



MTCA Science Advisory Board June 2, 2008 Meeting Summary

Location

EPA, Seattle, WA

SAB Members present

Dr. Bruce Duncan
Dr. Elaine Faustman
Dr. Hank Landau
Dr. Marjorie Norman
Dr. Mike Riley

Ecology staff present

Dave Bradley
Martha Hankins
Dawn Hooper
Peter Kmet
Craig R. McCormack

Audience members

Marcia Bailey
Bill Beckley
William Bloor
Larry Dunn
Tina Gary
Michael Garry
Linn Gould
Harry Edward Grant
Roy Hummell
Mark Johns
Lon Kissinger
Dave McBride
Linda Mortensen
Paul Perlwitz
Courtney Selm
Waverly Thorsen

Meeting Summary

The meeting started at 9:10 am. SAB members, Ecology staff, and audience members introduced themselves. Dr. Duncan provided welcoming remarks and Dawn Hooper reviewed the agenda and materials.

In his introductory remarks, Dr. Duncan reviewed the function of the Science Advisory Board. The SAB responds to questions presented by Ecology; the SAB evaluates data presented and may make recommendations; however, there is no requirement that the Board reach a consensus. When a document is sent to the SAB it is forwarded to Ecology with a request for Ecology to let the Board know how to proceed with the information. This is how we've operated in the past and will continue to do so. When the Board considers an item before it, it not only considers information provided by Ecology but also draws on their knowledge and experience to make recommendations.

SAB members clarified a number of points in the March 11, 2008 SAB meeting summary. Ecology indicated the corrections will be incorporated into the summary and members approved as noted.

Establishing a Tribal Fish Consumption Rate: Considering Inclusion/Exclusion of Salmon

Presentation by Dave Bradley: Fish Consumption Issues

Dave Bradley provided an overview of the context for this discussion on Tribal fish consumption rates. The rule lays out a process where Ecology consults with the SAB. Last summer the LEKT came to Ecology regarding tribal fish consumption rates. Ecology brought the questions to the SAB in December 2007. At the direction of the SAB, Ecology revised the questions and presented the revised questions to the SAB in March 2008. The SAB was able to respond to most of the questions, but basically one remained.

Dave noted that Ecology is not asking the SAB to establish cleanup levels.

The central issues before the Board today relate to the use of the Suquamish tribal survey to estimate fish/shellfish exposure for members of the LEKT. At the March meeting, the Board reached a number of areas of agreement. The remaining issue is whether to include salmon consumption in overall fish consumption rates. In March the Board requested additional information when discussing this issue.

Since the March 11 SAB meeting, Ecology staff met with and/or obtained additional information on the salmon issue from other state agencies, EPA, DOH, LEKT, and several Board members. Ecology staff from Southwest Regional Office continued work on the scope of work for additional investigations in the Port Angeles area and a baseline risk assessment. Ecology (SWRO) met with several interested parties from the Port Angeles area to discuss Ecology's plans for investigation and cleanup and the relationship to the Board's review. Ecology received a letter yesterday (June 1, 2008) from the parties addressed to the Board.

MTCA directs Ecology to establish a scientific advisory board to provide advice on a wide range of topics, including cleanup standards and remedial actions. Ecology consults with the Board on issues of statewide importance. The MTCA cleanup regulation defines a role for the Board when Ecology is considering how to use new scientific information when defining cleanup requirements for individual sites. The Board's conclusions and recommendations are advisory in nature. Ecology is responsible for establishing cleanup standards and cleanup requirements for specific sites. The Ecology site manager assigned to a specific site makes those determinations when preparing the cleanup action plan. Ecology considers a wide range of technical and policy factors that extend beyond the scientific issues addressed by the Board.

Ecology intends to work with the tribe and other interested parties. Ecology site managers are continuing with the investigation and will review results from additional studies and evaluations once these studies are complete. Ecology will determine whether to bring site-specific issues back to the Board in the future for further discussion.

