Achieving Results from Oregon's New Toxics Standards:

A Proposal to Revise Oregon's 303(d) Listing Methodology to Include Impairment Listings Based on Fish Tissue Sampling

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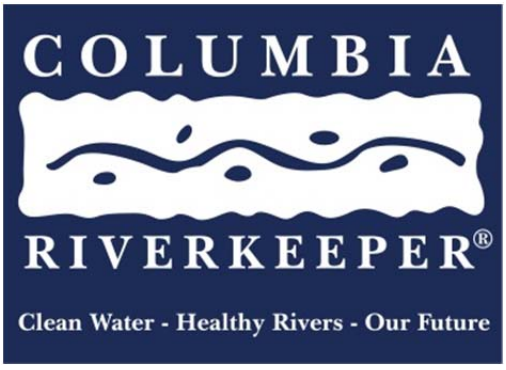

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I. Executive Summary

Oregon's revised human health criteria—commonly referred to as the "Fish Consumption Rulemaking"—hold great promise for protecting people from toxic pollution in locally-caught fish. But the Oregon Department of Environmental Quality (DEQ) must take additional steps to realize the full potential for the new toxics rules. One such step is revising Oregon's 303(d) listing methodology. The so-called "303(d) list" identifies waterbodies in Oregon, or sections of waterbodies, that violate water quality standards. Oregon's new human health criteria are one of those water quality standards. Currently, Oregon's methodology for listing segments of waterbodies as "impaired" ignores data on toxics in fish. This approach undermines the long-term effectiveness of Oregon's new human health criteria.

Specifically, under Oregon's current methodology, the presence of toxics in fish does not trigger a 303(d) listing. Instead, 303(d) listings are based on either water column concentrations of toxic pollutants, or on fish advisories issued by the Oregon Health Authority. Water column concentrations, however, do not reflect the amount of toxics present in fish.

Fish advisories also miss the mark. The Oregon Health Authority uses an assumed fish consumption rate of 32 grams per day of fish, which is substantially lower than Oregon's recently adopted fish consumption rate of 175 grams per day. Also, fish advisories are meant to be a warning to the public about how much fish is safe to consume from a given waterbody. In contrast, water quality standards are based on how much fish people *actually* eat.

In 2011, the State of Oregon made a policy decision to protect people who eat large quantities of local fish.[1] Oregon, therefore, must carry out this policy decision where it matters

[1] *See* DEQ, *DEQ Toxics Reduction Strategy: Summary* (2012).

by: (1) ensuring that waterbodies with toxic-laden fish are placed on the 303(d) list, and (2) developing TMDLs to reduce the toxics present in fish to below unsafe levels. To achieve real results—less toxics in locally-caught fish—DEQ should revise the 303(d) listing methodology to include fish tissue data.

II. The Problem with Oregon's Current 303(d) Listing Methodology.

Oregon's current 303(d) listing methodology fails to realistically account for toxics in fish. DEQ's recent study comparing toxicity in fish tissue and water column samples demonstrates the problem with Oregon's 303(d) listing methodology. In 2012, DEQ found that while water column samples from the mid-Columbia River were generally within acceptable levels for toxics, toxics were present in fish tissue at well above the acceptable levels to protect human health.[2] Essentially, the study found that water column samples from a waterbody might have a safe level of toxics, but the fish in that same waterbody could contain so much toxic pollution that they are dangerous for human consumption.

In 2011, Oregon adopted the nation's most protective water quality standards for toxics that threaten public health. Oregon's policy decision to protect the vast majority of people from toxics in fish, however, is not reflected in or effectuated by the state's 303(d) listing methodology. DEQ's current methodology for listing a waterbody as water-quality impaired does not involve testing fish tissue. Instead, the water column is tested for toxics, and fish tissue only becomes a factor if a fish advisory is issued for a certain species of fish. Unfortunately, fish advisories are subject to less stringent standards than the tougher toxics reduction standards that Oregon enacted for its waterbodies, and water column tests do not necessarily predict the levels

[2] Oregon DEQ, *Regional Environmental Monitoring and Assessment Program: 2009 Lower mid-Columbia river Ecological Assessment Final Report* (2012)

of toxicity in actual fish. A change must be made so that all Oregonians can enjoy toxic-free fish.

