



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
West Coast Region  
Oregon and Washington Coastal Area Office  
510 Desmond Drive SE, Suite 103  
Lacey WA, 98503

December 20, 2013

Mr. Shingo Yamazaki  
Industrial Section  
P.O. Box 47600  
Olympia, WA 98504-7600

RE: Weyerhaeuser NPDES Concerns, Permit WA-0000124

Dear Mr. Yamazaki,

Please consider the enclosed comments from the National Marine Fisheries Service regarding the above referenced permit proposal. These comments are provided in deference to NMFS role in managing public trust fishery resources, and our role in working towards the recovery of specific stocks of salmon listed under the Endangered Species Act. As there will be no federal nexus established with the issuance of this permit through the delegation program established between EPA and Ecology, NMFS will have no opportunity to formally consult on the proposal through the ESA-triggered Section 7 process. Thus, comments provided here are reflective of many of the concerns we would have attempted to address through that process.

Project Understanding:

Ecology has proposed to issue an NPDES permit for Weyerhaeuser Plant in Longview, Washington. The plant currently manufactures pulp and wood products, including bleached Kraft Pulp, paper, newsprint, and lumber and wood products. Current on-site treatment of industrial wastewater includes primary clarification, aeration, and secondary clarification. The plant is also authorized to receive and treat a variety of sanitary and industrial discharges from other plants offsite. These include discharges from a hydrogen peroxide plant, a calcium carbonate plant, a locomotive maintenance shop, and a chloro-alkali plant, among others. The plant discharges from 5 separate outfalls, and also discharges water from a ditch (001/002), an export dock, a cargo dock, raw water ditch, and RW office. Discharged effluent contains numerous organic and inorganic materials including dioxins, cyanides, arsenic, PCBs, and others.

## Concerns

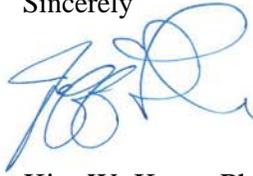
- Many of the most dubious compounds that would be discharged from this plant under this permit are persistent bioaccumulative toxicants (PBTs) with significant toxicity to aquatic life, including salmonid species listed as threatened or endangered in the Columbia River system. In particular, this permit would authorize the discharge of 2,3,7,8 tetrachlorodi benzodioxin (TCDD), dibenzofurans (TCDF), and pentachlorophenol. While this letter will not review all that is known about these compounds, the authorization of their release as PBTs is troubling, and counter to both national level efforts to eliminate the release of PBTs known to have implications to adverse health effects in animals and humans, and to NMFS' and Washington State's recovery efforts for ESA-listed salmonid stocks. Indeed, 2,3,7,8 TCDD is perhaps the most toxic agent ever tested on fish, with mortality primarily occurring during hatching or shortly thereafter, associated with severe subcutaneous edema, craniofacial malformations, and disturbances in the cardiovascular system (Walker et al. 1991; Spitsbergen et al. 1991; Fisher et al. 1996; Elonen et al. 1998; Cooper and Chen 1998). Subacute lethality was documented in 45 percent of rainbow trout exposed to 0.038 ng/L over 28 days (Tillett et al. 1998). Salmonids may be the most sensitive of fish species to exposure as well. Walker et al. (1991) and Spitsbergen et al. (1991) established tissue-residues in lake trout embryos of 40 and 400 ng/kg (parts per trillion) following 48 hour exposure; all of the embryos at the high dose died and 22.5 percent died at the lower dose—all with pathognomonic clinical signs consistent with dioxin exposure.
- NMFS recognizes that adverse effects from chemical exposure typically require exposure concentrations and durations above established biological effects thresholds. However, evaluating the risk of the discharge of chemicals based solely on anticipated water concentrations is fraught with error when such chemicals are bioaccumulative and reach steady state in exposed animals through multiple exposure pathways. Dioxins and dibenzofurans, for example, bioconcentrate only moderately from water exposure, and significant exposure occurs from dietary bioaccumulation and biomagnification.
- The permit would authorize maximum daily discharges of 10 pg/L of 2,3,7,8 TCDD and 39 pg/L of 2,3,7,8 TCDF. As the mechanism of action of the toxicants is the same—initiated with the initial binding of the chemical to the aryl hydrocarbon receptor in the exposed animals—the exposure of fish to multiple congeners represents additive toxicity risk. Yet, from our limited review, the permit does not capture an analysis of this toxicological additivity, or reflect on the use of toxic equivalency factors to better refine the discharge limits for constituents whose toxicity is asserted through the same mechanism of action. Further, the permit only provides limits for the 2,3,7,8 chlorine-substituted TCDD and TCDF congeners. Yet, significant work over the years with bleached Kraft mill effluents has identified numerous other congeners from among the roughly 215 isomers in these classes of compounds that could be released and accumulate in biota tissues and sediments. These additional congeners also represent additive risk to exposed animals, for which permit conditions should be recognized. Notably, the high limits allowed are precariously close to

