

## Summary of Pertinent Comments on the Draft Treated Wood Guidelines of 12-08

### Denise Berthiaume

Comment 1 - Do not allow treated wood.

Response 1 - Comment noted.

### Huck DeVenzio – Arch Wood Protection

Comment 2 - The document may not provide adequate guidance for a local official faced with a decision on the use of treated wood in a specific project.

Response 2 - The document was developed by NMFS for use by its biologists and natural resource management specialists in conducting consultations under the Endangered Species Act (ESA) for threatened and endangered salmonid species and for Essential Fish Habitat (EFH) consultations under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). It was not developed for a wide ranging audience, but we recognize that it may find utilization outside of NMFS. Other commenters suggest further development of a “checklist” style document that could be used by a wider audience. NMFS has had preliminary discussions with the Western Wood Preservers Institute (WWPI) regarding development of a “simplified” version. It is our understanding that WWPI is working on a draft of this document, but NMFS has not been able to dedicate resources to this effort at this time.

### Jeff Miller – President and Executive Director, Treated Wood Council

Comment 3 - In general, the TWC believes that the draft Guidelines represent a strong statement on the acceptability of treated wood for use in many aquatic applications.

Response 3 - NMFS also believes that the draft Guidelines provide a clarification of acceptability regarding the use of treated wood products in many aquatic applications.

Comment 4 - TWC is concerned that the draft Guidelines lack a clear set of procedures by which field inspectors and scientists might evaluate potential applications in an objective, efficient manner. A set of delineated procedures would yield consistent determination on which projects are environmentally suitable for treated wood use, and which might warrant a more in-depth analysis. Treated Wood Council urges NOAA/NMFS to work with the treated wood industry and other interested stakeholders to develop and implement a “field checklist”.

Response 4 - The Guidelines were developed to provide NMFS staff with a better understanding of the potential effects and the environmental conditions that affect such an analysis for listed salmonid species. As a summary and analysis document, NMFS feels that the intent of the Guidelines has been fulfilled and that NMFS employees will be able to read the document and have a better understanding of the issues that need to be considered across the wide variety of environments and projects subject to consultation.

However, several commenters have expressed a similar dissatisfaction with the form of the Guidelines document. NMFS has had preliminary discussion with the Western Wood Preservers Institute (WWPI) regarding development of a “simplified” version. It is our understanding that WWPI is working on a draft of this document, but NMFS has not been able to dedicate resources to this effort at this time.

R. Sherman Wilhelm, Director, Florida Department of Agriculture and Consumer Services, Division of Aquaculture

Comment 5 - Mr. Wilhelm requests that the Guidelines be amended to limit their application to the Pacific Coast Region. He is concerned that inappropriate application of the guidelines will occur in Florida.

Response 5 - We have clarified that the purpose of the Guidelines are to assist NMFS personnel in Alaska, California, Oregon and Washington state at the beginning of the document.

Stan Lebow, Team Leader, Wood Preservation Research, U.S. Department of Agriculture, Forest Service, Forest Products Laboratory

Comment 6 - It is evident that considerable time and effort has been expended in reaching this point, and these efforts are appreciated. My concern is that the guidelines appear to be more of a literature review than a guide, and provide little or no specifics for criteria used to evaluate the acceptability of projects. Instead they continue to require a site-specific assessment of every project on a case-by-case basis.

Response 6 - The guideline document does provide a review of pertinent literature because this is necessary for NMFS staff biologists and natural resource managers who are not familiar with the subject matter. Review of each Federal action (project) is a requirement of the ESA and the EFH requirements of the MSA unless a programmatic consultation has been conducted to cover a suite of actions in an area. This is the case with some areas and these programmatic consultations are appropriately referenced and highlighted in the Guidance document. This process, through the NMFS-commissioned reports on copper and creosote products generated by Stratus Consulting, also resulted in a third-party examination of the impact prediction models available from the WWPI. Entering project and environmental data into these models can provide the project proponent and reviewer with a simple means of evaluating the likelihood of contaminant concentrations rising to problematic levels (i.e. a no effect or may effect determination to ESA listed salmonids, adverse effects are expected or the potential for effects is discountable). Text within the Guidelines has been changed to clarify that the WWPI models (as well as the multiple regression equations presented in NMFS 1998) reviewed by Stratus are sufficient for this determination. It is NMFS’ understanding that updated models are currently in preparation and will be subject to peer-review before being posted on the WWPI website.

