



# Coastal Watershed Institute (CWI)

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***Our mission: “To protect and restore marine and terrestrial ecosystems through scientific research and local community, place based partnerships..”***

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Please accept these comments on the DoE draft Supplemental Environmental Impact Statement for the continued effort by the shellfish industry to use Imidacloprid to control burrowing shrimp in Willapa Bay (<http://www.ecy.wa.gov/programs/wq/pesticides/imidacloprid/>). The Willapa Grays Harbor Oyster Growers Association (WHGOGA), which grows (non-native) clams and oysters, want to control (native) burrowing shrimp by applying Imidacloprid (a neonicotinoid insecticide).

Imidacloprid was previously reported to enhance adipogenesis and resulted in insulin resistance in cell culture models (Sun et al 2016, 2017). Therefore, this insecticide of strong concern for human health. Equally alarming, insecticides, including Imidacloprid, are of very high concern for damaging and killing, thru indirect or direct pathways, critical wild fish species of salmon and smelt, including the marine invertebrates that are critical food source for juvenile salmon and forage fish (Westin et al 2014, 2015). Macneale et al 2014 and Gibbons et al 2015 provide a review of some of these concerns, along with studies cited in previous permit review. DoE has received exhaustive comments on the previous application to use Imidacloprid to kill burrowing shrimp populations on up to 2,000 acres per year (total) of commercial clam and oyster beds in Willapa Bay and Grays Harbor. Proposed application methods included aerial spraying from helicopters. Ecology issued a 5-year NPDES Individual Permit (WA0039781) on April 16, 2015, following a SEPA environmental review process. However, ***\*On May 3, 2015, WGHOGA asked Ecology to withdraw the permit in response to strong public concerns.\**** Ecology agreed and cancelled the permit on May 4, 2015, prior to the close of the appeal period and before the permit was active.

The new Supplemental EIS (SEIS) of the ‘WGHOGA 2 is 016 NPDES permit application to Ecology’ is for a ‘revised’ application. The revised proposal for the use of Imidacloprid to treat commercial clam and oyster beds on up to 500 acres per year (total) in Willapa Bay and Grays Harbor. The 2016 application also stipulates spray and granular applications from boats and/or ground equipment rather than aerial applications from helicopters. The synopsis of the supplemental EIS states that this action will result in:

- Immediate adverse, unavoidable impacts to juvenile worms, crustaceans, and shellfish to the areas treated with Imidacloprid and the nearby areas covered by incoming tides.
- Significant uncertainty about the cumulative environmental impacts and other unknown adverse impacts to other marine invertebrates and life cycles.
- Potential indirect impacts to fish and birds if food sources are disrupted.
- There are still knowledge gaps about Imidacloprid. Further research is needed,

In addition, DoE finds that, quote:’ *There is also a growing public concern about Imidacloprid, which is a neonicotinoid pesticide.*’

The upshot: despite the significant literature documenting human health and ecosystem concerns/risks surrounding its use, this insecticide is proposed (again) to be applied along shellfish beds and

shallow coastal areas of Willapa Bay, exactly where juvenile salmon and forage fish feed, rest, and migrate.

Clearly, regardless of the size of coverage, Imidacloprid applied to coastal areas will impact critical marine and nearshore ecosystems, and is a human health concern. It still includes the application of a highly toxic insecticide along shorelines used by numerous salmon and forage fish species, including Chinook and coho from as far away as Snake and Columbia River systems (Shaffer et al 2012). This insecticide will exactly impact prey species for these fish. Further, marine mammals, including killer whales *Orcinus orca*, that are critically endangered due to pollution and lack of food. These killer whales? Depend on Chinook salmon. This insecticide will therefore have a cascading impact that is exactly contraindicated to preserving and restoring our coastal ecosystem. Further, method of spray does not mitigate toxicity to fish, invertebrates, and coastal systems (or humans for that matter).

The substance and context of the comments pointing out the myriad of negative environmental impacts provided on the last EIS and permit are still exactly applicable on this 'revised EIS' (see: <http://www.ecy.wa.gov/programs/wq/pesticides/imidacloprid/commentsFeb2014.html>). All previous comments detailing the negative and dangerous effects of use of this insecticide and it's impacts to fragile coastal ecosystems should also therefore be brought forward to this consideration.

And finally, from a management perspective, the public is not well served by this 'withdraw, wait, and resubmit' permit strategy by the aquaculture industry. The public should not have to keep reiterating these points and resubmitting reviews to insist that public agencies properly and wisely manage our critical ecosystems and coastal resources.

The bottom line? People don't want to eat pesticide laced shellfish-and have said so loud and clear. Washington's coastal ecosystems are complex, and critical to our region. Citizens of Washington have also stated clearly: our coastal ecosystems must be preserved. They must not be turned into industrial (non-native) shellfish feed lots. To that end, toxic insecticides, including Imidacloprid, should not be allowed to be applied on coastal ecosystems to wipe out native species to enhance non-native shellfish species for commercial use. The state and federal resource agencies are legally mandated to preserve Washington States' wild species and their ecosystems, and to ensure that industrial aquaculture practices are limited to those that protect-and not destroy- wild intact ecosystems. Insecticide application in coastal zones, including Imidacloprid, are contraindicated to this mandate and should not be permitted.

Respectfully,



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Literature cited

Gibbons, D., Morrissey, C., & Mineau, P. (2015). A review of the direct and indirect effects of neonicotinoids and fipronil on vertebrate wildlife. *Environmental Science and Pollution Research International*, 22, 103–118. <http://doi.org/10.1007/s11356-014-3180-5>

Macneale, K.H., Spromberg, J.A., Baldwin, D.H. and Scholz, N.L., 2014. A Modeled comparison of direct and food web-mediated impacts of common pesticides on Pacific salmon. *PloS one*, 9(3), p.e92436.

Shaffer J.A., P. Crain, T. Kassler, D. Penttila, and D Barry. 2012. Geomorphic Habitat Type, Drift Cell, Forage Fish, and Juvenile Salmon: Are They Linked? *Journal of Environmental Science and Engineering A*(1):688-703.

Sun, Q., Qi, W., Xiao, X., Yang, S.H., Kim, D., Yoon, K.S., Clark, J.M. and Park, Y., 2017. Imidacloprid Promotes High Fat Diet-Induced Adiposity in Female C57BL/6J Mice and Enhances Adipogenesis in 3T3-L1 Adipocytes via the AMPK $\alpha$ -Mediated Pathway. *Journal of Agricultural and Food Chemistry*, 65(31), p.6572.

Sun, Q., Xiao, X., Kim, Y., Kim, D., Yoon, K.S., Clark, J.M. and Park, Y., 2016. Imidacloprid promotes high fat diet-induced adiposity and insulin resistance in male C57BL/6J mice. *Journal of agricultural and food chemistry*, 64(49), p.9293

Weston, D.P., Asbell, A.M., Lesmeister, S.A., Teh, S.J. and Lydy, M.J., 2014. Urban and agricultural pesticide inputs to a critical habitat for the threatened delta smelt (*Hypomesus transpacificus*). *Environmental toxicology and chemistry*, 33(4), pp.920-929.

Weston DP, Schlenk D, Riar N, Lydy MJ, Brooks ML 2015. Effects of pyrethroid insecticides in urban runoff on Chinook salmon, steelhead trout, and their invertebrate prey. *Environmental toxicology and chemistry*. Mar;34(3) pp 649-57.