State of Oregon
Department of Environmental Quality Memorandum

Date: July 23, 2010

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item H, Informational item: Update on DEQ's development of revised water quality standards and implementation policies for toxic pollutants August 18-19, 2010 EQC meeting

Purpose of item

DEQ will update the commission on the development of rules and other approaches for implementing revised human health water quality standards for toxic pollutants, which DEQ expects to propose for adoption in mid 2011. DEQ will ask for additional input the commission may have on implementation policies.

Why this is important

DEQ intends to propose revised water quality standards based on the highest fish consumption rate used by any state, 175 grams per day. This will make Oregon's criteria significantly more protective of human health than other state or federal criteria, which are based on consumption rates of 6.5 to 33 grams per day. Toxic pollutants come from many different sources, including sources that must obtain NPDES permits under the Clean Water Act and sources that do not. In some cases, state and federal regulations remain largely silent about implementation strategies for sources that may contribute a significant load of these pollutants to Oregon waterways. One exception to this is the pretreatment program. Some businesses do not receive permits directly from DEQ because they discharge to publicly-owned treatment works but they are subject to the state and federal pretreatment regulations. The wastewater discharged by those businesses is controlled by a permit issued by the publicly-owned treatment works.

To meet the environmental objectives inherent in the revised water quality standards, DEQ must have implementation tools that facilitate cost-effective environmental improvement for NPDES-permitted sources, even when the attainment of the water quality standards is uncertain or infeasible. DEQ must also develop strategies to reduce or control inputs of these pollutants into Oregon waters where they are not being addressed through other existing mechanisms.

Background

DEQ is responsible for establishing water quality standards in Oregon to protect human health. Water quality standards include numeric water quality criteria expressed as concentrations that are not to be exceeded.

The criteria allow Oregonians to consume fish and shellfish and to use state waters for drinking water supply without adverse health effects. Most of DEQ's current criteria are based on EPA's recommended values. Through the current rulemaking, DEQ will revise Oregon's human health criteria based on a fish consumption rate that is substantially higher than the values based on national data used in EPA's recommended criteria values. If approved by EQC and approved by EPA, these water quality standards will be the basis of regulatory tools used by DEQ and EPA to prevent or reduce water pollution.

EQC directed DEQ to pursue rule revisions that will set new water quality standards for toxic pollutants in Oregon based upon on a revised fish consumption rate of 175 grams per day. The commission also directed DEQ to propose rule language or develop other implementation strategies to reduce the adverse impacts of toxic substances in Oregon's waters that are the result of nonpoint source discharges or other sources not subject to section 402 of the federal Clean Water Act, which governs NPDES permits.

The commission instructed DEQ to carefully consider the costs and benefits of the fish consumption rate and the data and scientific analysis already compiled or that is developed as part of the rulemaking proceeding. The proposed rule language must allow DEQ to implement the standards in an environmentally meaningful and cost-effective manner.

Key issue: Project status

Finalizing proposed rulemaking package

DEQ completed discussions with the stakeholder workgroups on most of the individual elements of the rulemaking package at its July 15, 2010 workgroup meeting. DEQ will meet with the stakeholder workgroups in August and September to review the complete rulemaking package and issue papers and to discuss DEQ's fiscal impact analysis.

A status of the elements of the rule package to date is provided in attachment A.

NPDES source implementation

DEQ continues to communicate with the stakeholder workgroup to finalize the tools DEQ will use to implement the revised human health criteria in an environmentally meaningful and cost-effective manner. Staff will provide an overview of the implementation tools that will be included in the final rulemaking package. Staff will also summarize discussions with the rulemaking workgroup, including discussion of implementation tools that were considered but are not included in the

final rulemaking package.

Nonpoint source implementation
DEQ has also discussed with the stakeholder workgroup revisions to the water quality rules and other actions that will address nonpoint and other sources of pollutants that do not receive individual NPDES permits. DEQ will update the commission on the concepts that will be included in the rulemaking package as well as DEQ's plans to address issues and concerns that will not be addressed through the current rulemaking process. Future rulemakings may be needed to implement additional recommendations ultimately contained within DEQ's Toxics Reduction Strategy.

