

**Heart of America Northwest**  
*Citizens' Guide to the Revised Draft (3/99)*  
**Hanford Remedial Action EIS (HRAEIS)**  
**And**  
**Comprehensive Land Use Plan (CLUP)**

Background:

USDOE dramatically revised this Environmental Impact Statement (EIS) following near universal condemnation of the prior draft. It now focuses primarily on designating land uses for development and preservation for the Hanford site and Hanford Reach of the Columbia River. Several alternative land use plans are presented. USDOE has a "preferred alternative", which would allow for large scale industrial development, and new Hanford production type missions in the Southeast areas of the site (North of Richland and West of the Columbia River).

The prior draft of the HRAEIS was based on USDOE asserting that it could set cleanup levels and designate future site use scenarios, on which acceptable levels of cleanup were to be based. *For instance, USDOE said that it would plan cleanup based on limiting future public use of the Hanford Reach of the Columbia River to 8 hours a day, seven days a year (56 hours a year).* However, only the cleanup regulators (USEPA and Washington Ecology) can set remedial action levels, while state and federal laws determine the cleanup standard and appropriateness of future use scenarios (alternative maximum reasonable exposure scenarios).

USDOE's Preferred Alternative Land Use Map:

1. Opens the Southeast portion of the site to industrial use. Area impacted is near Columbia River and is several times larger than the current areas used by USDOE for the 300 Area and FFTF reactor.
2. Opens a huge portion of the site to Mining and Grazing, while calling this "conservation".
3. Preserves Wahluke Slope and ALE, with exception of mineral/natural gas rights.
4. Expands area of USDOE/nuclear industrial use outside the "squared off" boundaries of the 200 Area (Central Plateau). USDOE had agreed to follow Hanford Future Site Uses Working Group.
5. Expressly notes disagreement with Native American Tribes over treaty rights. Fails to live up to federal trust requirements, including low priority of transfer of land for non-federal uses.

Human Health Risks and Contamination Not Considered in DOE Plan:

1. USDOE proposes to open land up for development and "recreation" prior to full remediation for unrestricted use, based on the maximum reasonable exposure scenario. The land use plan wrongly, and illegally, assumes that signs and "institutional controls" will prevent exposure to contamination. Fails to address extremely high risks from exposure due to USDOE plans to defer cleanup of groundwater along River. Fails to address USDOE deferral of cleanup along River. Designating shorelines for higher intensity use while contamination remains is not permissible.
2. USDOE proposes to open up areas for private industrial uses outside of existing developed areas, including areas where there may be uninvestigated hazardous waste disposal sites.
3. USDOE proposes to open up areas for private industrial use, while the 300 Area and FFTF are still used for dangerous nuclear missions. Fails to consider that employees of new users will be members of the public, and radiation protectiveness standards for the public must apply to them.
4. Fails to recognize cleanup as Hanford's primary, overriding mission. Treats economic development and new production missions as equivalent missions for USDOE-RL. Fails to address restrictions on using cleanup funds and resources (Environmental Management Account) for economic development purposes.

