DEPARTMENT OF
ECOLOGY
State of Washington

Final Environmental Impact Statement

Washington State's Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A

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July 25, 2016

Dear Interested Party:

The Washington State Department of Ecology (Ecology) released the final Environmental Impact Statement (EIS) on the changes to the Water Quality Standards for Surface Waters of the State of Washington – Chapter 173-201A WAC. Due to the controversial nature of this rulemaking, we prepared this EIS to provide as much information as possible to aid in decision-making and to satisfy the requirements of the State Environmental Policy Act (SEPA).

The state's surface water quality standards set limits on pollution in our lakes, rivers, and marine waters in order to protect beneficial uses, such as swimming and fishing. The water quality standards are implemented through discharge permits under the federal Clean Water Act. The standards also help identify polluted waters and set levels for water cleanup.

Specifically, this rulemaking activity:

1. **Establishes new human health criteria to protect designated uses.** Human health criteria are limits set for toxic substances to protect people who consume water, fish, and shellfish from Washington's water bodies. They address substances such as metals, pesticides, and other organic compounds. Because Washington's surface water quality standards currently lack human health criteria, we are required to operate under the federal criteria established in the U.S. Environmental Protection Agency's (EPA) 1992 National Toxics Rule (NTR; 40CFR131).

   In September 2015, the U.S. Environmental Protection Agency (EPA) proposed a regulation that would promulgate new federal human health criteria applicable to Washington's waters. If we submit final human health criteria to EPA for Clean Water Act review and approval before EPA finalizes the new federal regulation for Washington, EPA will review and act upon our submission prior to any final action on the federal criteria.

   Our process of developing new human health criteria accounted for factors used to calculate each chemical criterion, including risk and more accurate data about how much fish and shellfish people eat in Washington State. The calculated criteria are used to carry out the permitting program, and identify and clean up polluted waters under the Clean Water Act.

The rule will also develop specific criteria and alternative control strategies for two challenging chemicals: arsenic and Polychlorinated Biphenyls (PCBs).

2. **Provides predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or discharge limits.** The changes will allow for compliance with requirements while dischargers effectively work to meet permit limits and control sources of pollutants.

We recognize the need to expand compliance and implementation tools available for dischargers in order to address increasingly restrictive concentration limits for pollutants. New human health criteria may result in revised discharge permit limits for industries and municipalities. The new criteria may be challenging to achieve in both the short and long term because some of the chemicals are ubiquitous and naturally occurring. Other chemicals are present in the environment largely due to past uses, and some are still being discharged. Technology, to both measure pollutant concentrations and to remove pollutants, has not kept pace with the ability to calculate protective water quality criteria. In addition to new human health criteria for toxics, other conventional water quality criteria, such as temperature and dissolved oxygen, drive regulatory actions that present similar long and short term challenges. Recognizing this, Ecology clarified and expanded the regulatory tools to make them more effective and predictable. Successful use of these tools will allow dischargers to remain in compliance as they effectively work toward improving technology and implementing pollutant reduction actions.

This EIS addresses only the key parts of the water quality standards that Ecology changed. They include:

1) Adoption of new human health criteria (and the expectation that EPA will remove Washington from the federal National Toxics Rule).
2) Adoption of new or expanded/clarified Implementation Tools and amendments to existing language on these implementation tools:
    - Intake Credits – new tool
    - Compliance Schedules – expanded tool
    - Variances – expanded and clarified tool

Please visit the water quality standards website for a comprehensive discussion of the changes at: http://www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203ov.html. For assistance or questions, please contact Becca Conklin at (360) 407-6413 or by email at: swqs@ecy.wa.gov.

Sincerely,

Heather R. Bartlett
Water Quality Program Manager

Fact Sheet

Title:	Washington State's Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A
Description:	A rule amendment to adopt new human health surface water quality criteria and to add and expand/clarify implementation tools for discharge permitting.
Lead Agency and Responsible Official:	Washington State Department of Ecology Heather R. Bartlett, Water Quality Program Manager
Person to contact for more information:	Cheryl Niemi Water Quality Program Washington State Department of Ecology
DEIS issue date:	February 2, 2016
DEIS comment period closed:	April 22, 2016
Public Hearings:	Ecology held four public hearings on this rule proposal, one in Western Washington, one in Eastern Washington, and two webinars. • April 5, 2016: Seattle • April 6, 2016: Spokane Valley • April 7, 2016: Webinar (1:30 p.m. and 6:30 p.m.) The hearings included a short presentation, a question and answer session, and a formal testimony portion. Formal comments were also accepted in electronic and hard copy formats.
Intended Rule Adoption Date:	August 1, 2016
Intended Rule Effective Date:	September 1, 2016 The rules cannot be used for Clean Water Act purposes until the environmental agency approves them.

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Summary

In February 2016, the Department of Ecology (Ecology) proposed changes to the Water Quality Standards for Surface Waters of the State of Washington at Chapter 173-201A WAC, commonly called surface water quality standards. Ecology intends to adopt the revised rule language on August 1, 2016. If adopted, the revised rule becomes effective on September 1, 2016, however the rules cannot be used for Clean Water Act purposes until EPA approves them.

The purpose of this rulemaking is to adopt human health criteria to protect people in Washington State who consume fish and shellfish in waters regulated by the Washington State Department of Ecology (Ecology). The new rule also describes requirements for implementing water quality standards that will keep dischargers in compliance with their National Pollutant Discharge Elimination System (NPDES) permits while they actively implement actions and control strategies to address pollutants.

Environmental Impact Statements (EIS) provide an impartial discussion of significant environmental impacts. An EIS helps inform decision makers and the public of reasonable alternatives, including mitigation measures, which would avoid or minimize adverse impacts or enhance environmental quality.

This EIS focuses on:

1) specific policy decisions and subsequent calculated criteria concentrations.
2) language for implementation tools outlined in the rule language and included in this document.

The EIS does not address every possible alternative, nor will it meet the requirement of "least burdensome," which the Administrative Procedures Act (APA) material evaluates. Each alternative analysis in the EIS includes an "implementation effectiveness" consideration. The water quality standards rulemaking website contains the APA rule materials, which also include the Cost Benefit Analysis, along with other supporting material for the rule.

This EIS is for a nonproject action. Nonproject actions are governmental actions involving decisions on policies, plans, or programs that contain standards controlling use or modification of the environment. Nonproject actions include the adoption or amendment of comprehensive plans, ordinances, rules, and regulations at WAC 197-11-704(20)(b).

In accordance with the APA, Ecology filed two pre-proposal statements of inquiry, Code Reviser (CR) 101, in September 2012 to notify the public of Ecology's intent to begin rulemaking for the Water Quality Standards for Surface Waters of the State of Washington – Chapter 173-201A WAC. The two CR 101 statements addressed development of human health criteria and revisions to implementation tools, respectively. These two CR 101 statements were merged into one formal proposed rulemaking (CR 102) process.

In December 2014, Governor Jay Inslee proposed a comprehensive plan combining the proposed water quality standards with proposed legislation and funding to provide stronger and broader controls on toxic threats in our environment (see the Governor's Policy Brief at: http://www.ecy.wa.gov/water/standards/Gov-Dec2014-ReducingToxicPollution.pdf). In January 2015, Ecology issued a proposed rule establishing new human health criteria to protect designated uses and provide predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or discharge limits. Along with the proposed rule, a draft EIS was also issued. The House passed the governor's proposed bill during the regular legislative session, but the Senate failed to act on it before the legislative session concluded. Ecology did not adopt the initial proposed rule and instead proposed a second revision of water quality standards in February 2016.

All the rule support material is incorporated by reference into this EIS.

New human health criteria

Numeric criteria

Human health criteria are numeric water concentrations for toxic substances that protect people who consume fish and shellfish from local waters and who drink untreated water from local surface waters. These criteria are calculated from a variety of different factors, including chemical-specific toxicity to humans, how chemicals move from water into fish and shellfish and then into humans, as well as other factors.

The development and adoption of new human health criteria includes consideration of new science on toxicity factors, new information on body weight, and Washington-specific fish consumption. The factors included in the criteria calculations are a mix of average and higher percentile values, and are consistent with EPA guidance. This approach results in high levels of consumer protection from pollutants that could be found in untreated surface water, fish, and shellfish from Washington.

Arsenic and PCB criteria

Ecology developed chemical-specific approaches for arsenic and Polychlorinated Biphenyls (PCBs).

Revised and expanded implementation tools

Washington's water quality standards contain a number of tools that relate directly to how the criteria are met. These tools are implemented both in permits and orders, as well as specifying how the current designated uses and criteria can be changed if certain factors can be

demonstrated. Ecology is adopting revisions to two of the tools (compliance schedules and variance requirements) that are already in the water quality standards, and the addition of a new tool (intake credits).

Ecology is also adopting new language clarifying implementation of human health criteria for Combined Sewer Overflow (CSO) Treatment Facilities. The new language on CSO treatment plants is not considered a major change because it describes practices that are already in use and identified in Ecology's Permit Writer's Manual, therefore it is not evaluated in this EIS.

The following tools and changes are briefly summarized.

Compliance schedules

Compliance schedules are tools used in Ecology discharge permits, orders, or other directives that allow time for dischargers to make needed modifications to treatment processes in order to meet permit limits or requirements. They are commonly used for construction and treatment plant upgrades, and cannot be used for new or expanding discharges. Compliance schedules are used when there is an expectation that the discharge will meet permit limits at the end of the schedule. The current state water quality standards approved by EPA contain a maximum time limit of ten years for compliance schedules. In 2009, the Washington legislature passed a law (RCW 90.48.605) requiring Ecology to develop longer compliance schedules for certain types of discharges.

Ecology revised WAC 173-201A-510(4) language:

- deletes the specific period of time for the compliance schedule.
- describes circumstances when a compliance schedule can go beyond the term of a permit.
- ensures that compliance is achieved as soon as possible.
- authorizes compliance schedules for longer periods of time in accordance with RCW 90.48.605, where a total maximum daily load (TMDL) exists.
- details circumstances when more time is needed and a TMDL does not exist.

Variances

A variance is a time-limited designated use and criterion as defined in 40 CFR 131.3, and must be adopted into state rule and approved by EPA. A variance temporarily waives water quality standards for a specific chemical criterion and designated use for either a single discharge or for multiple discharges, or for specified stretches of surface waters (for example, a specific tributary, lake, or watershed).

Variances are used in situations where it can be demonstrated that:

1) a discharge can eventually meet the permit limit or a water body can eventually meet the criteria and designated use, but a longer time frame is needed than allowed in a compliance schedule, or,

2) it is not known whether the discharge will ever be able to meet the permit limit or whether a waterbody will meet a criterion and/or designated use. Because a variance is a temporary change to a criteria and use, variances are considered changes to the water quality standards and must go through a rulemaking and subsequent EPA Clean Water Act approval to be effective.

The current state water quality standards approved by EPA give a brief list of the requirements for granting variances, including a maximum five-year time frame. The federal water quality standards regulations were recently revised and now include substantial requirements for granting variances (40 CFR 131.14; http://www2.epa.gov/wqs-tech/final-rulemaking-update-national-water-quality-standards-regulation).

The new rule language on variances expands on the current rule language and is consistent with the new EPA regulations. Demonstrating the need for a variance could be very labor intensive, depending on the specific situation. More detailed specifications in the water quality standards help set clearer expectations for both dischargers and the state, and will result in more predictable outcomes for dischargers.

Intake credits

Intake credits are a permitting tool that allows a discharge limit to be calculated in a way that does not require the discharger to "clean-up" pollutants in the discharge that are from the intake water, when the intake water and water body receiving the discharge are the same water body. This tool is currently allowed for use in the NPDES permit program to calculate technology-based limits, but Washington does not have a regulation that allows use of this tool to calculate limits based on water quality criteria (a.k.a. water quality-based limits). This tool is used to calculate water quality-based limits in several other states, including Oregon and the Great Lakes states.

The new rule language includes general provisions and considerations for determining reasonable potential and establishing water quality based effluent limits.

Purpose and need of the rulemaking

Water quality standards are the foundation of water pollution control programs under the Clean Water Act. The standards are required to protect public health and welfare, and identify designated uses (aquatic life, drinking water, recreation, etc.) and the numeric criteria to protect those uses. Water quality standards are used in writing permits, identifying polluted waters, and setting allocations to clean up already polluted waters.

Federal regulatory requirements

Under the federal Clean Water Act, all states are required to develop water quality standards that protect the designated uses of the state's waters. Federal requirements further define what those standards must contain. The state's water quality standards set limits on pollution in our lakes, rivers and marine waters in order to protect existing and designated beneficial uses, such as swimming and aquatic life. The Clean Water Act requires states to review and revise as necessary their water quality standards every three years.

Clean Water Act 303(c)(2)

303(c)(2) *Review; revised standards; publication.*

> *"The Governor of a State or the State water pollution control agency of such State shall from time to time (but at least once each three year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.*
>
> *Whenever the State revises or adopts a new standard, such revised or new standard shall be submitted to the Administrator. Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this Act. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and also taking into consideration their use and value for navigation."*

State regulatory requirements

Water Pollution Control Act

90.48.010 *Policy enunciated.*

> *It is declared to be the public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state. The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the*

jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington.

90.48.035 *Rulemaking authority.*

The department shall have the authority to, and shall promulgate, amend, or rescind such rules and regulations as it shall deem necessary to carry out the provisions of this chapter, including but not limited to rules and regulations relating to standards of quality for waters of the state and for substances discharged therein in order to maintain the highest possible standards of all waters of the state in accordance with the public policy as declared in RCW 90.48.010.

90.48.260 *Federal Clean Water Act – Department designated as state agency, authority – Powers, duties and functions.*

The Department of Ecology is hereby designated as the State Water Pollution Control Agency for all purposes of the federal clean water act as it exists on February 4, 1987, and is hereby authorized to participate fully in the programs of the act.

Water Resources Act of 1971

90.54.020 *General declaration of fundamentals for utilization and management of waters of the state.*

(b) Waters of the state shall be of high quality. Regardless of the quality of the waters of the state, all wastes and other materials and substances proposed for entry into said waters shall be provided with all known, available, and reasonable methods of treatment prior to entry. Notwithstanding that standards of quality established for the waters of the state would not be violated, wastes and other materials and substances shall not be allowed to enter such waters which will reduce the existing quality thereof, except in those situations where it is clear that overriding considerations of the public interest will be served.

Need for rulemaking

Triennial Review

The Clean Water Act requires that states hold public hearings to review their water quality standards at least once every three years, and make changes as appropriate. This effort is often called the "Triennial Review". Ecology completed its last Triennial Review in 2010.

The Triennial Review process started with outreach to identify issues in the water quality standards that potentially needed revision. Ecology held a series of public meetings, and developed a 5-year plan based on feedback during the meetings.

Each of the substantive issues addressed in this rulemaking (adoption of human health criteria and improved implementation tools language) were highlighted as priority rule areas in the 2010 Triennial Review. During that process, and through other venues, Ecology received a number of concerns that Washington is implementing federal human health criteria that are significantly outdated and do not include updated information on fish consumption rates from surveys taken in Washington State.

The overview of the 2010 Triennial Review process can be found at this site: http://www.ecy.wa.gov/programs/wq/swqs/triennial_review.html.

Federal proposal of human health criteria for Washington State

In September 2015, the EPA published draft federal human health criteria for Washington State (80 FR No. 177, Monday, September 14, 2015. Pages 55063 – 55077). Comments on that draft federal regulation were accepted up until December 28, 2015. We expect the Washington State rule to be submitted to the EPA prior to finalization of the draft federal rule.

