

**Approval of a Variance
To Land Disposal Restrictions at Hanford for
Contaminated Beryllium**

Responsiveness Summary



DEPARTMENT OF
ECOLOGY
State of Washington

**Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, WA 99354**

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RESPONSIVENESS SUMMARY

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Nuclear Waste Program

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Introduction

The Washington State Department of Ecology (Ecology) sought public comment on a proposed variance approval to [Land Disposal Restrictions](#) (LDR) of the [Dangerous Waste Regulations](#). The public comment period ran from April 1 through April 21, 2010.

The proposed action was to approve a site-specific variance to treatment standards of Washington Administrative Code ([WAC](#)) [173-303-140](#) for approximately 50 grams of radioactive beryllium powder (and the 250-gram vial it is in) from the Analytical Lab at Hanford's Plutonium Finishing Plant.

This responsiveness summary addresses comments received during the public comment period. The public commented on the following issues:

- The announcement's clarity and level of detail.
- Cleaning up Hanford, not burying waste in a cement form.
- Receipt of off-site waste.
- Risk to humans and the environment from the waste.

Responsiveness Summary

Comment 1:

This announcement does not tell anyone what the requirement is that the variance is for.

It should say that stabilization and burial proposal is instead of ... (usual required treatment and disposal)

Ecology's Response:

In accordance with Washington's Dangerous Waste Regulations (WAC 173-303), the variance petition proposes an alternative treatment standard for radioactive beryllium powder designated as P015 hazardous waste. Treatment standards in WAC 173-303-140 (Land Disposal Restrictions) are based on recovery. But there is no treatment facility capable of meeting LDR treatment requirements for this radioactive beryllium waste. Ecology reviewed the LDR variance petition and concluded that the proposed alternative treatment is just as, or more, protective of human health and the environment.

The information for public comment provided brief answers to a number of questions. Detailed technical and regulatory justifications are provided in the United States Department of Energy's LDR variance petition and Ecology's draft approval, which are attached for interested citizens.

Comment 2:

Thank you for sending the information on the LDR variance petition and comment periods. I hope that these are the proper email addresses for my comment. If not, please pass my comment on to the proper address.

I absolutely think that the Dept. of Energy, the Dept. of Ecology, and the DEQ are shirking their responsibility and promise to the people of Oregon and Washington to clean up Hanford. To me, this does not mean fusing nuclear waste in cement and burying it at Hanford. Nor does it mean accepting more waste into the Hanford site. The promise was to clean it up and close it down. I expect that to happen.

Thank you.

Ecology's Response:

We understand your issues as a concerned citizen. This small quantity of beryllium waste was generated at the Hanford Site's Plutonium Finishing Plant, not from areas outside Hanford. Therefore, it is the United States Department of Energy's responsibility to properly treat and dispose of the waste. Washington State's Dangerous Waste Regulations allow for site-specific LDR variances if there is enough justification and the alternative is just as, or more, protective of human health and the environment.

Ecology reviewed this LDR variance petition in accordance with WAC 173-303-140. We agree that the proposed LDR variance treatment and disposal method is appropriate and safe for workers, the public, and the environment. The proposed variance method is consistent with the overall Hanford strategy for treatment, storage, and disposal of mixed waste. More detailed technical and regulatory justifications are in the variance petition and Ecology's draft approval.

Comment 3:

Can you tell me the danger of 50 gm of beryllium powder? How many cancer cases can be directly attributed to this? What is its half life? When it eats through its storage container, how much ground water will be contaminated?

Thank you...

Ecology's Response:

Beryllium is the chemical element with the symbol *Be* and atomic number 4, with low density and high nuclear transparency. Beryllium is found naturally with other elements in minerals. This beryllium powder, along with other elemental commercial chemical products, was to be used as an emission specification standard to ensure accuracy of instruments. This beryllium

powder is unused, but is contaminated with radiological constituents due to storage and handling in a radiological contamination area.

Beryllium is a carcinogen and is toxic by contact, especially if inhaled. Swallowing beryllium has not been reported to cause effects on humans because very little beryllium is absorbed by the stomach and intestines.

This beryllium powder in its natural elemental form does not have a half life. It is slightly contaminated with radioactive isotopes (Am-241, Pu-238, Pu-239, Pu-241, and Pu-242). The half-life for these radioactive isotopes varies from 14 years (Pu-241) to 24,128 years (Pu-239). The slight radioactive contamination is the main reason for this LDR variance petition. With the proposed LDR variance treatment and long-term storage, there is little concern for cancer cases or ground water contamination.