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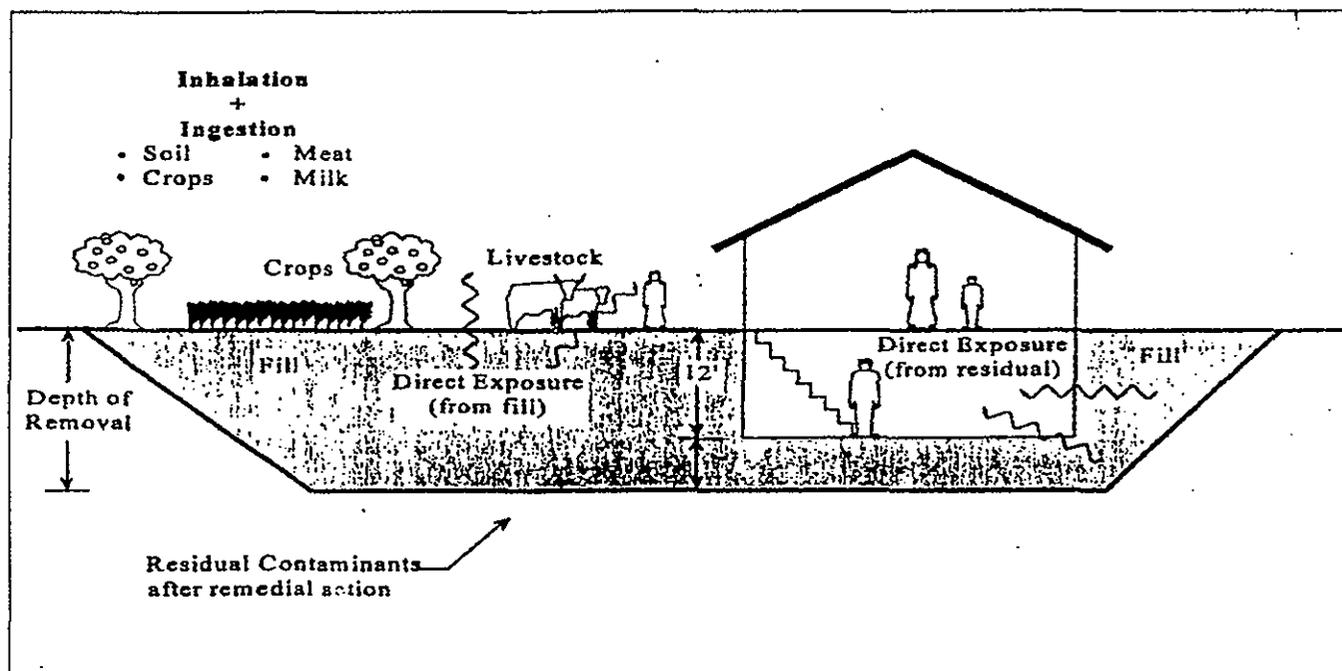
## Can You Find How Many Things Are Wrong or Missing From This Official Diagram of How Future Risk From Living Along the Columbia River Was Calculated?

This diagram represents USDOE's view (with Ecology and EPA approval) of how to calculate the future risk of exposure to the contamination left behind after "clean up" is completed. Based on the exposure scenario in the diagram, the agencies are saying they will set a cleanup level to prevent unacceptable levels of exposure to carcinogens (including radiation) and toxic wastes left in the soil of Hanford's 100 Areas.

*What are your views of the reasonable maximum exposure scenario?*

*Do you think the assumptions in this diagram represent the maximum reasonably foreseeable exposures from all pathways?*

Hints: Think about foreseeable use of the area by people unlike yourself and who would have the highest exposures (i.e., children or adults; other cultures). What other ways (pathways) may people get exposed?



DOE/RL-96-17

1. Adult in basement instead of a child: Common sense dictates that the most sensitive population exposed in future residences will be children (inc. in utero). Reasonable maximum exposure scenario required to be used pursuant to state law (WAC 173-340-708(3)(a), see pending rule) would be for a bedroom and/or accessory living unit in basement with children present. Institutional controls must be assumed to fail where there is a history of local governments in state either allowing such units or such units being widely established despite zoning.
2. Time exposed: USDOE assumes exposure is 25% of time (DOE/RL-96-17 @B2). Realistic scenario would be child exposed 100% of time through infiltration or direct outside exposure. Washington State law (MTCA) requires use of 100% for carcinogen exposure to contaminated soils (WAC 340-740(b)(iv,c)). Under Washington law, 25% frequency of exposure is presumption for public exposure to residual soil contamination at a commercial gas station (WAC 173-340-360).