Framework for federal review and action

All state-adopted water quality standards are required to be submitted to EPA for review and approval (or disapproval). If EPA does not approve state water quality standards, then they are required to promulgate federal water quality standards for states that do not adopt standards.

Ecology conducted a formal revision of the state rules for water quality standards. After adoption, the rule is required to be submitted to EPA for federal action (approval or disapproval). The following outlines the steps and timing of the federal action:

1. Ecology submits the adopted rule to EPA.
2. EPA reviews the submittal for acceptability under the Clean Water Act.
3. EPA has 90 days to make a determination on whether the State's rule meets the Clean Water Act.
4. If the Clean Water Act would not be met by the rule, then EPA can disapprove Ecology's rule.

If Ecology submits final criteria to EPA for approval under the Clean Water Act before EPA finalizes the draft federal human health water quality criteria, EPA will review and act upon the state's submission in a timely manner and prior to any final action on the federal criteria.

Summary of the rulemaking

States are required to update standards to reflect updated scientific data. In 1992, EPA promulgated the National Toxics Rule (NTR) that included federal criteria to protect human health and aquatic life. States that did not adopt toxics criteria were placed under the NTR by EPA. During that time, Washington standards incorporated aquatic life criteria for toxics but not human health criteria for toxics. Thus, Washington was one of 14 states/territories that were placed under the NTR.

Because the state has not previously adopted human health criteria for toxics under the Clean Water Act, all factors that go into developing the human health criteria were considered and discussed as part of this rule adoption process.

There are four separate equations used to calculate the human health criteria for toxics that are in the updated rule. This results in four distinct groups of 94 of the 97 priority pollutant chemicals that have numeric criteria (three chemicals have criteria that are based on Safe Drinking Water Act [SDWA] levels):

1. Carcinogenic chemical for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
2. Noncarcinogenic chemicals for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
3. Carcinogenic chemical for exposures from consuming fish and shellfish only (marine waters and some freshwaters).
4. Noncarcinogenic chemicals for marine water exposures from consuming fish and shellfish only (marine waters and some freshwaters).

For purposes of simplifying the discussion, these scenarios will be referred to as freshwaters or marine waters, respectively. Some freshwaters in Washington do not have "domestic water supply" as a designated use, and, as noted previously, for these waters the criteria that address only the consumption of organisms are applied. Criteria for three chemicals (copper, asbestos, and arsenic) are based on SDWA regulatory levels.

The other issue highlighted in the Triennial Review was the need to update the implementation tools (e.g., compliance schedules or variances) in the water quality standards. Current water quality cleanup plans (also called Total Maximum Daily Loads, or TMDLs) and regular permitting situations sometimes result in effluent limits that cannot be successfully met within the life of a permit cycle (e.g., temperature, nutrient controls, and toxics controls).

The goal of the implementation rule language is to provide predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or effluent limits over both short-term and longer time frames. The changes will allow for compliance with requirements while dischargers effectively work toward meeting effluent limits and controlling sources of pollutants.

The EIS looked at several options related to the three different areas of focus for the implementation tools: compliance schedules, clarified and expanded language for variances, and a new section on intake credits.

Summary of environmental impacts

The water quality standards contain criteria to protect designated beneficial uses. Under the Clean Water Act, Section 303 (c)(2), States must provide:

> "*water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural , industrial, and other purposes, and also taking into consideration their use and value for navigation."*

These rule revisions address the beneficial use of protecting human health through the recreational and aquatic life, and fishable/swimmable goals. The criteria in the standards are used to develop permits for discharge facilities, to identify waters that are polluted and need to be cleaned up, and to set the final discharge limits and best management practices that will result in clean waters. The criteria were developed to protect people that drink surface water and consume fish and shellfish from Washington State waters.

The implementation tools (intake credits, compliance schedules, and variances) apply to the implementation of human health criteria. They also apply to narrative and numeric criteria that are designed to protect all designated uses, in particular aquatic life and recreational uses. The implementation tool alternatives have an expanded analysis for how they might affect aquatic life and recreational uses.

Other documents incorporated by reference

This EIS is for a nonproject action to adopt new human health criteria and new/revised implementation tools under the Clean Water Act. As a part of this rule adoption process, other documents have been prepared which are being incorporated by reference.

The following documents can be viewed at: http://www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203docs.html.

1. Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment.
2. Cost-Benefit and Least Burdensome Alternative Analysis.

Summary of alternatives

Alternatives for the adoption of new human health criteria (see appendix B for details)	
Alternative 1	No action alternative. Remain under the existing National Toxics Rule (40CFR131.36) for human health criteria. The NTR applies a fish consumption rate of 6.5 grams/day and a risk level of one-in-one-million for the carcinogenic chemicals (note that the criterion for asbestos is based on Safe SDWA levels).
Alternative 2	EPA new draft human health criteria regulation for Washington.*
Alternative 3	Adopt human health criteria based on a fish consumption rate of 175 grams/day, and a risk level of one in a million for the carcinogenic chemicals (note that the criteria for copper and asbestos are based on SDWA levels). Chemical-specific exceptions have been made for arsenic and total PCBs. Decriptions for the alternatives for these chemicals follow.
A comparison of the criteria concentrations for each of these Alternatives is found in Appendix A. The three alternatives are explained more fully in the section Adopting Human Health Criteria: Human health criteria alternatives.	

*The EPA draft human health criteria regulation is not finalized at the time of this writing. However, for purposes of reviewing alternatives, the draft EPA regulation is useful to evaluate because, from a temporal and topical perspective, it is a parallel process to the Ecology rulemaking process and could potentially result in new federal human health criteria for the state.

Alternatives for the challenging chemical Arsenic	
Alternative 1	No action alternative. Remain under the existing National Toxics Rule for arsenic-0.018 µg/L for freshwater and 0.14 µg/L for marine water (both inorganic).
Alternative 2	EPA new draft new human health criteria regulation for Washington. 0.0045 µg/L inorganic arsenic for freshwater and 0.0059 µg/L inorganic arsenic for marine water.

Alternative 3	Adopt new human health criteria of 10 µg/L (total arsenic) based on SDWA levels, accompanied by required arsenic pollution minimization efforts if a facility is adding arsenic within their system.

Alternatives for the challenging chemical category of total PCBs	
Alternative 1	No action alternative. Remain under the existing National Toxics Rule for PCBs – 0.00017 µg/L total PCBs for marine and freshwater.
Alternative 2	EPA new draft human health criteria regulation for Washington. 0.0000073 µg/L total PCBs for marine and freshwater.
Alternative 3	Adopt a PCB criterion of 0.00017 µg/L total PCBs for marine and freshwater.

Alternatives for the Implementation Tools	
Compliance Schedules	
Alternative 1	No action alternative. Make no changes to the existing water quality standards.
Alternative 2	Adopt a 20 year maximum time frame for compliance schedules and requirements to meet the water quality standards in the shortest time possible.
Alternative 3	Adopt language that does not specify the amount of time provided for compliance schedules and rely on a permit by permit analysis to meet the water quality standards in the shortest time possible.
Variances	
Alternative 1	No action alternative. Make no changes to the existing water quality standards

Alternative 2	Adopt a provision allowing for a 10 year variance time period in rule.
Alternative 3	Adopt language that does not specify the amount of time that can be granted for variances and rely on a variance-specific analysis to meet the water quality standards in the shortest time possible. Add language clarifying requirements.
Intake Credits	
Alternative 1	No action alternative. Do not add any intake credit language to the water quality standards.
Alternative 2	Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on using concentration and mass in the permitting process.
Alternative 3	Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on concentration only to be used during the permitting process.

Summary of mitigation measures

The state does not expect any adverse impacts associated with the preferred alternative. The following measures are a part of the state's efforts to address toxics:

- Increased monitoring
- Increased water clean-up actions
- Increased pollution prevention actions
- Increased guidance for implementation tools

Increases in these categories would help mitigate any potential negative environmental impacts associated with the new rule.

Alternatives

An Environmental Impact Statement (EIS) is a tool for identifying and analyzing probable adverse environmental impacts, reasonable alternatives, and possible mitigation. Alternatives were considered for the development of human health criteria, the development of specific criteria for arsenic and PCBs, and alternatives for each of the three implementation tools.

The EIS analyzed the preferred alternative, the no action alternative, and one or two reasonable alternatives proposed by stakeholders. A reasonable alternative is defined as a feasible alternate course of action that meets the rule's objective. Reasonable alternatives may be limited to those that an agency with jurisdiction has authority to control either directly or indirectly through the requirement of mitigation.

The preferred alternative has been discussed in the public involvement process. That process included significant public comment from stakeholders, including the regulated community, environmental groups, tribes, and other interested parties. As such, these alternatives incorporate many concerns of cost, feasibility, and environmental protection. The "no action" alternative is the existing federal rule language (NTR at 40 CFR 131) and the existing language in WAC 173-201A. In this final EIS, the EPA draft human health criteria regulation for Washington that EPA issued for public review in September 2016 is included as an alternative.

Because all alternatives were developed in consideration of cost, complexity, effectiveness of implementation, and level of environmental protection, all are considered to be "reasonable."

The issues can be loosely grouped into the following categories of reasonable alternatives that meet the rule's objectives: human health criteria, arsenic, PCBs, and implementation tools. These are compared later in this document.

This EIS examines the overall protectiveness of these types of criteria by looking not only at the context of the value or description, but also examines how effectively each alternative can be managed in a regulatory context to provide environmental protection. Each section within the EIS contains a table summarizing the information used in the evaluation.

Each of the alternatives is evaluated using two characteristics: effective usability and environmental protection. These elements are ranked independent of each other. However, the reader may want to balance the pros and cons of both categories when determining what they believe would be the best alternative, or when determining the environmental consequences of any single alternative. The following characteristics are evaluated for each alternative.

Usability (Can the alternative be used effectively to protect water quality?)

This characteristic has an implementation focus that asks the question: is there something about this alternative that would make it unable to be implemented effectively? Would something about an alternative lead to incorrect uses, thus providing less protection? This does not address the stringency of the alternative for the regulated community, which is analyzed in the APA documentation. Usability of the alternatives is evaluated according to the following system:

High – A very easy alternative to use. There are no expected obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could be effectively written into permits and TMDLs. This alternative is clearly defined in federal guidance and regulations.

Moderate – A moderately easy alternative to use. There are no or few expected major obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could usually be effectively written into permits and TMDLs, though it may require additional complex modeling or analysis. This alternative meets federal regulations and meets intent of federal guidance.

Low – A more difficult alternative to fully and effectively use. There may be obstacles to implementing the alternative that would diminish its effectiveness. For example, it might require complex modeling, multi-party negotiations, long-term data collection, or detailed analysis before the alternative could be used in permits and TMDLs. Complexity might affect the intended function. This option meets federal regulations but might not be consistent with federal guidance.

Level of environmental protection

This characteristic is a best assessment of what level of protection the criteria would provide, and is based on the information presented. The intent is to describe how close each alternative comes to meeting the objective of the rule. The level of environmental protection does not factor in issues of simplicity and usability. The reader should evaluate simplicity, usability, and level of environmental protection when determining the consequences of adopting any single alternative. The level of environmental protection of the alternatives is evaluated according to the following system:

High – The alternative *would have a high likelihood* of fully protecting the beneficial uses. The alternative addresses nearly all of the potential risks to the beneficial use for that issue. There are no or few exemptions that might reduce the level of protection. The protection the alternative provides is effective immediately.

Moderate – The alternative *would most likely* provide full protection for the beneficial uses. The alternative addresses most of the potential risks to the beneficial use for that issue, but there are some exemptions or simplifying assumptions that might reduce the level of protection. The protection the alternative provides is effective immediately or in the near future.

Low – The alternative *might* fully protect the beneficial uses. The alternative addresses many, but not all, of the potential risks to the beneficial use for that issue. There are many simplifying assumptions that might reduce the level of protection. The protection the alternative provides might not be effective immediately.

Issues not addressed in EIS

Unchanged parts of the Water Quality Standards

There are many parts of the water quality standards that Ecology did not change, or is making only minor changes to. This EIS focuses only on those issues and items identified in the previous section.

Postponing the implementation of the rule

The Clean Water Act requires states to review their water quality standards every three years. The last substantive revision to Washington's water quality standards occurred in 2003/2006. Some of the changes in this rulemaking have been discussed for many years. EPA has drafted new regulations that revise the current federal human health criteria applicable to Washington's waters to ensure that the criteria are set at levels that will protect fish consumers in Washington from exposure to toxic pollutants. EPA stated that if Ecology submits final state-adopted human health criteria to EPA for approval before EPA finalizes the federal human health water quality criteria, EPA will review and act upon Ecology's submission prior to any final action on the federal criteria. If EPA approves state criteria submitted by Ecology, the corresponding federal criteria will not be finalized.

Development of implementation tools to address toxics was identified as a priority in the last triennial review process. These tools were developed or further clarified to bring about compliance with the water quality standards yet recognize that to meet some of the water quality standards it will take longer time due to the complex nature of some of the pollutants that are being addressed in Washington State.

Ecology could postpone the human health criteria rule, in which case it would default to the federal government to update their human health criteria for Washington State. Ecology has received significant feedback from a variety of stakeholders that they want the State to maintain control of water quality standards that apply to Washington waters, including state adoption of human health criteria, rather than the federal government.

How Water Quality Standards Criteria are implemented in the Clean Water Act Programs

Once a state has adopted water quality standards, those standards then provide a foundation for implementing key provision of the Clean Water Act. The water quality standards are used to implement the following four programs/authorities:

1. The National Pollutant Discharge Elimination System (NPDES) program.
2. The Clean Water Act 401 certification authority.
3. Section 303(d) of the Clean Water Act to identify polluted waters.
4. The TMDL or water cleanup program.

The National Pollutant Discharge Elimination System Program

In 1972, Congress enacted the National Pollutant Discharge Elimination System (NPDES) as part of the Clean Water Act. The NPDES program requires that all entities have an NPDES permit if they discharge wastewater into state waters. The permit describes:

- What the discharger must do to protect water quality.
- The types of monitoring and reporting the discharger must perform.
- Limits on how much pollution can be discharged to maintain water quality.

The state of Washington has delegated authority from EPA to issue NPDES permits for the state, and issues two types of wastewater discharge permits:

Individual permits - cover individual facilities.

General permits - cover a category of similar dischargers. Boatyards, municipal stormwater and upland fin fish hatcheries are examples of activities which are covered under general permits. General permits provide efficient and effective permitting of wastewater discharges. The general permit approach produces a permit for a group of similar dischargers at diverse locations. Once issued, many facilities can be covered under a single general permit quickly and efficiently. A general permit is appropriate when the characteristics of the discharge are similar and a standard set of permit requirements can effectively provide environmental protection regardless of location. To develop a general permit, Ecology collects information about typical pollutants and discharge conditions from the targeted group and sets permit requirements to regulate the identified set of pollutants and discharges.

A wastewater discharge permit is a legal document issued by Ecology to control the discharge of wastewater to surface or ground waters and to publicly-owned sewage systems. Permits place limits on the quantity and concentrations of contaminants that may be discharged. When necessary, permits require treatment of wastewater or impose other operating conditions on dischargers to ensure that permit limits are met. Permits may also set other conditions, including monitoring and reporting requirements, spill prevention planning, and other regulatory activities.

Permit conditions specify how a facility must operate to remain within the effluent limits. Effluent limits are specific restrictions on the volume and concentration of certain pollutants that can be discharged. Federal and state regulations require that effluent limitations in a permit must be either technology-based or water quality-based. The more stringent of these two types of limits must be chosen for each pollutant of concern identified in the permit.