Comment 7 - From a practical standpoint, this leaves us at the same place we were several years ago, before this process started. Our Forest Service engineers still will not have criteria to use in predicting whether or not a project is likely to cause concern, and it is more likely that NMFS personnel will be inconsistent in evaluating projects.

Response 7 - We disagree. NMFS staff should be better informed and the uncertainties about these treated wood products should be clarified. This should lead to streamlined consultations for the smaller projects generally conducted by the Forest Service and for projects that fall under existing programmatic consultation arrangements. As pointed out in the Guidelines, the treated wood industry recommends site-specific examinations for larger projects that utilize treated wood in-water or substantial volumes of treated wood in above-water situations. Forest Service engineers should make a habit of utilizing the WWPI models as part of their effects determinations in preparing biological assessments or their own, internal environmental documentation and presenting this information to NMFS biologists in the context of the Guidelines.

Comment 8 - The Guidelines would be much more useful if they contained a few simple criteria, or a decision tree, that both Forest Service and NMFS personnel could use to predict whether a project is likely to be problematic.

Response 8 - Please see the Response to Comment 4.

Comment 9 - Using the existing data and models developed by Poston and/or Brooks, a small matrix table (or equation) should be created to show which combinations of wood volume and water area likely to pass a screening level evaluation. Alternatively, a series of questions or simple decision tree could be developed to classify potential projects. Either approach would allow our engineers to anticipate in advance when designing a project with treated wood might not be a good idea.

Response 9 - We agree that the models could be used to generate these tables as suggested. The equations found in NMFS (1998) can also be used to serve this function.

Robert Fronczak, Assistant Vice-President, Environment and Haz Mat, Association of American Railroads

Comment 10 - Page 26 of the draft guidelines recommends that “Exposed wood, used in overwater applications (such as decking) should be protected from the weather and an application of water repellent sealer is recommended by industry (WWPI 2003) and agencies (NMFS 2004b, 2003, Lebow and Tippie 2001, USDA FPL 2001).” Two of AAR member railroads which own over 43,000 miles of track have estimated that the cost to apply this best management practice would be approximately \$19 million (i.e. \$35.00 per tie). Extrapolating that cost to the entire railroad network,

assuming that the other railroads would have a similar number of open deck bridges impacted, would mean a total additional cost to the industry of nearly \$62 million.

Response 10 - Please note that NMFS is not calling for the treatment of all treated wood, open deck bridges in the railroad system. NMFS anticipates this sealer treatment, as called for by the treated wood manufacturing industry and the USDA Forest Service, Forest Products Laboratory, would only take place for those structures found to be causing or likely to cause a water quality impairment that may affect ESA listed salmonids or EFH. This obviously would not apply to the entire railroad network or to all structures within watersheds occupied by ESA listed salmonids.

Comment 11 - One of our member railroads estimated that if they had to replace all the creosote treated wood pilings in aquatic environments with steel pilings, the cost to that railroad alone would be approximately \$2 billion. That one railroad estimates that they have 100 miles of bridges with treated wood pilings. Again, extrapolating that cost across the entire industry would result in a total additional cost to the industry of \$10.5 billion. While NOAA is not recommending replacement of all treated wood pilings, this gives the agency an idea of the magnitude of the cost impact to just railroads if the use of creosote treated pilings were prohibited.

Response 11 - Thank you for recognizing that NOAA is not calling for the replacement of all treated wood pilings. NMFS anticipates that the project proponent and/or the appropriate Federal action agency will examine any bridge replacement project for potential effects to ESA listed salmonids and EFH when appropriate, and as required of Federal action agencies under the ESA and MSA.