Oregon's new human health criteria are the most protective in the nation. As the *Oregonian* Editorial Board noted, "Fish, and their consumption by Oregonians, are at the core of the proposal. It is widely known that fish signal river health. But increasingly, fish are implicated in disease suffered by humans."[3] The unfortunate reality for Oregonians is that fish are not directly tested for toxics, and the new human health criteria are not yet resulting in healthier fish.

Toxic pollution is a serious concern for Oregon's waters, especially the Columbia River. EPA has identified the Columbia River as a priority Large Aquatic Ecosystem in need of protection from toxic pollution.[4] American Rivers identified the Rough & Ready and Baldface Creeks in Oregon on its annual list of the most endangered rivers due to the threat of toxic pollution from mining.[5] Some toxic pollution is the result of nonpoint source pollution. The EPA has recognized that nonpoint source pollution is now the leading cause of water quality problems.[6] Nonpoint sources of toxics can be from agriculture, storm water runoff, timber harvesting, and many other sources. Ultimately, DEQ recognized that toxics were such a looming disaster to the health of Oregonians that it enacted a comprehensive Toxics Reduction Plan to reduce toxics in Oregon's waters.

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[3] Oregonian Editorial Board, *Reducing River Toxics Without Pain or Job Loss* (January 11, 2011) (http://www.oregonlive.com/opinion/index.ssf/2011/01/reducing_river_toxics_without.html).
[4] EPA, *Columbia River Basin Toxics Reduction Action Plan* 5 (2010).
[5] American Rivers. http://www.americanrivers.org/endangered-rivers/2013/roughready/.
[6] EPA, *What is Nonpoint Source Pollution?* (http://water.epa.gov/polwaste/nps/whatis.cfm).

III. History and Background

A. Brief overview of water quality standards, the 303(d) list, and the TMDL process.

Under the Clean Water Act, states must develop water quality standards attain and maintain the physical, chemical, and biological integrity of the nation's waters. Water quality standards consist of two components: a designated or protected use for the waterbody (e.g. fish, swimming, drinking water) and criteria, numeric or narrative, designed to protect that use.

A fish consumption rate is a component of a designated use. The fish consumption rate in turn affects water quality standards, primarily for toxics such as mercury or PCBs, and affects sediment standards for cleanups. Fish from our nation's waters should be safe to eat in "normal" amounts. What constitutes a normal amount of fish varies from state to state, and therefore states are left to determine for themselves what the fish consumption rate should be within the state.

The primary mechanism for pollution reduction in the Clean Water Act is the National Pollution Discharge Elimination System (NPDES).[7] Under NPDES, permits are assigned to point sources[8] with numeric limits on the amount of pollutants that can be discharged into a waterbody. If a waterbody section violates a water quality standard (such as its designated use of fishable), the Clean Water Act imposes a more stringent pollution reduction program:

> Each State shall identify those waters within its boundaries for which the effluent limitations required by [§ 301 of the Clean Water Act] are not stringent enough to implement any water quality standard applicable to such waters. The State shall establish a priority ranking for such waters. The State shall establish a priority

[7] 33 U.S.C § 1342.

[8] The term ''point source'' means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture. 33 U.S.C. § 1362(14).

> ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.[9]

The list of waters that do not comply with water quality standards is known as the 303(d) list (named after the section of the Clean Water Act that requires it). Once a waterbody has been listed on the 303(d) list, the state must establish a Total Maximum Daily Load (TMDL) for the pollutant that caused the waterbody to violate water quality standards.[10] The Clean Water Act only requires that states submit new impaired waterbodies to the EPA "from time to time," but the EPA has interpreted the statute to require an update to the list every two years.[11]

Besides the NPDES program, TMDLs are one of the most effective ways to control toxic pollutants that the Clean Water Act provides. A TMDL sets the maximum amount of a pollutant which can be discharged or "loaded" into the waterbody from all combined sources.[12] Once the total amount of pollutant that can be discharged into a waterbody is determined, all sources of pollutants—including pollution from point sources and nonpoint sources—are allocated an amount of the pollutant that they can discharge. TMDLs are especially effective because they address nonpoint sources. A TMDL can even be issued for a waterbody where there are only nonpoint sources of pollution.[13]

TMDLs are far from perfect: they are expensive to implement and require a large amount of scientific research.[14] But on the whole, TMDLs provide more effective pollution control than the NPDES program alone.