Technology-based limitations are performance standards established under federal and state regulations. Water quality-based limitations are based on compliance with the state water quality standards.

Technology-based effluent limits for the discharge are derived first. Washington State requires dischargers to use all known and available reasonable technology (AKART) to control pollutants in their effluent. If technology-based controls fail to cause a discharge to meet state water quality standards, the permit will impose additional conditions so the discharge meets water quality standards. These are water quality-based effluent limits.

Effluent monitoring, recording, and reporting are required in most permits to verify that treatment or control processes are functioning correctly and that effluent limitations are being achieved. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The frequency of monitoring is the minimum frequency needed to document compliance.

Requirements for preparation of pollution prevention plans, spill control plans, and other operating conditions can also be a permit condition.

There are a number of steps and key decision points that need to be made as a permit is developed.

- Does the permitted facility discharge a toxic chemical?
- Is there a reasonable potential for that facility to discharge a toxic chemical?
- Does the concentration of that chemical exceed the criteria at the compliance point?

A more detailed discussion of how permits are issued can be found in Ecology' *Permit Writers Manual*, Revised December 2011, Publication No. 92-109. Appendix A of this EIS also provides flow charts stepping through the permit process that were developed for this rule effort.

401 Certifications

Ecology also implements the Water Quality Standards through the Clean Water Act, Section 401 State Water Quality Certifications. This is a certification action required for federally permitted or licensed projects that could result in discharge to the state's waters. Applicants receiving a permit or license from the following federal agencies are required to apply to Ecology for a 401 certification; EPA (NPDES permits) to federal facilities, U.S. Army Corps of Engineers (Section 404 or nationwide permit), the Coast Guard (River and Harbors Act, Section 10 permit) or the Federal Energy Regulatory Commission (hydropower license). To ensure water quality is protected, Ecology may take one of the following actions:

- Approve the project without condition.
- Deny the project.
- Waive the state 401 authority.
- Condition the project to include further protections necessary to meet Washington State water quality standards.

If the certification is denied, then the federal permit or license is not issued. If the certification includes conditions, then these become requirements of the federal permit or license. If the state approves the project or waives its 401 authority, then the permit or license can proceed as written by the federal agency.

303(d) – list of polluted waters

The Clean Water Act established a process to identify polluted waters. Every two years states are required to prepare a list of water bodies that do not meet Washington's water quality standards. This list is called the 303(d) list because the process is described in Section 303(d) of the Clean Water Act. To develop the list, Ecology compiles readily available water quality data. Ecology frequently gets data from other federal and state agencies, local governments, citizen groups, tribes, and industries. All data submitted are reviewed to ensure that they were collected using the appropriate quality assurance and scientific methods before they are used.

The data are then assessed to determine if waterbodies exceed the water quality standards. A determination of whether they exceed the standards is made according to the Water Quality Program 303(d) Assessment Policy 1-11 at www.ecy.wa.gov/programs/wq/303d/WQpolicy1-11ch1.pdf.

Water cleanup programs (Total Maximum Daily Load)

The Clean Water Act also requires that a water quality cleanup plan be developed for each of the waterbodies on the 303(d) list. The technical name for a water cleanup plan is a Total Maximum Daily Load, or TMDL. A TMDL identifies how much pollution needs to be reduced or eliminated to achieve water quality standards. A waterbody stays on the 303(d) list until a TMDL has been developed for it, or its pollution problem is addressed through some other pollution control process, or it meets water quality standards.

All TMDLs have five main components:

1. An identification of the type, amount, and sources of water pollution in a particular water body or segment.
2. A determination of how much the pollution needs to be reduced or eliminated to achieve clean water.
3. An allocation showing how much pollution each source will be allowed to discharge.
4. A strategy to meet these allocations.
5. A monitoring plan to make sure the water is getting cleaner as the TMDL is implemented.

In general, the TMDL identifies the problem and its sources, and establishes wasteload allocations for point source discharges. Ecology implements the TMDL by placing the necessary pollutant limits in the NPDES permits for pollution coming from point source, once the wasteload allocations have been set.

For pollutants coming from nonpoint sources, once the source or sources have been identified the TMDL implementation plan must evaluate potential methods to control the pollutants and suggest an array of methods that can be used. These methods are referred to as "best management practices" or BMPs.

Measuring chemical concentrations - quantification levels

The NPDES program uses EPA-approved and required chemical analytical methods to measure concentrations of pollutants in wastewater. However, some methods are more sensitive than others, and in some cases the EPA-approved and required methods for measuring chemicals cannot measure at the very low levels at which these chemicals are found. The concentration at which a laboratory or method can reliably report a determination of accurate measurement is called the "quantification level." For compliance assessment Ecology requires use of the most

sensitive analytical method and quantification levels that are allowed by EPA for NPDES program use under the federal regulations (40 CFR 136). The quantification levels for each of the criteria that are being adopted are included in Appendix B with each of the human health criteria alternatives.

Adopting Human Health Criteria

Background on human health criteria

The human health criteria are chemical-specific concentrations applied to surface waters. The human health criteria are developed to protect human populations from undue risks to chemical exposures from drinking untreated surface-water and eating fish and shellfish that live in those waters. The criteria are calculated using equations developed by EPA that incorporate information on risk and exposure, and the degree to which the pollutant accumulates in fish and shellfish tissues and water. EPA has developed equations for both carcinogens and noncarcinogens that apply to either ingestion of "organisms + water", or, "organisms-only" (EPA 2000). For the remainder of this document these will be termed human health criteria for fresh waters or human health criteria for marine waters. Ecology developed a detailed document that explains how human health criteria are calculated: *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment, January 2016.* That document is incorporated into this EIS by reference.

In total, there are four equations that are used to calculate human health criteria:

1. Carcinogenic chemical for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
2. Noncarcinogenic chemicals for exposures from drinking untreated surface water and consuming fish and shellfish (most freshwaters).
3. Carcinogenic chemical for exposures from consuming fish and shellfish only (marine waters and some freshwaters).
4. Noncarcinogenic chemicals for marine water exposures from consuming fish and shellfish only (marine waters and some freshwaters).

These equations are based on chemical effects (carcinogens or noncarcinogens/threshold chemicals) and routes of exposure (fresh or marine water).

Chemical effects: Human health criteria equations are used to calculate criteria for both cancer causing chemicals, called carcinogens, and non-cancer causing chemicals, called noncarcinogens. The criteria for any one chemical are based on the acceptable level of risk (the effect that would occur at the lowest water concentration).

Cancer Risk: This applies to carcinogens and are based on modeled risk levels with an assumption of non-threshold effects: even one molecule of the chemical causes some additional risk of effect. These are modeled risks.

Non-cancer hazard: These apply to noncarcinogens and are based on threshold levels developed from toxicity testing. There are safe levels: below a certain dose no response is detected, above a certain level safety decreases and effects could occur. These are measurable affects.

Routes of exposure: Washington has both marine and fresh waters under Clean Water Act and state jurisdiction. Therefore, separate equations are needed for each to account for presence or absence of an untreated drinking water exposure route. Marine waters are assumed to include estuarine waters and they are assumed to not serve the use of drinking water.

Each of the alternatives presented are alternatives that meet the EPA existing guidance to states with the exception of the "No Action" alternative. The "No Action" alternative relies on staying under the federal NTR which does not provide adequate environment protection (see alternatives analysis). EPA has published a draft regulation for Washington that would impose revised federal human health criteria on the state. The EPA draft regulation is alternative 2 in this EIS. EPA finalization of a federal regulation for Washington is an outcome not aligned with state law as specified in the overarching language in RCW 90.48.010:

> *"…The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington."*

Human health criteria alternatives

Three different alternatives are presented here for 95 of the 97 priority pollutant chemicals being addressed (two chemicals, arsenic and PCBs, are reviewed separately). To see a side by side numeric comparison of the criteria concentrations in each of the alternatives go to Appendix B.

Alternative #1: No Action Alternative. Remain under the existing National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in a million for the carcinogenic chemicals.

This federal rule uses a fish consumption rate of 6.5 grams/day that reflects the national consumption of fish by the general public (consumers and nonconsumers) based on survey information from the 1970s. This alternative also relies on a one-in-one-million (1×10^{-6}) risk rate for carcinogens and a relative source contribution of 1 for non-carcinogens. See *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016. The criterion for copper and asbestos are based on SDWA levels.

Alternative #2: EPA draft regulation for Washington. For purposes of this EIS evaluation the federal draft regulation is one of the alternatives. This draft federal regulation uses a fish consumption rate of 175 grams/day, a one-in-one-million (1×10^{-6})-risk rate for carcinogens, a relative source contribution of 0.2 to 0.8 for non-carcinogens, and an accumulation factor approach that focuses on ingestion of predatory fish only (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016, for information about these factors). The criteria for copper and asbestos are based on SDWA levels.

Alternative #3: Washington State regulation. Adopt criteria based on a fish consumption rate of 175 grams/day, and a one-in-one-million (1×10^{-6}) risk rate for carcinogens (PCB and arsenic alternatives addressed separately below), a relative source contribution of 1.0 for non-carcinogens, and an accumulation factor approach that accounts for ingestion of shellfish, non-predatory and predatory fish (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016, for information about these factors). The criteria for copper and asbestos are based on SDWA levels.

Alternative #3 is the preferred alternative presented in this rule.

Comparison of Alternatives

Please refer to the Alternative Section for more detail on the considerations used in rating the alternatives.

Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No Action	Alternative 2 EPA Draft Regulation	Alternative 3 Preferred alternative
Low	Moderate to Low	Moderate to Low
Note on usability comparison: All three alternatives will have obstacles in the way of their use. An important obstacle shared by all three alternatives is the inability to detect and quantify the concentrations of many of the chemicals in the environment and in discharges at the low levels of many of the human health criteria in the three alternatives. The issues associated with chemical analytical methods make some criteria difficult to implement and limit effectiveness of implementation. Permitting tools to address this have been developed and are in use. Alternatives 2 and 3 would both result in effluent limits, and costs and benefits under existing detection levels. EPA prepared a cost analysis (EPA 2015. Economic Analysis for the Revision of Certain Federal Water Quality Criteria Applicable to Washington. Abt Associates and PG		

Usability Can the alternative be used effectively to protect water quality?		
Alternative 1 No Action	Alternative 2 EPA Draft Regulation	Alternative 3 Preferred alternative
Environmental, LLC. August 17, 2015; at EPA Docket: EPA-HQ-OW-2015-0174) that shows no cost for the vast majority of pollutants that are a part of their draft regulation. However, the EPA analysis appears to underestimate costs in a number of ways that are reflected in higher cost estimates in Ecology's Cost Benefit Analysis accompanying this rule. The EPA analysis does not include cleanup costs for sediments, soils, or groundwater regulated by the Model Toxics Control Act, which are sometimes driven by the water quality standards. It does not estimate costs for minor facilities. The proportionally representative sample of major facilities on which EPA's costs are based may not reflect costs to individual non-typical facilities as accurately as Ecology's analysis. In particular, where the state human health criteria are less stringent than EPA and create costs, EPA has underestimated costs. This may not affect many dischargers and chemicals detected in effluent, by Ecology's analysis, but includes chemicals such as bis(2)ethylhexyl phthalate. Similarly, where the state human health criteria are more stringent than EPA and create costs, EPA may have underestimated non-zero costs (This affects only three chemicals detected in effluent: 3,3'-dichlorobenzidine, benzene, and chlordane). See the Cost Benefit Analysis that accompanies this rule. In summary, Alternative 2 has a large percentage of individual criteria values that are more stringent than Alternative 3. It is expected that a more thorough analysis of costs of Alternative 2 (where EPA analysis may or does underestimate costs), using Ecology's more comprehensive approach, would result in equal or greater costs for the Alternative 2. Because Alternative 1 does not meet the levels of protection needed for non-carcinogens (see Note in the next table), Alternative 1 is rated "low" for usable effectiveness. Alternatives 2 and 3 share similar challenges with regard to detection levels, and use of both would result in costs and benefits, thus these alternatives are rated as "moderate to low," with the caveat that the costs associated with Alternative 2 are expected to be higher than costs associated with Alternative 3.		

Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No Action	Alternative 2 EPA Draft Regulation	Alternative 3 Preferred alternative
Moderate - Low	High	High
Note: Alternatives 2 and 3 provide protection of the environment and the designated uses that they are specifically designed to address. In some cases other types of water quality standards (e.g., those designed to protect aquatic life) are more stringent (protective) than the criteria in the alternatives. In those cases the most stringent (protective) of the criteria are used to determine discharge effluent limits to protect the most sensitive use. For alternatives 2 and 3 the different concentration levels are generally very low and are tied to levels of protection that are well within past and current practices for human health criteria. For these reasons alternatives 2 and 3 are rated as "high." Alternative 1 is rated as "moderate – low" because, while the levels of protection afforded by the criteria for carcinogens are within EPA guidelines, the protection afforded by the criteria for non-carcinogens does not meet a "no effects level" as determined by state-specific data for the fish consumption rate input to the equation, therefore the level of protection used in EPA guidelines and chosen by Washington as part of its risk management process is not met by Alternative 1.		

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Adopting Human Health Criteria for Arsenic

Background on arsenic

Arsenic is a naturally occurring element present in the environment in both inorganic and organic forms. Inorganic forms of arsenic are considered to be the most toxic, and are found in ground water and surface water, as well as in many foods. A wide variety of adverse health effects, including skin and internal cancers and cardiovascular and neurological effects, have been attributed to chronic arsenic exposure, primarily from drinking water (NAS, 1999; CTD, 2013).

There are also anthropogenic sources of arsenic in the environment which include: pesticides and herbicides, fertilizers, pharmaceuticals, electronic semiconductors, automobile lead-acid batteries, lead bullets and shot, metal smelting, and pressure-treated lumber. (Pressure-treated lumber is a legacy source. Production of new pressure-treated lumber treated with an arsenic compound has been phased out.)

A more in-depth discussion on the issues and challenges with arsenic is found in *Washington Water Quality Standards: Human health criteria and implementation tools*. *Overview of key decisions in rule amendment*, January 2016.

Arsenic standards in Washington

Washington's current water quality standards for arsenic to protect aquatic life are contained in the state's Water Quality Standard rule (WAC 173-201A) that is administered by the Washington Department of Ecology (Ecology). Arsenic standards for protection of human health are also contained in the EPA-promulgated National Toxics Rule (NTR) (EPA 1992; 40 CFR 131.36). Both human health criteria and aquatic life criteria are shown in this table and are expressed as micrograms per liter (µg/L), which is equivalent to parts per billion (ppb).

Washington's Current Water Quality Standards for Arsenic					
National Toxics Rule (NTR) – Human Health Criteria (1992)		Washington State Water Quality Standards (WAC 173-201A) – Aquatic Life Criteria			
Freshwater (µg/L)	Marine (µg/L)	Acute Marine (µg/L)	Chronic Marine (µg/L)	Acute Freshwater (µg/L)	Chronic Freshwater (µg/L)
0. 018 (inorganic)	0.14 (inorganic)	69 (dissolved)	36 (dissolved)	360 (dissolved)	190 (dissolved)

In addition to the NTR and the state water quality standards, EPA establishes Maximum Contaminant Levels (MCLs) for arsenic under the federal Safe Drinking Water Act (SDWA). Up until 2001, the drinking water MCL for arsenic was 50 µg/L. EPA lowered the arsenic MCL to 10 µg/L in 2001 (EPA, 2001), following an extensive public process. The new standard went into effect for public supplies of drinking water nationwide in 2006. SDWA standards for arsenic in Washington are under the authority of the Washington Department of Health (WDOH).