Board discussion

The Board discussed risk management, uncertainty, and variability and the importance of clarifying between science and policy. A question arose regarding the timeline for the efforts underway in Port Angeles Harbor.

Dave Bradley responded that investigation of the Port Angeles Harbor began in 1997 by EPA, and responsibility was subsequently transferred to Ecology. It has appeared since 2000 on Ecology's list of hazardous waste sites.

Dr. Landau asked if Ecology will request additional Board review as new information is gathered. Dave responded that Ecology will request further review as appropriate. The Board discussed that should new scientific information become available, and if requested by Ecology, they will look at it.

Dr. Faustman referenced the Oregon Department of Environmental Quality's recently published reports on fish consumption rates and recommended this information be included in the record. (Craig verified that he has a copy.) She noted that this document suggests WA has been underestimating fish consumption. Estimating fish consumption is a scientific issue. She also noted that determines what percentage of the population to protect is a risk-management issue, not a scientific issue. The upper 95th percentile (2 times the standard deviation) is often used in these decisions.

Marcia Bailey added that the Umatilla Tribe has recent data; Lon Kissinger added that to the best of his understanding the agreement between Umatilla Tribe and the State of Oregon specifies a fish consumption rate of 175g/day. The Board was interested in more information about these numbers.

The Board discussed that new information can always be brought to Ecology who may choose to bring it to the Board. It was clarified that discussion today is in regard to the fish diet fraction (FDF); other questions previously addressed by the Board are not being revisited. The question includes whether a FDF of 50% or 100% is appropriate.

The Board discussed that the FDF is unknown because the exact extent of the site is unknown. Dr. Landau noted the importance of Ecology's definition of a site; if a higher FDF pushes CULs down, the area considered contaminated will expand which in turn might affect the FDF. Board members wondered about exposed tribal populations and questions of sustainable harvest rates.

Presentation by Craig McCormack: Continuation of Site-Specific Proposal Modifying Default MTCA Fish Consumption Exposure Parameters

Craig acknowledged contributions made by Sandra O'Neill, Sherri Duncan, and Sandra Noel (the graphic artist from Seattle who created the salmon lifecycle conceptual model). He thanked Ecology's Environmental Assessment program and GIS staff. Craig distributed a clarification to the EPA Region 10 Framework relating to the question of inclusion or exclusion of salmon.¹

Craig's presentation reviewed the question posed to the Board on March 11, 2008:

Question 9. Ecology and the LEKT have concluded that contaminants from the Site are unlikely to significantly contribute to the contaminant body burden for salmon and other anadromous species that are harvested from local waters. Does the Board agree that this conclusion is consistent with current scientific information?

The SAB asked Ecology to re consider the question. In response, Ecology analyzed additional information. (Refer to: *Continuation of Site-Specific Proposal for Modifying the Default MTCA Fish Consumption Exposure Parameters; Factors to Consider for Inclusion/Exclusion of Salmon for Tribal Fish Consumption*, June 2008.)

- Ecology believes that there is a reasonable basis to conclude that localized releases make a non-zero contribution to the contaminant body burden in salmon.
- Ecology does not believe there is enough scientific information quantify that contribution.
- The decision on how to factor salmon consumption when establishing cleanup levels for individual sites is largely a policy decision.

Ecology is asking the SAB if it is reasonable for Ecology to make an association between salmon contaminant body burdens (i.e., PCBs) harvested by LEKT and released from the former Rayonier mill site in Port Angeles Harbor.

Ecology concludes that contaminants may be associated with the site. This conclusion is based on several lines of reasoning.

