

Technical Workshop No. 1 Notes DRAFT

OUTLINE PRESENTED AND COMMENTED ON

Risk Assessment Methodologies

Exposure Assessment

- Tribal consumption
- Site use Ftrs
- Trophic modeling
- Analytical methods issues

Toxicity Assessment

Allowable risk and uncertainty

Other risk assessment topics

- Application of Superfund methods to this process

Areas or data gaps for additional research

Risk management approach

Background Methodologies

Tissue or sediment basis

Area background alternatives

Statistical methods

Testing alternatives

- Inconsistencies in analytical methods

Reason to believe—where to test/diox test triggers

COMMENTS AND FEEDBACK RECEIVED**General Process Comments**

DMMP caught up in overall concern of dioxin contamination “background” throughout Puget Sound—not purview of DMMP

Question is dredge disposal in this context

PSDDA decided DMMP sites managed for focused disposal and management

Are dioxins throughout Sound of concern? Different level state process 303d list? Need that to be figured out for DMMP context

All very interrelated—think about unintended policy outcomes

Important sustainability issue

+ translation of approach to other bioaccumulation chemistry (PCBs) when evaluate economic and environmental impacts

Economic and program impact relate to expansion beyond dioxin and DMMP

Likely if non-urban reference site chosen for criteria, it’s likely all other areas will exceed, therefore, everywhere test and freq. dioxin could be only contaminant of concern and fail...shut down urban dredging, therefore, not a realistic alternative.

History of DMMP non-urban dredging cy vs. urban areas.

When DMMP set up—lots of energy to link cleanup-source control and dredging programs—how to interrelate rel. to act levels “regulatory beauty”

The way agencies have dealt with NAS report—highly critical of how EPA addressing toxicity of dioxins and suggestion to reclassify

- EPA plan expected soon regarding how they will respond
- Reference

Given timeliness and topicality of report—how will agencies address in this process?

- Uncertainties in this process and risk understanding stimulates move to background alternatives.

Big Picture – Impact of Revised Framework and Considerations Comments

How to evaluate “what if no dredging”?

Concept of DMMP good

If risk unacceptable—may be moving from unacceptable shallower “easier to manage” locations to unacceptable harder to manage deeper locations

Shallow to deep lessens exposure, sequencing disposal could reduce risk deeper disposal more stable?

Recent monitoring shows—“all working out”—concentrations at disposal sites not much different than surrounding

Overall progression TMDL, toxics loading source control overall

Recognize PSDDA initial protocols before many ESA listings

Can you make assumptions about levels of dioxin placed at sites in history relative to current conditions in sediment and tissue?

Adaptive management—monitoring says it looks OK now, so, therefore, why change protocol? (but don't dredge same areas in future as past...how to take into consideration?)

Operational considerations, such as sequencing

If dredged material looks like what has been disposed of before and current conditions good regarding tissue

If concentrations in tissue at vicinity of sites not different than rest of Puget Sound...

Tissue is key, most important to focus on tissue

Can do bioaccumulation testing to compare tissue at clam level

Trophic model (not for risk assessment) but to correlate sediment and tissue

Could result in sediment criteria

Monitoring at disposal sites—variability or potential impacts from handling of material at disposal sites

Do not have regional background data to use as comparison to data in vicinity of disposal sites

Puget Sound data

- PSDDA monitoring
- Superfund/MTCA sites or vicinity
- No PS monitoring dioxin database

Bioaccumulation model used on Duwamish and Portland for crab worth considering

Risk Assessment Approach Comments

Incremental cancer risk from disposal activity relative to what's already out there

Absolute risk is what was looked at (e.g., for A-K, for superfund)

Put together programmatic recc re: how to look at comparative or incremental risk

Assumptions re: risk factors

- ?Sustainability of these assumed numbers (e.g., consumption) over duration of disposal site use?

Incremental effect of disposal activity

? adjustments for losses in cooking and consumption (filet, skin, etc.)

Variability between years in tissue burdens in Duwamish

- ? related to dredging (making available contamination through dredging and residuals)

Hazardous waste risk assessment vs. this disposal risk assessment

- With sequencing, need to address exposure period and exposure concentrations in DMMUs
 - * Exp. period short due to additional placement above it
 - * Consider volume weighting

Background Related Comments

If concerns throughout (with air dep and other pathways)—consider movement from one place to another

- Steers to background-based approach

Site use factors used in DMMP past to acknowledge impacts and management of dredge material sites

When recalculate background, etc., trip into:

- How list sites?
- How manage cleanup sites?
- Discharge standards

Consortium/group input on background data availability

Every approach involves background characterization for some level of comparison

RSET statistical work on reference area background underway

DMMP—if more background data please point out—tissue data underway at non-dispersive disposal sites

- Dungeness crab (meat and hepatopancreas)
- English sole
- Benthic organism tissue

If you have disposal site criteria based on background how to evaluate dredged material relative to criterion?

