MTCA / SMS Advisory Group & Sediment Workgroup

Meeting Notes

Monday, June 21st, 2010

Port of Tacoma Fabulich Center, 09:00 – 15:30 Hrs

Meeting Synopsis / Summary

This was the sixth MTCA / SMS advisory group meeting. Four topics were previewed and discussed: freshwater sediment standards, Method A cleanup levels, MTCA rule framework and ground water discharge to surface water.

Freshwater sediment standards – Ecology vetted proposed criteria. Ecology's plan is to use the existing SMS standards as a framework or template. Ecology's proposed plan – use a multivariate statistical approach (floating percentile method) that minimizes (simultaneously) both false-positive / negative errors. The number of substances / chemicals that will be addressed or regulated is significant. Lastly, unlike marine sediments, Ecology will not normalize chemical concentrations to organic carbon. Ecology's proposed plan is, from a national perspective, unique. However, Ecology has been working the freshwater standards for quite some time and it has undergone extensive peer review. Ecology plans to have the freshwater standards peer-reviewed by both EPA and several national experts later this summer. *Feedback/ comments* – workgroup members suggested that Ecology ground-truth the proposed statistical model. It was also suggested that Ecology clarify the 10-column table within the freshwater sediments report. There was also some brief discussion about linking or integrating source control to freshwater standards. Lastly, a concern was raised about the proposed standard for antimony (Sb) – it's within the range of typical laboratory detection limits.

Use of Method A cleanup level tables – Ecology plans to change ground rules on how these cleanups levels are applied and used. Specifically, use of the Method A tables for "routine" cleanup sites will be eliminated. However, Ecology is planning on adding two new criteria. First, you cannot use Method A if substances are "likely to reach surface water". Second, if you use the Method A tables, then you must also conduct a terrestrial ecological (TEE) evaluation. *Feedback* – it was suggested that Ecology clarify the phrase "likely to reach surface water" (e.g. what sort of timeframe is this?). Two questions were raised about ground water discharge to surface water. First, it was suggested that Ecology clarify what you should do when ground water is discharging to marine water or an estuary (use Method B). Second, it was recommended that Ecology clarify when or how you can apply ground water attenuation modeling to sites that are near or abut surface water. Lastly, it was suggested that Ecology clarify or define upland soil vs. sediment.

Updates / revisions to Method A table cleanup levels – Ecology gave an update on previous discussions (March, 2010) and proposed revisions. This is a work-in-progress. Balcony view – Ecology indicated that based on the March feedback, there was general agreement that the Method A table values needed to be revised / updated, based on IRIS / NCEA toxicity values, as well as laboratory PQLs and ambient / background concentrations. However, there was no consensus on whether the Cal-EPA toxicity values should be used to revise cleanup levels. As for the early life-stage exposure adjustments, Ecology indicated that there was no consensus on this issue to date. Here's a brief synopsis of information on various Method A table substances:

- *Arsenic* – Ecology is reviewing the IRIS cancer slope factor. Ecology has also collected and evaluated ambient ground water concentrations (Department of Health Drinking Water database). If you apply 90th percentile statistical protocol, then ambient arsenic (ground water) is ~ 10 ppb (ug/L).

- *Naphthalene* – latest scientific information indicates that this substance should now be deemed a carcinogen. If naphthalene is reclassified as a carcinogen, then it would result in ground water cleanup levels of ~ 10-90 ppb (from current level of 160 ppb).

- *Benzo(a)Pyrene and PAH* mixtures – for b(a)P, the ground water cleanup level would be reduced from current level of 0.1 ppb to 0.02 ppb. For PAH mixtures, Ecology is contemplating how best to adjust for early life stage, i.e. as a single substance or mixture.

- *Chromium* – latest scientific information indicates that hexavalent chromium is a carcinogen (human ingestion of ground water). New Jersey DEP has implemented updated hex-chrome standard.

