperwork, one employee monitors the work activity, and one employee performs the sampling. Extraneous sampling results in increased risks to the work force in terms of potential radiological and chemical exposures and heightens the risk

H2C Public Comments - Draft Air Approval Order DE26NWP-002

of industrial accidents due to increased difficulty of climbing sampling platforms while wearing protective clothing and respirators.

- When sampling with multiple sorbent tubes, there is also the possibility of cross-contamination between media. To prevent false positives, it is important not to mix and match sampling media. For example, the sampling media for the EPA TO-11a aldehyde panel is a silica gel coated with nitrophenyl hydrazine (DNPH). During manufacture, this silica gel is coated using a solution of DNPH in acetonitrile. Residual acetonitrile remains in the DNPH coated silica gel media and can off-gas and travel back through a sampling train thus contaminating other forms of media such as Thermal Desorption Unit (TDU) tubes and charcoal tubes used for sampling acetonitrile under NIOSH 1606.
- Enhanced VOC sampling under Condition 5.a.iv.B would require approximately two work weeks to complete due to the multiple sampling evolutions involved. This creates an undue burden that provides minimal assurances of protection to human health and the environment. Each additional sampling evolution increases:
 - Worker industrial accident risk
 - Worker radiological exposure
 - Worker toxic chemical exposure

Taking these factors into consideration, H2C is capable of processing a maximum of 2 samples per day. Testing for the 10 analytes listed in Approval Condition 5.a.iv.B would require a minimum of 6 working days under ideal conditions and more realistically 2 full weeks. It is not physically possible to complete all of this sampling in one day. As a result, H2C cannot comply with Approval Conditions 5.a.iii.D and 5.a.iv.B, as well as all Approval Conditions which reference 5.a.iv.B (5.a.iv.A, 5.a.iv.A.I).

Requested Change: H2C requests that Approval Conditions 5.a.iv (and all references to 5.a.iv) and 5.a.iii.D be removed from the Approval Order. If Approval Conditions 5.a.iv and 5.a.iii.D and all references thereto are not removed, H2C requests that Approval Condition 5.a.iv be modified such that “overall organic TAP emissions” are monitored via method TO-17, which will include reporting all sample results including TICs, and without prescribing a specific analytes list; or that Approval Conditions 5.a.iii.D and 5.a.iv be modified to remove any same calendar day testing requirement.

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Comment #3: Inappropriate use of calculations for actual emissions measurement and reporting.

Proposed Condition 5.e requires emission calculations that rely on linear scaling of measured stack test concentrations to compute emissions at non-tested flows. This would lead to otherwise compliant measured emissions resulting in exceedances of applicable regulatory limits, based solely on calculated emissions.

Neither the WAC (173-400 and 173-460) nor existing guidance requires or authorizes use of emission calculations for source testing and use of a default linear scaling factor. There is no regulatory basis for the use of emission calculations or a scaling factor where direct source testing can be performed. EPA guidance on source or stack testing specifically recommends the following:

“[P]erformance tests be performed under those representative (normal) conditions that:

- represent the range of combined process and control measure conditions under which the facility expects to operate (regardless of the frequency of the conditions); and*
- are likely to most challenge the emissions control measures of the facility with regard to meeting the applicable emission standards, but without creating an unsafe condition.*

The following are factors that should be considered in developing the plan for a performance test that challenges to the fullest extent possible a facility's ability to meet emissions limits.

- For a facility operating under an emission rate standard (e.g., lb/hr) or concentration standard (e.g., $\mu\text{g}/\text{m}^3$), normal process operating conditions producing the highest emissions or loading to a control device would generally constitute the most challenging conditions with regard to the emissions standard. If operating at maximum capacity would result in the highest levels of emissions, operating at this level would not create an unsafe condition, and the facility expects to operate at that level at least some of the time, EPA recommends that the facility should conduct a stack test at maximum capacity or the allowable/permitted capacity.”*

[Clean Air Act National Stack Testing Guidance, EPA (April 27, 2009) (emphasis added).]