EPA is currently in the process of reviewing the toxicity information in the Integrated Risk Information System (IRIS) related to inorganic arsenic, and plans to submit the next draft to the National Research Council for future peer review (EPA, 2014). The cancer slope factor currently in IRIS is an older value developed in 1998. Because of a number of issues and uncertainties EPA did not use this value in the development of the 2001 SDWA MCL nor was it used by EPA in their promulgation of Clean Water Act human health criteria for the state of California in 2000, called the California Toxics Rule (EPA, 2000).

Human health criteria for arsenic in other states

Nationwide, nearly half of the states use the SDWA MCL value of 10 µg/L for their Clean Water Act human health criteria arsenic criterion. (Oregon Department of Environmental Quality, 2011, P. 19)

In the west, where natural levels of arsenic are prevalent, six states have already adopted the SDWA MCL as their human health criteria for arsenic and these were subsequently approved by EPA. Oregon took a different approach and adopted human health criteria for arsenic using the 1998 IRIS cancer slope factor, and higher risk levels than the other human health criteria, which EPA subsequently approved. EPA promulgated human health criteria for the state of California in 2000, as the California Toxics Rule (CTR). EPA did not promulgate human health criteria for arsenic for the state of California using the 1988 IRIS cancer slope factor. The following is language from the EPA's 2000 promulgation of the California Toxic's Rule (EPA, 2000):

> *"EPA is not promulgating human health criteria for arsenic in today's rule. EPA recognizes that it promulgated human health water quality criteria for arsenic for a number of States in 1992, in the NTR, based on EPA's 1980 section 304(a) criteria guidance for arsenic established, in part, from IRIS values current at that time. However, a number of issues and uncertainties existed at the time of the CTR proposal concerning the health effects of arsenic…."*
>
> *"…Today's rule defers promulgating arsenic criteria based on the Agency's previous risk assessment of skin cancer….."*

A summary of human health criteria for arsenic in western states

EPA Approved Human Health Criteria for Arsenic in Western States		
State	Arsenic Criteria (Freshwater; water + organisms.)	Basis
Alaska	10 µg/L	Same as SDWA MCL
Idaho	10 µg/L	
Wyoming	10 µg/L	
Nevada	10 µg/L	
Utah	10 µg/L	
New Mexico	10 µg/L	
Oregon	2.1 µg/L inorganic arsenic (Drinking surface + fish and shellfish: "fresh waters".)	1×10^{-4} risk level
	1.0 µg/L inorganic arsenic (Fish and shellfish only: marine and estuarine.)	1×10^{-5} risk level
California	None (See explanation above.)	

Concentrations of arsenic in surface waters of Washington

Arsenic is naturally elevated in many western states based on geology. In Washington, natural levels of inorganic arsenic in surface waters, based on discrete samples, may infrequently exceed the SDWA MCL of 10 µg/L, but frequently exceed the National Toxics Rule human health criteria concentration of 0.018 and 0.14 µg/L. It is likely that the more stringent values proposed by EPA in Alternative #2 would have an even higher probability of exceeding natural levels of arsenic in Washington.

Alternative #1: No action alternative. Remain under the existing National Toxics Rule for arsenic. Use the National Toxics Rule value for arsenic. The existing federal National Toxics Rule human health criteria are 0.018 for freshwater and 0.14 µg/L for marine.

Alternative #2: EPA draft regulation for Washington. 0.0045 µg/L for freshwater and 0.0059 µg/L for marine water.

Alternative #3: Adopt 10 µg/L (total arsenic) accompanied by required arsenic pollution minimization efforts.

The following rule pollution minimization language was developed to address discharges of arsenic from industrial sources, to waters with the designated use of "domestic water supply:"

> *"When Ecology determines that an indirect or direct industrial discharge to surface waters designated for domestic water supply may be adding arsenic to its wastewater, Ecology will require the discharger to develop and implement a pollution prevention plan to reduce arsenic through the use of AKART (All Known and Reasonable Treatment). Indirect discharges are industries that discharge wastewater to a privately or publicly owned wastewater treatment facility."*

Alternative #3 is the preferred alternative presented in this rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016.

Comparison of alternatives – Arsenic

Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No action	Alternative 2 EPA Draft Regulation	Alternative 3 Preferred alternative
Low	Low	High
Note: Alternatives 1 and 2 include criteria levels for arsenic that are below natural concentrations of arsenic in many waters in the state. This hinders effective usability of these alternatives because of difficulties associated with determining natural vs. non-natural concentrations. Alternative 2 suffers this flaw more greatly than Alternative 1. Alternative 2 would also be found above the criteria values a greater number of time than Alternative 1, but detection levels do not allow for a reliable estimate of the difference. Because of this, these alternatives are rated "low" for effective usability. Alternative 3 criteria concentrations are exceeded frequently in the state, but less frequently than Alternatives 1 and 2.		

Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No action	Alternative 2 EPA Draft Regulation	Alternative 3 Preferred alternative
Alternative 3 also includes specific narrative pollution prevention requirements to reduce arsenic that is added to discharge systems in Washington, which is likely to result in more reductions in arsenic in discharges than the criteria in either Alternatives 1 or 2. Because of this Alternative 3 is ranked as "high" for effective usability.		

Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No action	Alternative 2 EPA Draft Rule	Alternative 3 Preferred alternative
High	High	High
Note: Alternatives 1-3 are all ranked "high" in the comparison. Alternative 3, the preferred alternative, is consistent with EPA's SDWA regulatory levels and was developed using a nationwide risk assessment that incorporated information on cancer and non-cancer effects. This preferred alternative has been adopted in many states as a Clean Water Act criterion and subsequently been approved by EPA. Alternatives 1 and 2 are lower concentration values than Alternative 3, and because Alternative 3 is rated "high", Alternatives 1 and 2 also are rated as "high."		

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Adopting Human Health Criteria for Polychlorinated Biphenyls (PCBs)

Background on PCBs

Polychlorinated Biphenyls (PCBs) are a group of manufactured chlorinated organic compounds. There are 209 individual PCB compounds, known as congeners. Aroclor is a commonly used trade name for specific PCB mixtures and is often referenced in PCB regulations.

PCBs in the environment are human-caused and there are no known natural sources. Used as coolants and lubricants in electrical equipment because of their insulating properties, manufacturing of PCBs was halted in the United States in 1979 (EPA, 2014) due to evidence that PCBs accumulate and persist in the environment and can cause harmful health effects. From 1929 to 1979 about 600,000 metric tons of PCBs were commercially manufactured in the US. The 1976 *Toxics Substances Control Act* (TSCA) prohibited manufacture, processing, and distribution of PCBs. Products made before 1979 that may contain PCBs include older fluorescent lighting fixtures and electrical devices.

Even though they are "banned," PCBs are still allowed in many products manufactured and sold in the United States, including many pigments and caulking. The concentrations of PCBs in these products are regulated by the EPA under the Toxic Substances Control Act regulations. PCBs are also regulated under additional state and federal laws, and they are not always consistent. For example, the level of PCBs that is allowed in products under TSCA is millions of times higher than what is allowed in water under the Clean Water Act. This leads to water permit holders being held responsible at the end of their pipe for PCBs that came from other products. Back in the late 1970s the total amount seemed small and the amount allowed in each product seemed low, but now we know that it is high compared to levels that affect human health.

Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults, and neurobehavioral and immunological changes in children. PCBs have been shown to cause cancer in animals (EPA 2014). Studies of exposed workers have shown changes in blood and urine that may indicate liver damage. According to the Agency for Toxics Substances & Disease Registry (ATSDR, 2001), PCB exposures in the general population are not likely to result in skin and liver effects.

According to the ATSDR, exposure routes for PCBs include:

- Leaks from old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, which were made 30 or more years ago and may be a source of skin exposure.

- Eating contaminated food. The main dietary sources of PCBs are fish (especially sport fish caught in contaminated lakes or rivers), meat, and dairy products.
- Breathing air near hazardous waste sites and drinking contaminated well water.
- Hazards in the workplace during repair and maintenance of PCB transformers, such as accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

PCB standards in Washington

Washington's cancer-based human health criteria for PCBs are currently based on revisions to the 1992 NTR. The 1992 rule included human health criteria for individual Aroclors that were calculated using a cancer potency factor of 7.7 per mg/kg-day (EPA, 1992). EPA reassessed the cancer potency of PCBs in 1996 (EPA, 1996) and adopted an approach that distinguishes among PCB mixtures by using information on environmental mixtures and different exposure pathways. Based on this reassessment, EPA derived a new cancer potency factor of 2 per mg/kg-day. EPA revised the NTR human health criterion for PCBs in 1999 (EPA, 1999) to incorporate this new science. The newer NTR criterion (currently applied to Washington waters) is 0.00017 µg/L for the protection of human health from consumption of aquatic organisms and water, and the consumption of aquatic organisms only.

PCBs in Washington's surface waters

PCBs are difficult to detect in surface waters. The analytical method required by EPA for compliance purposes (EPA Method 608) does not detect PCBs at the low concentrations in water at which they occur. Because PCBs in waters are difficult to detect, methods that depend on concentration of PCBs in fish and shellfish tissue are frequently used to assess PCB levels across the state. Aquatic biota accumulate PCBs as part of their exposure to the food web, and the PCBs are often detected in fish and shellfish tissue. Fish and shellfish tissue monitoring data are used to support development of Washington Department of Health fish advisories (WDOH, 2014) and Clean Water Act Section 303(d) impaired waters lists (Ecology, 2012). Monitoring information demonstrates that PCBs are widespread in the environment, but have in general been decreasing in concentrations since the 1979 "ban" on use of PCBs was put in place.

PCBs present regulatory challenges for Clean Water Act programs because:

- PCBs were widely used prior to the 1979 "ban".
- PCBs are widespread in the sediments and in biota.
- PCBs are long-lasting and bind readily to fats. Because of this they continue to cycle in the environment and in the food web. PCBs readily accumulate in organisms.
- PCBs are transported through the atmosphere.

- Because PCBs are transported along many pathways, and come from many sources associated with human habitation and use, they are found widely in environments that range from pristine to highly developed.
- Treatment plants are most often not designed to remove these chemicals. However, treatment plants that enhance solids removal will also remove PCBs.

These PCB characteristics make them particularly difficult to control, and efforts to address PCBs are multimedia, including contaminated site clean-up, regulation of PCBs in products, and reductions of PCBs from airborne sources. Disposal of PCBs requires specifically designed equipment. Ecology has developed a Chemical Action Plan for PCBs to address additional multi-media approaches to control PCBs entering the environment (Ecology, 2014).

Alternative #1: No Action Alternative. Remain under the National Toxics Rule for PCBs. The existing federal National Toxics Rule for PCBs is 0.00017 µg/L for freshwater and marine water.

Alternative #2: EPAs draft new regulation for Washington contains criteria for PCBs of 0.000073 µg/L for freshwater and marine water.

Alternative #3: Washington rule approach: a specific risk level for PCBs that is consistent with the level of risk/hazard in the toxicity factor used by the WDOH in developing fish advisories. This risk level is $4X10^{-5}$. The calculated total PCB criteria using this approach are 0.00029 µg/L. Since this concentration would be less protective than the current federal NTR Washington remains with the NTR value of 0.00017 µg/L. (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016 for more information).

Alternative #3 is the preferred alternative presented in this rule.

Comparison of alternatives – PCBs

Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No action	Alternative 2 EPA Draft Rule	Alternative 3 Preferred alternative
Low - moderate	Low- moderate	Low- moderate
Notes: The criteria for Alternatives 1 through 3 are below the quantification levels used to measure compliance with effluent limits for PCBs (EPA Method 608; 40CFR136) and all alternatives result in some impairment listings under Clean Water Act 303(d). More sensitive analytical methods (e.g., EPA Method 1668C) that are sometimes used to identify sources of PCBs can be used with all these criteria to prompt additional source controls. Because implementation of all these alternatives is hindered by analytical methods these alternatives are rated as "low- moderate" in usability and effectiveness.		

Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No action	Alternative 2 EPA Draft Rule	Alternative 3 Preferred alternative
High	High	High
Notes: All the PCB alternatives provide levels of protection that meet EPA guidance (EPA 2000) for protection of general and highly exposed populations from effects of carcinogens from exposure to fish, shellfish, and untreated drinking water. Please see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016 for more information.		

Implementation Tools

Background on implementation tools

Washington is a "delegated state" under the Clean Water Act for purposes of NPDES permitting. This means that Washington State (instead of EPA) writes the NPDES discharge permits for discharges to surface waters in Washington. Many of the sources of pollution that are a challenge to deal with need additional implementation tools to address the pollutant as well as to address some of the challenges associated with preventing or minimizing those pollutants from impacting water quality. Ecology developed additional tools and additional language around existing tools, to use for dischargers that are actively working to reduce pollutants but need additional time. While these tools will be available for all water quality standards, the development of human health criteria has highlighted the need to have these tools available.

There are a number of issues that make regulating some of the toxics chemicals a greater challenge. These issues include natural background and legacy pollutants. Under the Clean Water Act, the final Water Quality Standards must be met, and there is no ability to incorporate cost impacts of meeting the water quality standards.

One type of implementation tool that was revised is a compliance schedule that is used to meet the standards in the shortest time possible yet recognize that for some pollutants the "shortest time" might be more than a permit cycle (5 years). Ecology developed additional language around variances that recognize that it may take longer than a compliance schedule timeframe to address temperature or some legacy contaminants. Ecology also developed a new implementation tool, allowing the use of intake credits to account for background levels of contaminants that a discharger is getting from their intake water.

Compliance schedules

Background

A compliance schedule is an enforceable tool used as part of a permit, order, or directive to achieve compliance with applicable effluent standards and limitations, water quality standards, or other legally applicable requirements. Compliance schedules include a sequence of interim requirements such as actions, operations, or milestone events to achieve the stated goals. Compliance schedules are a broadly used tool for achieving state and federal regulations. Compliance schedules under the Clean Water Act are defined in federal regulations at Clean Water Act 502(17) and 40 CFR Section 122.2.

Schedules of compliance have existed in regulations at 173-220-140 and WAC 173-226-180 for the NPDES permit program since 1974. These regulations require that compliance schedules set forth the shortest, reasonable period of time to achieve the specified requirements, and require

that such period be consistent with federal guidelines and requirements of the Clean Water Act. Compliance schedules become an enforceable part of the permit. If a permittee fails or refuses to comply with interim or final requirements of a compliance schedule in a permit, such noncompliance constitutes a violation of the permit. Compliance schedules were incorporated into the state water quality standards in 1992 to allow continued use in the permitting program, and can be found at WAC 173-210A-510(4).

The use and limitations of compliance schedules for NPDES permits in Washington are described at WAC 173-220-140 and WAC 173-226-180. For purposes of water quality standards, compliance schedules may be used only where there is a finding that a permittee cannot immediately comply with a new, or newly revised, water-quality based effluent limit (WQBEL). Compliance schedules lasting longer than one year must include interim milestones, along with dates for their achievement, with no more than one year between dates. Interim milestones might relate, for example, to purchase and installation of new equipment, modification of existing facilities, construction of new facilities, and/or development of new programs. Compliance schedules also must include specific numeric or narrative effluent limits that will be met during the compliance schedule period.

