

## **MTCA Science Advisory Board Meeting Summary**

March 28, 2005  
9:00 AM – 3:30 PM

Center for Urban Horticulture  
3501 NE 41<sup>st</sup> Street  
Seattle, WA

### **Agenda:**

Agenda Review, Review of 12/16/04 meeting summary  
Fish Consumption Rate for Asian Pacific Islanders  
2005 Legislative Session Overview  
Natural Attenuation Guidance Update  
Establishing Low-Moderate Soil Lead Levels Protective of Groundwater

### **Attendees:**

SAB Members Present: Dr. Hank Landau, Dr. Bruce Duncan, Dr. Marjorie Norman, Dr. Elaine Faustman.

SAB Members Absent: Dr. Stan Peterson (excused)

Agency Staff and Presenters: Dawn Hooper, Lon Kissinger (EPA), Pete Kmet, Charles San Juan, Hun Seak Park

Audience: Greg Glass; Paul Agid, Karen Pickett, Michelle Miller, Linn Gould, Warren Hanson, Don Robbins, Chris Waldron. *Ecology:* Fiorella Conti; Craig McCormack, Rick Huey, Ed Jones, Fu-Shin Lee. *EPA:* Marcia Bailey. *Department of Health:* Jim W. White

### **I. Agenda Review; Review of 12/16/04 Meeting Summary**

Ecology reviewed the agenda and goals for the meeting. Ecology stated that the audience would be provided two opportunities during the meeting to comment on the discussion.

Ecology asked Board members to offer revisions to the December 16, 2004 meeting summary. Revisions were agreed upon and recorded.

## **II. Presentation on Establishing Fish Consumption Rates for Asian Pacific Islanders (Lon Kissinger)**

Cleanup action proposed at a specific site and studies conducted in the lower Duwamish area provides such an opportunity to establish rates for the Asian Pacific Islanders (API). The Asian Pacific Islander community has been identified as the largest consumer of fish from the waters of this area. Lon Kissinger and Dr. Marcia Bailey from the Environmental Protection Agency, Region X are assisting Ecology as the technical leads in evaluating and developing data for establishing an API fish consumption rate. Ed Jones, from Ecology's Hazardous Waste Program is the site manager and the sponsor of the proposal. Other Ecology staff working on the effort include Fiorella Conti, Craig McCormack, Fu-Shin Lee, and Pete Kmet.

Pete Kmet noted that any decision to modify the MTCA fish consumption rate is a blend of policy and science considerations. He reminded the Board of their role to advise Ecology on scientific considerations and asked them to focus their discussion on the scientific aspects of this proposal. During the discussion, Ecology sought the Board's advice on the methodology being used to develop an API fish consumption rate. The agency is not asking the Board to consider a specific rate at this time since additional work is needed in order to reach a conclusion.

At the request of Ecology, Lon Kissinger (EPA) provided a presentation on the development of fish consumption rates for use in MTCA surface water cleanup level equations at sites impacting the Duwamish River and Elliot Bay. The necessity to develop a fish consumption rate was identified as a result of Ecology cleanup sites releasing contaminants to the Duwamish River and Elliot Bay and the confirmed Asian and Pacific Islanders (API) exposure that occurs through consuming contaminated fish harvested from the area. It was noted that Asian and Pacific Islanders (API) reside and fish in the vicinity of the Duwamish River and that their consumption rates are greater than the current MTCA fish consumption rates used to compute surface water cleanup levels. Ecology proposed to develop and adopt a higher fish consumption rate that will be protective of APIs who might consume fish from the Duwamish River and Elliot Bay. Lon noted that the proposal focuses on the API community since they are the population suspected of having the highest fish consumption rate and also exposed to inhalation risk in certain areas within the Duwamish corridor. Ecology noted that this is a site-specific rate that is being developed and that due to the large number of sites within the lower Duwamish River area that it will likely be used at other sites within that proximity, if not beyond. Lon informed the Board that several days prior, he learned that the senior statistician of the 1999 API study, Nayak Polissar, was reconsidering the statistical approach used in the API survey to derive a fish consumption rate.

