

Ventilation Upgrades for Hanford's Double-Shell Tanks

Responsiveness Summary



DEPARTMENT OF
ECOLOGY
State of Washington

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

September 27, 2011

Publication Number: 11-05-011

Responsiveness Summary

Prepared by:

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Nuclear Waste Program

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Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Summary of changes to the ventilation systems for some double-shell tanks at Hanford

The Washington State Department of Ecology (Ecology) held a comment period to vet our decision to issue a permit to the US Department of Energy to upgrade some ventilation systems at Hanford's double-shell tanks. The upgrades will protect workers and the environment from the fumes from some of Hanford's underground tanks.

Workers must mix the waste in the tanks thoroughly before sending it to the plant that will convert the waste to a safer glass form. The upgrades would install mixing equipment and new ventilation systems in three of Hanford's double-shell tank farms – AP, SY, and AY/AZ.

The proposed upgrades would increase emissions of dimethyl mercury. Under state regulations, this requires the US Department of Energy to submit a health impact analysis as part of a more detailed evaluation.

Ecology reviewed the health impact analysis and found that the emissions won't harm health or the environment.

Public Involvement Actions

The comment period was from August 1 to September 16, 2011. We intended to hold a 30-day comment period from August 1 to September 2. But we had a delay in getting the materials to the public information repositories, so we extended the comment period until September 16. We received two comments from the public. They are below.

1. James Bruvold – What is the source of the methyl mercury and what other gasses are anticipated to be emitted? And what are the best available controls technology being proposed?

Response: Dimethyl mercury (DMM) is formed in the waste tanks by the reaction of inorganic mercury compounds with organic compounds in the waste. DMM is not very water soluble, but is soluble in organic solutions so it will volatilize from the waste and is exhausted from the tank ventilation systems. The report "Potential Dimethyl Mercury Concentration in Waste and Organic Condensates" (<http://www5.hanford.gov/pdwdocs/fsd0001/osti/2005/I0046347.pdf>) has a more detailed description of the chemistry.

Table 2 in the draft notice of construction approval order (http://www.ecy.wa.gov/programs/nwp/sections/wasteman/wastemgmt/pdf/AOP/draft_NOC_approval_order.pdf) lists all gases regulated by the Washington Administrative Code (WAC 173-460), that could be emitted. As noted in the application, these potential emissions have a significant level of conservatism built into the calculations. This means we do not think the emission rates to be as high as estimated, but even at the estimated potential emission levels, we would not anticipate any health or environmental concerns.

The best available controls technology being proposed, as listed in the Approval Order (page 2), are a moisture de-entrainer, heater, prefilter, and a two-stage High Efficiency Particulate Air (HEPA) filtration system.

2. John Howieson – I would like to have more information about the health implications of the increased release of dimethyl mercury consequent to the proposed revision of the Hanford tank ventilation system. As you know, this substance is a potent neurotoxin. How much of an increase would result and what are the probable health risks?

Response: To determine if the tank ventilation systems emissions will pose significant toxicity risks, DOE/WRPS (Hanford contractor) calculated hazard quotients. A hazard quotient (HQ) equal to or greater than one would be cause for concern, and a HQ less than one indicates there is no appreciable health risk. Section 5.5.1 of the Technical Support Document (http://www.ecy.wa.gov/programs/nwp/sections/wasteman/wastemgmt/pdf/AOP/2nd_tier_support.pdf) shows the HQ for the maximum 30-year exposure to ventilation system-attributable DMM is 6.9E-06 (0.0000069). Likewise, the 70-year exposure HQ is 6.9E-07. Both exposure scenarios' HQs are far less than one.

The peak DMM concentration is likely to be 39-fold lower than the measured mean background concentration in Seattle and 519-fold lower than the mean measured background concentration in Antarctica. We assume the background DMM concentration at Hanford is similar to Seattle's concentration, but that the site could have a concentration as high as in Antarctica.

Assuming peak concentrations lasted 30 years, and included both the peak DMM from the ventilation system and the background concentrations, the HQ is of 2.8E-04 (using the Seattle background) and 3.6E-03 (using the Antarctica background). These HQs are far less than one. (Section 5.4.4.1 of the Technical Support Document)

Exposure to background DMM and the proposed ventilation systems DMM will pose no appreciable neurotoxic effect risk to people in public access areas near Hanford.

Public Involvement

We announced the comment period in the following ways:

- Emailing advance notice to the HanfordInfo listserv (about 700 subscribers).
- Emailing announcement to the HanfordInfo listserv at the start of the comment period with links to all materials.
- Emailing announcement of comment period extension.
- Mailing the public notice to the postal Hanford mailing list (825 addresses).
- Placing a legal classified advertisement in the *Tri-City Herald* on July 31, 2011.
- With a postcard to postal list announcing comment period extension.
- As an event on our Facebook Hanford Education and Outreach page.
- Displaying the public notice in the Nuclear Waste Program's office lobby
- Discussing the comment period in meetings with the Hanford Advisory Board's public involvement committee.