David A. Webb, Administrative Director, Creosote Council

Comment 12 - We support the effort to develop “a guidance document” that has been put forth by the treated wood industry – lead by the Western Wood Preservers Institute.

Response 12 - Comment noted.

Comment 13 - The Creosote Council strongly objects to the term “pesticide treated wood”.

Response 13 - The wording in the Guidance has been changed to “treated wood”.

Comment 14 - We object to the heavy reliance on the flawed Stratus Report. The Creosote Council hereby incorporates by reference its May 2, 2006 comments discussing the numerous flaws in the draft Stratus Report. Despite these objections regarding the lack of clarity and review process of this report, the draft guidelines repeatedly cite the Stratus Report.

Response 14 - NMFS reviewed the objections of the Creosote Council regarding the review of the Stratus Report and determined that proper review protocols that complied with the guidelines put forward by the White House Office

of Management and Budget were followed. Many of the comments made in the May 2, 2006 letter resulted in changes to the Stratus Reports that are reflected in their final forms. Therefore it is proper to refer to the Stratus Report within the Guideline document. Other comments from May 2, 2006 are not relevant to the current Guideline document.

Comment 15 - On page 3, first paragraph of “Introduction”, components of wood preservatives are referred to as “contaminants”. These are EPA registered chemicals for use as wood preservatives; they are not “contaminants”.

Response 15 - Contaminants refer to any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water or soil or the beneficial uses that they support. In this case, that includes ESA listed salmonids or EFH. When copper or creosote components leach from the treated wood product, it is no longer protecting the treated wood product. If it enters and affects some component of the ecosystem, it is considered a contaminant.

Comment 16 - In addition, it is not correct that the components of creosote are EPA-registered pesticides. It is the “whole” creosote that is an EPA-registered pesticide.

Response 16 - Thank you. The text in this section has been clarified.

Comment 17 - The Threshold Effects Level (TEL) and Effects Range Low (ER-L) are not appropriate sediment quality benchmarks by any standard. Washington State has published EPA approved marine Sediment Quality Criteria (SQC) in WAC 173-204 and is currently developing freshwater Sediment Quality Values. Goyette and Brooks (1998, 2000) conducted a detailed assessment of the efficiency and protectiveness of a range of possible SQC applicable to the Sooke Basin Study. Similar to WDOE (2002, 2003) they found that the TEL and ER-L were unacceptably inefficient because they predicted far too many toxic effects in Sooke Basin Sediments when the very large bioassay database generated in that study did not find toxicity. Goyette and Brooks (1998, 2000) found that the arithmetic mean of the TEL and the Probable Effects Level (PEL) and/or the Washington State SQC were both protective and efficient. Other SQC are available, such as the Consensus SQC proposed by Swartz (1999) and these should have been reviewed by NOAA. The reports of Goyette and Brooks (1998, 2000) are particularly appropriate for consideration here because they apply to the mixture of PAH that accumulates in sediments in association with the use of creosote treated wood.

Response 17 - The TEL and ER-L are not enforceable criteria and the process being undertaken here does not change that fact. They are indicative of the lowest range where effects have been shown in some ecosystems on some species. The finding of effects at these levels is not consistent, but may represent an impact to EFH for some species. The manifestation of effects

in some of the wide-ranging studies that make up the databases used in the TEL and ER-L processes indicate that some caution is warranted during evaluations. It is not prudent to wait until effects are potentially widespread and easily predictable (e.g. Washington State SQC) before actions are taken to prevent or minimize impacts and NMFS does not have the discretion to ignore this or arbitrarily seek a more “predictable” effects level. The other assessments and studies that are referred to by the commenter were reviewed as part of this process, but this Guideline is not meant to propose enforceable SQC and therefore they were not presented in detail to avoid confusing the intended audience. As mentioned in the Guidance document, in 2001 NMFS agreed that an increase of no more than 50% above background levels would be reasonable due to the inherent variability of contaminant concentrations in sediments.

We agree that there are superior methods in determining potential impacts of projects to sediment quality and subsequent effects on biota. In particular we favor the approach taken by the State of California in their new standards for Sediment Quality (SWRCB 2009) which requires a multiple lines of evidence approach that includes generating sediment chemistry, sediment toxicity and benthic community condition data before making a determination. This seems much more protective than just requiring the generation of sediment chemistry data.