Sediment background easier for individual sediment characteristics

- Tissue standard

Compositing—with archive for isolating contaminant concentrations or volume-weighted modeling

Cost of sampling for background options factor into evaluation of options

Disposal site vicinity background may be unusually elevated by past disposal

If manage sequencing of material and placement

- Monitoring history of sites shows sites are stable

Cap to below background

Site Use Factors

Knowledge of home range and trophic transfer

Could refine assumptions and inform calculation of incremental risk associated with disposal site could be calculated

- IF look at acceptable concentration for a specific disposal site—small placement areas
- With site use ftrs for those disposal sites

To evaluate 10^{-6} above, area background disposal

Could potentially end up with criteria that is above background

Analytical Methods

Because criteria so low—how labs report and analyze directly affects outcome

Reporting of “est max” likely much bias high

Complexities and uncertainties in methods and reporting at low levels detect and non-detect management

Blank correction

Need for standardized policies regarding analysis and diff. interpreting historical data

RSET or DMMP work to need for standardized policies

Relates to both risk assessment and background approach

When to Test

Relates to what option is chosen to select suitability criteria.

Technical Workshop No. 2 Notes DRAFT

OUTLINE PRESENTED AND COMMENTED ON

Comparative Risk Evaluation

- Incremental risk
- Risk reduction

Environmental “costs” and benefits

Economic impacts

Material sequencing/controlled placement

Other

When to sample?

COMMENTS AND FEEDBACK RECEIVED

General Process/Policy Comments

DNR key policy concern—not accept institutional controls on disposal sites

Policy makers need to address economic and environmental cost and benefit

Concern that there may currently be a disconnect between cleanup and PSDDA regarding criteria re: bioaccum—stuff failing cleanup criteria being able to go to PSDDA—need to make programs consistent again while not stopping the projects from going forward.

Reference to MUDS project that fell through due to avail of landfills may need to consider reevaluation of MUDS-type program to re-examine how to most economically as possible handle contamination material not put burden on “clean” PSDDA process. If reconsider MUDS—consider treatment?

Does this process require SEPA?

Relative/Comparative Risk – In-Water

Puget Sound background and how disposal concentrations fit

Intake of dioxins from regular diet

Daily intakes/tolerable

What is the problem/is there a problem?

Evaluate incremental cancer risk of operation of a disposal site. Compare that risk vs. what would be there if no disposal site (background).

Could use that approach to determine concentration that would lead to incremental cancer risk at site less than 10^{-6} and operational methods to control.

Disposal site quality now is picture of what resultant quality of current guidelines.

Then could evaluate effect to risk from different guidelines (at what cost both \$, carbon, etc.).

Also could evaluate benefit to health effects overall, given other food intake.

Could look at cost-risk evaluation with different management methods.

What is today vs. what may be in 20 years when Sound cleaned up and healthier

Don't just look at cancer risk—other effects

PSP goal of trying to reduce concentrations over time

In evaluation guidelines what would "baseline" be that we would compare to (hard to determine what is current—look at historical information of projects taken)

- Very small subset of material taken to sites was tested

Look at background as "0". Calculate exposure and risk of disposal site—tiny bit of what the fish is exposed to. Look at variety of guidelines for disposal to evaluate the excess risk from operation at the disposal site—incremental "dose".

Corps has used similar method for eval. At New York/New Jersey.

- Difficult to find home ranges of species

Dioxin tox—if background risk is at level that is unacceptable—what if any incremental risk would be acceptable" = key policy issue.

"Site referential risk" in development DMMP used reference area for comparison another policy—"don't use site as reference"

Comparison material in nearshore vs. at disposal site —how address material at site?

"Gradient" of risk assessment

- Incremental risk of site being oper from background

Issues related to comparative risk of material in harbor area vs. disposal site

- Material over broad area (additional exposure) vs. at localized site smaller

- If higher concentration at surface—leaving in place or transport to disposal site not only options (cleanup program)
- Comparative risk program or site-specific assessment
- Concern re: exposure during dredging and disposal
 - * Dredging methods may be relevant
- Adequacy of sampling concern re: compositing

Understanding Dioxin Levels at Disposal Sites Comments

Is moving material to disposal sites causing an unacceptable problem?

- Management
- Mixing
- Placement
- How to get better over long-term?

Could consider coring at sites to gain information

Get information to discriminate whether disposal sites much different than rest of Puget Sound—then how understand in context

Number of different lines of evidence trend analysis? Of quality of material being dredged comparison of site conditions to no site conditions

In context of trend analysis of general improvement of dioxins in sediment in sound (due to S.C.)