Feedback – for the early life stage exposure and related adjustments, it was suggested that Ecology use a framework that is flexible and not static. Specifically, it was suggested that Ecology adopt or implement a flexible approach that would allow for cleanup level updates and revisions as new scientific information comes on-line. *Ground water arsenic* - there appeared to be widespread consensus that the adjustment for ambient made sense and should be done. However, it was also suggested that Ecology check ambient levels of both organic / inorganic arsenic, as the organic form is less toxic. *Naphthalene* - concerns were raised about the cost / benefit of revising the ground water standard. There was some concern that if the naphthalene standard was lowered, then this would impede cleanups. It was also suggested that Ecology check typical ground water 1-methyl naphthalene (1-MN) concentrations as cleanup levels are based on 1-MN toxicity. Lastly, for naphthalene, it was recommended that Ecology check how this would play out for vapor intrusion exposure (i.e. ambient concentrations). B(a)P and PAH mixtures – concerns were raised about lowering the ground water standard to 0.02 ppb. Specifically, it was felt that if this was done, then it may re-open a lot of sites and impede future cleanups. Concerns were also raised that in reality, b(a)p @ 0.02 ug/L was within the range of analytical "noise". This is very low concentration and difficult to measure from a practical standpoint. As for the PAH mixtures, it was suggested that Ecology should not "double adjust" for early life stage exposure. However, it was also recommended that Ecology "do the math" and check the impacts of various adjustments, i.e. single substance and 10-6 risk, early life stage, etc. Lastly, one balcony view comment – workgroup members appreciated the level of detail provided in the Method A cleanup level handout, how it was organized, etc.

MTCA Rule Framework – Ecology circulated a draft outline on how the cleanup level piece of the regulation (Section 700s) would be organized. *Feedback* – questions were raised about statistical methods and how best to handle non-detects. Several asked about the proposed "direct comparison" method for ground water, e.g. what exactly is this, how would it be implemented, etc. In terms of ground water compliance monitoring and statistical approaches, it was suggested that Ecology keep this information in guidance and not get into details within the regulations.

Ground water discharge to surface water – Ecology gave a PowerPoint presentation on this exposure pathway. Issue – latest scientific information indicates that the amount of ground water discharging to surface is more significant than previously anticipated. Also, dynamics of ground water discharge to surface water are somewhat complicated. This in turn has in some cases resulted in incomplete or inaccurate site characterizations, etc. Lastly, the current rule framework / language is somewhat ambiguous in terms of how best to handle this exposure pathway. PLPs and Ecology staff have struggled with establishing cleanup levels, site characterization and point of compliance decisions. Ecology is contemplating changes to existing rule language, e.g. point of compliance, site characterization, etc. *Feedback* – there was consensus that the ground water to surface water pathway was definitely an issue that needed to be clarified. However, it was recommended that Ecology not make significant revisions to the existing rule language. Specifically, it was suggested that Ecology clarify the Section 720(8) point of compliance rule language, as well as site characterization requirements. It was also suggested that Ecology provide more detailed information in guidance.

Acronyms

- MTCA – Model Toxics Control Act (Chapter 173-340 WAC)
- SMS – Sediment Management Standards (Chapter 173-304 WAC)
- H-H – human health.
- TEE – terrestrial ecological standards (MTCA Section 7490)
- PMEP – permanent to the maximum extent practicable (MTCA 360)
- RIFS – remedial investigation / feasibility study (MTCA 350-360)
- TCP – Toxics Cleanup Program (Department of Ecology).
- SEPA – State Environmental Policy Act
- APA – Administrative Procedures Act
- TPH – Total Petroleum Hydrocarbons
- GHG – green house gas
- PQL – practical quantitation limit (laboratory)
- PLP – potentially liable party
- ICs = institutional controls (ICs, MTCA Section 440)

Introduction

09:09 Hrs

Tamie Kellog – meeting kick-off. We will take questions during presentations and audience questions at the end of each presentation. We will also take a couple of breaks, lunch etc. Let's get started – lot's to do. Let's start with group member / audience introductions.

Martha Hankins, Ecology - please check updated roadmap. Ecology has received a lot of good feedback so far. Have received written comments (~25 so far, total of 140 pages). Some concern about topics / issues – more than anticipated. There are a number of issues that still need discussion. The back of the

roadmap has details on a path forward. This roadmap / schedule is very much a work-in-progress. Ecology anticipated having a joint meeting with sediment workgroup; however, we're not quite ready. Our next meeting is July 26th, 2010, followed by a Fall, 2010 "reunion" meeting. There's a lot of concurrent work in progress, e.g. sediment and vapor workgroups, etc. Ecology is also garnering feedback internally and from other stakeholders. Petroleum cleanup levels – Ecology needs to discuss this with the group (next meeting). July – lead cleanup levels will be discussed. Vapor intrusion workgroup – one meeting so far, with another meeting this week. Fish consumption rates – Ecology is vetting this internally and will also meet with Ecology Director Ted Sturdevant (end of July). Ecology hopes to have proposal on fish consumption by this fall. Proposed plan – draft rule language next spring (2011).