Fiscal impact statement
DEQ will discuss its approach and framework for fiscal analysis at the August 17 workgroup meeting. Staff will provide an overview of the approach to analyzing the fiscal impact of the rule as part of its presentation to the commission. DEQ will continue to work closely with its stakeholder workgroups, EPA, and the Umatilla Tribes to finalize the proposed rulemaking package and associated fiscal impact statement. Monthly meetings are scheduled through September.

Key issue: Metals criteria rulemaking

Accelerated rulemaking schedule for arsenic, iron, and manganese criteria revisions
Arsenic, iron and manganese occur naturally in Oregon's soils and surface waters. As a result, these pollutants are sometimes recorded in effluent at concentrations above DEQ's standards. The proposed revisions to the arsenic, iron and manganese criteria address the fact that these pollutants occur at high levels naturally. The revisions will minimize issues related to these pollutants for dischargers, some of whom have permits due for renewal in the near term, and target agency resources to higher priority environmental protections. In addition, DEQ proposes an arsenic reduction policy to minimize anthropogenic additions of arsenic for streams that have low arsenic concentrations. See attachment B for a summary of the proposed standards revisions for arsenic, iron and manganese. DEQ will provide a brief overview of the accelerated rulemaking for arsenic, iron, and manganese, including the rulemaking timeline and the draft proposed rule revisions going out for public comment.

Stakeholder involvement

Stakeholder perspectives on rulemaking package
DEQ assembled workgroups to solicit input on this rulemaking effort, and the groups include representatives from industry, cities, environmental groups, a tribe, agriculture and forestry. Some of the major perspectives DEQ has heard during the development of this

rulemaking package include:

- Sufficient tools must be available to address situations likely to be encountered by point source dischargers;
- Implementation tool provisions must be effective and efficient, without prohibitive procedural costs to regulated sources or DEQ;
- Point source implementation tools must conform to federal requirements;
- Requirements should be in place for all potential sources to meet water quality standards, and implementation tools should ultimately lead to achieving water quality standards;
- Provisions applicable to nonpoint sources should consider current programs and efforts of other state implementing agencies; and
- Rule provisions applicable to nonpoint sources are needed to achieve water quality standards.

Next steps

DEQ will continue to work with EPA, tribal governments and stakeholders in its development of the proposed rulemaking package. DEQ will discuss the final rulemaking package and its fiscal impact analysis with the workgroups at the August and September stakeholder workgroup meetings. DEQ plans to solicit public comment on draft proposed rules in January-February 2011 and propose rules to the commission in summer of 2011.

EQC involvement

DEQ will continue to provide informational updates on the progress of this rulemaking at the pleasure of the commission. We anticipate providing the next informational update at the October 2010 commission meeting. DEQ will continue to invite Commissioners Blosser, Williamson and O'Keefe to these stakeholder workgroup meetings, as requested.

Attachments

A. Table of rulemaking package elements
B. Summary of proposed revisions to water quality standards for arsenic, iron and manganese

Available upon request

1. Project work plan summary

Approved:

Division: _____

Section: _____

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Rulemaking Element	Description	Rulemaking Status	Comments
NPDES Tools			
Intake credit	This tool allows a source to pass through pollutants contained in their intake water to their effluent without treatment as long as the facility does not increase either the mass or concentration of the pollutant at the point of discharge.	**DEQ will propose a new rule authorizing intake credits.**	DEQ expects there will be very few permittees that will qualify to use this provision.
Background Pollutant Allowance	New WQS provisions to allow a "de minimis" increase in toxic pollutant load above ambient WQ conditions from a single point source, which is small enough that it is not expected to significantly affect human health risk.	**DEQ will propose a new rule authorizing an allowance for background pollutants.**	This rule would be a new water quality standards provision. DEQ believes that a small increase in concentration would still be protective of designated uses.
Variances	A variance is a temporary exemption from meeting certain otherwise applicable water quality standards and must be justified based on one of 6 reasons specified in federal and state WQS regulations.	**Existing. DEQ will propose revisions intended to clarify and streamline the process to obtain a variance.**	Substantial and widespread economic and social impact is one reason a variance may be granted. Other reasons include high, naturally occurring pollutant loads and human-caused conditions or sources of pollution that cannot be remedied or would cause more environmental damage to correct than leave in place. EPA must approve variances. Underlying WQS remain in effect for the water body and for all other CWA purposes (e.g. other permittees, 303(d) listing and TMDL development).