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[9] 33 U.S.C. § 1311(d)(1)(A).
[10] 33 U.S.C. § 1311 (d)(1)(C).
[11] 33 U.S.C. § 1311 (d)(2).
[12] *Dioxin/Organochlorine Center v. Clarke*, 57 F.3d 1517, 1520 (9th Cir. 1995).
[13] *Pronsolino v. Nastri*, 291 F.3d 1123, 1140–41 (9th Cir. 2002).
[14] Oliver A. Houck, *The Clean Water Act TMDL Program: Law Policy, and Implementation* 136–37 (2nd ed. 2002).

Oregon, like most states, issues a report every two years[15] cataloguing waterbodies that are failing to meet water quality standards.[16] The report includes DEQ's methodology for determining whether a waterbody is meeting water quality standards.[17] Waterbodies are divided into five categories[18] depending on the water quality, ranging from Category 1 (all designated uses supported) to Category 5 (data indicates a designated use is not supported and a TMDL is needed).[19]

DEQ's 303(d) listing methodology for toxics relies mostly on water column testing. The agency's description of a Category 5 waterbody highlights the methodology for listing a waterbody:

> Category 5: Water Quality Limited, TMDL Needed (303(d) List) Two (2) or more valid results not meeting the most stringent applicable criterion for concentrations of a specific toxic substance in the water column when these samples represent 5% or more of the total valid samples; Or, Fish consumption advisories for specific waterbodies where pollutants are found in fish tissue. Fish consumption advisories are issued by the Oregon Department of Human Services Public Health Division Office of Environmental Public Health.[20]

Despite the mention of fish advisories, DEQ's methodology emphasizes listings based on water column testing.

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[15] Oregon has a history of not submitting complete reports. EPA recently had to add 870 sections of water bodies to the impaired list. *See* EPA, *EPA Letter to Oregon DEQ Re: Waters Added to Oregon's 2010 303D List* (December 2012).

[16] DEQ, *Water Quality Assessment* (http://www.deq.state.or.us/WQ/assessment/assessment.htm).

[17] OAR 340-041-0046.

[18] Categories are divided as follows: *Category 1*: All designated uses are supported. (Oregon does not use this category.) *Category 2*: Available data and information indicate that some designated uses are supported and the water quality standard is attained. *Category 3*: Insufficient data to determine whether a designated use is supported. Oregon further sub-classifies waters if warranted as: *3B*: Insufficient data to determine use support but some data indicate non-attainment of a criterion and a potential concern. *3C*: Impairing pollutant unknown. *Category 4*: Data indicate that at least one designated use is not support but a TMDL is not needed. This includes: *4A*: TMDLs that will result in attainment of water quality standards have been approved. *4B*: Other pollution control requirements are expected to address pollutants and will result in attainment of water quality standards. *4C*: Impairment is not caused by a pollutant (e.g., flow or lack of flow are not considered pollutants). *Category 5*: Data indicate a designated use is not supported or a water quality standard is not attained and a TMDL is needed. This category constitutes the Section 303(d) list that EPA will approve or disapprove under the Clean Water Act.

[19] DEQ, *Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters* (2011).

[20] *Id.* at 51.

