

Historic orchard data from Agricultural Census.



Historic orchard lands in Wenatchee

Station 1: Mapping



Ecology staff has collected over 600 soil samples on private and public property since 2017.

Ecology analyzed historic air photos taken between late 1940's-1950's to determine locations of orchards in Central Washington. The overlapping photos provide a high degree of accuracy and are ground-truthed during soil sampling.



Historic orchard lands in Yakima and Selah

Washington has studied and mapped the extent of lead and arsenic contamination.

Our maps are highly accurate and use historic air photo interpretation to locate historic orchard lands.

Nearly 200 square miles of former orchard lands have been identified in Central Washington – Chelan, Yakima, Okanagan, **Benton and Douglas Counties.**





Historic orchards near Lake Chelan



Ecology is finding contamination levels in old orchards at levels that are 10x the lead cleanup standard and almost 15x the state standard for arsenic.



Concentrations of arsenic on old orchards near Wenatchee taken in 2019 with levels ranging of up to 5 times the state cleanup level. Samples show that active orchards may only be partly contaminated – only if they were active from 1900-1950.

Station 1: Data & Sampling











Concentrations of lead on old orchards near Wenatchee taken in 2019 with levels ranging from twice to more than 10 times the state cleanup level. Samples show that active orchards may only be partly contaminated – only if they were active from 1900-1950.





The SEPA review process helps agency decision-makers, applicants, and the public understand how the entire proposal will affect the environment. Ecology oversees the rules and guidance for the state and we provide technical assistance to agencies, applicants, and citizens as they participate in the SEPA review process. We also serve as the SEPA lead or co-lead agency for some proposals.

I AM AN ATTORNEY, BUT I AM NOT YOUR ATTORNEY. PLEASE DO NOT ASK FOR LEGAL ADVICE.

Station 3: Legal Issues & Liability



Our cleanup law evolved from citizens' Initiative 97 in 1988 and became law in 1989.

key principles:

- The polluter pays.
- Cleanups should be as permanent as possible.
- Public participation is crucial.
- Processes should demonstrate a bias toward action, permanence, and innovation.











Station 4: Cleanup Measures

Mixing

- Critical to evaluate Pb/As concentrations at depth
- Only successful with shallow, lowlevel contamination
- May require import of clean dilution soil
- Confirmation sampling required

Only recommended when contamination is shallow

- Generally requires disposal at a licensed landfill
- Often requires topsoil import restore organic material

Capping

- Minimum 6" soil clean soil
- Minimum 4" rock or gravel
- Any other permanent surface
- Marker material required beneath non-permanent surfaces
- Institutional controls required

Consolidation and Capping

- No restrictions on other areas
- Same cap requirements
- Permanent surfaces
- Limited institutional controls

Excavation

| | <u>Before Mixing</u> |
|--------------|----------------------|
| <u>Depth</u> | <u>(</u> |
| 0-1' bgs | |
| 1-2' bgs | |
| 2-3' bgs | |
| 3-4' bgs | |
| | |

Example Distribution





After Mixing



| 20 ppm | sod/organic layer |
|-------------------|-------------------|
| 60 ppm | |
| 90 ppm | |
| 40 ppm | |
| 30 ppm | |
| 20 ppm | |
| | |
| Arsenic concentra | tion |