1. Sport salmon catch statistics shows salmon are present in the Port Angeles Harbor area. Historically the Dungeness and Elwha rivers have supported large salmon populations.
2. The Port Angeles Harbor area has a large forage fish population and eel grass beds where salmon acclimate. Craig distributed maps showing areas with eel grass, which is associated with

¹ Marcia Bailey, EPA Region 10; *Clarification for Continuation of Site-Specific Proposal for Modifying the Default MTCA Fish Consumption Exposure Parameters; Factors to Consider For Inclusion/Exclusion of Salmon for Tribal Fish Consumption*. Prepared for the MTCA Science Advisory Board, June 2008.

the presence of forage fish (e.g., herring) which salmon eat. It is likely resident salmon as well as salmon migrating through the area feed on contaminated aquatic organisms in the Port Angeles Harbor area.

3. Puget Sound Chinook salmon are more contaminated with PBTs than are any other west coast salmon population. Craig presented data provided by Sandra O'Neill, biologist with the NOAA showing that Puget Sound Chinook have significantly higher PCB levels than Chinook from Northern British Columbia, Eastern Vancouver Island, the Columbia River, or from central California. Puget Sound is the largest fiord-like estuary in the USA. The unique nature of the Sound tends to trap contaminants within it. Data indicates the entire pelagic food web in Puget Sound is contaminated.

4. Contaminants from Port Angeles Harbor likely contribute to Puget Sound pollution through mechanical and biological dispersion as well as dispersion via volatilization, affecting salmon and other aquatic species in the Sound. Craig demonstrated a dye-dispersal simulation (based on NOAA data) for Port Angeles Harbor; noting the possibility of young salmon or steelhead from the rivers being affected by contaminants.

Craig concluded that salmon are known to be in the area, they likely feed in the area, likely pick up contaminants from the area and are consumed by members of the LEKT. Therefore while Ecology can't currently quantify the contribution of salmon to the body burden of contaminants to local populations, there is likely a non-zero body burden contributed by the site.

Board Discussion

Dr. Landau asked if Ms. O'Neill's data includes data from Port Angeles area. He noted that a sill in Admiralty Inlet impedes flow between Puget Sound and the Strait of Juan de Fuca. Craig responded that data from fish in the Strait of Georgia and Admiralty Inlet are included; he's not sure about the Strait of Juan de Fuca.

The Board discussed that Ecology is saying the contribution from the site is non-zero but is not comfortable giving specific data. They asked for clarification on the question: are salmon in the area known to be contaminated? Are the contaminants in the Sound the same contaminants as in the not yet defined site? Dr. Landau asked if there are specific studies in the Port Angeles area? And is the body burden of salmon caught around Port Angeles Harbor different from the body burden of salmon caught in clean background areas? Board members discussed the life cycle of salmon; noting that resident salmon (those not leaving the Sound) have higher contaminant levels than those spending part of their life in the open ocean. Sandra O'Neil research provides a relationship between length of time spent in Puget Sound and body burden and with the contaminants in herring. Dr. Faustman noted that the air recycling of PCBs with sediments is an important exposure pathway, as demonstrated in studies in the Great Lakes. Members noted the temperature dependence of this pathway, acknowledging the cold water in the sound.

Dr. Norman said she is not comfortable setting a specific number regarding the contribution to salmon body burden coming from the site. Dr. Duncan noted that Ecology is only asking the SAB to say that the contribution from the site is non zero. He noted that at this time that's all the SAB can say, that there are non zero contributions. How much of a contribution is unclear.

Audience comments

Harry Grant, attorney for Nippon Papers USA, offered comments on behalf of the Port, the City of Port Angeles, and Nippon. He noted that none of these entities are PLPs. He expressed their concern that they learned of extensive upcoming sediments investigation in Port Angeles Harbor. He indicated that the groups he represents met with Ecology SWRO regarding the ongoing SAB discussions. Mr. Grant referred to a May 28, 2008 memo from Ms. Hooper.² He said that the SAB had reached conclusions before the site had been identified. He expressed concern that the Board had reached a “consensus.” He also expressed his view that until the “Site” is defined by Ecology all discussions with the SAB on this issue should stop.

