DEPARTMENT OF ECOLOGY
State of Washington

Rayonier Mill Off-Property Soil Dioxin Study

Toxics Cleanup Program **July 2011**

Draft Report Available for Public Review and Comment

In 2008, Department of Ecology analyzed one soil sample from 85 different locations near and downwind of the Rayonier Mill property. The purpose of this sampling is to help determine:

- The concentration of dioxins and furans (referred to as dioxins in this fact sheet) in surface soils that might have been impacted by air emissions from the Rayonier Mill; and
- The former Rayonier Mill's contribution to measured dioxin contamination, compared to other possible sources.

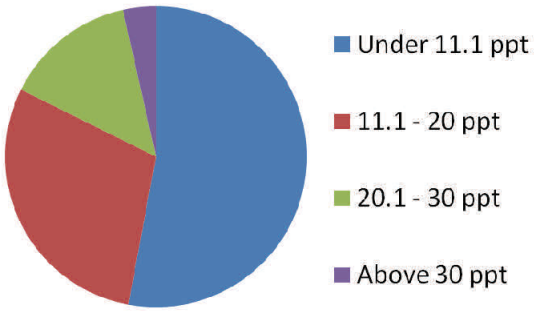
Ecology released data in February of 2009 and now has further evaluation of the study. The draft report is ready for public review at the locations listed in the box on the right. Please submit comments by August 30, 2011.

Study Conclusions

Chemical and spatial patterns in the data indicate that the former Rayonier Mill was one source of dioxins. Other sources also contributed to the dioxins found in this study. Ecology did not design this study to determine the boundaries of Rayonier's responsibility or assess human health risk. Instead, it identifies areas of concern and potential sources. Under state cleanup law, Rayonier must address its off-property dioxin contamination.

Figure 1 compares the data to a level of 11.1 parts per trillion (ppt) TEQ.* This is the "Method B" direct contact value for protection of human health. Above 11.1 ppt, there is greater than a one-in-a-million additional cancer risk, depending on type and length of exposure. Forty samples had above 11.1 ppt TEQ.

Figure 1. Soil dioxin concentrations in parts per trillion (ppt) TEQ*



**TEQ is a measure of the toxicity of a dioxin mixture. For more on TEQs, see the Reading Guide, available online and at the locations listed to the right.*

Comments Accepted

July 14—August 30, 2011

Submit Comments and Questions to:

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Public involvement contact:

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E-mail: Hannah.Aoyagi@ecy.wa.gov

DOCUMENT REVIEW LOCATIONS

Port Angeles Public Library
2210 South Peabody Street
Port Angeles, WA 98362
Phone: (360) 417-8500

Peninsula College
1502 E. Lauridsen Blvd.
Port Angeles, WA 98362
Phone: (360) 417-6280

WA Department of Ecology Southwest Regional Office
300 Desmond Drive SE
Lacey, WA 98503

By appointment only:

Contact Debbie Nelson, Debbie.Nelson@ecy.wa.gov or (360) 407-6365

Ecology's Toxics Cleanup website
http://www.ecy.wa.gov/programs/tcp/sites_brochure/rayonierOffProp/rayonierOffPr_hp.htm

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Ecology's Next Steps

Ecology will respond to questions at the end of the comment period and address general public concerns in a responsiveness summary. The responsiveness summary will be available at locations listed on page one.

Ecology has shared these results with Rayonier and will ask the company to address dioxins outside of its property. Ecology will work with Rayonier on a legal agreement and a plan for the next steps.

Study Findings

For a detailed summary of the report, see the Reading Guide (locations listed on page one).

Chemical patterns: There are many different types of dioxins and related furans. Different sources have certain proportions of dioxins and furans. The lab looked at the 17 dioxins and furans that are considered most toxic. The study looked at possible sources by analyzing for certain patterns. This is a complex process because samples rarely have dioxins from only one source.

All of the samples had one or more of three patterns (Figure 2). Each of these patterns may represent a single source or a mix of different sources.

Sources of dioxins: The next step was to see if these patterns matched any known sources of dioxins. Ecology gathered data on many different known dioxin sources, including hog fuel boilers that burned saltwater laden wood to fuel pulp mills.