Rulemaking Element	Description	Rulemaking Status	Comments
Toxics Pollutants Reduction Plan	As currently drafted, this approach is essentially a variance, but the emphasis is placed on developing a toxics reduction plan to be in compliance. The plan would need to be approved by EPA.	**DEQ proposes to incorporate elements of this plan into the variance provision.**	Workgroup members discussed the viability of this approach at the July 15 meeting. DEQ proposes to combine language from the variance provision with terms from the toxics pollutants reduction plan and rename the provision (e.g. "pollutant reduction plan"). Some representatives objected to not using the term "variance", since it could mislead the public, while others believed that an alternative name, such as a "toxics pollutants reduction plan" would represent a more proactive approach by a facility unable to meet water quality standards.

Non-NPDES Approaches			
Division 41 and 42 Amendments	ORS 527 and 568 describe the mechanisms for forestry and agricultural nonpoint sources to meet water quality standards. The intent of those statutes and how nonpoint sources are expected to meet water quality standards and TMDL load allocations are explained.	**Existing. DEQ will propose revisions intended to clarify how nonpoint sources from agricultural and forest lands are controlled to meet water quality standards and load allocations.**	Clarifying roles and authorities in rule will eliminate the need to revisit the issue and will allow DEQ's resources to implement its programs and address actual water quality issues.
	Although DEQ has authority to do so already, its ability to identifying significant air and land sources and assign load allocations is not explicit in the Division 42 TMDL rule. DEQ proposes to revise this rule to clarify DEQ's authority to assign an individual load allocation to air and land sources in TMDLs.	**DEQ will propose a revision to clarify that load allocations could be assigned to air and land sources.**	DEQ made a policy decision to limit the scope of the toxics water quality standards rulemaking to divisions under water program. The actual regulatory mechanism for addressing TMDL allocations through other media programs still needs to be defined and described.

Summary of proposed revisions to water quality standards for arsenic, iron and manganese

DEQ is proposing to revise Oregon's human health water quality criteria for arsenic, iron and manganese as shown in Table 1 below. In addition, DEQ is proposing to adopt an arsenic reduction policy. A summary of the proposed criteria, and the scientific basis and rationale for the criteria are provided below. For additional information, please see DEQ's draft issue paper titled: **"**Water Quality Standards Review and Recommendations: Arsenic, Iron and Manganese." The paper will be available on DEQ's water quality standards web page for toxic pollutants at http://www.deq.state.or.us/wq/standards/toxics.htm after Sept. 1, 2010.

Table 1. Proposed human Health Water Quality Criteria for Arsenic, Iron and Manganese (µg/l)

Pollutant	**Water + Organism**		**Organism Only**	
	Current Criteria	Proposed Criteria	Current Criteria	Proposed Criteria
Arsenic	0.0022	2.3 inorganic arsenic	0.0175	2.7 inorganic arsenic
Iron	300	None	None	None
Manganese	50	None	100	100 marine waters

Notes:

1) Current criteria are currently effective federal criteria from Table 20 of the OARs.

2) Criteria are for total metals, not dissolved.

3) The aquatic life criterion for iron is 1000µg/l. There are no aquatic life criteria for arsenic or manganese.

Arsenic

DEQ derived the proposed criteria for arsenic using EPA's calculation method. However, DEQ adapted the calculation for Oregon by using locally appropriate values rather than nation-wide default values for some variables. Specifically, the Oregon criteria are based on a fish consumption rate of 175 grams per day, a cancer risk level of 1×10^{-4} for the water + organism criterion, and a cancer risk level of 1×10^{-6} for the organism only criterion. Additional modifications for both human health criteria include using a bioconcentration factor (BCF) of 1

and a 10 percent inorganic arsenic factor. Further explanation of these variables and the criteria calculations is provided in the body of the paper below.

DEQ is proposing locally derived criteria rather than EPA's nationally recommended criteria because there are natural background levels of arsenic in many Oregon waters that are higher than the national criteria. The natural arsenic is from geologic sources; levels are often higher in ground water than in surface waters. In addition, inorganic arsenic, which is the form of arsenic that is toxic to humans, does not bio-accumulate in fish tissue as readily as total arsenic. In addition, the proposed water + organism value is significantly lower than the maximum contaminant level (MCL) established by EPA as protective of finished drinking water under the Safe Drinking Water Act.