- Including the comment period on the TPA [Tri-Party Agreement] Events Calendar on our web site http://www.ecy.wa.gov/programs/nwp/PI/pdf/TPA_PI_Calendar.pdf
- In addition, the facilitators for the Hanford Advisory Board forwarded to the Board all the email announcements.

The public information repositories in Richland, Spokane, and Seattle, Washington and Portland, Oregon received the following:

- Draft permit
- Recommendation for approval of the health impact analysis.
- The application letter.
- The assessment of best available controls technology.
- The application supplement.
- Public notice.

This information, in hard copy, was also available at the Nuclear Waste Program office.

Attachments

The following information is attached to show the public involvement activities taken in support of the public comment period:

1. Public notice
2. Comment period extension postcard.
3. Public announcement classified advertisement
4. Notices sent to the Hanford Information email list

Ventilation upgrades for Hanford's double-shell tanks

The [Department of Ecology](#) invites public comment on a draft permit for air emissions from some of the underground double-shell waste tanks at Hanford.

Background

The U.S. Department of Energy Office of River Protection (ORP) wants to upgrade the ventilation system at the 241-AP, 241-SY, and 241-AY/AZ double-shell tank farms. The tanks hold huge volumes – 16 million gallons – of radioactive and chemically toxic waste left over from making plutonium. The waste will be converted to a safer glass form in the waste treatment plant ORP is now building.

Workers must mix waste in the tanks thoroughly before sending it to the waste treatment plant. The upgrades would install mixing equipment and new ventilation systems in three phases (AP, SY, and AY/AZ).

The proposed upgrades would increase emissions of dimethyl mercury. Under [Washington Administrative Code 173-460-090](#), this requires ORP to submit a health impact analysis as part of a more detailed evaluation.

What's next?

Ecology reviewed the health impact analysis. The results show the emissions won't harm human health or the environment. Please let us know if you think our decision to allow the upgrades will protect the environment, or what changes are needed to meet this goal. The following documents are available for public review:

- The draft permit.
- Recommendation for approval of the health impact analysis.
- The application letter.
- The assessment of best available controls technology.
- The application supplement.

WHY IT MATTERS

The upgrades will protect workers and the environment from the fumes from some of Hanford's underground double-shell waste tanks.

Public Comment Period

August 1 – September 2, 2011

Submit comments to:

Oliver Wang
3100 Port of Benton Blvd.
Richland, WA 99354
Fax: 509-372-7971
owan461@ecy.wa.gov

Document review locations

- Department of Ecology Nuclear Waste Program
3100 Port of Benton Blvd
Richland, WA 99354
(Call 509-372-7920 for appointment)
- Ecology's Nuclear Waste Program web site
www.ecy.wa.gov/programs/nwp/commentperiods.htm
- Hanford's Information Repositories (see page 2)

Special accommodations

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Public Comment Period ♦ Aug. 1–Sept. 2, 2011 Ventilation upgrades for Hanford’s double-shell tanks

How do I submit comments?

You can email, mail, or hand-deliver your comments to Oliver Wang (see sidebar on page 1). We prefer email. The deadline is September 2, 2011.

Will there be a public hearing?

We don’t plan to hold a hearing, but we’ll reconsider if there is strong public interest.

Hanford Public Information Repositories

Portland

Portland State University
Branford Price Millar Library
1875 SW Park Ave.
Attn: Claudia Weston 503-725-4542
Map: <http://www.pdx.edu/map.html>

Richland

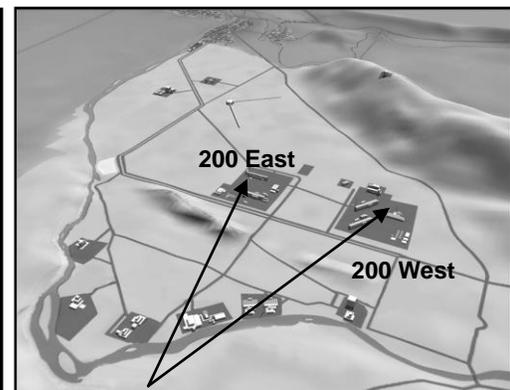
U.S. Dept of Energy Reading Room
Consolidated Information Center
2770 University Dr.
Attn: Janice Parthree 509-372-7443
Map: <http://tinyurl.com/2axam2>

Spokane

Gonzaga University
Foley Center
502 E. Boone Ave.
Attn: Linda Pierce 509-313-3834
Map: <http://tinyurl.com/2c6bpm>

Seattle

University of Washington
Suzzallo Library
Government Publications Division
Attn: Cass Hartlett 206-543-4363
Map: <http://tinyurl.com/m8ebj>



Double-shell tank farm locations at Hanford. (View is to the south.) The 241-AP and 241-AY/AZ tank farms are in 200 East Area. The 241-SY tank farm is in 200 West Area.