Oregon currently has numeric criteria for twenty-three distinct toxic pollutants.[21] If a waterbody violates the criteria for one of these toxics, then the waterbody will be placed into Category 5, requiring a TMDL for the toxic pollutant.[22] Under DEQ's 303(d) listing methodology, the only way that toxics present in fish tissue qualify a waterbody for the 303(d) list is if the Oregon Health Authority issues a fish consumption advisory. Fish advisories focus mostly on mercury and polychlorinated biphenyls (PCBs).[23] In the rare instance a fish advisory is issued that contains more than these two toxics, the results are often vague warnings listing toxics such as DDT and PCBs as "a concern," while reminding the public of the health benefits of eating fish.[24] The differences in methodology between the 303(d) list and fish advisories will be discussed in detail below.

IV. The Inadequacies of Oregon's Current Methodology for Listing Impaired Waters

Oregon adopted new human health criteria for toxic pollutants to protect people who regularly eat Oregon-caught fish. EPA's letter approving the new toxics human health criteria hailed the new criteria as "a solid example to other states in the Northwest and throughout the country."[25] The Columbia River was identified by the EPA as a priority Large Aquatic Ecosystem due to toxic pollution,[26] and Oregon's new human health criteria were meant to help address the problems facing the Columbia River and other waterbodies within the state.[27]

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[21] DEQ, *Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters* 54–62. (2011).
[22] *Id.* at 51.
[23] *See, e.g.*, DHS, *Advisory warns of high PCB levels in smallmouth bass above Bonneville Dam* (2009); DHS, *Fish consumption advisory for the Columbia Slough* (2010).
[24] *See Columbia River Fish Advisory* (1996) (http://public.health.oregon.gov/HealthyEnvironments/Recreation/Pages/columbia.aspx).
[25] EPA Region 10, *EPA's Approval of new and Revised Human Health Water Quality Criteria for Toxics and Implementation Provisions in Oregon's Water Quality Standards Submitted on July 12 and 21, 2011* (2011).
[26] EPA, *Columbia River Basin Toxics Reduction Action Plan* 5 (2010).
[27] Unfortunately, doubts about the effectiveness of the new toxics human health criteria were expressed even before they were adopted. Concerns over the lack of oversight from the agricultural and forestry industries left environmentalists concerned that the new criteria could be a paper exercise.

Oregon's new criteria are one step towards toxic free fish. But much work remains. In a Question and Answer document relating to the implementation of new criteria, DEQ lays out the effect that the new criteria will have on NPDES permittees. In response to the question, "Will all water quality permit holders be affected by this rule?" DEQ estimates that about only twenty "primary" industrial facilities are likely to have their permits revised for the new toxics criteria.[28] Additionally, the "majority" of Oregon cities will not be affected by the revised standards.[29] DEQ plans to evaluate facilities under the new criteria as the facilities renew their pollutant discharge permits, which will take several years because permits are renewed, at best, every five years.

Implementing the stringent toxics criteria through the NPDES program is only part of the solution to toxics in fish. In the *State of the River Report for the Columbia River Basin*, the EPA focused primarily on four pollutants: mercury, DDT, PCBs, and PBDEs.[30] The EPA identified nonpoint sources as major pathways for each of these four toxics reaching river.[31] The EPA recognized that nonpoint source pollution is the leading remaining cause of water quality problems.[32] One of the Clean Water Act's few mechanisms for dealing with nonpoint sources is the TMDL process. As discussed above, TMDLs address point sources and nonpoint sources of pollution. Reducing toxic discharges from Oregon's top twenty industrial facilities will not result in adequate toxics reduction if nonpoint sources are also major sources of toxic pollution.

Yet the new human health criteria would only trigger a TMDL if toxics are present in the water column above criteria levels, which studies show does not tell the whole story. Instead,

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[28] DEQ, *Question & Answer: Implementing Newly Approved Water Quality Toxics Standards for Human Health and Associated Implementation Policies* (2011).
[29] *Id.*
[30] EPA, *Columbia River Basin: State of the River Report* 1 (2009).
[31] *Id.* at 15.
[32] EPA, *What is Nonpoint Source Pollution?* (http://water.epa.gov/polwaste/nps/whatis.cfm).