Dawn Hooper clarified that in the context of the SAB discussions the site refers to the general area of Port Angeles Harbor.

Mark Johnson, Exponent, has been talking with Ecology SWRO regarding the site. A huge multimillion dataset is in the process of being collected. He expressed concern that reports presented to the SAB (the EPA Region 10 Framework, LEKT documents, and the Suquamish Tribal consumption survey) have not been peer reviewed.

Board discussion

Board members asked about the Sampling and Analysis Plan, and timeframe for the sampling study. Ecology is sampling the entire harbor and can provide the SAP. Dr Landau responded to the need for peer reviewed reports, noting that the MTCA Cleanup Rule test for scientific information specifically does not require peer reviewed information and this was the result of an extensive discussion during the rule-making effort.

Board members discussed whether sufficient evidence exists to conclude that the contribution from contaminants in the Port Angeles Harbor is non-zero. Members explored whether the contribution is there, whether it's non zero, and whether there is a connection between the Rayonier mill and the salmon caught in the area. The process and factors that Ecology evaluated when considering the inclusion or exclusion of salmon for the LEKT will be relevant when considering tribal fish diet and application of the EPA Region 10 Framework at other sites. Dr. Faustman noted that the Board was concerned with the precedent of ignoring salmon. Even if the exact contribution from salmon cannot be determined, the contribution to body burden from shellfish can be determined. Perhaps in this case the shellfish consumption rates are so high that the salmon contribution is swamped out.

Dave Bradley clarified that Ecology's original proposal did not factor in salmon assuming that localized releases did not affect salmon. On advice of the Board, Ecology reevaluated that proposal; and concludes an association exists, but that at the current time Ecology is unable to quantify the association.

After further discussion, Dawn Hooper summarized the Board's recommendation as follows: Board members agree it is reasonable to conclude that salmon body burden is above zero;

² Cover memo written by Dawn Hooper and sent, with agenda and materials for the June 2, 2008 meeting, to SAB members.

however, currently Board members do not have enough information to say how much above zero. Members noted that for the Port Angeles area cleanup these issues may not make a difference, but recognize that the questions themselves have broad implications and that additional data will be available in the future. Ecology, EPA, and DNR are in the process of conducting studies of Puget Sound sediments. Ecology may return to the Board with further questions in the future. The importance of transparency with respect to the broader issue was noted.

Lunch presentation by Josh Baldi

Governor Gregoire's vision for Puget Sound is to ensure a fishable, swimmable and "digable" environment for future generations. This will be challenging as the Puget Sound area is expected to add an additional 1.5 million people in the next 20 years. The hope is to at least turn the trend lines in the face of this population growth. In general, people view Ecology's cleanup program as a mature program with over 20 years of doing good work. The idea is to accelerate and focus this work to contribute to the Governor's vision. As part of this effort, Ecology has identified 7 bays for priority cleanup work.

Dr. Faustman asked for clarification of how the seven priority bays were identified. Josh responded by saying he did not know the specific criteria but would be willing to get back to the Board with this information.

Josh described how the Puget Sound Partnership is an agency consisting of a leadership council chaired by Bill Ruckelshaus. Executive Director David Dicks leads about 30 staff. The Partnership is advised by a science panel providing independent nonrepresentational scientific advice to the partnership. Input is provided in areas of both basic and applied science. The relationship between this science panel and the MTCA SAB has not been determined.

Over the years lots of plans have been made for Puget Sound with little effect. The Partnership is intended to change this. Current efforts of the Partnership are focused on the 2020 action agenda. This is intended to be a science based plan, with a deadline of 2020 and specific goals. The science panel is currently discussing toxics loading and contaminant loading pilot studies. The Partnership is not a regulatory agency but one tool they have is to require agencies to shift their grant programs and resources to support the action agenda.

If the SAB would like future updates Josh, recommended asking the Partnership Science Panel Chair and lead staff to a MTCA SAB meeting.