The presentation included information about the:

- ▲ Process for modifying MTCA exposure parameters
- ▲ MTCA surface water cleanup level equation
- ▲ Rationale for Ecology concerns about current rate's protectiveness
- ▲ Fish consumption surveys and the API study
- ▲ API study utilization, issues and responses

## ▲ Next steps

Science Advisory Board members were asked to advise Ecology about whether they agreed that Ecology should proceed with the proposed approach for deriving an API fish consumption rate.

Broadly, the Board provided the following advice to Ecology:

Members asked that Ecology consider additional scientific information as available and to consult with other authors of the 1999 API study to determine their opinion of the statistical analysis used in their study. The Board agrees that Ecology should re-examine / re-evaluate fish consumption to be protective but not limited to the API community. They also expressed interest in Ecology developing tribal fish consumption rates.

Next steps for Ecology include:

- ▲ Seeking a contract with the statistician for re-analysis of API study data.
- ▲ Continue to consult with the Environmental Protection Agency (Lon Kissinger and Dr. Marcia Bailey), SAB and Washington State Department of Health regarding the re-analysis of study data.

## ***Board members provided the following specific observations:***

### **Faustman's Comments / Observations**

- Considerable scientific information has been accumulated since the 54 grams per day rate was established.
- Considerable population variability exists within and across different populations – established protections are not serving these populations very well - - API is one group but also consider others such as the tribes.
- There is a confirmed established pathway of exposure for the API population
- There are other susceptible populations that have not been evaluated, such as children.
- Check the wording in MTCA for margin of safety or level of protection.
- Key issue with API groups is that the source of contamination is unknown for more than 85% of fish contaminated. Lon responded that the King County API study and Landolt study show consumption therefore exposure.
- What percentage of population does the API community represent? Dr. Bailey's response – approximately 12% are API.
- The major difference between the area-wide and fish consumption evaluation presentation is that there is a confirmed exposure pathway for API population.

### **Landau Comments / Observations**

- Hank asked whether there is a valid reason to adjust the 95<sup>th</sup> percentile. Statistically the reasonable maximum exposure (RME) is usually defined in terms of the 95<sup>th</sup> percentile – should an adjustment be made to the 95<sup>th</sup> percentile when defining an RME for a particular susceptible population, should the percentile be

different to account for sensitive populations? Check background information for defining the RME. Lon's comment: EPA guidance and clear precedent were used to establish a 95% upper bound. It is still supported even for populations with higher fish consumption rates. He also noted that policy citations may be helpful.

- Since the statistics of the API study needs to be redone, are the other authors of this study in agreement with Nayak Polissar's point of view? Has this study been issued in final form? Lon responded that the study was finalized.
- Mirrors Elaine's concerns regarding concerns that children may be at a greater risk and deserve greater level of protection than currently offered.
- Dr. Landau commented on the use of an information and education-based approach for area-wide contamination and asked whether a similar approach for Fish Consumption would be wise. Lon noted the distinction between the established cleanup level and a selected remedial approach.
- How does Ecology's final rate (54 g/day) compare with other studies? Lon responded that creel surveys are not as good as personal interviews and showed slide illustrating the differences.

#### **Faustman and Duncan Comments / Observations**

- Elaine asked whether exposure pathways have been confirmed. (Lon responded yes)
- Regarding the statistical reevaluation of the API study – how much of an impact will this reevaluation have and how will it shift the results? Pete Kmet responded that Ecology and EPA believe that there aren't enough data available to distinguish between the individual API groups. Lon commented that they would like to evaluate other ethnic communities but the data is not currently available as there are for the API. He also noted their concern about the multiple exposure pathways for the API. He asked the Board to consider whether this study, as a whole, provides enough information to develop rates for the API community.