Compliance schedules must require a permittee to meet the applicable WQBEL "as soon as possible." The determination of what constitutes "as soon as possible" is made on a permit-by-permit basis, considering the specific steps a permittee must take to achieve compliance. A compliance schedule typically is short-term in duration, and includes a schedule of actions (investigations such as source identification studies, treatment feasibility studies) to meet the final effluent limitation. A compliance schedule differs from a variance in that a discharge may need more time to meet a final effluent limitation, but it has identified specific actions that will attain water quality effluent limits. In other words, the discharger knows they can achieve the water quality standard but they need more time.

Current Washington State regulations limit compliance schedules to no more than ten years. However, Ecology has been directed by the Legislature to extend the maximum length of compliance schedules to more than ten years when a compliance schedule is appropriate, the base requirements for compliance schedules are met (i.e., compliance "as soon as possible"), and a permittee is not able to meet its total maximum daily load (TMDL) waste load allocations only by controlling and treating its own effluent. Statutory language can be found at RCW 90.48.605 - Amending state water quality standards — Compliance schedules in excess of ten years authorized. Available online: http://apps.leg.wa.gov/rcw/default.aspx?cite=90.48.605.

Compliance Schedule Alternative #1: No Action Alternative. Do not make any changes to the existing water quality standards as it relates to compliance schedules.

Compliance Schedule Alternative #2: Adopt a 20 year maximum time frame for compliance schedules and requirements to meet the water quality standards in the shortest time possible.

Compliance Schedule Alternative #3: Adopt language that does not specify the amount of time provided for compliance schedules and rely on a permit by permit analysis to meet the water quality standards in the shortest time possible.

Compliance Schedule Alternative #3 is the preferred alternative presented in this rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment*, January 2016.

Comparison of compliance schedules

<table>
<tr><th colspan="3">Compliance Schedules</th></tr>
<tr><th colspan="3">Usability
Can the alternative be used effectively to protect water quality?</th></tr>
<tr><td>Alternative 1
No Action</td><td>Alternative 2</td><td>Alternative 3
Preferred alternative</td></tr>
<tr><td>Moderate</td><td>Moderate</td><td>Moderate</td></tr>
<tr><td colspan="3">Note: All three Alternatives require an assessment of meeting permit limits in the shortest practicable time. This analysis is needed to use Alternatives 1 and 2, and is an absolute necessity when using Alternative 3 (which has no maximum time-frame). This analysis is considered to be equal between the three alternatives, and they are all rated as “moderate” based on this.</td></tr>
</table>

Compliance Schedules		
Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
High	High	High
Note: All three alternatives provide a high degree of environmental protection because all three require limits to be met within the shortest possible time. The allowance for longer compliance schedules in Alternatives 2 and 3 is likely to give most dischargers the time needed to meet most limits, which should reduce the number of potential requests to change the water quality standards (designated uses, variances, or site-specific criteria) that could occur if the "shortest possible time" is longer than the allowed maximum time in of an alternative. Alternative 3 would allow for the most adaptability to permitting situations that require very long (> 20 year) control strategies (e.g., growing trees to provide shade to reduce temperatures in streams).		

General provision language for variances

Background

A variance is a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) for a single discharger, a group of dischargers, or stretch of waters. Variances establish a set of temporary requirements that apply instead of the otherwise applicable water quality standards and related water quality criteria. A variance may be considered when the standards are expected to be attained by the end of the variance period or the attainable use cannot be reliably determined. Variances can be targeted to specific pollutants, sources, and/or stretches of waters.

EPA has dictated that state variance procedures, as part of state water quality standards, must be consistent with the substantive requirements of 40 CFR 131.14. Although Washington has never done a variance, EPA has approved state-adopted variances in the past and has indicated that it will continue to do so if:

- Each variance is included as part of the water quality standards.

- The state demonstrates that meeting the standard is unattainable based on one or more of the grounds outlined in 40 CFR 13 1.10(g) for removing a designated use.
- The justification submitted by the state includes documentation that treatment more advanced than that required by sections 303(c)(2)(A) and (B) has been carefully considered, and that alternative effluent control strategies have been evaluated.
- The more stringent state criterion is maintained and is binding upon all other dischargers on the stream or stream segment.
- The discharger who is given a variance for one particular constituent is required to meet the applicable criteria for other constituents.
- The variance is granted for a specific period of time and must be re-justified upon expiration.
- The discharger either must meet the standard upon the expiration of this time period or must make a new demonstration of "unattainability".
- Reasonable progress is being made toward meeting the standards.
- The variance was subjected to public notice, opportunity for comment, and public hearing. The public notice should contain a clear description of the impact of the variance upon achieving water quality standards in the affected stretch of waters.

The temporary requirements established through a variance are only effective for the life of the variance. Because a variance establishes a temporary set of requirements that apply instead of the underlying water quality criteria, EPA has specified that variances for the Clean Water Act 101(a)(2) fishable/swimmable uses are appropriate only under the same circumstances required in federal rule to undertake a Use Attainability Analysis (UAA), used to change a designated use for a water body. Also, variances can be granted when they are needed to undertake restoration activities. Regulations found in 40 CFR 131.10(g) establish six circumstances under which a UAA, or a variance, might be appropriate. They are:

- Naturally occurring pollutant concentrations prevent attainment of the use.
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the use, unless these conditions may be compensated for by discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.
- Human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
- Dams, diversions or other types of hydrologic modifications preclude attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the use.

- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.
- Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

Recent EPA guidance (EPA, 2014) offered two examples of the circumstances under which variances may be particularly appropriate to consider:

1. When attaining the designated use and criteria is not feasible under current conditions (e.g., water quality-based controls required to meet the numeric nutrient criterion would result in substantial and widespread social and economic impact) but achieving the standards could be feasible in the future if circumstances related to the attainability determination change (e.g., development of less expensive pollution control technology or a change in local economic conditions).
2. When it is not known whether the designated use and criteria may ultimately be attainable, but feasible progress toward attaining the designated use and criteria can be made by implementing known controls and tracking environmental improvements (e.g., complex use attainability challenges involving legacy pollutants).

Variances have not been issued in Washington to date but are described in WAC 173-201A-420. The current language states that a variance is subject to a public and intergovernmental involvement process and a variance does not go into effect until it is incorporated into WAC 173-201A and approved by EPA. The current duration of a variance is for up to five years and variances may be renewed after providing another opportunity for public and intergovernmental involvement and review.

Variance Alternative #1: No Action Alternative. Make no changes to the existing water quality standards.

Variance Alternative #2: Adopt a provision allowing for a 10 year variance time period in rule.

Variance Alternative #3: Adopt language that does not specify the amount of time that can be granted for variances and rely on a variance-specific analysis to meet the water quality standards in the shortest time possible. Add language clarifying requirements. This alternative is aligned with the new federal regulations at 40CFR131.14.

Variance Alternative #3 is the preferred alternative presented in this rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016.

Comparison of Variance Alternatives

Variance Alternatives		
Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
Low	Low	Low
Notes: For all alternatives a variance is a future formal rulemaking change to the water quality standards with requirements for EPA approval of the rule change before it can be used. The rule language does not create variances, but gives extensive directions on what is required. Because of that the "effectiveness" rating is slanted at the likelihood of effectiveness in future use. Alternatives 1 and 2 are limited by maximum time frames for a variance with the possibility of renewals. In both these cases renewals would be labor intensive because of rulemaking requirements. Alternative 3 could be tailored to fit longer term pollution control situations more easily than Alternatives 1 and 2. In all cases the predictability of a variance being successfully used/granted is uncertain because state rule changes would still be subject to EPA approval, which cannot be predetermined. Because of this all three alternatives are rated as "low" because of the uncertainty of EPA approval of future variances.		

Variance Alternatives		
Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No Action	Alternative 2	Alternative 3 Preferred alternative
High	High	High
Notes: For all alternatives a variance is a future formal rulemaking change to the water quality standards with requirements for EPA approval of the rule change before it can be used. The rule language does not create variances, but gives extensive directions on what is required. The time frame under each alternative would need to be tailored to meet the shortest possible time frame. In all three alternatives standards must ultimately be met, thus all are rated as "high" in environmental protection.		

Intake credits

Background

An intake credit is a tool intended to be used primarily in the National Pollutant Discharge Elimination System (NPDES) Permit Program, in specific circumstances where the discharger is not contributing any additional mass of the identified intake pollutant in its wastewater, thereby having a "no net addition" of the pollutant. Examples of a pollutant already found in the intake water could be from naturally-occurring or legacy pollutants that are outside of the control of the facility. This implementation tool would not affect Washington's water quality and public health because it would not be granted unless the facility met the requirements for "no net additions" of the pollutant.

The following conditions must be met for an intake credit to apply:

- The intake pollutant must not cause, or have the reasonable potential to cause, or contribute to levels above an applicable water quality standard.
- Intake water must come from the same body of water to which the discharge is made.
- The facility must not contribute any additional mass of the identified intake pollutant to its wastewater.

- The facility must not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream.
- The facility must not increase the identified intake pollutant concentration at the edge of the mixing zone or at the point of discharge if a mixing zone is not allowed, as compared to the pollutant concentration in the intake water, unless the increased concentration does not cause or contribute to an excursion above an applicable water quality standard.
- The timing and location of the discharge must not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant were left in-stream.

Typically, states have used intake credits in conjunction with technology-based effluent limits, but EPA has recently approved the use of intake credits with water quality based effluent limits (WQBELs) in some states.

Intake credits do not alter the permitting authority obligations under 40 CFR 122.44(d)(vii)(B) to develop effluent limitations as part of a TMDL prepared by the state department and approved by EPA as outlined in 40 CFR 130.7. They may have a limited applicability due to the requirement that pollution essentially pass through the facility unaltered.

Intake Credit Alternative #1: No Action Alternative. Do not add any intake credit language to the water quality standards.

Intake Credit Alternative #2: Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on considerations of using concentration and mass in the permitting process.

Intake Credit Alternative #3: Add intake credit language to allow intake credits to be used in developing water quality based effluent limits for NPDES permits. Add specific restrictions on concentration only to be used during the permitting process.

Intake Credit Alternative #2 is the preferred alternative presented in this rule.

For more information, see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016.

Comparison of Intake Credits

Intake Credit		
Usability **Can the alternative be used effectively to protect water quality?**		
Alternative 1 No Action	Alternative 2 Preferred alternative	Alternative 3
High	Moderate	Moderate
Notes: All alternatives can be used effectively. Alternatives 2 and 3 require additional analysis at permitting that would require use of models. Alternative 1 would preclude use of this tool entirely, so is easiest to use.		

Intake Credit		
Level of Environmental Protection **This characteristic is a best assessment of what level of protection the criteria would provide.**		
Alternative 1 No Action	Alternative 2 Preferred alternative	Alternative 3
High	High - moderate	Moderate
Notes: The no action alternative results in situations where meeting a water quality-based effluent limit could require removal of pollutants by the discharger that come from upstream intake waters. This alternative could result in greatest reductions in pollutants discharged to waters and thus is ranked "high." Alternatives 2 and 3 do not require removal of upstream pollutants in this situation and simply require no additional increase in pollutant concentrations, and in the case of Alternative 2, no net addition of mass with the reasonable potential determination is allowed. Because mass is excluded from consideration in Alternative 3 this is less protective than Alternative 2.		

Affected Environment, Potential Impacts and Mitigation Measures

Affected environment

The purpose of the water quality standards is to set criteria to be used to fully protect beneficial uses of all of Washington's rivers, streams, lakes, marine waters, and other waters of the state. The specific use of fishing/harvesting and drinking water is the use that the human health criteria are designed to protect. These are the beneficial uses that are specifically protected in WAC 173-201A:

- Aquatic Life. The aquatic life beneficial use includes salmonids (salmon, trout, and char), other fish, macroinvertebrates, other animals, and plants. All life-stages of aquatic life, including spawning, rearing, and migrating, are protected. Salmonids, especially those that are threatened or endangered, usually receive the most attention. In many cases, they are also the most sensitive species.
- Water Contact. The water contact beneficial use is designed to protect those who work or play in Washington's waters. This includes swimming, wading, boating, fishing, and other activities.
- Agricultural, Domestic, and Industrial Water Supply. Water quality must be of high enough quality so water can be used for these activities.
- Commerce and Navigation. Water quality must be of high enough quality so water can be used for these activities.
- Wildlife. The wildlife use protects terrestrial plants and animals that rely on rivers, streams, lakes, and marine water for survival.
- Fishing and Harvesting. The fishing and harvesting use protects water quality at levels that allow for fishing, harvesting, and consumption of aquatic plants and animals (such as fish and shellfish).

The changes to the water quality standards could affect all of these uses. However, human health criteria are specifically designed to protect fishing/harvesting and drinking water uses. The specific names of the uses in WAC 173-201A protected by the human health criteria are:

- *Domestic Water — (domestic water supply)*
- *Fresh waters— Harvesting (fish harvesting), and Recreational Uses*
- *Marine waters— Shellfish Harvesting (shellfish—clam, oyster, and mussel—harvesting), Harvesting (salmonid and other fish harvesting, and crustacean and other shellfish—crabs, shrimp, scallops, etc.— harvesting), and Recreational Uses*

Pollution that affects these uses comes from point sources (such as industrial facilities and waste water treatment plants) and non-point sources (such as stormwater runoff from urban and rural lands), as well as other sources such as direct atmospheric deposition.

Impacts

The changes to the water quality standards set specific criteria that if met will fully protect the recreational use of fishing. However, the level of protection that will actually be gained by the criteria change is unclear. On paper the criteria will change, however how those criteria actually affect environmental outcomes is more challenging to determine.

Adopting human health criteria

The rulemaking and preferred alternative will not increase the risk of any negative effects from exposure to pollutants through fish/shellfish and water consumption:

- Numeric criteria were developed for 97 priority pollutants. This includes 84 priority pollutants from the original NTR, and 13 additional pollutants with criteria published since the 1992 NTR was issued. Of the total list of criteria pollutants, (including PCBs, see the following discussion), 88 of the marine and 73 of the freshwater criteria are equal to or of a lower (more protective) concentration than the current federal rule (NTR) that the state is required to use in regulation. Criteria for new pollutants not currently regulated are counted as more protective than the current regulatory standards. Criteria became more protective based on new science and risk management decisions. No increases in risks beyond those currently incurred should occur for these criteria. The criteria for 2,3,7,8-TCDD and for arsenic, both of which have increased concentrations, are discussed next. The remainder of the criteria with higher criterion concentrations are based on new science on toxicity, and the new calculated values maintain levels of risk associated with carcinogens (1 x 10-6) and non-carcinogens (hazard quotient = 1) that are included in the NTR criteria.
- The numeric criteria for 2,3,7,8-TCDD are slightly higher than the current NTR criteria (see Appendix B for criteria concentrations). This value is a higher concentration because of uncertainty around the science of dioxin carcinogenicity (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016). The current NTR criteria are 0.000000013 and 0.000000014 µg/L, and the criteria in the state rule are 0.000000064 and 0.000000064µg/L. This chemical was only detected at one facility, and that facility is under a TMDL-based dioxin limit that will not change if the criteria are adopted.
- The numeric criteria for arsenic increase in concentration, but the additional requirements for pollution prevention that are paired with the numeric criteria concentrations in the

rule are anticipated to result in reductions of arsenic discharged to freshwaters that are greater than any reductions prompted by the alternatives. See the following section on arsenic.