Compare next 20 years of PSDDA sites rel. to quality or quantity

- What went in?
- What seeing?
- Is material that went in worse or better (last 20 vs. next 20 years)?

Monitoring data—operation of disposal sites do not seem to have negative impact on quality of that area.

Role of core information

Cost and benefits analysis of revised framework

How does disposal affect future quality of Puget Sound?

- “Multi-criteria decision analysis” can set goals/values to evaluate multiple issues, including cost, risk, etc.

- Constant improvement is imbedded in original DMMP, but not well used.
- Would bring in testing, sequence, management

Adaptive management—decisions for next increment of time with good monitoring and evaluation, in order to continue to adapt expectations

Interim process is stopping several projects—need to be thoughtful about multiple effects of new framework.

Multi-criteria evaluation could get to that trend analysis, maybe a part of it

Need to factor in benefit of maintenance dredging and placement at disposal sites—removing smear of contamination from harbor areas that continues to enter system from watershed

If choose to do comparative risk evaluation and funding constrained—need to focus on the items that vary between the items being compared.

Environmental Cost

- If DMMP headed to background-based alternative—it will affect cleanups as well as navigational dredging
- Availability of open-water sites big difference to large cleanups as one location for disposal of portion of material
- More stringent criteria may affect how much projects move forward—which includes cleanup sites that are motivated by development and navigation

Project not required by cleanup order that would not go forward if removal of open-water disposal alternative—could impact habitat mitigation opportunities too

Project with economic benefit in addition to cleanup are incentive for projects to move forward—combined projects utilize PSDDA sites to be doable

Habitat restoration component

Good use of existing tools for land use—healthy econ and cleanup, including building significant nearshore habitat

If PSDDA stops projects through restr criteria—will affect ability for the habitat enhancement, creosote piling, etc., that are parts of projects

Need to address dioxin concern, but maintain viability of projects

Concern about how to quantify above

Could qualitatively define with “poll” regarding impact of interim framework

Apply options to case studies?

Igor example from New York/New Jersey

How make multi-var analysis broad enough?

Impacts of navigational impacts

If marine business impacts, can stimulate truck trips—has separate traffic and emissions environmental impacts—how address the cumulative and repercussion impacts well beyond PSDDA

Want quality example of where interim framework “shut down”—but also compare to 15

Acknowledge carbon footprint issue in alternatives—trucks vs. ships both relative to land use

Question re: funding constraints...what are resource \$ constr?

Sequencing of Disposal Material

Placement of material on spatial basis both horizontal and vertical

DMMP BMP highest suit first...used on a case-by-case basis where significant variability in DMMUs yet still within guidelines

Sequencing never been used to allow disposal of higher levels

Placement methods and BMPs and potential for sequencing consid may vary by site given site conditions

Sequencing of projects or sequencing of material?

Sequencing of projects worth reconsidering—proponents could arrange and commit

Acknowledge difficulty of constraining dredging sequencing

Form of beneficial reuse to provide the surface material

Would trigger other project-specific monitoring re: confirm. And potential new monitoring paradigm at sites

Glen—not constrain tribal consumption and not make tribes pay for outcome—end result is the key

Policy concern—not confining or capping—all “suitable”

If policy set aside, how would you set guidelines for the subsurface material?

Recognize big uncertainty regarding effect of sediment concentrations on tissue concentrations

- Discussion of sentinel species, home range

Spatially weighed concentrations of material placed at dump sites. Concept of volume-weighted characterization of material to be dredged.

Potentially more suited to bioaccumulations because not about specific benthic tox, but effect to species that range throughout the site

Interim framework has range of suit between average and maximum—could be used for sequencing

How to set standards for surface regarding immediate area background? What if immediate area gets cleaner?

If “capped” changes monitoring and maintenance requirements, and could change placement methods “controlled” so does not occur at surface?

Adaptive management elements of program

- Again would need to address improvement of area background

Igor description of active vs. passive adaptive management

Install “check points” to review results and conditions over time in order to trigger need to change if outside predictions

Tissue data in future

Cumulative risk of multiple chemicals

Make publicly available the input received

Multiple bioaccum compounds

When to test and “reason to believe”

Don't have a lot of info

Need to collect info on what's out there

Level of testing is an issue

USEPA eval other techniques for dioxin analysis that could be less costly

Reason to believe re: Duwamish...dioxin identified as a localized COC—data both of occurrences and lack of occurrences would bear on future dredging projects

Data availability both motivate where need to test and also where not needed

Revision to protocol tied to decisions re: revised criteria

Some of the testing could be done by PSDDA to define conditions

Programmatically/strategy to build database to be used as basis...not all on dredger requirements

Mult possibilities for funding above

Potential tiered-screening methodology