concentrations referenced in the first bullet of this comment letter (e.g., subacute lethality from 28 day exposure to 38 pg/L 2,3,7,8 TCDD).

- Dissolved copper is present in relatively high levels in the effluent from outfalls #1 and #2. The ambient background level of dissolved copper in the Lower Columbia River is approximately 1.0 µ/L. Maximum values of measured concentrations of total copper released from outfalls #1 and #2 were 9.1µg/L and 8.6 µg/L respectively. These values equate to dissolved copper concentrations of 7.8 µg/L and 7.4 µg/L. Currently, NMFS refers to effects levels established by Baldwin *et al.*, (2003) and Sandahl *et al.*, (2007), which documented significant olfactory sensory responsiveness effects within ten minutes at 2.0 µg/L above ambient background dissolved copper levels of 3.0µg/L or less. Therefore, effluent discharged from these outfalls contains dissolved copper at concentrations above those known to cause harm to ESA-listed fish.
- Dissolved zinc is present in relatively high levels in the discharge. Similar to copper, dissolved zinc is known to be toxic in fish, and NMFS thresholds for dissolved zinc are concentrations of 5.6µg/l over background levels between 3.0µg/L and 13µg/L. According to ambient background data for the Lower Columbia River, total zinc is at 4µg/L. Maximum values for zinc concentrations discharged from outfalls #1 and #2 are 54µg/L and 48µg/L, respectively. Converting this number to dissolved zinc yields concentrations of 52µg/L and 47µg/L, well above thresholds for harm recognized by NMFS.
- Effluent from the export dock, the cargo dock, and the stormwater ditch 001/002 contains extremely elevated levels of total zinc. These maximum values recorded are 170 µg/L, 570 µg/L, 230µg/L, which convert to dissolved zinc concentrations of 163µg/L, 547µg/L, and 220µg/L, well above thresholds recognized by NMFS to cause harm to ESA-listed fish.
- Stress associated with living in water contaminated with bleached pulp discharges is known to increase the degree of parasitism and bacterial infections in fish living in these waters and suggests possible effects on their immune systems.
- A large variety of chlorophenols are found in the bleach plant discharge effluent. Chlorophenols are known to cause a variety of lethal and sublethal effects on aquatic organisms at small concentrations. Further, individual chemicals in discharge form complex mixtures that can have additive effects that may differ from effects from individual compounds

From the information presented in the proposed permit and fact sheet, it is clear that the full extent of effects to aquatic organisms resulting from discharges from this plant have not been analyzed. Constituents discharged from this plant will have likely adverse outcomes to fish species under NMFS authorities under the ESA and Magnusen-Stevens Acts, with negative implications to species recovery efforts and no offsetting mitigation. NMFS would welcome the opportunity to discuss the permit conditions with Ecology further. Please direct questions and/or comments regarding this letter to Dr. Jeff Fisher, Lower Columbia/Washington Coast Branch Chief of my staff at [jeff.fisher@noaa.gov](mailto:jeff.fisher@noaa.gov).

Sincerely



for Kim W. Kratz, Ph.D.  
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National Marine Fisheries West Coast Region  
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