Questions / Comments

- ***Are we just addressing MTCA; or, both MTCA / SMS? Please clarify.*** For SMS – most changes will be in rule. Is this a formal rule making process for SMS? ***Ecology – yes, SMS issues will be vetted this fall. Background / human-health still needs to be sorted out.*** All materials posted on Ecology web site.

- ***Is there a point where Ecology will summarize decisions and provide details on decisions on goes in the rule?*** Or, should group members just wait for draft rule language? Would like to see some sort of scorecard or issues summary, as well as decisions. ***Ecology – will likely do this in the fall.***

- ***It would be helpful if you know what major policy decisions are prior to draft rule language.*** Group members want some sort of "return-on-investment" for time / energy. Please convey decisions prior to draft rule language. ***Ecology – we will take a look at this.***

- ***What kind of timeframe are we talking about for draft rule language? We have concerns about revised rules that have not been fully vetted or discussed.*** Some of the rule language that's been vetted so far contains more extensive changes than anticipated. Didn't we make a conscious decision to limit the scope of the rule? ***Ecology – it's difficult to say or predict with high degree of precision exact schedule, etc. Ecology is proposing an iterative process. It make take a few transactions to sort things out.***

Freshwater Sediment Standards

09:38 Hrs

Russ McMillan, Ecology; Teresa Michelsen, Avocet Consulting - PowerPoint Presentation

Issue – Ecology is proposing freshwater sediment standards. Ecology needs feedback on standards, the proposed approach, etc. Technical / science comments - please submit comments (to Martha Hankins, Ecology) 2-weeks from today (June 21st, 2010). Policy / framework comments – you have more time to submit comments – please get them to Ecology by mid-July (or thereabouts).

Freshwater standards overview / synopsis (PowerPoint presentation) -

- One of six sediment issues currently being worked.
- Today's presentation – biological and chemical criteria, as well as policy framework.

- Objective – consistency with current SMS framework.
- Biological "override" – key issue.
- Bioassays trump chemistry – bioassays measure toxicity.
- Two tier structure – SQS / CSL.
- Biological suite – 3 tests; multiple species, sensitive life-history stages. Use both acute / chronic tests. Require 3 endpoints, e.g. mortality, etc. Also require 2 species.
- Freshwater standards history - Ecology has been working on freshwater standards for a long time (since early 1990s). 2002 – developed freshwater AETs and other SQG sets (TELs/PELs, etc.). It was then decided that a new approach was needed, for various reasons.
- Statistics – false negative – predicting that sample will be non-toxic when it actually is. Converse – false / positive – predicting that a sample is toxic when it actually is not. Goal – minimize (simultaneously) false / positives and false / negatives. Floating percentile method – model that searches for most predictive results. Multivariate model – achieves much more accurate results – somewhat complicated.
- Data set – chemistry – OR and WA. West / East of Cascades. Lakers, rivers and various geochemical environments.
- Total petroleum hydrocarbons (TPH) – by far the most predicative (bioassay) substance, e.g. aliphatics. Therefore, do have draft standards for residual / remnant diesel range organics (DRO).
- Cu, Pb and Zn – historical TELs probably too low for these three heavy metals. Some metals are more toxic (benthic community) than others. McDonald's freshwater standards – similar approach to Ecology; however, a little bit different - false-positive rate is also a bit higher.
- Past / current peer review – 5 national / regional conferences (1999-2009). Ecology's freshwater standards approach have been extensively vetted. OR-DEQ – used Ecology's approach for Portland Harbor.
- Moving forward / the future – more peer review – 4 national experts. August, 2010 – Ecology science panel. Late this fall (2010) – draft rule language, as well as EPA review.
- Previous decisions – a look back – has Ecology been consistent with SMS framework? Two-tier SQS / CSL – does this still make sense? False positives / negatives – balance and higher reliability – is this good? Chemical criteria not universally applicable to all sites. Bioassay override – for conditions where chemical criteria are precluded.