Oregon's current methodology for listing a waterbody as impaired relies on fish consumption advisories. Fish advisories rely on different assumptions about fish consumption rates than Oregon's human health criteria, and are not suited for 303(d)-listing purposes. Instead, Oregon should use fish tissue sampling and a fish consumption rate that reflects how much fish Oregonians actually eat.

A. Fish consumption advisories do not account for how much fish Oregonians actually eat.

The fish advisories issued in Oregon are *always* based on lower fish consumption rates than the rate established in the human health criteria. Oregon's new human health criteria rely on a fish consumption rate of 175 grams per day.[33] The Standard Operating Guidance for the Oregon Health Authority's Fish Advisory Program clearly states that screening values for toxics are based upon a fish consumption rate of 32 grams per day.[34] For a waterbody to fall into Category 5 for toxics (requiring a TMDL), water column tests must show toxics in harmful amounts or a fish advisory must be issued for the waterbody.[35] But since fish advisories are based upon a fish consumption rate substantially lower than the one used for human health criteria for toxics, essentially only water column testing is used to determine if a waterbody is impaired for toxics. As both Oregon and Washington's own studies show, water column tests can come back free of toxics but fish can still show dangerous levels of toxics. Oregon's water quality standards are supposed to protect human health, but the current methodology does not measure toxics in the actual fish people consume.

[33] DEQ, *Human Health Criteria Final Issue Paper* 1 (2011).
[34] Oregon Health Authority, *Fish Consumption Advisory Standard Operating Guidance For the Oregon Health Authority Fish Advisory Program* (2011).
[35] DEQ, *Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters* 51 (2011).

Fish advisories also only consider non-cancer health effects, which conflicts with EPA's methodology for deriving ambient water quality criteria for the protection of human health. The Oregon Health Authority limits "advisories to non-cancer health effects as cancer risk models are more likely to over-estimate risk, causing consumers to unnecessarily forgo the health benefits of eating fish."[36] EPA explicitly relies on cancer risk assessments in order to determine water quality standards for human health, and analyzes cancer risk at length in the methodology for determining water quality standards.[37] In a guidance document for fish advisories, EPA's recommended methodology for implementing fish advisories also relies on cancer risk assessment: "For carcinogens, EPA recommends basing screening values on chemical-specific cancer slope factors."[38] Clearly, EPA feels that cancer risk should be included in assessments.

Ultimately, fish advisories do not reflect the same human health criteria that Oregon adopted in an effort to reduce toxics. Fish advisories are effectively useless for listing a waterbody as impaired because fish advisories do not reflect the water quality standards that would get a waterbody on the 303(d) list. As a practical matter, the Oregon Health Authority likely does not have the same level of expertise and resources that Oregon Department of Environmental Quality would have to determine the toxicity of fish. Oregonians are left relying on water column testing to determine whether the actual fish they eat are toxic or not. Yet studies conducted by Oregon and Washington indicate that this is an inadequate way to protect people from toxic fish.

[36] Oregon Health Authority, *Fish Consumption Advisory Standard Operating Guidance For the Oregon Health Authority Fish Advisory Program* (2011).
[37] EPA, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* 3-1 (2000).
[38] EPA, *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories; Volume 2* 2-52 (2000).

B. The effect of Oregon's methodology.

TMDLs are one of the most effective ways to achieve effective pollution reduction. For example, EPA Region 10's Toxics Reduction Action Plan concludes that additional TMDLs for toxics are needed to reduce toxic pollution in the Columbia River.[39] Oregon's methodology for 303(d) listing does not sufficiently account for toxics that could be present in fish, but the practical effect of this oversight might not be clear. Revising fish advisories to reflect current water quality standards, or implementing better methods to determine if waterbodies are impaired, will eventually lead to the implementation of TMDLs for impaired waters.

Oregon's 303(d) listing methodology makes it very difficult to list a waterbody as impaired for toxics. If toxics are present in fish tissue but not present in amounts that violate water column criteria, the waterbody is not attaining its designated use, but it will not be listed as impaired. DEQ must first list a waterbody as not attaining its designated uses on the 303(d) list before a TMDL can be issued for the pollutant causing non-attainment. If an effective methodology does not exist to determine that a waterbody is impaired, then effective toxic reduction cannot happen.