Arsenic

The preferred alternative criteria concentrations of 10 µg/L are larger than the current federal NTR values. However, the criteria are identical to EPA's SDWA MCL used for protection of public drinking water supplies across the nation, and have been adopted by other states as human health criteria and subsequently approved by EPA. The state criteria are also accompanied by source control language requiring pollution prevention actions to reduce added arsenic that is found in discharges. Because of the specific source control language, this change is expected to result in reductions in arsenic discharges to surface waters that would not take place under the other two alternatives.

PCBs

The preferred alternative for PCBs keeps the current criterion of 0.000170 µg/L. Adoption of this criterion concentration is discussed in *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016. Because there is no change in the criteria levels from the current federal criteria, there should be no real increases in risks beyond those currently incurred.

Implementation tools

Use of the implementation tools is not expected to cause negative impacts to the environment. Their ability to provide predictable time frames for regulatory requirements is expected to result in more effective pollution control programs with resultant decreases in discharges of pollutants to surface waters. The use of variances will require subsequent rule revisions that will need a separate SEPA analysis.

Mitigation measures

Mitigation measures should be identified that will reduce or eliminate the adverse environmental impacts of a rule. Mitigation measure should be reasonable and capable of being accomplished. According to the SEPA rules (WAC 197-11-768), "mitigation" means:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.

- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.
- Monitoring the impact and taking appropriate corrective measures.

The state does not expect there to be adverse impacts associated with this rule change. However, the following mitigation measures are identified for the state to move forward with:

- Continue to do monitoring for toxics in our waters,
- Move forward with developing water cleanup plans for waters that are identified as polluted, and
- Work to encourage all permitted facilities to implement pollution prevention concepts.

The state recognizes that in order to address toxics comprehensively more needs to be done to address the sources of toxic pollution that are not controlled by permits. Under the persistent, bioaccumulative pollutant (PBT) Rule (173-333 WAC) Ecology develops Chemical Action Plans (CAPS) to facilitate comprehensive controls for pollutants.

A CAP identifies, characterizes and evaluates all uses and releases of a specific PBT, (see http://www.ecy.wa.gov/programs/hwtr/RTT/pbt/index.html), a group of PBTs or metals of concern. A CAP is a plan, not legislation or a rule. It recommends actions to protect human health and the environment. Some of the recommendations may lead to new legislation or rules. These would go through the normal legislative or rulemaking process.

The PBT Initiative focuses on one toxic substance at a time. Ecology develops each CAP in collaboration with other agencies and experts representing various business, agricultural and advocacy sectors. CAPs have been finalized for mercury, polybrominated diphenyl ethers (PBDEs), lead, polycyclic aromatic hydrocarbons (PAHs), and PCBs.

The current Multiyear CAP Schedule lays out the planned schedule for future CAPs. It explains how and why Ecology gave priority to the chemicals slated for CAP development. In October 2012, Ecology issued an amendment to the Multiyear Schedule to begin work on a CAP for PCBs, which was completed in 2015. Ecology is currently working on a CAP for per- and poly-fluorinated alkyl substances.

Glossary and List of Acronyms

303(d)	Ecology's list of impaired waters that violate the Water Quality Standards.
APA	Administrative Procedures Act
BMP	Best Management Practices
CFR	Code of Federal Regulations
CSO	Combined Sewer Overflow
EIS	Environmental Impact Statement
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
HHC	Human Health Criteria
HQ	Hazard Quotient
IRIS	Integrated Risk Information System
kg	Kilograms
mg/l	Milligrams Per Liter
NPDES	National Pollutant Discharge Elimination System Permitting Program
NTR	National Toxics Rule
PBDEs	Polychlorinated Biphenyls
PCBs	Polychlorinated Biphenyls; manufactured chemicals which persist and accumulate in food chains
RCW	Revised Code of Washington
SDWA	Safe Drinking Water Act
TMDL	Total Maximum Daily Load, or Water Clean-Up Plan
WAC	Washington Administrative Code (The Water Quality Standards for Surface Waters of the State of Washington are in WAC 173-201A)

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Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) (AKA: *The Clean Water Act*)

Revised Code of Washington (Chapter 90.48; Water Pollution Control)

The Concise Explanatory Statement will include a complete set of references in the citation list appendix.

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Appendix A

NPDES permit process flow charts.

These NPDES Permit process flow charts were used at the September 16, 2013 Delegates Table discussion. Charts 1 and 5 are shown in Appendix A. You can find all the charts at the following web address:

http://www.ecy.wa.gov/programs/wq/swqs/HumanHealthFlowchtsforDelegates090613.pdf

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Chart 1

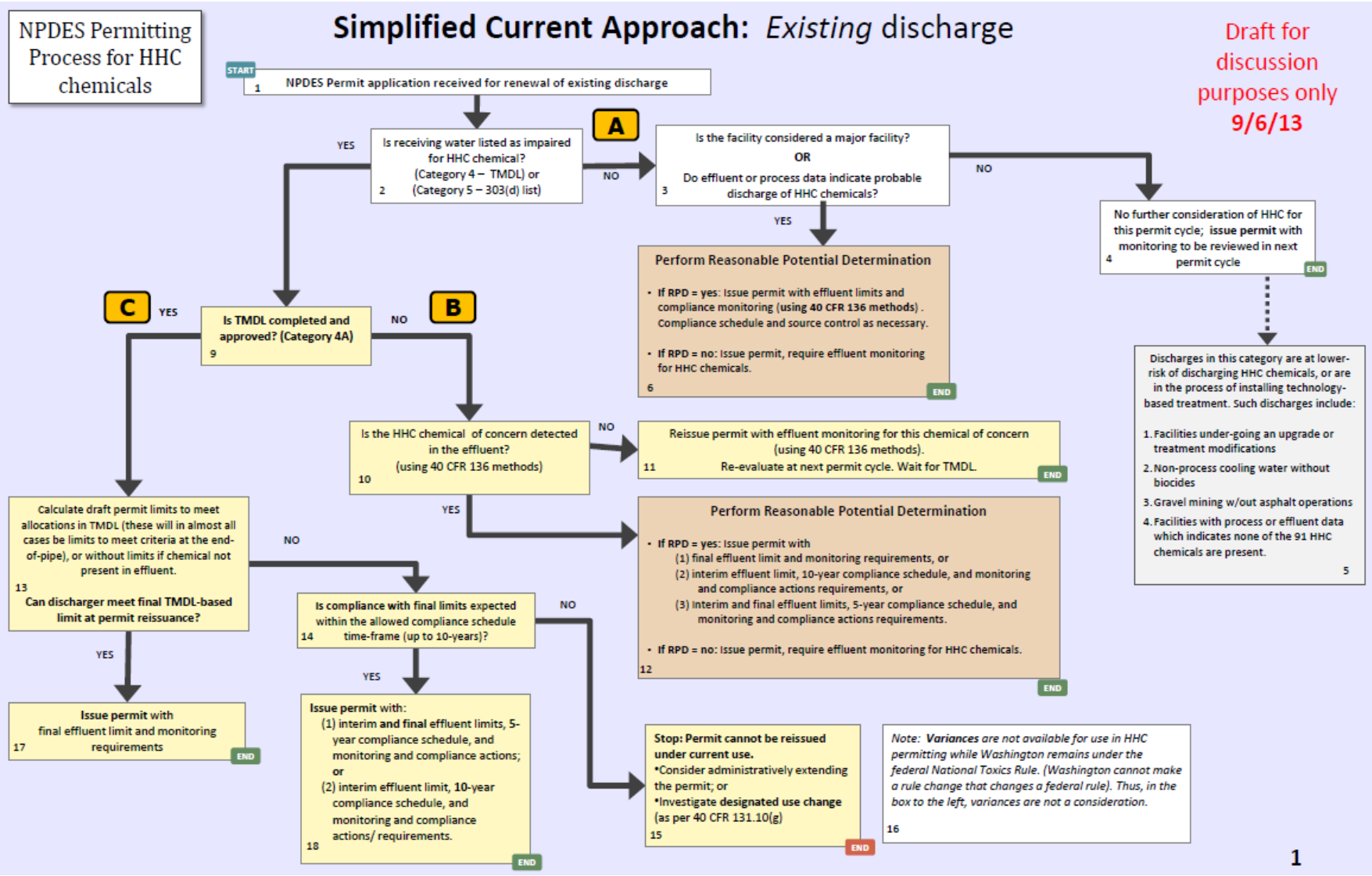
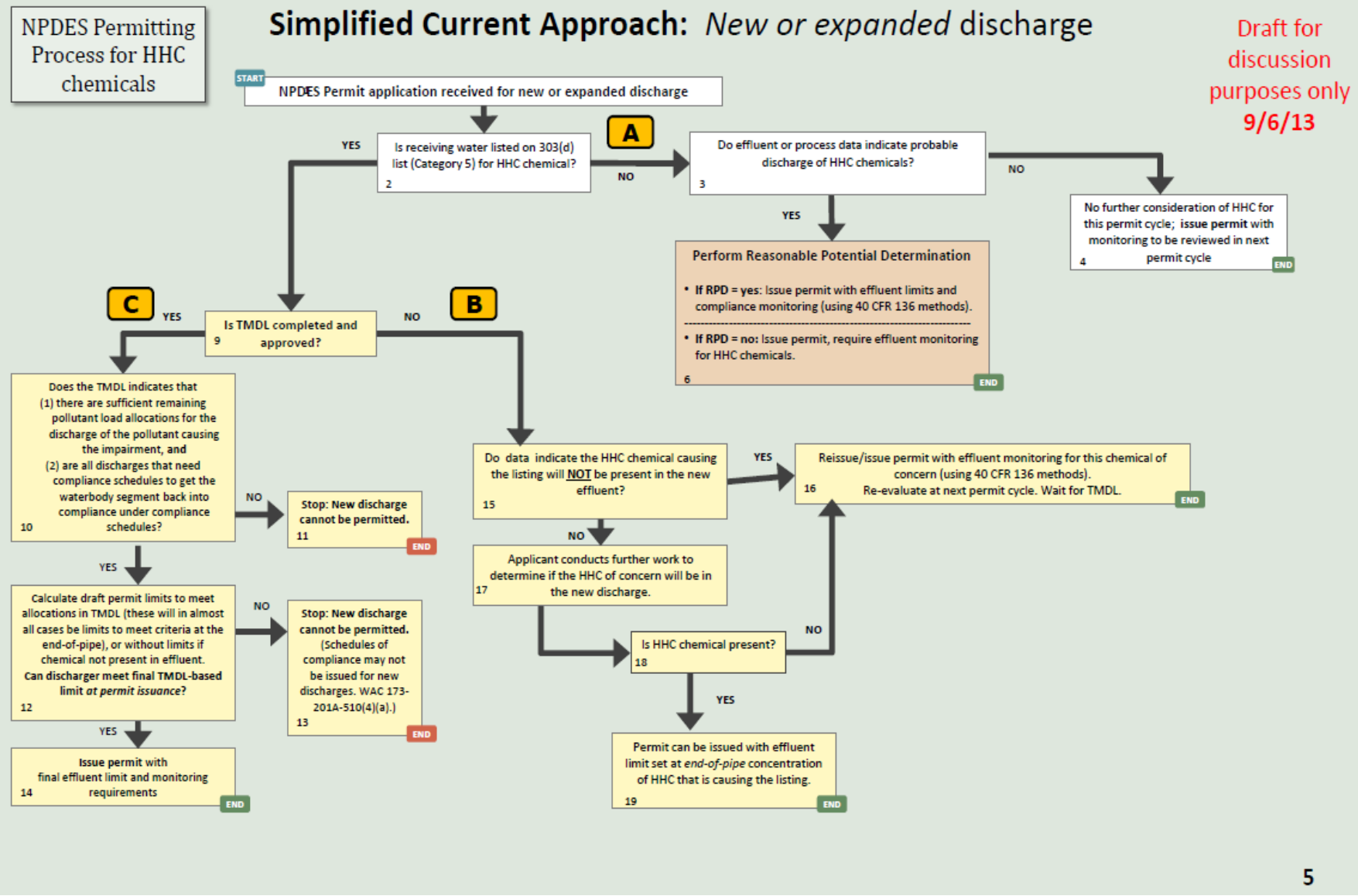

NPDES Permitting Process for HHC chemicals
Simplified Current Approach: Existing discharge
Draft for discussion purposes only 9/6/13
START
1 NPDES Permit application received for renewal of existing discharge
A
Is receiving water listed as impaired for HHC chemical? (Category 4 – TMDL) or (Category 5 – 303(d) list)
2
YES
NO
Is the facility considered a major facility? OR Do effluent or process data indicate probable discharge of HHC chemicals?
3
NO
YES
No further consideration of HHC for this permit cycle; issue permit with monitoring to be reviewed in next permit cycle
4
END
Perform Reasonable Potential Determination
• If RPD = yes: Issue permit with effluent limits and compliance monitoring (using 40 CFR 136 methods). Compliance schedule and source control as necessary.
• If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
6
END
Discharges in this category are at lower-risk of discharging HHC chemicals, or are in the process of installing technology-based treatment. Such discharges include:
1. Facilities under-going an upgrade or treatment modifications
2. Non-process cooling water without biocides
3. Gravel mining w/out asphalt operations
4. Facilities with process or effluent data which indicates none of the 91 HHC chemicals are present.
5
C
YES
Is TMDL completed and approved? (Category 4A)
9
NO
B
Is the HHC chemical of concern detected in the effluent? (using 40 CFR 136 methods)
10
NO
Reissue permit with effluent monitoring for this chemical of concern (using 40 CFR 136 methods). Re-evaluate at next permit cycle. Wait for TMDL.
11
END
YES
Perform Reasonable Potential Determination
• If RPD = yes: Issue permit with
(1) final effluent limit and monitoring requirements, or
(2) interim effluent limit, 10-year compliance schedule, and monitoring and compliance actions requirements, or
(3) Interim and final effluent limits, 5-year compliance schedule, and monitoring and compliance actions requirements.
• If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
12
END
Calculate draft permit limits to meet allocations in TMDL (these will in almost all cases be limits to meet criteria at the end-of-pipe), or without limits if chemical not present in effluent.
13
Can discharger meet final TMDL-based limit at permit reissuance?
YES
NO
Issue permit with final effluent limit and monitoring requirements
17
END
Is compliance with final limits expected within the allowed compliance schedule time-frame (up to 10-years)?
14
YES
NO
Issue permit with:
(1) interim and final effluent limits, 5-year compliance schedule, and monitoring and compliance actions; or
(2) interim effluent limit, 10-year compliance schedule, and monitoring and compliance actions/ requirements.
18
END
Stop: Permit cannot be reissued under current use.
•Consider administratively extending the permit; or
•Investigate designated use change (as per 40 CFR 131.10(g)
15
END
Note: Variances are not available for use in HHC permitting while Washington remains under the federal National Toxics Rule. (Washington cannot make a rule change that changes a federal rule). Thus, in the box to the left, variances are not a consideration.
16
1