Group Member Questions / Comments

- ***How does the core team sediment evaluation process get reconciled with this?*** Ecology – this is a work-in-progress.
- ***What's different with freshwater standards?*** Ecology – a lot more chemicals. The number of chemicals that go into dredging manual (e.g. ammonia and sulfides) is yet to be determined. Total petroleum hydrocarbons (TPH) vs. PAHs – key distinction for Ecology's standards.
- ***Is Ecology normalizing freshwater sediment concentrations to organic carbon (OC)?*** No. Dredging programs have never done that and Ecology is moving away from this. You may need to adjust for parameters like water hardness certain scenarios, e.g. mining sites in freshwater watersheds.
- ***Ten different columns in standards table – what is this?*** Ecology - this is not a statistical distribution. Should Ecology clarify? Yes, put column headings or explanatory note.
- ***Were you able to evaluate cumulative effects of multiple contaminants?*** Good question. Model considers all chemicals at once; however, no single solution. Synergistic or additive effects is a

complicated issue. ***Do mixtures explain why bioassays have higher false / positive rates?*** Yes, this may be.

- ***Will Ecology be conducting case study evaluations to ground-truth model and practical applications?*** Ecology – yes, we've heard consistent "mantra" to do this. We recognize this is very important. However, it may take years to do this.
- ***Ecology – does two tier standard make sense? Balance of false positives / negatives? Does this resonate with you?***
- ***Should Ecology adopt source-control standards for freshwater levels?*** Group members - how would you envision integrating standards and source-control? Ecology – it's difficult to provide meaningful feedback on this question. Marine sediment standards do not incorporate source control. Should stormwater / NPDES permits be modified for source control / sediment protection? Ecology – no decisions on this have been made. We're still working this internally.
- ***Balcony view question / comment – is Ecology's goal to bring freshwater standards in line with marine?*** If yes, then both should be similar in concept and design.

Audience Questions / Comments

- ***Proposed Antimony (Sb) levels are at or below typical laboratory quantitation limits.*** There is a method for Sb that provides better recovery. Ecology – we are aware that this is a bit of issue; however, we don't feel that this is that significant.
- ***Organic carbon normalization – will Ecology exclude this adjustment for marine sediments as well?*** Ecology – no, this is not on the table. We had to exclude because of time constraints / scope of work.
- ***28-day tests – can labs cut this test to shorter timeframe?*** Yes.

----------Break 10:49 Hrs----------

Method A Cleanup Levels

10:59 Hrs
Pete Kmet, Dave Bradley, Ecology

Issue – primary focus is updates / revisions to Method A tables; some discussion on use of Method A values.

Pete Kmet – use / criteria for the Method A tables.

- Method A is for simple sites; however, cleanup levels do not consider or account for possible surface water impacts, terrestrial ecological and vapor intrusion. Additive effects are not considered as well. You can substitute background, ARARs and lab PQLs for other chemicals.

- Proposed structure for soil / ground water – table and ARARs (same as current rule). Other media (surface water, air and sediments) – use Method B cleanup levels and sediment standards (WAC 173-204).

- Proposed criteria – retain or keep "few" hazardous substances. Eliminate "routine" cleanup sites. Add terrestrial ecological evaluation (exclusion checklist or simple). Surface water impacts – proposed language – you cannot use Method A if "likely to reach surface water".

- Do you concur with soil / ground water focus for Method A? Should Ecology continue to allow for use of ARARs? Are there other criteria that should be added?

Questions / Comments

- ***What does "likely to reach surface water" mean?*** What sort of timeframe (e.g. geologic?). Please clarify.

- ***If ground water is impacting estuary or marine environment, then how is that addressed?*** Ecology – you would need to then switch to Method B cleanup levels.

- ***How is Ecology differentiating between soil / sediment?*** Good question – this has not been fully resolved.

- ***Clarify how and when you can apply modeling / attenuation evaluations for migration to surface water***. For example, if you are "X" distance inland, then can you conduct modeling? Please clarify. Ecology – we will check into this.