MTCA Cleanup Regulation Update

Martha Hankins provided a brief update on the rule making efforts. Board members were reminded that a number of the issues being discussed as part of the MTCA Cleanup Regulation Update will be on the agenda over the next couple of years. As a way to begin the substantive discussions related to rule making, Ecology presented proposals to update a number of definitions in the rule.

Dave Bradley presented and reviewed three key definitions for consideration:

Key term	Why Ecology is proposing to change the definition
Averaging time	Changing the averaging time for carcinogens to 70 years will make it consistent with toxicity values
Bioaccumulation factor	Surface water standards currently include a bioconcentration factor; more recent scientific methodology uses bioaccumulation instead of bioconcentration.
Carcinogen	References the more recent EPA guidelines.

Ecology is in the process of evaluating implications of the proposed updates.

Bioaccumulation factor (BAF)

Bioconcentration is an older term; the newer terminology is bioaccumulation. Bioconcentration represents the accumulation of contaminants in the tissue of aquatic organisms through ingestion of contaminants dissolved in water. Bioaccumulation is intended to get at contaminants not only accumulated from the water column but also by the ingestion of other organisms. This new definition is a first step in moving MTCA down this path. Other changes would be needed to the rule to incorporate this concept.

Dr. Landau noted that the two proposed definitions are so nearly identical as to be confusing. The distinction he thought should be amplified, perhaps by explaining that the BCF is limited to water while the BAF applies to water and other media. This raises the question of why the term BCF is needed.

Dr Faustman noted that the definition implies an equilibrium condition exists. She also noted that Ecology might want to make the definitions more generic since they could apply to other media besides water.

Averaging time

Dave noted that changing the averaging time for carcinogens to 70 years will make it consistent with basis for the toxicity values used in risk calculations. EPA uses 70 years; updating the averaging time in MTCA will improve clarify and provide consistency.

Dr. Landau asked if EPA is planning to change the life expectancy used to calculate cancer slope factors and cleanup levels in light of today’s longer life expectancy. Dave responded that as far as he knows, they are not planning to change this.

Board members discussed averaging time as a way to account for small exposure over a long time. It was noted that exposure during the early life phase can have disproportional risk; MTCA equations currently are unable to specifically account for this early life stage exposure.

It was suggested that for carcinogens the definition be reworded to state “For carcinogens, the averaging time equals 70 years consistent with the lifetime assumption used to develop the cancer slope factor.”

Carcinogen

Dr. Faustman stated that she likes the carcinogen definition being proposed. She noted that IRIS is a more limited list of carcinogens because to make this list there must be both identification and a cancer slope factor. IARC identifies more substances as carcinogens but doesn't provide cancer slope factors. Board members discussed the practical implications of including substances without readily available slope factors.

Dr. Landau expressed concern that Ecology is considering the definitions by three different agencies and selecting the most stringent of the three, while at the same time noting that in the narrative that the proposed definition is consistent with these other agencies definitions. Board members discussed the differences with the other agency definitions and that possibly more clarification is needed. Dave noted that Ecology plans to next look at how a change to the definition would affect which substances are actually identified as carcinogens under MTCA.

Audience comments

It was noted that the definition of BSAF (biota sediment accumulation factors) is blank and a question was asked about the status of the definition. Dave said Ecology plans to add a definition in the future. Dr. Riley asked if the BAF is the same as the BSAF which is often used for sediments. Bruce noted that these factors are different. The BAF is used for water but it does take into account sediment contamination to some degree because the food web includes aquatic organisms that live in the sediment. He committed to contacting EPA's Duluth Minnesota office for the latest work on these concepts.

Concluding remarks

Dawn noted that the next Board meeting will be this fall but there may be contacts with Board members in the interim via e-mail on specific rule issues. The meeting concluded with a suggestion that the next meeting be possibly Monday, October 20th or Friday, 24th, 2008.

Meeting summary approved by the Board on March 5, 2009.