Chart 5


NPDES Permitting Process for HHC chemicals
Simplified Current Approach: New or expanded discharge
Draft for discussion purposes only 9/6/13
START
NPDES Permit application received for new or expanded discharge
Is receiving water listed on 303(d) list (Category 5) for HHC chemical?
2
YES
NO
A
Do effluent or process data indicate probable discharge of HHC chemicals?
3
NO
YES
No further consideration of HHC for this permit cycle; issue permit with monitoring to be reviewed in next permit cycle
4
END
Perform Reasonable Potential Determination
• If RPD = yes: Issue permit with effluent limits and compliance monitoring (using 40 CFR 136 methods).
• If RPD = no: Issue permit, require effluent monitoring for HHC chemicals.
6
END
C
YES
Is TMDL completed and approved?
9
NO
B
Does the TMDL indicates that (1) there are sufficient remaining pollutant load allocations for the discharge of the pollutant causing the impairment, and (2) are all discharges that need compliance schedules to get the waterbody segment back into compliance under compliance schedules?
10
NO
Stop: New discharge cannot be permitted.
11
END
YES
Calculate draft permit limits to meet allocations in TMDL (these will in almost all cases be limits to meet criteria at the end-of-pipe), or without limits if chemical not present in effluent. Can discharger meet final TMDL-based limit at permit issuance?
12
NO
Stop: New discharge cannot be permitted. (Schedules of compliance may not be issued for new discharges. WAC 173-201A-510(4)(a).)
13
END
YES
Issue permit with final effluent limit and monitoring requirements
14
END
Do data indicate the HHC chemical causing the listing will NOT be present in the new effluent?
15
YES
Reissue/issue permit with effluent monitoring for this chemical of concern (using 40 CFR 136 methods). Re-evaluate at next permit cycle. Wait for TMDL.
16
END
NO
Applicant conducts further work to determine if the HHC of concern will be in the new discharge.
17
Is HHC chemical present?
18
NO
YES
Permit can be issued with effluent limit set at end-of-pipe concentration of HHC that is causing the listing.
19
END
5

Appendix B

Criteria values for each alternative and current detection limits

Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,1,1-Trichloroethane	71556	71-55-6	NC	8,000	47,000	624	2.0
1,1,2,2-Tetrachloroethane	79345	79-34-5	0.17	0.1	0.12	624	2
1,1,2-Trichloroethane	79005	79-00-5	0.6	0.35	0.44	624	2
1,1-Dichloroethylene	75354	75-35-4	0.057	300	1200	624	2
1,2,4-Trichlorobenzene	120821	120-82-1	NC	0.036	0.12	625	0.6
1,2-Dichlorobenzene	95501	95-50-1	2700	300	2000	624	7.6
1,2-Dichloroethane	107062	107-06-2	0.38	8.9	9.3	624	2
1,2-Dichloropropane	78875	78-87-5	NC	0.72	0.71	624	2
1,2-Diphenylhydrazine	122667	122-66-7	0.04	0.01	0.015	1625B	20
1,2-Trans-Dichloroethylene	156605	156-60-5	NC	100	600	624	2

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,3-Dichlorobenzene	541731	541-73-1	400	0.9	13	624	7.6
1,3-Dichloropropene	542756	542-75-6	10	0.22	0.24	624	2
1,4-Dichlorobenzene	106467	106-46-7	400	70	460	624	17.6
2,3,7,8-TCDD (Dioxin)	1746016	1746-01-6	1.30E-08	5.80E-10	6.40E-08	1613B	0.000005
2,4,6-Trichlorophenol	88062	88-06-2	2.1	0.25	0.25	625	4
2,4-Dichlorophenol	120832	120-83-2	93	4	25	625	1
2,4-Dimethylphenol	105679	105-67-9	NC	90	85	625	1
2,4-Dinitrophenol	51285	51-28-5	70	10	60	625	2
2,4-Dinitrotoluene	121142	121-14-2	0.11	0.039	0.039	609/626	1.4
2-Chloronaphthalene	91587	91-58-7	NC	100	170	625	0.6
2-Chlorophenol	95578	95-57-8	NC	20	15	625	2
2-Methyl-4,6-Dinitrophenol	534521	534-52-1	13.4	1	7.1	625/1625B	3
3,3'-Dichlorobenzidine	91941	91-94-1	0.04	0.012	0.0031	605/626	2
3-Methyl-4-Chlorophenol	59507	59-50-7	NC	200	36	625	2.0
4,4'-DDD	72548	72-54-8	8.30E-04	7.90E-06	3.60E-05	608	0.05
4,4'-DDE	72559	72-55-9	5.90E-04	8.80E-07	5.10E-05	608	0.05

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
4,4'-DDT	50293	50-29-3	5.90E-04	1.20E-06	2.50E-05	608	0.05
Acenaphthene	83329	83-32-9	NC	10	110	625	0.4
Acrolein	107028	107-02-8	320	3	1	624	10
Acrylonitrile	107131	107-13-1	0.059	0.058	0.019	624	2
Aldrin	309002	309-00-2	1.30E-04	4.10E-08	5.70E-06	608	0.05
alpha-BHC	319846	319-84-6	0.0039	4.80E-05	0.0005	608	0.05
alpha-Endosulfan	959988	959-98-8	0.93	3	9.7	608	0.05
Anthracene	120127	120-12-7	9600	40	3100	625	0.6
Antimony	7440360	7440-36-0	1.40E+01	2.5	12	200.8	1
Arsenic	7440382	7440-38-2	0.018	0.0045	10	200.8	0.5
Asbestos	1332214	1332-21-4	7,000,000 fibers/L	7000000 fibers/L	7000000 fibers/L	NL	NL
Benzene	71432	71-43-2	1.2	0.44	0.44	624	2
Benzidine	92875	92-87-5	1.20E-04	1.30E-04	0.00002	625	24
Benzo(a)Anthracene	56553	56-55-3	0.0028	1.60E-04	0.014	625	0.6
Benzo(a)Pyrene	50328	50-32-8	0.0028	1.60E-05	0.0014	610/626	2
Benzo(b)Fluoranthene	205992	205-99-2	0.0028	0.00016	0.014	610/626	2.6

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Benzo(k)Fluoranthene	207089	207-08-9	0.0028	0.0016	0.14	610/626	2.6
beta-BHC	319857	319-85-7	0.014	0.0013	0.0018	608	0.05
beta-Endosulfan	33213659	33213-65-9	0.93	4	9.7	608	0.05
Bis(2-Chloroethyl)Ether	111444	111-44-4	0.031	0.027	0.02	611/626	2
Bis(2-Ethylhexyl) Phthalate	117817	117-81-7	1.8	0.045	0.23	625	0.5
Bromoform	75252	75-25-2	4.3	4.6	5.8	624	2
Butylbenzyl Phthalate	85687	85-68-7	NC	0.013	0.56	625	0.6
Carbon Tetrachloride	56235	56-23-5	0.25	0.2	0.2	624/601 or SM6230B	3
Chlordane	57749	57-74-9	5.70E-04	2.20E-05	9.30E-05	608	0.05
Chlorobenzene	108907	108-90-7	680	50	380	624	2
Chlorodibromomethane	124481	124-48-1	0.41	0.6	0.65	624	2
Chloroform	67663	67-66-3	5.7	50	260	625 or SM6210B	3
Chrysene	218019	218-01-9	0.0028	0.016	1.4	610/626	1.6
Copper	7440508	7440-50-8	NC	1300	1300	200.8	2
Cyanide	57125	57-12-5	700	4	19	335.4	10
Dibenzo (a,h) Anthracene	53703	53-70-3	0.0028	1.60E-05	0.0014	625	1.6

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Dichlorobromomethane	75274	75-27-4	0.27	0.73	0.77	624	2
Dieldrin	60571	60-57-1	1.40E-04	7.00E-08	6.10E-06	608	0.05
Diethyl Phthalate	84662	84-66-2	23000	80	4200	625	7.6
Dimethyl Phthalate	131113	131-11-3	3.13E+05	200	92000	625	6.4
Di-n-Butyl Phthalate	84742	84-74-2	2700	3	450	625	1
Endosulfan Sulfate	1031078	1031-07-8	0.93	4	9.7	608	0.05
Endrin	72208	72-20-8	0.76	0.002	0.034	608	0.05
Endrin Aldehyde	7421934	7421-93-4	0.76	0.1	0.034	608	0.05
Ethylbenzene	100414	100-41-4	3100	12	200	624	2
Fluoranthene	206440	206-44-0	300	2	16	625	0.6
Fluorene	86737	86-73-7	1300	5	420	625	0.6
gamma-BHC (Lindane)	58899	58-89-9	0.019	0.43	15	608	0.05
Heptachlor	76448	76-44-8	0.00021	3.40E-07	9.90E-06	608	0.05
Heptachlor Epoxide	1024573	1024-57-3	0.0001	2.40E-06	7.40E-06	608	0.05
Hexachlorobenzene	118741	118-74-1	7.50E-04	5.00E-06	5.10E-05	612/626	1.6
Hexachlorobutadiene	87683	87-68-3	0.44	0.01	0.69	625	1

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Hexachloro-cyclopentadiene	77474	77-47-4	240	0.4	150	1625B/626	2
Hexachloroethane	67721	67-72-1	1.9	0.02	0.11	625	1
Indeno (1,2,3-cd) Pyrene	193395	193-39-5	0.0028	1.60E-04	0.014	610/626	2
Isophorone	78591	78-59-1	8.4	30	27	625	1
Mercury	7439976	7439-97-6	0.14			1631E	0.0005
Methyl Bromide	74839	74-83-9	48	100	520	624/602	11
Methylene Chloride	75092	75-09-2	4.7	10	16	624	10
Methylmercury	22967926	22967-92-6	NC	-		NL	NL
Nickel	7440020	7440-02-0	610	30	150	200.8	0.5
Nitrobenzene	98953	98-95-3	17	10	55	625	1
N-Nitrosodimethylamine	62759	62-75-9	6.90E-04	6.50E-04	0.00065	607/626	5
N-Nitrosodi-n-Propylamine	621647	621-64-7	NC	0.0044	0.0044	607/626	2
N-Nitrosodiphenylamine	86306	86-30-6	5	0.62	0.62	625	1
Pentachlorophenol	87865	87-86-5	0.28	0.002	0.046	625	1
Phenol	108952	108-95-2	21000	4,000	18000	625	4
Polychlorinated Biphenyls (PCBs)	n	1336-36-3	1.70E-04	7.30E-06	1.70E-04	608	0.5

			Freshwater HHC (Consumption of water & organisms)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Pyrene	129000	129-00-0	960	3	310	625	0.6
Selenium	7782492	7782-49-2	NC	25	120	200.8	1
Tetrachloroethylene	127184	127-18-4	0.8	2.4	4.9	624	2
Thallium	7440280	7440-28-0	1.7	0.048	0.24	200.8	0.36
Toluene	108883	108-88-3	6800	29	180	624	2
Toxaphene	8001352	8001-35-2	0.00073	6.60E-05	3.20E-05	608	0.5
Trichloroethylene	79016	79-01-6	2.7	0.3	0.38	624	2
Vinyl Chloride	75014	75-01-4	2	0.02	0.02	624/SM6200B	2
Zinc	7440666	7440-66-6	NC	450	2300	200.8	2.5

*From Attachment A – Effluent characterization for permit application.

(Available online at: http://www.ecy.wa.gov/programs/wq/permits/forms.html.)

HHC Alternative 1	Not proceed with any rule revisions and remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in one million for the carcinogenic chemicals. The criterion for asbestos are based on SDWA levels.
HHC Alternative 2	This uses a fish consumption rate of 175 grams/day and a risk level of one in one million for the carcinogenic chemicals. The criteria for copper and asbestos are based on SDWA levels.

HHC Alternative 3	This is the preferred alternative presented in the rule. This uses a fish consumption rate of 175 grams/day, and a decision to use a risk level of one in one million for the carcinogenic chemicals except for PCBs. PCBs are based on a state-specific risk level and then held at current Alternative 1 levels (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016. The criteria for arsenic, copper, and asbestos are based on SDWA levels.

General Notes:

All criteria and analytical level values are expressed as µg/L unless noted otherwise.

Red Font indicates Carcinogen

NC = No Criterion

NL = Not Listed

HHC Alternative 1 (NTR) calculated using a Body Weight (BW) of 70 kg and Drinking Water Intake (DI) of 2 L/day; HHC Alternatives 2 & 3 use a BW of 80 kg and a DI of 2.4 L/day.

Marine Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,1,1-Trichloroethane	71556	71-55-6	NC	20,000	160,000	624	2.0
1,1,2,2-Tetrachloroethane	79345	79-34-5	11	0.3	0.46	624	2
1,1,2-Trichloroethane	79005	79-00-5	42	0.9	1.8	624	2
1,1-Dichloroethylene	75354	75-35-4	3.2	2,000	4100	624	2
1,2,4-Trichlorobenzene	120821	120-82-1	NC	0.037	0.14	625	0.6
1,2-Dichlorobenzene	95501	95-50-1	17000	300	2500	624	7.6
1,2-Dichloroethane	107062	107-06-2	99	73	120	624	2
1,2-Dichloropropane	78875	78-87-5	NC	3.3	3.1	624	2
1,2-Diphenylhydrazine	122667	122-66-7	0.54	0.02	0.023	1625B	20
1,2-Trans-Dichloroethylene	156605	156-60-5	NC	400	5800	624	2
1,3-Dichlorobenzene	541731	541-73-1	2600	1	16	624	7.6
1,3-Dichloropropene	542756	542-75-6	1700	1.2	2	624	2

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
1,4-Dichlorobenzene	106467	106-46-7	2600	80	580	624	17.6
2,3,7,8-TCDD (Dioxin)	1746016	1746-01-6	1.40E-08	5.90E-10	6.40E-08	1613B	0.000005
2,4,6-Trichlorophenol	88062	88-06-2	6.5	0.28	0.28	625	4
2,4-Dichlorophenol	120832	120-83-2	790	6	34	625	1
2,4-Dimethylphenol	105679	105-67-9	NC	300	97	625	1
2,4-Dinitrophenol	51285	51-28-5	14000	40	610	625	2
2,4-Dinitrotoluene	121142	121-14-2	9.1	0.18	0.18	609/626	1.4
2-Chloronaphthalene	91587	91-58-7	NC	100	180	625	0.6
2-Chlorophenol	95578	95-57-8	NC	80	17	625	2
2-Methyl-4,6-Dinitrophenol	534521	534-52-1	765	3	25	625/1625B	3
3,3'-Dichlorobenzidine	91941	91-94-1	0.077	0.015	0.0033	605/626	2
3-Methyl-4-Chlorophenol	59507	59-50-7	NC	200	36	625	2.0
4,4'-DDD	72548	72-54-8	8.40E-04	7.90E-06	3.60E-05	608	0.05
4,4'-DDE	72559	72-55-9	5.90E-04	8.80E-07	5.10E-05	608	0.05
4,4'-DDT	50293	50-29-3	5.90E-04	1.20E-06	2.50E-05	608	0.05

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Acenaphthene	83329	83-32-9	NC	10	110	625	0.4
Acrolein	107028	107-02-8	780	50	1.1	624	10
Acrylonitrile	107131	107-13-1	0.66	0.85	0.028	624	2
Aldrin	309002	309-00-2	1.40E-04	4.10E-08	5.80E-06	608	0.05
alpha-BHC	319846	319-84-6	0.013	4.80E-05	5.60E-04	608	0.05
alpha-Endosulfan	959988	959-98-8	2	3	10	608	0.05
Anthracene	120127	120-12-7	110000	40	4600	625	0.6
Antimony	7440360	7440-36-0	4.30E+03	37	180	200.8	1
Arsenic	7440382	7440-38-2	0.14	0.0059	10	200.8	0.5
Asbestos	1332214	1332-21-4	NC	-	NC	NL	NL
Benzene	71432	71-43-2	71	1.7	1.6	624	2
Benzidine	92875	92-87-5	5.40E-04	0.0012	2.30E-05	625	24
Benzo(a)Anthracene	56553	56-55-3	0.031	0.00016	0.021	625	0.6
Benzo(a)Pyrene	50328	50-32-8	0.031	1.60E-05	0.0021	610/626	2
Benzo(b)Fluoranthene	205992	205-99-2	0.031	0.00016	0.021	610/626	2.6