Dave Bradley – Method A Cleanup Level Revisions / Updates (75 page handout).

- Comments on March, 2010 revisions. ***What did we (Ecology) hear?*** General agreement that cleanup levels need to be updated, based on IRIS / NCEA criteria. There's a range of opinions on use of Cal EPA toxicity values. We also heard the need to consider and adjust cleanup levels for drinking water MCLs, background and laboratory PQLs.
- Early life-stage exposure – Ecology has heard a range of opinions. No consensus on this to date.
- Proposed cleanup levels changes – Ecology does plant to revise the standards for b(a)p, Cr+3 and ethylene dibromide (EDB). There are a number of substances were Ecology is contemplating changes, e.g. arsenic, etc. (handout has details).
- Early life-stage – Ecology has heard that applying EPA policy is reasonable first step; however, range of opinions about applying to all carcinogens. As for applying to b(a)p / PAH mixtures – there's issues with low dose extrapolation and cleanup levels below background.
- Arsenic – updated drinking water MCL (EPA, 2001). IRIS cancer slope factor – under review. Ambient ground water arsenic – Ecology had draft data that indicates background is closer to 10 ppb. What should Ecology do about arsenic? Should Ecology adjust from 5 to 10 ppb (background)?

----------Lunch – 12:00 Hrs----------
----------Reconvene – 12:15 Hrs----------

- ***Naphthalene*** – updated toxicity results in carcinogen status. Ground water Method A – updated level would be ~ 10-90 ppb. Should Ecology classify naphthalene as a carcinogen? What are your thoughts on this?
- ***Benzo(a)pyrene*** – proposed Method A level would go from 0.1 – 0.02 ppb (ground water) for early life stage effects. Does this make sense? Is Ecology on target? Revised standard (0.02 ug/L) is close to lab PQL.

- ***PAH mixtures*** – how should Ecology implement early life stage adjustment? Should Ecology maintain 2007 policy for mixtures (e.g. dioxin-furans, treat as single hazardous substance). If you adjust PAH mixtures for early life stage (as well as risk and single substance), then are you "piling on"?
- ***Chromium*** – latest scientific information - Cr+6 is carcinogen when ingested, which raises issues for drinking water pathway. NJDEP has implemented revised Cr+6 standard, based on updated cancer slope factor. What should Ecology do? Is this really an issue? Chrome +6 reduces to Cr+3.

Group Member Questions / Comments

- ***Early life stage adjustments - use a framework that is not static and has some flexibility***. Recognize that science will change. For example, standard definitions (e.g. mutagenic) are still being worked-out. TCE is also a good example of changing science / uncertainty.
- ***Endocrine disruptors have more significant effect at certain life stages – not addressed***.
- ***Arsenic – it is appropriate to adjust for both new toxicity and ambient g.w. concentrations. Need to consider both. If you only use toxicity, then that will create problems.***
- ***Arsenic - Ecology needs to clearly identify what background levels are. If Ecology adjusts arsenic to 10 ppb, then that would significantly improve cleanup process. Many sites have ambient g.w. arsenic concentrations > 5 ppb.***
- ***Background arsenic – scale is important, e.g. hydrodynamics, geologic environments, etc. Need to evaluate scale closely.***
- ***Arsenic – when you have risk based below background, do you default to background?*** Yes.
- ***Naphthalene – what level of risk does current standard of 160 ppb (g.w.) pose? What is cost / benefit?***
- ***Naphthalene - If you adopt 1-MN toxicity, then that results in ~ 10 ppb cleanup level. This seems to make sense. However, need to account for background (vapor intrusion pathway).***
- ***Ecology should check into 1-MN – this is data gap.*** Ecology should retain current standard of 160 ppb; however, please do a more robust evaluation of 1-MN, how often it's detected, etc.
- ***B(a)P – this is a significant change (0.1 to 0.02 ug/L). What's the purpose of the Method A tables? Are the current levels sufficiently protective?*** Changes in b(a)p standard may re-open a lot of sites. It's a misnomer that b(a)p is a "stand-alone" substance or unique. Any change to b(a)p will impact PAH mixtures.
- ***Low level b(a)p analysis –*** typical PQL is about 0.01 to 0.02 for all PAHs in water. However, there's really not a whole lot of difference between 0.01 and 0.1 ppb. You're getting down into the weeds when you go this low.
- ***Most of the time you have oil and other things (e.g. turbid ground water) that result in higher detection limits for PAHs. You really need to be careful about this.***
- ***PAHs - keep Method A simple sites going - if you lower standard, then this may really create problems. It may really bog things down.***
- ***Naphthalene / b(a)p – you should be consistent in how you make changes, e.g. cancer slope factor.*** Ecology – Cal EPA factor does not apply to b(a)p.
- ***PAH mixtures –*** Ecology should not "double adjust" (early life stage). However, you need to do math first – figure out which adjustment is more restrictive.
- ***Why have b(a)p in Method A table?*** Why not cPAHs at 0.1?
- ***Ecology did a good job with Method draft revisions –*** 75 page handout. Good job on transparency.