V. Examples of 303(d) Listing Methodologies that are More Protective than Oregon's

When the EPA approved Oregon's new standards for toxics, the agencies touted the standards as "the strictest in the nation."[40] However, Oregon's decision to exclude fish tissue testing from the 303(d) listing methodology results in a large gap in protection for public health. The State of Oregon made a policy decision to protect people who regularly eat local fish. [41]

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[39] *Id.* at 10.
[40] Oregonian, *EPA Signs Off on New Oregon Water Quality Rules—Strictest in the Nation* (2011) (http://www.oregonlive.com/environment/index.ssf/2011/10/epa_signs_off_on_new_oregon_wa.html).
[41] *See* DEQ, *Toxics Reduction Strategy: Summary* (2012).

Oregon, therefore, must carry out this policy decision where it matters, by (1) placing waterbodies with toxic-laden fish on the 303(d) list, and (2) developing TMDLs to reduce the toxins present in fish.

Washington and Ohio serve as useful examples for what Oregon's 303(d) listing methodology should look like. Washington's methodology is notable because, as neighbors, the shared duties of managing toxics in the Columbia River requires uniformity between Oregon and Washington.[42] Ohio's approach is also worth examining because Ohio faced a situation similar to Oregon's: the criteria for toxic pollution were different than the standard used for fish advisories. Ohio adopted fish tissue testing as a listing mechanism for waterbodies to correct this gap between the actual water quality criteria and the way that it was being implemented. Oregon is facing a similar choice now.

A. Washington

Washington's methodology for listing a waterbody on the 303(d) list as "water quality impaired" reflects the reality that a water column sample might not register toxics, but toxics might still be present in fish tissue. Studies conducted by Washington Department of Ecology (Ecology) have exposed this phenomenon. A 2001 study of toxics in water and fish tissue throughout Washington tested water column samples for toxics and found no toxics present in the water samples. In fact, "[t]he laboratory noted that these water samples were exceptionally clean."[43] The actual fish tissue told a different story, however. One hundred percent of the fish

[42] Washington's fish consumption rate (6.5 grams per fish a day) is are currently far below Oregon's, but Washington is currently in the process of revising its fish consumption rate standards.
[43] Washington Dept. of Ecology, *Toxic Contaminants in Fish Tissue and Surface Water in Freshwater Environments* 9 (2003).

tissue samples detected the presence of various pesticides, PCBs, Dioxin/Furans, and mercury.[44] Clearly, more is going on under the surface than appears.

Like Oregon, Washington divides its waterbodies into five categories, with Category 5 being the most impaired and requiring a TMDL. Unlike Oregon, Washington's methodology for listing a waterbody as Category 5 specifically uses fish tissue data as a listing criterion:

> A waterbody segment will be placed in Category 5 for a specific pollutant when exceedances of the human health criteria are present from resident species for that pollutant. A segment will be placed in Category 5 if either the mean of the three single-resident fish samples with the highest concentration of a given pollutant or one composite sample made up of at least three resident fish exceed the criteria.[45]

Washington does not require fish tissue testing in every waterbody. Fish tissue testing is merely one of three ways that a waterbody can be tested for toxic pollutants—exceedances of water column samples and fish advisories may also be used.[46]

Washington's methodology has several shortcomings. First, the bioconcentration factors are based off EPA criteria from 1980 which use a low rate of fish consumption (6.5 grams per day).[47] Secondly, the methodology relies on *bioconcentration*, when the more realistic assessment is based upon *bioaccumulation*. The EPA has explained the very important difference between the two:

> [T]he term "bioaccumulation" refers to the uptake and retention of a chemical by an aquatic organism *from all surrounding media* (e.g., water, food, sediment). The term "bioconcentration" refers to the uptake and retention of a chemical by an aquatic organism *from water only*. For some chemicals (particularly those that are highly persistent and hydrophobic), the magnitude of bioaccumulation by aquatic organisms can be *substantially greater* than the magnitude of

[44] *Id.* at 10.
[45] Washington Dept. of Ecology, *Water Quality Program Policy* 51 (2012).
[46] *Id.* at 47.
[47] *Id.*

> bioconcentration. Thus, an assessment of bioconcentration alone would underestimate the extent of accumulation in aquatic biota for these chemicals.[48]

It is easier to just consider the toxics present within the water that fish inhabit, but fish interact with more than just water.