The proposed LDR variance treatment and long-term disposal should eliminate any realistic cancer and toxicity concern. Beryllium will not “eat through its storage container” because it is a stable element.

The following actions will be taken to ensure that the storage container remains in good condition and protects the groundwater from contamination:

- The beryllium powder waste will be solidified in concrete at a state-approved dangerous waste permitted facility, Perma-Fix Northwest. The solidified waste will not exhibit any dangerous waste characteristics of ignitability, corrosivity, reactivity, or toxicity. When solidified, the leachability of the waste will be greatly reduced. And the low amount of annual precipitation at Hanford also reduces the likelihood of leaching.
- The solidified waste will be properly packaged into a United States Department of Transportation-approved container and returned to Hanford for disposal at the mixed waste disposal unit.

The mixed waste disposal unit is a double-lined landfill for disposal of solid mixed waste. It is compliant with Resource Conservation and Recovery Act requirements. The landfill has an earthen cover over a primary and secondary liner. The leachate collection and removal system is resistant to the stabilized beryllium waste and other mixed waste disposed in the landfill.

The combination of treating via solidification and of disposing in a permitted landfill will minimize the potential for groundwater contamination.

Ecology’s Dangerous Waste Regulations do allow for site-specific LDR variances if there is sound justification and the alternative is just as, or more, protective of human health and the environment. We reviewed this LDR variance petition in accordance with WAC 173-303-140 regulatory requirements, and concluded that the proposed LDR variance treatment and disposal method to be appropriate and safe for workers, the public and the environment.

Summary of Public Involvement Actions

We advised two separate listserv groups of our proposed variance approval. The Hanford-Info listserv has 643 subscribers, and the Ecology-WAC-Track listserv has 2,278 subscribers for a total of 2,921 subscribers. The listserv notices announced the comment period and directed readers to the Ecology website for more information.

We placed a notice of the comment period in the Ecology events calendar <http://apps.ecy.wa.gov/pubcalendar/calendar.asp>. We also announced the comment period in meetings with regional stakeholders. And we tweeted the start of the comment period.

We did not schedule a public hearing, nor did we receive a request to do so.

Attachments

1. Comment from Eugene Grohs
2. Comment from Jeanne Raymond
3. Comment from Nancy Matela
4. ListServ notices

From: Grohs, Eugene L [eugene.grohs@pnl.gov]
Sent: Thursday, April 01, 2010 8:56 AM
To: Brown, Madeleine (ECY)
Subject: RE: Public Comment Period starts today

This announcement does not tell anyone what the requirement is that the variance is for.

It should say that stabilization and burial proposal is instead of .(usual required treatment and disposal).

Gene Grohs
RCRASME
Environment, Health, Safety and Security

Pacific Northwest National Laboratory
902 Battelle Boulevard
P.O. Box 999, MSIN K3-75
Richland, WA 99352 USA
Tel: 509-375-2575
Cell: 509-539-3472
Fax: 509-375-4426
eugene.grohs@pnl.gov
www.pnl.gov

From:"Brown, Madeleine (ECY) [mailto:mabr461@ECY.WA.GOV]

From: Jeanne Raymond [raymondj@peak.org]
Sent: Friday, April 02, 2010 7:53 AM
To: Brown, Madeleine (ECY)
Cc: HANFORD-INFO@listserv.wa.gov; Wang, Oliver S. (ECY)
Subject : Re: Corrected instructions for finding the variance petition on Ecology's web site

Dear Madeleine Cadbury Brown, Dept. of Ecology, Nuclear Waste Program,

Thank you for sending the information on the LDR variance petition and comment periods. I hope that these are the proper email addresses for my comment. If not, please pass my comment on to the proper address.

I absolutely think that the Dept. of Energy, the Dept. of Ecology, and the DEQ are shirking their responsibility and promise to the people of Oregon and Washington to clean up Hanford. To me, this does not mean fusing nuclear waste in cement and burying it at Hanford. Nor does it mean accepting more waste into the Hanford site. The promise was to clean it up and close it down. I expect that to happen.