MTCA Rule Framework

13:02 Hrs
Pete Kmet, Ecology - No PowerPoint presentation – handout circulated

Issue – rule structure / format – not enough time for feedback last time this was vetted. Would like your feedback.

Group Member Questions / Comments

- ***Non-detects – should updated statistical approaches be used or considered (e.g. EPA ProUCL)?*** What about different labs with different abilities? Who is watching over labs? Non-detects are addressed in sampling and analysis plans. Also, rule requires that PQL cannot be > 10X detection limit.
- ***Some cleanups are typically based on lot size, as opposed to area. This has implications for statistics.***
- ***Ground water dilution for tidal areas – people are all over the board on this. Ecology should clarify.***
- ***No-purge sampling – what happens when something better comes out? Site unit concept – you take away or are requiring cleanup to levels that we never required before.***
- ***Filtering ground water samples – Ecology wants to clarify regulations for filtering in some circumstances.***
- ***Soil lead – rule does not speak to Method B. Cleanup level procedures for Method B should be the same as Method A.***
- ***Soil ingestion + dermal (concurrent exposure) – should be applied to all substances.***
- ***Commercial land use exposure and eliminating standard / modified - have not observed modifying parameters for commercial exposure.*** Ecology - remedy selection – if you commit to commercial land use, then you can implement a "commercial" type remedy with institutional control.
- ***Ecology – is ground water "direct comparison" method helpful?*** Group members – what does "direct comparison" mean? Ecology is trying to write-in to rule guidance information. Ecology should keep this information in guidance and not address in rule.
- ***Ground water direct comparison method –*** depends on when you do your monitoring, e.g. a drought year. Keep in guidance.
- ***Guidance vs.* rule** – if there's problems in guidance, then putting that information in rule really doesn't help.
- ***Modified Method B*** – a lot of Ecology site managers feel that all sites should be evaluated in terms of unrestricted land use.
- ***4-quarters – ground water monitoring*** – usually a longer timeframe and direct comparison method is typically used.

Ground Water Discharge to Surface Water

13:45 Hrs
Charles San Juan

Issue – latest scientific information indicates that the amount of ground water discharging to surface is more significant than previously anticipated. Also, dynamics of ground water discharge to surface water are somewhat complicated. This in turn has in some cases resulted in incomplete or inaccurate site

characterizations, etc. Lastly, the current rule framework / language is somewhat ambiguous in terms of how best to handle this exposure pathway. PLPs and Ecology staff have struggled with establishing cleanup levels, site characterization and point of compliance decisions. Ecology is contemplating changes to existing rule language, e.g. point of compliance, site characterization, etc.

Group Member Questions / Comments

- ***What exactly is wrong with current MTCA point of compliance language?*** We worked on this back in 2001. Don't tinker with it too much.
- ***Do not make significant revisions. Clarify point of compliance and site characterization requirements***.
- ***You should be allowed to use measurements from a well that abuts surface water. Please do not prohibit this.***
- ***Clarify conditional point of compliance and how to measure dilution / attenuation***.
- ***Adopt a model in guidance that spells out how you characterize sites***.
- ***Clarify expectations – you should only evaluate this pathway at sites that that abut surface water. You cannot fix off-property issues. It's too complicated.***
- ***Clarify both shallow and deep discharges***.

----------Meeting Adjourned - END – 15:10 HRS – Thank-You!!----------