Washington's own studies show that the use of fish tissue testing can show impairments for toxics that might not otherwise show up in water column testing of a waterbody. Allowing fish tissue to be a criterion can result in TMDLs and greater toxic reductions.

B. Ohio

Ohio also uses fish tissue testing to determine if a waterbody should be placed on the 303(d) list. Ohio explicitly adopted this policy due to discrepancies between fish consumption advisories and water quality standards. Ohio's 2012 Integrated Report notes that "the levels of fish tissue contaminants that trigger a fish advisory have little obvious relation to the levels of fish tissue contaminants on which the [Water Quality Standards] are based. This discrepancy exists because different assumptions about fish consumption rates are made in calculating water quality standards than in issuing fish advisories."[49] Oregon faces a similar situation: Oregon's fish consumption rate is based on 175 grams per day, while the Oregon Health Authority uses a fish consumption rate of 32 grams per day.[50]

On its face, this discrepancy seems obvious and in need of rectification. Ohio certainly thought so: "Fish advisory contaminant levels are not directly related to the [Water Quality Standard] criteria contaminant levels, and in some cases are not as protective. Therefore, Ohio EPA has elected to directly compare fish tissue data with the WQS criteria calculations . . .

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[48] EPA, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* 5-2 (2000) (emphasis added).
[49] Ohio EPA, *Ohio 2012 Integrated Report* E-3 (2012).
[50] Oregon Health Authority, *Fish Consumption Advisory Standard Operating Guidance For the Oregon Health Authority Fish Advisory Program* (2011).

instead of using advisory-based categorizations."[51] On a deeper level, it might not be obvious what the difference is between fish consumption advisories and water quality standards. After all, both are protective of human health, but there is an important distinction to be made between the two. Fish advisories are a warning to the public about how much fish is safe to consume (often in increments of 9 oz. meals). Water quality standards identify how much fish people actually eat and use that information to calculate a "safe" level of contamination in fish.[52] For example, Ohio's advisory thresholds are given as one meal per week, one meal per month, and do not eat (where a meal equals eight ounces of fish).[53] Water quality standards, on the other hand, assume that people eat 15 grams of fish per day in the Lake Erie basin or 6.5 grams of fish per day in the Ohio River basin.[54]

Ohio recognized that the difference in fish consumption rates between fish advisories and water quality standards led to bizarre results. Data for smallmouth bass in one waterbody led to an advisory for mercury but the waterbody was considered unimpaired under water quality standards.[55] In another waterbody, there was no advisory for channel catfish, but the waterbody was listed as impaired for PCBs.[56] Ohio was left relying on fish advisories that seemingly had little to no relation to water quality standards, but fish advisories were relied on to determine if a waterbody was not complying with water quality standards and should be on the 303(d) list. Ohio looked to EPA guidance for developing an Integrated Report on 303(d) waters. The EPA guidance indicated that water quality standards are to be used as the basis for determining impairment categories of fish tissue.[57] Ultimately, this decision makes sense because fish

[51] Ohio EPA, *Ohio 2012 Integrated Report* E-3–4 (2012).
[52] *Id.* at E-28.
[53] *Id.*
[54] *Id.*
[55] *Id.* at E-29.
[56] *Id.*
[57] *Id.* at E-28.

advisories limit fish consumption based on the amount of toxics in the fish, while water quality standards set limits on toxics in fish based on how much fish people actually eat.

VI. Steps Needed to Correct Oregon's Methodology

Oregon needs to revise its 303(d) listing methodology to carry out its policy decision to protect the majority of Oregonians from toxics in fish. Other states' examples can serve as guides for implementing these changes.