Goyette and Brooks (1998, 2000) is a valuable study that demonstrates that the contaminants leaching from the creosote pilings in that particular ecosystem and under those particular environmental conditions are not acutely toxic to all types of aquatic life. However, it can not be presumed that the study shows that there will not be ecological effects to any member of the variety of habitats and species found throughout the Western coastal area covered by the Guideline document, as is implied by the comment.

Comment 18 - On page 17 regarding dissolved concentrations of PAH adjacent to creosote treated wood, it is stated that, “Water column concentrations were not measured at this time.” This statement is disingenuous. Water column concentrations of dissolved PAH were measured at significant expense by the Battelle Marine Science Laboratory using semi-permeable membranes placed 15 cm from the piling. The concentrations were determined to be in the 20 nanogram/L range for the  $\Sigma$ PAH at the three piling stations – which was not significantly different from concentrations found at the reference location. In addition, tissue concentrations of PAH in mussels used in the *in-situ* bioassays were found to be only slightly elevated two weeks after construction and they were low and not elevated in either lipid rich gonadal tissue or in somatic tissue after that.

Response 18 - As stated in Goyette and Brooks (1998), the semi-permeable membrane devices deployed (as well as the blanks and those at the control site) by the

Battelle Marine Science Laboratory at the time of the installations (April 3, 1996) and recovered two weeks later were all contaminated with naphthalene. Replacement devices were not deployed until June 4, 1996 (two full months post installation of the pilings) and would have missed the first flush release (a term used by the commenter in Comment 20) of contaminants found in the studies on page 16 of the Guidelines document. Therefore, water column concentrations were not measured at the time of installation although we have edited this section of the Guidelines document for greater clarity.

Comment 19 - On page 21 it is stated that BMP levels should not exceed American Wood Protection Association (AWPA) minimums. There are no minimum/maximum retention values in the AWPA Standards. For example, in AWPA, UC5B states that in the assay zone for coastal Douglas-fir creosote retention is 16 pcf (pounds per cubic foot). That is the recommended creosote retention level. There is only one retention given in the standard.

Response 19 - Thank you for the clarification. We have changed this section to reflect that we were referring to the summary presented in WWPI 2006a. That document presents information for a number of preservatives and presents ranges for several of those products.

Comment 20 - And to suggest on page 25 that older material was not treated to BMPs but to refusal. This is not correct. Marine wood piling for aquatic use has always been treated to a specific “targeted retention level”. Note the wood treating industry on the west coast has been producing BMP piles since the early 1990s. Further to discuss this issue on page 25, NOAA suggests that, “Since older creosote treated wood materials were likely not produced in accordance with industry BMPs (i.e. they were likely treated to the point of refusal), they should not be reused in aquatic environments.” In response, we are unaware of any documentation suggesting that prior to development of production BMPs, creosote treated piling were *treated to refusal*. In developing the creosote risk assessment model, Brooks (1997b) analyzed recorded creosote retention measured historically in nearly 2000 charges and determined an average retention of 22.4 pcf when 20 pcf was the target retention. The average retention is far less than *treatment to refusal* (in Douglas-fir, if treatment was to refusal, the creosote retention could approach 30 pcf). Secondly, BMPs are designed to produce products that are clean and free of surface deposits of preservative and to insure that the preservative is “fixed” when that is a factor (not so with creosote, only the waterbornes). BMP verification studies have shown that properly designed BMPs can be effective in significantly diminishing elevated loss rates observed shortly after immersion in non-BMP produced wood. Older piling, such as the eight year old piling used in the Weather Piling dolphin in the Sooke Basin Studies performed nearly as well as the BMP piling did. The point being

that older piling removed from service have lost that first flush of preservative and should perform similar to BMP produced piling. However, piling removed from service should be carefully examined for integrity before being re-used.