Nowhere in federal guidance is scaling recommended; rather, the emphasis is on representative and i.e., “worst case” testing. Ecology’s attempt to introduce a scaling factor for compliance in place of actual, measured emissions is inconsistent with its regulations and the existing guidance on source testing.

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Ecology's use of a scaling factor – in particular a linear scaling factor – is also unsubstantiated. Ecology has failed to provide any rational basis for the proposed scaling factor. The use of the emissions calculation and scaling factor are not tied to or derived from a TAP's chemical or physical properties or any operational data. The scaled values do not reflect the fact that emissions rates for specific TAPs are non-linear and diffusion-limited and may plateau or decline at higher flows. Therefore, they do not accurately represent the TAPs emitted. Requiring scaled values will therefore yield systematic inflation and overestimation of emissions, resulting in manufactured violations based on inappropriately scaled emission rates. Compliance should not be determined by calculated values that are premised upon an unsubstantiated scaling factor. Where any scaling factor may be needed, it must be justified in the first instance. Here, there is no evidence that emissions would exceed the regulatory limits at higher flows to warrant the use of scaled values to determine compliance.

Proposed Condition 5.e also conflicts with EPA guidance and existing policy on source testing because it would result in emission rates that are not representative. As noted above, EPA guidance emphasizes that the key to performance testing is that it must be representative. Thus, EPA recommends testing under operating conditions that produce the highest emissions or loading to a control device. By relying on an overly conservative scaled value, Ecology's proposed Condition 5.e results in emission rates that are not representative but instead overstated. If the use of a scaling factor can be justified in the first instance, any scaling factor that is relied upon should be source-specific and empirically derived in order to be representative.

Based on all the above, Ecology has acted arbitrarily and capriciously in including Condition 5.e. This deviation from the regulations is unsubstantiated and unsupported by any reasonable explanation by Ecology. The regulations do not permit overly conservative, non-representative scaling for compliance purposes. Moreover, Ecology's attempt to use a non-promulgated scaling factor violates the Administrative Procedure Act. Ecology cannot impose new, binding substantive standards on H2C without using the rulemaking process.

Lastly, proposed Condition 5.e is also vague and ambiguous, complicating both compliance and enforcement. It is unclear whether compliance will be assessed based on the measured (actual) emissions or the scaled, calculated emissions. This could result in situations in which H2C is compliant with regulatory limits based on measured emissions, but the calculated emissions exceed regulatory limits, which may be viewed or interpreted by Ecology as non-compliance. This vague and ambiguous condition creates uncertainty with respect to compliance, as well as the potential for inconsistent and arbitrary enforcement.

Requested Change: H2C requests that Ecology delete proposed Condition 5.e from the Approval Order.

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Comment #4: References to the TSD are confusing, arbitrary and overly burdensome to implement.

Attempted incorporation and cross-referencing of the TSD in the Approval Order (Summary, Legal Authority, 2.b.vii, 2.c.iii, 6.c.i.B), while stating that the TSD is non-enforceable is inappropriate, internally inconsistent, and creates confusion and impermissible ambiguity for H2C, Inspectors and the Public.

The draft NOC Approval Order explicitly states that the TSD *"is not an enforceable document."* However, it immediately contradicts itself by stating: *"A table or figure within the TSD may be cited within this NOC Approval Order, thereby making the cited material part of this enforceable document."* This inappropriately attempts to transform sections of an inherently non-enforceable basis document into binding conditions. This "incorporation by reference" mechanism impermissibly expands the enforceable permit or order to a background narrative document, creating an ambiguous gray area for compliance and enforcement.

Consistent with the federal Clean Air Act framework, TSDs, like Statements of Basis prepared by EPA pursuant to 40 C.F.R. 70.7(a), are not part of permits or approval orders. TSDs are not enforceable, do not set limits and do not otherwise create obligations. This fundamental premise has been affirmed by EPA (see, e.g., *In the Matter of Maimonides Medical Center*, Petition Number II-2001-04). The purpose of TSDs and Statements of Basis are solely to provide an explanation of the legal and factual basis for the proposed conditions. Ecology does not have the regulatory basis or authority to make a TSD or any portion thereof enforceable and cannot circumvent the existing regulatory framework by improperly attempting to incorporate an unenforceable document into an enforceable approval order.