## What's Missing From Exposure Model Diagram continued:

3. Area is along Columbia River, but exposure through fish and contaminated groundwater entering River is missing: State law requires cleanup to be based on assuming that future residents will eat a *minimum* of 54 grams of fish per day for 30 years, which is 19.7 kg per year. (WAC 173-340-730(B)). USDOE's model illegally replaces this with an assumption four times lower at 5kg per year (p.B-7). Given that this is an area along the River and likely to attract avid River users or Native Americans exercising their treaty rights to fish from the River and maintain traditional cultural usage of River fish, a minimum reasonable assumption would be on the order of 3 pounds a week (343 kg/year; 68x USDOE's assumption). USDOE fails to assume any exposure to contaminated groundwater entering Columbia River, despite obvious attraction of River use to nearby residents. USDOE asserts that: "access control by the DOE currently prevents potential exposure to contaminated groundwater" entering the River. (DOE/RL-96-102 @ 19). Yet, numerous public river users currently wade or walk above the low water line. DOE is also proposing that the groundwater not be remediated to within Drinking Water Standards (which are set at levels allowing 1 fatal cancer per 10,000 exposed adults) except by natural radioactive decay over hundreds of years.
4. Groundwater is not used for drinking or irrigation (nor are the residents exposed to the groundwater contaminated at levels up to 2,000 times Drinking Water Standards along the River shoreline): Washington State law requires the use of an assumption that groundwater will be used and will be an exposure path when calculating cleanup levels and residual risks (WAC 173-340-720(2)(a)). Groundwater contamination levels are currently as high as 2,000 times the Drinking Water Standard for some carcinogenic contaminants. Since new withdrawals of water from the Columbia are not currently allowed, where is it most likely that future residents or farmers will turn when they have been told that the area has been cleaned up enough for them to live on? State law also requires cleanup to be based on unrestricted use and active efforts at remediation to achieve the most permanent cleanup. WAC 740(2)(a) and 350. Stated policy and Ecology's proposed rule does not allow extending the restoration timeframe to hundreds of years for radioactive decay as a substitute for active cleanup. WAC 350(E)(1)(5) pending. USDOE's assumptions also fail to include the dose from future exposure to increasing contamination in groundwater coming from upgradient contaminated sites at Hanford. Yet federal and state laws require cleanup based on a maximum risk from the contamination coming from all sources at the site.
5. Exposure is calculated based on the house built on clean fill to 15 feet, and the soil around the house having clean fill: However, any soil area where the average dose is below an action level of 15 millirems ( a risk of 3 fatal cancers for every 10,000 adults exposed ) will not be remediated, and other areas will only be remediated to reach the 15 millirem cleanup level. Thus, many areas may have homes and children's play areas where clean fill has not replaced the top 15 feet. Soil ingestion rate assumption is 50% of minimum assumption required to be used in cleanups in Washington State (36.5g/yr v. 73 g/yr; SEE DOE/RL 96-17 @ B-7 and WAC 740(B)). For this area, the assumption should be adjusted upward, due to windblown soil and other factors.
6. Residences will be on the edge of the most contaminated area in the hemisphere, but the model pretends that residents (especially children) will not wander off to other Hanford contaminated areas or receive exposure from them due to wind, accidental releases, spread of contaminated groundwater: Reactor sites nearby will have structures remaining that are sources of contamination and direct radiation exposure along with the soil under them. Many of Hanford's contaminated structures and sites are "attractive nuisances". Warning signs are not likely to stop exposures. Federal and state cleanup laws require calculating the cleanup level based on the cumulative risk from carcinogens or toxic waste exposure from all sources remaining. Current proposals to leave sources, partially remediate to 15 or more millirems, use engineered or institutional controls to prevent exposure are not considered in this model. Current assumptions would make this cleanup decision in a vacuum without understanding the cumulative impacts from other Hanford sites.
7. Risk to Sensitive Ecosystems or Potentially Endangered Species is Not Used as a Further Basis for Determining the Cleanup and remedial action levels:

### What Do You Think Are Other Reasonably Foreseeable Maximum Exposure Scenarios?

- 1.
- 2.

## Heart of America Northwest

## Citizens' Guide

to

The Debate Over Clean-Up Standards  
and Risk

## in Hanford Clean-Up Decisions

Whose Standard:	Radiation Dose:	Risk of Fatal Cancer:	
Washington State Law for Cleanups (MTCA)	(risk standard applies to all carcinogens, including radiation)	1 per 100,000 sensitive persons exposed (e.g: children) (1xE-5, or "one times ten to the minus fifth")	Total risk from all carcinogens at site; Applies to all cleanups, including federal facilities.
Federal Superfund Law (CERCLA) run by EPA	(5 millirem)	Maximum risk of 1 per 10,000 (1xE-4)	Risk based standard for residual contamination covers all carcinogens.
Nuclear Regulatory Commission (NRC)	25 millirem	equals a risk of >5 per 10,000 adults exposed (5xE-4)	Recently issued; does not apply to Hanford; applies to NRC licensees. State standards are allowed to be stricter.
Washington Dept. of Health (proposed rule)	25 millirem average dose	>5 per 10,000 (5xE-4)	Not dose to maximum exposed citizen.
Federal Drinking Water Standard (EPA)	4 millirem dose to organs	1 per 10,000	
Hanford Clean-Up level proposed for area along Columbia River (100 Areas)	15 millirems plus exposure to other carcinogens	3 per 10,000 from radiation plus 1 per 10,000 from other carcinogens = (4xE-4)	USDOE's assumptions to calculate exposure violate state cleanup standards: children living in area are likely to have far higher dose than 15 millirem and much greater risk.