These criteria represent an appropriate balance of human health protection and recognition that many Oregon waters contain arsenic from natural geologic sources, commonly at levels of 1-3 µg/l. These natural levels do not represent new or added health risk to the environment. Setting criteria that would trigger 303d listings, TMDLs and other CWA implementation activities would require the use of valuable public resources for administrative activities that would in most cases not result in a real reduction of arsenic levels in the water or in fish.

DEQ also proposes to include an arsenic reduction policy in our state water quality regulations. This rule will require discharges that DEQ has identified as likely to add anthropogenic sources of arsenic to their wastewater and that discharge within a public drinking water supply protection area delineated by DEQ, to take feasible actions to minimize the arsenic in their discharge, even where the ambient arsenic level is below the numeric criteria. The purpose of this provision is to minimize human health risk from arsenic where the arsenic is not from natural sources and it is possible to reduce the arsenic input to the water body.

Iron

DEQ agreed to review this criterion because iron is a naturally occurring earth metal that sometimes exceeds the current criterion due to natural background levels, and because the criterion is not based on levels needed to protect human health. Oregon's current "human health" criterion for iron is 300 µg/L (0.3 mg/L). This was EPA's national recommended criteria at the time it was adopted. However, iron is not classified as a priority pollutant by EPA and their criterion was actually based on taste and laundry staining considerations, not on human health effects. DEQ proposes to withdraw Oregon's human health criterion for iron for the following reasons:

- The current criterion of 300 µg/L is not based on human health effects.
- Iron criteria for the protection of human health are not necessary. The tolerable intake levels are higher than those found in Oregon surface waters and much higher than the aquatic life criterion of 1000 µg/L.

- DEQ does not expect that discharges of iron in Oregon will impact beneficial uses, including the ability to drink water or consume fish.
- Oregon has a narrative criterion and EPA has a secondary MCL that allow water suppliers to protect against objectionable taste and odor if they wish to do so.

DEQ does not propose to change the current freshwater aquatic life criterion for iron, which is1000 µg/L (1.0 mg/L) for the chronic criterion. Aquatic life is a designated beneficial use in all surface waters of Oregon and therefore the aquatic life criterion for iron applies to all waters.

Manganese

DEQ agreed to review the manganese criteria because manganese is a naturally occurring earth metal in Oregon and because the "water + organism" criterion is not based on levels needed to protect human health. DEQ proposes to withdraw the criterion for water + fish ingestion for the following reasons:

- The criterion is not based on human health effects. EPA has not recommended a water + organism criterion for the protection of human health, nor have they recommended an MCL to protect against human health effects of manganese in drinking water. Manganese levels in Oregon surface waters are far below average daily human intake levels. There is no reason to believe that discharges of manganese will impact beneficial uses of Oregon's fresh waters.
- Oregon does not need a numeric manganese criterion to protect water supply based on aesthetic and organoleptic effects. The Safe Drinking Water Information System database shows only one surface water supplier with detectable levels manganese in their finish water, and the concentration was 0.8 µg/l, far below the levels where aesthetic or taste effects are objectionable (30 – 150 µg/l). DEQ has a narrative criterion for the protection of taste, odor and aesthetic affects should limits be required to protect a surface water domestic water supply source from particularly high levels of manganese from anthropogenic sources. Finally, EPA has a secondary MCL of 50µg/l in place under the Safe Drinking Water Act to provide guidance to water suppliers for these non-health effects.

In addition, DEQ proposes that the 100 µg/l "fish consumption only" criterion apply only to marine waters. The 100µg/l criterion was recommended by EPA in 1976, prior to the fish ingestion/bioconcentration factor derivation method, which was published in 1980. The EPA criterion was recommended not based on the method, but due to concerns about possible high bioconcentration rates among marine mollusks. A fish consumption criterion for freshwaters is not needed because data that has been collected since that time shows that bioconcentration factors for manganese in freshwater species are low (i.e., manganese does not accumulate in freshwater aquatic species in appreciable amounts). DEQ did not investigate more recent data for bioconcentration factors in marine species.