#### **Norman Comments / Observations**

- What is Ecology trying to accomplish? Who is Ecology trying to protect? It seems to be a very small percentage of the population.
- By continuing to use same metric for percentiles then [Ecology] may end up with 99% for the overall population.
- Are the MTCA fish consumption rates out of date?

#### **Duncan Comments / Observations**

- For which groups of chemicals do background concentrations control cleanup decisions? – Pete responded that PCBs are at about natural background levels for Puget Sound. Also present in the Duwamish area are phthalates, mercury, volatiles, flame retardants and arsenic.

**Audience Comment:**

**Lynn Gould -- ERDA Environmental:**

- Should other exposure factors be considered for susceptible populations such as exposure frequency, exposure durations, life expectancy and body weights/
- How do these rate change over time – 30 years, or for 2<sup>nd</sup> and 3<sup>rd</sup> generation?
- Generally support the evaluation process to establish an API rate for the Duwamish.

**Michele Miller -- Kitsap County**

- Will the methodology and ultimate rate establish the standard for API communities for each site or will it establish a process to evaluate the fish consumption for each site involved with fish consumption (surface water) issues. Will the rate and/or process apply for different sites with API communities across the state? Response: This rate is for the Lower Duwamish and Elliot Bay. The process could be applied elsewhere. Ecology may return to the Board to consider applying the process in other areas.

**Chris Waldron -- Pioneer Technology**

- What is the goal of this evaluation? What percentage of the population is this intended to protect? Ecology should consider fish advisories and integration with DOH and Sediments Program. Lon noted fish advisories often use mid-range values.
- Is concerned that this work establishes precedence for other sensitive subpopulations which makes it challenging for consultants know how to advise clients.
- Does Ecology coordinate with Health as it prepares to release fish advisories?

**Greg Glass -- Independent Consultant**

- It is very expensive to conduct these studies and obtain the data. The agencies should take possession of key data sets so that the results can remain available for use. He noted that many studies have disappeared over time.
- Commented on the importance of well formed statistical questions to make sure end results answer the right question. He suggested that the SAB could assist Ecology to construct good statistical questions early in the process of considering an issue. He stated his view that it is necessary to consider policy aspects when forming a statistical question. Default assumptions need to be examined when adjusting the fish consumption rate.

**Marcia Bailey (EPA)** Responded to the question of whether King County is an appropriate surrogate for the Duwamish observing that 25% of the catch comes from Duwamish River area and that the origin of the remaining catch is unknown and that some portion of the remaining amount also may be from King County.

### **III. Informational Update on 2005 Legislative Session (Pete Kmet)**

Pete provided a review of current legislative actions that may impact or influence the work of the agency with a focus on two bills in particular, the child-use areas impacted by area-wide soil contamination and the lien bill.

### **IV. Informational Update on Natural Attenuation Guidance for Remediation of Petroleum Contaminated Groundwater (Hun Seak Park)**

Hun Seak Park provided an overview of the comments that Ecology has received on the draft Natural Attenuation Remediation of Petroleum Contaminated Groundwater. Comments were received from 10 individuals and more are expected. Hun Seak provided a handout summarizing the comments into two categories: (1) Science/Technology issues and, (2) Policy/Structure issues. There was only time for a brief Board discussion of several of these topics. The following reflects that discussion.

#### **Science/Technology Issues:**

- Ecology intends to add a new mass flux estimate technique as an option for determining plume status and the rate of natural attenuation.
- Ecology is still evaluating the suggestion that bio-available ferric iron be measured and used to estimate biodegradation potential.
- Ecology believes that the emphasis on source control should remain. Dr. Landau and Dr. Faustman concurred. Dr. Norman noted that while it may be possible to soften the guidance language, early source control may be sufficient and should not be a reason for additional source control.
- The suggestion that pH and nitrogen be included in natural attenuation modeling is already addressed in the guidance.
- Regarding the source estimate figures as shown in Figures D.1 and D.2, Dr. Landau noted that these figures are intended to be illustrative only and suggested Ecology check the language to make sure it is reflected in the guidance.
- Regarding the comment that a minimum of five wells is too many, Dr. Landau noted it is a subjective but reasonable requirement.
- Ecology plans to add a statement that other tools can be used to analyze natural attenuation. Dr. Faustman cautioned that if other tools are used, Ecology should state that these need to be compared to the results obtained using Ecology's tools. Dr. Norman added that it should be pointed out that the use of other tools could result in delay.
- Regarding the amount of confirmational monitoring data needed for site closure, Ecology will look at this issue more.