The source three pattern (Figure 2) closely matches a hog fuel boiler source. There were several hog fuel boilers in Port Angeles, including the Rayonier Mill. Source one is a profile similar to tire burning or possibly a certain pesticide. Source two matches other urban soils and some hog fuel boilers, and may be a mix of sources.

Magnitude: The dioxin levels found in Port Angeles appear higher than in typical urban areas, based on available data. However, when source three dioxins are removed, the overall levels look more like a typical urban area.

Spatial patterns: Total dioxins from all three sources do not follow a spatial trend. However, each of the three sources looks distinct when mapped out separately. Higher concentrations of source one are mainly found on a few scattered properties. Source two is more uniform across the area investigated. Source three is highest closer to the Rayonier Mill (Figure 3).

Mass balance: Ecology also did a rough calculation and found that Rayonier's past emissions *could* account for the levels of source three dioxins seen in soil within the area investigated. This does not rule out other sources that could have contributed to source three dioxins.

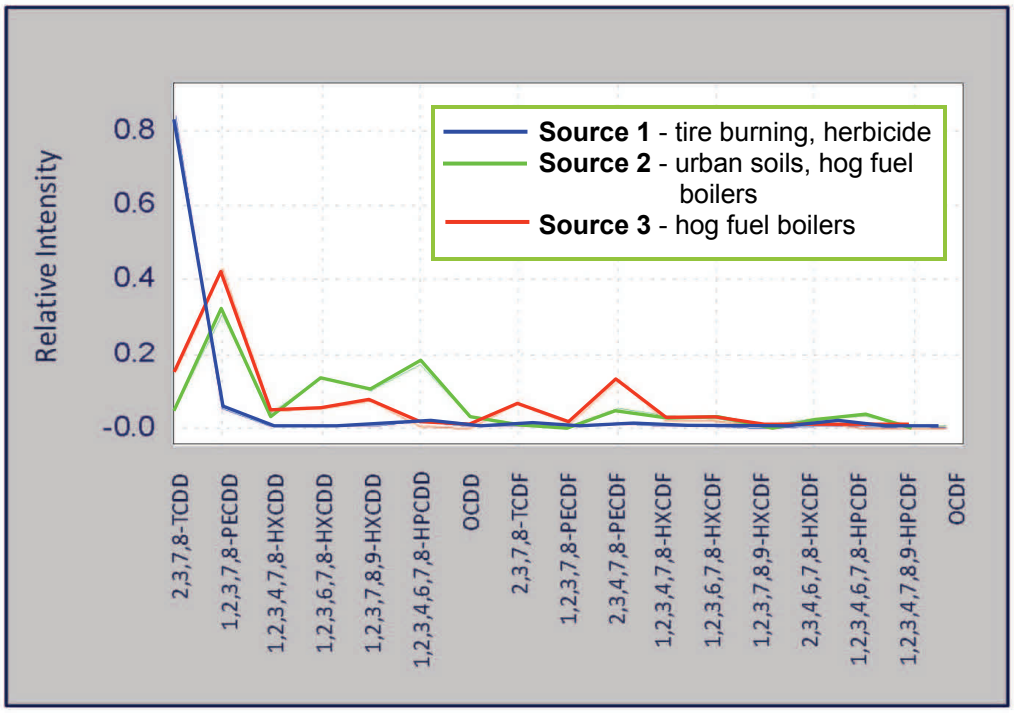

Figure 2. Dioxin patterns found in Port Angeles soils shown as fractions of TEQ

Keep In Mind...

- Dioxins are unintentional byproducts of human activities and natural processes. They do not break down easily in the environment and, as a result, are found everywhere.
- A single sample cannot be used to say whether a property is contaminated or not. Dioxin levels can vary widely, even within a single property. Other parts of a property may not have the same results.
- A single sample cannot predict if there is a health risk on a property. Samples were taken from the least disturbed part of each property in the study, which may not be an area where people are exposed.