Thank you,
Jeanne Raymond
Corvallis, OR 97330

On Apr 1, 2010, at 2:16 PM, Brown, Madeleine (ECY) wrote:

From: Nancy Matela [nmatela@pacifier.com]
Sent: Friday, April 02, 2010 8:42 AM
To: Brown, Madeleine (ECY) .
Subject : RE: Corrected instructions for finding the variance petition on Ecology's web site

Can you tell me the danger of 50 gm of beryllium powder? How many cancer cases can be directly attributed to this? What is its half life? When it eats through its storage container, how much ground water will be contaminated?

Thank you ...
Nancy Matela
Citizen of Portland Brown, Madeleine (ECY) .

-----Original Message-----

<1...
From: Brown, Madeleine (ECY) [mailto:mabr461@ECY.WA.GOV]

You can submit comments via postal mail, fax, or email. Ecology prefers to receive comments via email.

From: Dumar, Laurie (ECY) [ldum461@ECy.wA.GOV]
Sent: Thursday, April 01, 2010 12:48 PM
To: ECOLOGY-WAC-TRACK@LISTSERV.WA.GOV
Subject: Public Comment Period On Approval of a Variance To Land Disposal Restrictions at Hanford

Public Comment Period On Approval of a Variance To Land Disposal Restrictions at Hanford

The Department of Ecology (Ecology) received a petition from the United States Department of Energy (USDOE) for a Land Disposal Restrictions (LDR) variance to bury radioactive beryllium powder. The comment period on Ecology's proposed approval of the petition starts April 1, 2010.

How much waste?

This petition is for 50 grams of radioactive beryllium powder (and the 250-gram vial it is in) from the Analytical Lab at Hanford's Plutonium Finishing Plant.

What will happen to the waste?

USDOE will send the beryllium powder to be stabilized at PermaFix Northwest, a Resource Conservation and Recovery Act (RCRA)-permitted treatment facility, in Richland, Washington. They will crush the glass vial with the beryllium powder and bind the waste in a solid matrix (such as cement) according to RCRA's treatment protocols.

As required by 40 Code of Federal Regulations (CFR) 268.48, the solid matrix will meet the non-wastewater standard for beryllium. PermaFix Northwest will sample the stabilized waste to ensure success of the LDR treatment. Then the treated beryllium powder waste will be returned to Hanford for burial at the mixed waste disposal unit.

Why does USDOE want to bury the waste at Hanford?

Burial is the safest option. The usual treatment to recover the beryllium metal is either direct physical removal or thermal recovery. Neither method is good in this case because the beryllium is contaminated. So USDOE requested a site-specific variance from the required treatment standards of Washington Administrative Code (WAC) 173-303-140.

What do the regulations say?

Dangerous waste regulations allow for a site-specific LDR variance if there is strong justification and the alternative is just as, or more, protective of human health and the environment. The LDR (WAC 173-303-140):

- Identifies dangerous wastes that are restricted from burial.
- Describes requirements for restricted wastes.
- Defines the circumstances under which a prohibited waste may continue to be buried.

The regulations are set forth by the Environmental Protection Agency in 10 CFR Part 268, which the state incorporated by reference, with changes in the LDR.

What is the decision process?

Ecology has the authority under WAC 173-303-140(2) (a) and 40 CFR 268.44(h)(2)(i) to approve the USDOE petition. Ecology plans to approve this variance request since we find it protective of human health, the environment, and the Hanford workers who handle the waste.

We will hold a 21-day public comment period on our proposed approval of USDOE's variance petition. It will begin April 1 and end on April 22, 2010. The USDOE variance petition is available on Ecology's website at www.ecv.wa.gov: click on Nuclear Waste Program and look under the "what's new" column. You can also find the variance petition at Hanford's public information repositories.

Hanford Public Information Repositories

Portland

Portland State University
Branford Price Millar Library
1875 SW Park Ave.
Attn: Claudia Weston 503-725-4542

Richland

U.S. Department of Energy Reading Room
Consolidated Information Center, Room 101-L
2770 University Dr.
Attn: Janice Parthree 509-372-7443

Spokane

Gonzaga University
Foley Center
502 E. Boone Ave.
Attn: Linda Pierce 509-323-3834

Seattle

University of Washington
Suzzallo Library
Government Publications Division
Attn: David Maack 206-543-4664

Send comments to

Oliver Wang
Nuclear Waste Program Office
3100 Port of Benton Blvd.
Richland, WA 99354
Fax 509-372-7971

Email Owan461@ecy.wa.gov

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Subject: Public Comment Period starts today

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