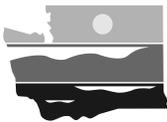


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Working with you for a better Washington



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Comment period extended to September 16!

Public Comment Period Aug. 1–Sept. ~~2~~**16**, 2011

Ventilation upgrades for
Hanford's double-shell tanks

We had some delay delivering the review materials to the Hanford Information Repositories, so we have extended this comment period for two weeks. The new deadline for comments is September 16. You can email your comments to Hanford@ecy.wa.gov, or mail or hand-deliver them to Oliver Wang at the address on the front of this card. We prefer email.

Visit our website for more information, the review materials and review locations.
www.ecy.wa.gov/programs/nwp/commentperiods.htm

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From: Brown, Madeleine (ECY)
Sent: Thursday, May 05, 2011 3:14 PM
To: 'Hanford-Info@listserv.wa.gov'
Subject: advance notice- comment period for air emissions permit

This is an announcement from the Washington Department of Ecology

We plan to start a public comment period in early June for an air emissions permit for Hanford tank farm operations.

The US Department of Energy Office of River Protection (ORP) wants to upgrade the ventilation system at the 24-SY, 241-AP, and 241-AY/AZ double-shell tank farms. The upgrade would install new ventilation systems. The upgrades would support the storage and transfer of wastes to the Waste Treatment Plant.

The ORP's application has identified potential emissions, as required in [WAC 173-460-150](#), from operation of the ventilation systems. The presence (under very conservative assumptions) of dimethyl mercury requires ORP to submit a health risk analysis as part of a Second Tier Review [[WAC 173-460-090](#)]. We are reviewing the final results and will share them during the public review. The results show the emissions have no potential to harm health or the environment.

The public comment period will run a minimum of 30 days. We do not plan to hold a public hearing, but we'll reconsider if there is significant public interest.

[Madeleine Cadbury Brown](#)

Washington State Department of Ecology

[Nuclear Waste Program](#)

(509) 372-7936

From: McFadden, Daina (ECY) [<mailto:dmc461@ECY.WA.GOV>]
Sent: Monday, August 01, 2011 3:04 PM
To: HANFORD-INFO@LISTSERV.WA.GOV
Subject: Comment period starts today on Ventilation Upgrades for Double-Shell Tanks

This is a message from the Washington State Department of Ecology

Comment period starts today on Ventilation Upgrades for Double-Shell Tanks

We invite you to comment on our proposed decision to permit the U.S. Department of Energy's Office of River Protection (ORP) to upgrade the ventilation system at some of Hanford's double-shell tank farms.

The comment period is from August 1 to September 2, 2011.

Why does this matter? Workers must mix waste in the tanks thoroughly before sending it to the Waste Treatment Plant. The upgrades would install mixing equipment and new ventilation systems in three phases (AP, SY, and AY/AZ).

The proposed upgrades would increase emissions of dimethyl mercury. Under [Washington Administrative Code 173-460-090](#), this requires ORP to submit a health impact analysis as part of a more detailed evaluation.

Ecology reviewed the health impact analysis. The results show the emissions won't harm health or the environment.

Now, it's your turn. Please let us know if you think our decision to allow the upgrades will protect the environment, or what changes are needed to meet this goal. Out for public review are:

- The [focus sheet](#)
- The draft permit
- Recommendation for approval of the health impact analysis
- The application letter
- The assessment of best available controls technology
- The application supplement

You can email, mail, or hand-deliver your comments to:

[Oliver Wang](#)

3100 Port of Benton Blvd

Richland, WA 99354

Fax: 509-372-7971

Email: owan461@ecy.wa.gov

We prefer email. The deadline is September 2, 2011.

You can review the documents by visiting Ecology's [Nuclear Waste Program website](#). Or you can visit Ecology's office – call 509-372-7920 to arrange your visit. Or, you can visit one of Hanford's information repositories.

From: Brown, Madeleine (ECY) [<mailto:mabr461@ECY.WA.GOV>]
Sent: Tuesday, August 23, 2011 4:05 PM
To: HANFORD-INFO@LISTSERV.WA.GOV
Subject: comment period extension

The comment period for the ventilation improvement for Hanford's double-shell tanks is extended to September 16.

Below is the notice of the comment period and links to the materials.

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