

June 29, 2021

Daina McFadden  
State of Washington Department of Ecology  
3100 Port of Benton Blvd  
Richland WA 99354

RECEIVED  
JUL 6 2021  
Department of Ecology  
NWP - Richland

**Comments on Class 2 Permit Modification to Add Steam Stripping (supplemental organic waste treatment) to the 200-Area Effluent Treatment Facility (ETF).**

Dear Ms. McFadden:

I am writing in response to the public comment period (June 23, 2021 to August 22, 2021) for the proposed ETF Class 2 Permit Modification<sup>1</sup>. The Class 2 Permit Modification is proposed in order to install a steam stripping treatment unit for supplemental organics, specifically acetonitrile, for which a 2 weight percent solution will be produced. The proposed changes in this package are related to the recent comment period for the ETF delisting petition.

1. Permit condition III.3.J.9 states: “Prior to processing waste through the steam stripper system, the Permittees must provide to Ecology the treatment and disposal pathway for the concentrated acetonitrile distillate secondary waste stream.”

I do not believe a permit should be allowed for construction when there is an unknown disposal path and unknown risks/costs, and with additional constituents present in the waste also unknown. This new waste stream is another example of waste proliferation from WTP (another is the accumulation of loaded cesium ion exchange columns from LAWPS). Can Ecology provide a list of the total volume of waste going into WTP and the total volume of effluents/concentrates/brines/leachates/cesium columns going out?

2. Addendum B.12, Section B.2.2.2 states: “For a waste stream with organic concentrations higher than the delisting treatability envelope, the 200 Area ETF can be configured to operate the steam stripper to remove organics not effectively destroyed in the UV/OX unit.”

The proposed permit omits information that the treatability envelope is incomplete, and will be edited as time goes along (plans are in progress to add constituents). This was made clear in the recent delisting petition update. Again – why grant a permit when the work is not done and the risks are not understood?

---

<sup>1</sup> Review materials were provided with Letter 21-ECD-001705, “Submittal of Class 2 Permit Modification Notification to the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion for the Liquid Effluent Retention Facility and the 200 Area Effluent Treatment Facility [S-2-8, T-2-8],” June 21, 2021.

3. Addendum B.24 states: “A secondary waste from the primary treatment train is generated from operation of the steam strippers. This waste stream is condensate from the stream stripper overheads. This waste stream will be transferred to an authorized dangerous waste facility for additional treatment.” Also Addendum C.13 states: “The distillate from steam stripping, containing essentially all acetonitrile present, will be accumulated prior to treatment at an offsite permitted treatment, storage, and disposal facility.”

I believe Ecology should insist that any selected “dangerous waste facility” be located on the Hanford Site. Tank related liquid waste including the acetonitrile concentrate should not be shipped to Perma-Fix Northwest, for example, due to its poor performance record and proximity to the groundwater and Richland residents. Any dangerous waste facility used should be required to have an up to date EIS and current (non-expired) dangerous waste permit and these are not true of PFNW.

Further, the composition of the distillate is unknown due to the absence of an integrated WTP/EMF pilot plant. What is the expected overall composition? How much tritium and other isotopes will be present? DOE should not be pushing WTP design and operability risks on the public by relying on PFNW. The combined radioactive and chemical risks should always be presented together, so that conditions are clearly stated.

4. Addendum C.56 states: “Additional organics compounds will be emitted when the stream stripper is in operation. The emissions are described in NOC-ENV-5503. The emissions fractions were determined using process simulation software.”

How was the process simulation software validated, when there is no integrated pilot plant data for comparison?

5. Addendum C.74 Primary Treatment train diagram.

The diagram in this figure identifies “vitrification tanks.” Shouldn’t these be labeled “verification” tanks?

6. Effluent Treatment Facility Acetonitrile Steam Stripping System Modification Traveler MT-50529 states: “Contaminant levels for Tritium and/or other expected radionuclides shall be confirmed and/or determined *during the design process*.”

Is the design process not complete? The radionuclide content is important and relevant, given that DOE is trading acetonitrile risk for tritium risk, per the radioactive air emissions notice of construction. Sometimes the rad content and the chemical content cannot be easily separated into Ecology scope and Department of Health scope, and sometimes the risks have synergy. Please provide the entire “expected” composition for chemicals and radionuclides, since the design should be complete before construction begins.

- Page 3-20 states: “The purpose of the first stage 60K-CO-001 Steam Stripper is to strip acetonitrile, acrylonitrile and other minor constituents from a waste water stream (influent) generated by upstream facility operations. The waste stream from 60K-CO-001 is condensed and pumped to the second stage 60K-CO-201 Concentrator to strip acetonitrile, acrylonitrile and other minor constituents from the waste stream.

Contrary to the page 3-20 statement about other constituents present, the maximum concentrations in Table 3-2 show that all other constituents are zero. If the maximum evaluated is zero, shouldn't the acceptance criteria also be zero in the LERF basins? Acetone exists in tank waste. N-NitrosoD is not defined. Separations are generally not 100% perfect, as is implied here. Can you clarify the data?

**Table 3-2. Maximum Bounding Process Stream Constituents.**

Constituent	Stream 302 Distillate to Distillate Storage Tank wt%
Water	98
Acetonitrile	2
Acrylonitrile	0
Acetone	0
N-NITROSOD	0
Air	0

Reference: H-2-839048

- The steam stripper is designed to cycle 10 times per year, but I could not find a total of the acetonitrile produced by WTP. What is the total mass of acetonitrile expected to be accumulated from WTP per year at ETF? According to the delisting petition this information should be available based on the amount projected to be created by incomplete combustion in the WTP LAW melters.
- It appears that the current proposal is solely to address an acetonitrile steam stripper, but there are other unknowns and chemicals of concern to be addressed “later.” There is no guarantee that there will be a future capability to treat future unknowns, leaving a considerable risk of what to do with non-compliant effluents from the WTP.

Thank you for considering these comments.