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Benzo(k)Fluoranthene	207089	207-08-9	0.031	0.0016	0.21	610/626	2.6
beta-BHC	319857	319-85-7	0.046	0.0014	0.002	608	0.05
beta-Endosulfan	33213659	33213-65-9	2	4	10	608	0.05
Bis(2-Chloroethyl)Ether	111444	111-44-4	1.4	0.24	0.06	611/626	2
Bis(2-Ethylhexyl) Phthalate	117817	117-81-7	5.9	0.046	0.25	625	0.5
Bromoform	75252	75-25-2	360	12	27	624	2
Butylbenzyl Phthalate	85687	85-68-7	NC	0.013	0.58	625	0.6
Carbon Tetrachloride	56235	56-23-5	4.4	0.5	0.35	624/601 or SM6230B	3
Chlordane	57749	57-74-9	5.90E-04	2.20E-05	9.30E-05	608	0.05
Chlorobenzene	108907	108-90-7	21000	80	890	624	2
Chlorodibromomethane	124481	124-48-1	34	2.2	3	624	2
Chloroform	67663	67-66-3	470	200	1200	625 or SM6210B	3
Chrysene	218019	218-01-9	0.031	0.016	2.1	610/626	1.6
Copper	7440508	7440-50-8	NC	-	NC	200.8	2

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Cyanide	57125	57-12-5	220000	50	270	335.4	10
Dibenzo (a,h) Anthracene	53703	53-70-3	0.031	1.60E-05	0.0021	625	1.6
Dichlorobromomethane	75274	75-27-4	22	2.8	3.6	624	2
Dieldrin	60571	60-57-1	1.40E-04	7.00E-08	6.10E-06	608	0.05
Diethyl Phthalate	84662	84-66-2	1.20E+05	80	5000	625	7.6
Dimethyl Phthalate	131113	131-11-3	2.90E+06	200	1.30E+05	625	6.4
Di-n-Butyl Phthalate	84742	84-74-2	1.20E+04	3	510	625	1
Endosulfan Sulfate	1031078	1031-07-8	2	4	10	608	0.05
Endrin	72208	72-20-8	0.81	0.002	0.035	608	0.05
Endrin Aldehyde	7421934	7421-93-4	0.81	0.1	0.035	608	0.05
Ethylbenzene	100414	100-41-4	29000	13	270	624	2
Fluoranthene	206440	206-44-0	370	2	16	625	0.6
Fluorene	86737	86-73-7	14000	5	610	625	0.6
gamma-BHC (Lindane)	58899	58-89-9	0.063	0.43	17	608	0.05
Heptachlor	76448	76-44-8	2.10E-04	3.40E-07	1.00E-05	608	0.05

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
Heptachlor Epoxide	1024573	1024-57-3	1.10E-04	2.40E-06	7.40E-06	608	0.05
Hexachlorobenzene	118741	118-74-1	7.70E-04	5.00E-06	5.20E-05	612/626	1.6
Hexachlorobutadiene	87683	87-68-3	50	0.01	4.1	625	1
Hexachloro-cyclopentadiene	77474	77-47-4	17000	0.4	630	1625B/626	2
Hexachloroethane	67721	67-72-1	8.9	0.02	0.13	625	1
Indeno (1,2,3-cd) Pyrene	193395	193-39-5	0.031	0.00016	0.021	610/626	2
Isophorone	78591	78-59-1	600	200	110	625	1
Mercury	7439976	7439-97-6	0.15			1631E	0.0005
Methyl Bromide	74839	74-83-9	4000	1,000	2400	624/602	11
Methylene Chloride	75092	75-09-2	1600	100	250	624	10
Methylmercury	22967926	22967-92-6	NC	0.033 mg/kg tissue residue)		NL	NL
Nickel	7440020	7440-02-0	4600	39	190	200.8	0.5
Nitrobenzene	98953	98-95-3	1900	60	320	625	1
N-Nitrosodimethylamine	62759	62-75-9	8.1	0.34	0.34	607/626	5

			Marine HHC (Consumption of organisms only)			Analytical Methods and Quantitation Levels*	
Chemical Name	**CAS # - 1**	**CAS # - 2**	**Alternative 1: No Action (µg/L)**	**Alternative 2: EPA Draft Regulation (µg/L)**	**Alternative 3: Preferred alternative Criterion (µg/L)**	**EPA or Standard Methods (SM) Method**	**Quantitation Level**
N-Nitrosodi-n-Propylamine	621647	621-64-7	NC	0.058	0.058	607/626	2
N-Nitrosodiphenylamine	86306	86-30-6	16	0.69	0.69	625	1
Pentachlorophenol	87865	87-86-5	8.2	0.002	0.1	625	1
Phenol	108952	108-95-2	4.60E+06	30,000	200000	625	4
Polychlorinated Biphenyls (PCBs)	n	1336-36-3	1.70E-04	7.30E-06	1.70E-04	608	0.5
Pyrene	129000	129-00-0	11000	3	460	625	0.6
Selenium	7782492	7782-49-2	NC	95	480	200.8	1
Tetrachloroethylene	127184	127-18-4	8.85	2.9	7.1	624	2
Thallium	7440280	7440-28-0	6.3	0.054	0.27	200.8	0.36
Toluene	108883	108-88-3	200000	52	410	624	2
Toxaphene	8001352	8001-35-2	7.50E-04	6.60E-05	3.20E-05	608	0.5
Trichloroethylene	79016	79-01-6	81	0.7	0.86	624	2
Vinyl Chloride	75014	75-01-4	525	0.18	0.26	624/SM6200B	2
Zinc	7440666	7440-66-6	NC	580	2900	200.8	2.5

*From Attachment A – Effluent characterization for permit application.

(Available online at: http://www.ecy.wa.gov/programs/wq/permits/forms.html.)

HHC Alternative 1	Not proceed with any rule revisions and remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in one million for the carcinogenic chemicals. The criterion for asbestos are based on SDWA levels.
HHC Alternative 2	This uses a fish consumption rate of 175 grams/day and a risk level of one in one million for the carcinogenic chemicals. The criteria for copper and asbestos are based on SDWA levels.
HHC Alternative 3	This is the preferred alternative presented in the rule. This uses a fish consumption rate of 175 grams/day, and a decision to use a risk level of one in one million for the carcinogenic chemicals except for PCBs. PCBs are based on a state-specific risk level and then held at current Alternative 1 levels (see *Washington Water Quality Standards: Human health criteria and implementation tools. Overview of key decisions in rule amendment,* January 2016. The criteria for arsenic, copper, and asbestos are based on SDWA levels.

General Notes:

All criteria and analytical level values are expressed as µg/L unless noted otherwise

Red Font indicates Carcinogen

NC = No Criterion

NL = Not Listed

HHC Alternative 1 (NTR) calculated using a Body Weight (BW) of 70; HHC Alternatives 2 & 3 use a BW of 80 kg.

Footnotes:

**Fish tissue concentration

Appendix C: Comments on Draft EIS

Three entities commented on the draft EIS during the February 1 – April 22, 2016 comment period. Appendix C contains those comments along with Ecology's responses. All comments and responses about the rulemaking, including the comments listed here, will also be released in the Concise Explanitory Statement as part of the rule adoption documents.

Waterkeepers Washington (*Janette K. Brimmer and Matthew R. Baca*)

Comment:

"VI. THE DEIS IS INADEQUATE IN ITS FAILURE TO CONSIDER REASONABLE ALTERNATIVES.

Ecology failed to consider and evaluate numerous important alternatives, rendering the DEIS inadequate. For example, Ecology entirely failed to consider any fish consumption rate higher than 175 g/day, even though numerous studies show fish consumption rates well in excess of that rate. DEIS at 20. Ecology also failed to consider maintaining a 70 kg body weight or increasing the life expectancy used in its calculation and how those changes would affect the chosen proposal. Instead, Ecology only considered a no-action alternative, EPA's proposed rule, and the Ecology proposed rule. *Id.* Lastly, Ecology unacceptably limited its comparison of the alternatives it did present, providing only one paragraph on "usability" and one on "environmental protection." *Id.* at 21-22. That discussion does not differentiate between, for example, the environmental protection differences in EPA's much stronger proposed rule. *Id.* In the tables presented, the qualitative ratings of alternatives 2 and 3 are the same, but there is essentially no explanation as to why one was selected over other. *Id."*

Ecology response:

Ecology disagrees. For this rule-making there are many different alternatives that could have been considered, and Ecology chose to present alternatives that were based on the substantial public process that was conducted to support development of this rule. The public process, including lengthy discussion of approaches and alternatives, included consideration of different FCRs (both higher and lower than 175 g/day) based on different statistics, focus populations, and resources. Body weight was also considered and discussed. Although considered and discussed, increasing the life expectancy has no effect on the calculated criteria because with water quality criteria the exposure duration is assumed to be the same as the lifetime value. Changing this value would only be relevant if the duration of exposure was assumed to be less than a lifetime, such as used in the MTCA risk equations. Please see the Inputs to the Equations section of this Response to Comments for a description of the lengthy and comprehensive process that was part of this rule-making. Ecology does not

consider the analyses in the DEIS to be "limited." Given the multiple inputs to the draft rule and multiple values that could be used for any of the inputs, there were literally hundreds of different possible combinations (alternatives) of input values that could have been used to calculate criteria. SEPA requires an analysis of "reasonable alternatives," not "every" alternative, and Ecology used the extensive public process supporting this rule to focus on a reasonable suite of alternatives for the DEIS. The DEIS is not required to recommend one alternative over another, nor to explain the rationale behind the preferred alternative. (See Decision Document for rationale). The DEIS is required to present alternatives and explain the differences. In the case of Alternative 2 vs. Alternative 3, both alternatives use a HQ = 1 and a risk level of 10-6, so given that neither alternative as a whole has all criteria "higher than" or "lower than" the other, they are considered approximately equal in protection.

The Boeing Company (*Steven Shestag*)

Comment:

"Ecology's proposed rule is based on an inadequate Environmental Impact Statement. Under the State Environmental Policy Act, an Environmental Impact Statement ("EIS") should present a reasonably thorough discussion of the significant environmental impacts associated with the agency's proposed action. In doing so, it should compare the proposed action to a reasonable range of alternatives, so that the decision makers and the public can understand and assess the likely effects of the proposed action. The Department first issued a draft EIS in January 2015. See WDOE, Draft Environmental Impact Statement (Jan. 2015). Along with its revised rule, the Department published a revised DEIS in January 2016. See Draft Environmental Impact Statement – Revised (Jan. 2016) (hereinafter "DEIS"). The DEIS has several fundamental inadequacies. Its analysis of the proposed Human Health Criteria is contradicted by and fundamentally inconsistent with the analysis presented in the Cost-Benefit Analysis, and it fails to consider a reasonable range of alternatives to the proposed Human Health Criteria. The DEIS is inconsistent with Ecology's Cost-Benefit Analysis. In its summary, the DEIS explains that "[t]he objective of the draft rule is to adopt Human Health Criteria for the state of Washington that protect people who consume fish and shellfish in waters regulated by Ecology." DEIS at 1. The document then goes on to compare four alternatives for Human Health Criteria with respect to the level of environmental protection provided and usability. The analysis and conclusions of this critical part of the DEIS are inconsistent with the analysis Ecology presented in its Cost-Benefit Analysis. Specifically, the DEIS concludes that the existing Human Health Criteria provide a "Moderate-Low" level of environmental protection, but that the proposed Human Health Criteria will provide a "High" level of environmental protection. DEIS at 22. The DEIS appears to reason that, in theory, more stringent criteria are more protective.

However, the DEIS never considers the practical effect of the new criteria. It does not compare the environmental conditions expected after adoption of the proposed criteria to current environmental conditions. The Department attempted to do so in the Cost-Benefit Analysis. As discussed above, the Department concluded that the only potential positive improvement would be the possibility of a reduction in phthalate discharges to the environment. The new proposed criteria for the other 94 substances would have absolutely no effect. It is, therefore, inaccurate and incredibly misleading to the public to issue a DEIS that claims that the proposed rule will increase the level of environmental protection from Moderate-Low to High."

Ecology response:

Please see response to Waterkeepers Washington (above). The alternatives in the DEIS were evaluated based on environmental protection and usability. These two factors are defined in the DEIS and the analysis presented is consistent with those factors as defined. The DEIS is consistent with the Cost-Benefit Analysis.

Comment:

"The DEIS fails to consider a meaningful range of alternatives. An EIS must consider a reasonable range of alternatives. With respect to most of the Human Health Criteria proposed, the Department's DEIS considers only three: 1. Human Health Criteria based on fish consumption rate of 6.5 g/day and risk level of 10-6. (No Action Alternative) 2. EPA's proposed Human Health Criteria, which are based on fish consumption rate of 175 g/day and risk level of 10-6. 3. Human Health Criteria for most substances based on fish consumption rate of 175 g/day and risk level of 10-6, but criteria for copper and asbestos based on SDWA levels. Although the DEIS identifies these as three alternatives, for 94 of the covered substances there are only two alternatives: the first and second listed above. The third alternative is identical to the second, except for copper and asbestos. The DEIS ignores at least two obvious additional alternatives. The first is the proposed Human Health Criteria the Department published in January 2015, which was based on 175 g/day fish consumption and a risk level of 10-5. The second is an alternative set of criteria based on a fish consumption rate in the range of 30 to 60 g/day, which would much more closely approximate the average consumption of Washington-reared fish by high consuming populations, and a risk level of 10-5. These alternatives in addition to those identified in the DEIS would reflect a reasonable range of alternatives. By failing to evaluate such a range, the Department has set up a false choice— either stick with the status quo, or support the Department's current proposal. Ecology should 18 revise the document to include a meaningful analysis and range of alternatives, and reissue the DEIS for further public comment"

Ecology response:

Please see response to Waterkeepers Washington.

Comment:

"Many of our concerns with the proposed rule remain. Boeing requests that the Department reconsider several important aspects of the proposal. In addition, the law requires that the Department revise and republish the Cost-Benefit Analysis and DEIS so that the public and regulated community can understand the rationale for the proposed rule. The Department should extend the public comment period on the proposed rule until those revised documents are published."

Ecology response:

Ecology disagrees that the law requires that the Department revise and republish the Cost-Benefit Analysis and DEIS. To further address your comment, please also see the responses to your comments in the Cost Benefit Analysis and DEIS sections in this Response to Comments.

American Exploration & Mining Association (*Matthew Ellsworth*)

Comment:

"The tables including HH WQC and analytical sensitivities in Appendix B of the EIS (Ecology 2016a) are helpful. They would be much more useful, however, if criteria below approved analytical method sensitivity were listed in bold type. This would help readers more easily understand how current and proposed HH WQC compare to analytical methods, and help frame many of the discussions in the CBA (Ecology 2016b)."

Ecology response:

Comment noted.

Comment:

"The CBA understates the costs and challenges of the proposed rule and the adoption of new, more sensitive analytical methods. The EIS should better represent the importance of analytical sensitivity relative to HH WQC as well"

Ecology response:

We address your concern about costs for improved analytical and testing methods in Chapter 7 of the Cost Benefit Analysis. On page 56, we state that with improved testing methods, dischargers may incur additional costs. However, we also explain, "There is too much uncertainty in the locations, facilities, chemicals, concentrations, and timing of impacts associated with future improvements to sampling and testing to assess the impacts of these future actions quantitatively." It is important to note that should improved testing methods drive additional costs for dischargers, they would also drive public benefits from reduced exposure to these chemicals..