- Ecology is considering revisiting the statements in the document on applicability to other easily degradable substances. Dr. Faustman expressed considerable concern about this, noting the SAB had discussed this extensively at the last meeting. She cautioned that if Ecology is going to proceed, there needs to be criteria added for determining which chemicals the document can be expanded to include. Considerable discussion ensued from other Board members but no conclusion was reached.
- Regarding comments on the five criteria, Ecology intends to review language to make sure it is clear on what rule requirements vs. guidance are and that it is reflected in the language. Dr. Faustman recommended that any rule requirements be explicitly called out.
- Regarding the biodegradation demonstration, Dr. Landau noted that given the evidence that TPH biodegrades, such a demonstration should not be necessary at every site. However, he noted that he understands the reasoning that Ecology used for requiring the demonstration and respects the choice.

#### **V. Informational Presentation on Establishing Low to Moderate levels for Lead that are Protective of Groundwater (Charles San Juan)**

Charles San Juan provided an informational presentation on the spatial (GIS) and statistical analysis of soil lead concentrations through the Tacoma Smelter Plume footprint. Additional information on lead leaching from soil into ground water will be presented at the next SAB meeting.

**Issue: Is it scientifically defensible to conclude that soil lead concentrations < 1,000 ppm are unlikely to significantly impact ground water?**

#### ***SAB Response:***

The Board felt that the information that was presented was a good start and very interesting; however, it did not fully answer the question of whether soil lead concentrations of less than 1,000 ppm pose a risk to ground water.

#### ***SAB Member Comments***

- Present information on lead concentrations from co-located soil and ground water samples within the Tacoma Smelter Plume (TSP) footprint. Screen-out wells or locations where lead was not sampled. Check TSP windrow plots for monitor well locations. Try and collect data from areas where soil lead concentrations are > 1,000 ppm.
- Compare the vertical profiles for TSP soil lead concentrations to vertical profiles from orchard lands (previously presented to SAB).

- Check soil pH levels and assess the buffering capacity of underlying soils and the ability of underlying soils to adsorb surficial lead. The change in lead concentrations over depth needs to be quantified and compared to background lead concentrations. Include 90th percentile when plotting lead concentrations over depth.
- Check with WDOH (drinking water division) and find out if any drinking water well has ever been taken out of service because of lead contamination.
- Identify soils and geologic units within the Tacoma Smelter Plume footprint.
- Identify data that have been excluded, e.g. non-detects or "J"-flagged soil lead data.

***Ecology Staff Comments***

- It may be helpful to back-calculate a soil lead concentration from target ground water lead concentration.

***Audience Comment:***

- Previous smelter studies (e.g. Vashon Island) indicate that lead concentrations decrease by ~ 20X over depth. Smelter study only focused on areas impacted by smelter. Thus, it should be kept in mind that high soil lead concentrations may exist elsewhere in Washington, e.g. along roads, etc.
- Port of Seattle has collected data on geologic units within the lower Puget Sound.
- Lead data from Group A and B wells are of less use because of high or variable detection limits.
- Back-calculating soil lead concentrations from target ground water concentration did not work well for Port of Seattle Third Runway Project.
- Focus on areas with highest soil lead, e.g. Maury-Vashon Island. Lead data from Group A and B wells is preferable to monitoring wells.

Summary approved by the Science Advisory Board at the November 18, 2005 meeting.