A. Adopt a 303(d) listing methodology that uses fish tissue data, water column data, and fish advisories.

Oregon should adopt a methodology that qualifies a waterbody as Category 5 and in need of a TMDL if fish tissue data, water column data, or fish advisories violate water quality criteria. This is essentially the method that both Ohio and Washington use. Washington's methodology states that "[t]he Assessment of a toxic pollutant is based on data from either of two media, water column and tissue. An assessment of data from either medium may result in placement of the waterbody into the appropriate category."[58] A fish advisory will also trigger a Category 5 determination if the pollutant parameters are not more protective than the water quality standards criteria.[59] Ohio follows essentially the same methodology and uses fish advisories to list a waterbody under Category 5 if the parameters of the advisory are equal or less protective than the water quality standards of the state.[60]

The change to Oregon's methodology would not require a radical shift in the way that DEQ lists waterbodies on the 303(d) list. For example, DEQ would not have to sample fish tissue in every waterbody in the state. Neither Washington nor Ohio requires this—instead, both

[58] Washington Dept. of Ecology, *Water Quality Program Policy: Assessment of Water Quality for the Clean Water Act Section 303(d) and 305(b) Integrated Report* 49.
[59] *Id.* at 48.
[60] Ohio EPA, *Ohio 2012 Integrated Report* E-1 (2012).

states rely on existing data to determine if fish tissue violates water quality standards. In fact, EPA regulations only require states to evaluate "all existing and readily available water quality-related data and information" to determine if a waterbody is impaired.[61]

B. DEQ should base fish tissue criteria on bioaccumulation factors and cancer risk.

Bioaccumulation is a more realistic expression of the toxics that could potentially be found within fish tissue. Bioaccumulation takes into account toxics present in the food chain and sediment along with water concentrations of toxics (as opposed to bioconcentration, which only factors in water). When Oregon calculates criteria for toxics in fish tissue, it should use bioaccumulation as the basis for such calculations. The criteria should also be derived from possible cancer risk associated with eating toxic fish. Oregon fish advisories currently do not use cancer risk.

C. Alternatively, Oregon could implement a fish advisory methodology that reflects the human health criteria for toxics.

Another option is for the Oregon Health Authority to revise its standard operating guidance for fish advisories to reflect the consumption rate adopted by Oregon's new human health criteria. While it is useful to have a fish advisory that reflects the fish consumption rate in water quality standards, it is not the ideal way to solve Oregon's methodology problem. The Oregon Health Authority does not have the resources or expertise to deal with fish tissue testing. Also, relying on fish advisories ignores the function of a fish advisory, which is to determine what amount of fish is safe for certain populations to consume, not to determine if a waterbody is attaining its designated use.

[61] 40 C.F.R. § 130.7(a)(5).

VII. Conclusion

The presence of toxics within the fish that people eat is a huge public health concern. Many governmental agencies, nonprofit organizations, tribes, and citizens have expressed concern over the toxic pollutants that people consume through fish on a regular basis. Yet meaningful changes in how we manage toxics are hard to come by. The Toxics Reduction Action Plan makes an attempt to reduce toxics, but it lacks specific standards and enforcement mechanisms. Nonpoint sources in particular are not well controlled and are potentially a major source of toxic pollution.

TMDLs can provide effective toxic reductions by considering the capacity of receiving waters to handle toxic pollution and placing limits on toxic pollution from point and nonpoint sources. As useful as TMDLs are, they can only be implemented if the correct methodology is in place to identify impaired waterbodies and put them on the 303(d) list. Oregon's current methodology does not use fish tissue criteria and therefore misses many waterbodies that are not attaining their designated uses and should be placed on the 303(d) list. Once these waterbodies are placed on the list, Oregon can develop TMDLs to reduce toxics in these waterbodies.

Oregon's rivers and streams are unique natural resources that need to be protected. Every person has the right to eat fish without worrying if their next meal with result in a neurological disorder or cancer. Revising Oregon's 303(d) listing methodology to include fish tissue data is one step toward achieving the State's goal of protecting people who regularly eat locally-caught fish.