The Clean Air Act permitting framework reinforces this point. Under 40 CFR § 70.6(a)(1), a permit must include "emissions limitations and standards" and the related operational requirements necessary to assure compliance with all applicable requirements. Similarly, WAC 173-401-600(1) requires that "[e]ach permit shall contain terms and conditions that assure compliance with all applicable requirements at the time of permit issuance," and WAC 173-401-605 requires that "[e]ach permit shall contain emission limitations and standards, including those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance."

In this instance, Ecology has improperly attempted to incorporate portions of a non-enforceable document in place of including those limitations and standards directly in the Approval Order. Washington administrative law and regional agency frameworks explicitly state that a Statement of Basis or Technical Support Document (TSD) holds no independent legal authority. For example, regional authorities like the Puget Sound Clean Air Agency and Olympic Region Clean Air Agency, explicitly label these files with the mandate: 'Unlike the permit, this document is not legally enforceable.'

Unlike standard Department of Ecology air quality permits, the TSD for approval order DE26NWP-002 lacks a clear, upfront disclaimer stating that the document is *"strictly for background information and is not enforceable."* By omitting this standard boilerplate language

H2C Public Comments - Draft Air Approval Order DE26NWP-002

while simultaneously cross-referencing the TSD figures in an attempt to make cited portions of the TSD part of the enforceable Approval Order, Ecology is creating impermissible ambiguity. This creates uncertainty in distinguishing between non-binding material and purportedly enforceable mandates. The attempt to make portions of the TSD enforceable rather than having all conditions within the enforceable Approval Order also forces H2C to toggle between two documents to ensure day-to-day compliance. This is burdensome and creates the potential for uncertainty and ambiguity in compliance and enforcement. Permitting conditions must be clear, bright-line, and definitive.

Requested Change: H2C requests that Ecology include any values or limitations that H2C is obligated to comply with from TSD Table 1, Table 2, Table A-1, and Table A-2 directly in the Approval Order, and delete the following statement: *“A table or figure within the TSD may be cited within this NOC Approval Order, thereby making the cited material part of this enforceable document.”*

H2C Public Comments - Draft Air Approval Order DE26NWP-002

Comment #5: Condition 2.b.i is confusing and should be rewritten.

2.b.i: The total hours of operation of the 241-SY Stationary Ventilation Exhausters must not exceed 72 hours during the decant operations, as presented in the NOC application, to prepare 241-SY for receipt of wastes from other tank farms. Hours of operation for normal operations, as presented in the NOC application, is unlimited.

Requested Change: H2C requests that the condition be rewritten as follows: “*Normal operations are unconstrained in terms of hours; preparatory decant operations of the exhausters as described in the application shall not exceed 672 hours.*”

Comment #6: Table 1 description is inaccurate.

296-S-26 and 296-S-27 as shown in Table 1 are not accurate. Each of those units are an “exhauster train” not an exhauster.

Requested Change: H2C requests that the description be changed to read “*One of two parallel exhauster trains operating together or independently, as needed*”.

Comment #7: Inclusion of non-emission points in Table 1.

Inclusion of the Air Inlet Station and the Annulus exhauster in Table 1 of the Approval order are not appropriate. These pieces of equipment were not included in the NOC application, nor are they considered emission point sources. WAC 173-400-110(3)(b) exempts these pieces of equipment from the permitting process because H2C is not increasing an emission unit or activity specific emission limit. Any emission arising from this equipment would be considered diffuse and fugitive, and is not subject to the permitting authority.

Requested Change: H2C requests that Ecology remove the Air Inlet Station, and the Annulus exhauster from Table 1, Approved equipment and Activities, of the Approval order.