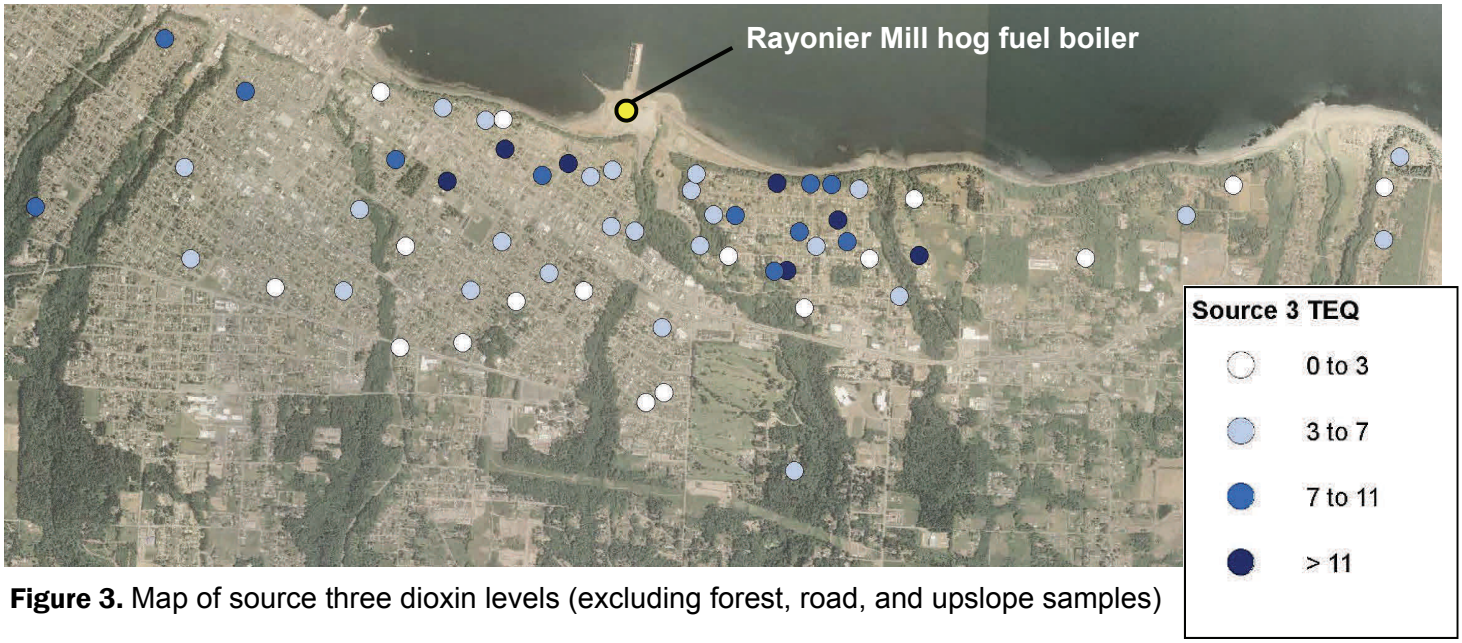

Figure 3. Map of source three dioxin levels (excluding forest, road, and upslope samples)

Healthy Actions

If you or members of your household are concerned, you can reduce exposure to potentially contaminated soil by:

- Washing your hands after working or playing outside, and before eating.
- Scrubbing fruits and vegetables from the garden.
- Vacuuming regularly and dusting with a damp cloth.
- Keeping children's toys clean.

Also, dioxins from air emissions tend to stay in the upper layer of soil until they are disturbed. Landscaping and development can dilute these dioxins, while grass and other ground cover can help prevent exposure.

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Rayonier Mill Off-Property Soil Dioxin Study Clallam County, WA

Study Results Available

Public Comment Period:
July 14-August 30, 2011

If you need this publication in an alternative format, call reception at (360) 407-6300. Persons with hearing loss, call 711 for Washington Relay Service. Persons with speech disability call 877-833-6341.

Technical Workshop & Public Open House

August 3, 2011
Port Angeles Senior Center
728 E. 7th Street, Port Angeles, 360-457-7004

Technical Workshop, Craft Room 3:00—5:00 p.m.
Presentation and discussion with Greg Glass about the analysis and conclusions of this study. **This event is also open to the public.**

Open House, Multi-purpose Room 6:30—8:30 p.m.

6:30—7:00 p.m.	Open House session
7:00—8:00 p.m.	Presentation on the results of the study and Ecology's next steps Question & answer
8:00—8:30 p.m.	Open House session

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