



March 21, 2011

Andrea Matzke
Oregon Department of Environmental Quality
Water Quality Division
811 SW 6th Avenue
Portland, OR 97204

Re: Comments on Revised Water Quality Standards

Dear Ms. Matzke:

The Oregon Department of Environmental Quality (DEQ) has produced draft water quality standards based on revised fish consumption estimates. Most Oregonians would like fish from our rivers and lakes to have lower contaminant levels. Revising water quality standards is one approach that can potentially help to reduce contaminant levels in fish, but the proposed action could benefit from a broader and more comprehensive evaluation, as outlined in the suggestions presented in this letter.

One significant comment discussed in greater detail below describes how DEQ can improve the proposed fish-ingestion water quality standards by using state-of-the-science methods to develop standards. Specifically, exposure and toxicity factors used to develop water quality standards should be evaluated using a probabilistic risk assessment framework.

Many aspects of the approach DEQ has taken to address contamination in fish have been driven by factors outside of the Agency's control (e.g., lawsuits, EPA directives, etc.). As a result, the current approach appears to be somewhat piecemeal and narrowly defined to only consider potential fish ingestion rates. The public would benefit from a more comprehensive and carefully considered approach to evaluate and communicate potential current fish consumption risks and identify opportunities to reduce contaminant levels in fish. Below are several additional brief comments regarding actions the DEQ should consider to address the larger issue of contaminants in fish.

Comment 1: Use Probabilistic Risk Assessment

The DEQ used a simple deterministic risk assessment method to estimate chemical-specific risk-based water quality standards based on fish ingestion. The method used by DEQ is modeled after the approach that has been used by the U.S. Environmental Protection Agency (EPA) to estimate water quality standards for decades. The deterministic approach combines point estimates of exposure and toxicity in a simple quotient to estimate a single water quality standard. Natural variability in exposure and toxicity factors is not explicitly considered in this approach, nor is uncertainty.

The science of risk assessment has improved considerably since fish-ingestion based water quality standards were first developed by the EPA. Today, relatively sophisticated and inexpensive probabilistic methods are now readily available to estimate risk-based water quality standards. Probabilistic risk assessment formally considers both natural variability in factors that



determine risk (e.g., variation in diets, bioaccumulation, ingestion rates, etc.), and uncertainty in data or models used in risk assessment. Probabilistic methods can more fully characterize risks associated with fish ingestion and improve decision making.

There are no compelling reasons to continue using simplistic risk assessment methods to estimate water quality standards. Technically superior methods are available that can be used to develop water quality standards with little or no increase in costs to the DEQ. The DEQ has the expertise to use these alternative methods, has used probabilistic risk assessment methods previously, and has developed guidance on how to use probabilistic risk assessment when evaluating contaminated sites. The DEQ should always use state-of-the-science methods when developing environmental standards.

Comment 2: Evaluate the Health Consequences of Fish Consumption

Base on several comments given in public meetings held by DEQ to explain the revised water quality standards, it is apparent that many people, including Tribal fishers, are fearful of eating fish such as salmon. Part of the fear may be due to the simplistic way that risks associated with fish ingestion are estimated and communicated. The public would benefit from a more rigorous assessment of the health consequences of consuming fish harvested from our local rivers and lakes. Specifically, the overall health consequences of various types of diets should be assessed and presented, because if people avoid fish, they will necessarily consume some other type of food.

Contaminants such as dioxins and polychlorinated biphenyls (PCBs) are present in virtually all meat and dairy products, and most Oregonians are regularly exposed to these chemicals in their diet. Also, there are health consequences to our diets that are unrelated to contaminants in foods. Based on numerous studies, diets high in fish such as salmon appear to be beneficial relative to many common alternative diets. A diet similar to that of many Tribal fish consumers is likely more healthy than most alternatives. Although a more rigorous assessment of the health consequences of fish ingestion will not change the fact that contaminants are present in fish, the information would allow people more informed decisions regarding the consequences of dietary choices.

Comment 3: Define the Relative Importance of Sources of Contaminants in Fish

In order to effectively reduce contaminant levels in fish, it is important to identify the chemicals in fish tissue that are suspected as posing the greatest risk to consumers, and it is also important to identify the primary environmental sources of these chemicals and the mechanisms by which contaminants enter fish tissue. For example, salmon may obtain most problematic contaminants (e.g., PCBs) through dietary uptake of impacted prey while foraging at sea. If so, actions that reduce contaminant body burdens in the marine prey species of salmon will likely be the most effective at reducing concentrations in salmon tissues. Identifying the environmental compartments, locations, and processes that structure contaminant loads in fish should be the first step in determining effective management options. If we focus our actions on parts of the process that are relatively unimportant in determining fish body burdens of chemicals, our ability to cause change will be diminished.

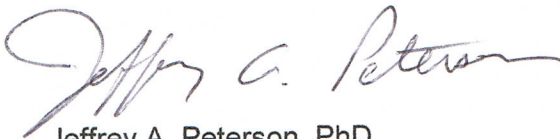


Comment 4: Estimate the Effect of Proposed Water Quality Standards on Fish Tissue Levels

The DEQ or others should attempt to estimate how fish tissue levels will change over time as a result of implementing revised water quality standards. In all likelihood, implementation of revised water quality standards will primarily result in reduced loading from uplands to surface water bodies. It would be helpful to understand how reduced loading from stormwater or municipal water is projected to change fish tissue concentrations over time. Due to a number of previous actions (i.e., banning production and use of DDT, PCBs, etc.), environmental concentrations of many of the most important contaminants in fish are already declining. The public would benefit from information regarding the projected further declines that could be expected as a result of implementation of revised water quality standards. Due to the proposed change in water quality standards, municipalities and industry may need to make significant investments in alternative water management practices. The costs of these changes in water management will ultimately be covered by Oregon citizens. An informative cost/benefit analysis of water quality standard revisions will require an understanding of the magnitude and time frame of the potential benefits.

In summary, the DEQ should estimate which specific contaminants in fish have the greatest potential to pose human health risks, where these contaminants are located, and how we can act to further reduce levels in fish in the most efficient manner. The DEQ should also attempt to better estimate the health consequences of fish ingestion so the magnitude of the problem can be placed in proper context and so individuals can make informed dietary choices. Finally, fish-ingestion water quality standards should be estimated using modern probabilistic risk assessment methods. We use the state-of-the-science to address most environmental problems, and the problem of managing contaminants in fish should be no exception. I would be happy to discuss specific details and methods that DEQ can use to improve water quality standards or improve the approach to reduce contaminant levels in fish.

Sincerely,
SLR International Corp



Jeffrey A. Peterson, PhD
Principal Environmental Scientist