Response 20 - Thank you for the clarification. The statement regarding “treated to refusal” comes from an industry source, but we did not properly record the personal communication and will therefore remove this phrase. However, we continue to recommend that older, non-BMP pilings not be reused in the aquatic environment due to the potential variability in their retention levels and manufacturing techniques.

Comment 21 - The document cites the Vines *et al.* (2000) study finding adverse effects on herring spawn associated with creosote treated wood, but failed to report that Goyette and Brooks (1998, 2000) found that spawn from mussels growing directly on the creosote treated piling developed normally to the trochophore stage. While it is true that fish (vertebrates) and invertebrates (with planktonic early life stages) face different contaminant pathways and therefore different challenges, both reports should have been discussed – or neither report should have been included.

Response 21 - Both reports were discussed as appropriate. The comment is correct in that vertebrates and invertebrates face different exposure scenarios. They also have differing tolerances to contaminants. It is appropriate to give greater weight to herring as a surrogate for the fish species we manage and this is a common practice in toxicology when species specific data is lacking.

Comment 22 - Of particular interest is NOAA’s failure to report the abundance and diversity of invertebrates living on creosote treated piling by Brooks *et al.* (2006). The authors observed 64 different taxa in nine 200 cm<sup>2</sup> samples collected from the piling. These taxa included 12 mollusks, 13 arthropods and 26 annelid species. The fouling community was found to be exceptionally abundant, containing an average 79,900 invertebrates/m<sup>2</sup>. The reason for NOAA’s failure to report these findings is understandable, because the results do not support NOAA’s assertion that pressure treated wood structures are toxic to aquatic life.

Response 22 - The Guidelines have been developed to help our personnel address ESA listed salmonids as these species relate to projects which utilize treated wood as well as for EFH. To take the information the commenter is presenting and to claim the increased presence of these fouling organisms shows that the projects will not affect listed salmonids is like comparing apples to oranges, at best. To use the commenter’s language from Comment 18, this statement is disingenuous. Regarding EFH, the addition of hard substrate (e.g. pilings) into a substrate limited setting often results in the colonization of the substrate by numerous species of organisms and species which utilize or prey upon these organisms. That does not mean that there is no affect to EFH. Indeed, these projects may alter the

character of the EFH so that its ability to fully support the natural species assemblage is compromised. In other cases, this alteration may be discountable. This is a determination best made on a project specific or regional basis (e.g. the SLOPES III opinion) and is needed regardless of the construction material (treated wood, concrete, steel, etc.). A careful reading of the Guideline document will reveal that it does not assert that pressure treated wood structures are toxic to aquatic life, but rather that there may be some toxic effects to some organisms under some circumstances. Teasing out these potential impacts and preventing or mitigating them is the task of the action and reviewing agencies.

James C. Gauntt, Executive Director, Railway Tie Association

All comments are similar to those from the Creosote Council. Please see the comments of and responses to the Creosote Council.

Carl Johnson, Executive Director, Southern Pressure Treaters' Association

Comment 23 - SPTA participated in the WWPI ESA Committee and agree with the Committee's comments submitted to NOAA. Because of our experience in the wood preserving industry, SPTA is writing to strongly recommend that NOAA adopt the Committee's recommendations on developing a field worksheet and decision tool for use by both agency personnel and project proponents.

Response 23 - Please see Response #4.

Neil R. Alongi, Vice President, Maul Foster Alongi

Comment 24 - The commenter suggests developing a screening level checklist that will simplify the permit application and agency review process for those projects that have little or no effect on water subject to ESA or EFH consultations. The commenter attached a general decision tree to his letter outlining the potential outcomes of a project evaluation.

Response 24 - Please see Response #4. Thank you for the decision tree attachment.

Ted LaDoux, Executive Director, Western Wood Preservers Institute

Comment 25 - WWPI appreciates NMFS SW Region's efforts in developing the draft guidelines and their willingness to consider scientific data and input from industry during the review and development process. WWPI believes the issuance of the draft guidelines is a significant step forward in establishing a basis for reaching mutually acceptable guidelines, and though it does not resolve all our differences on the science, it does significantly bring the stakeholders closer to agreement on the parameters for conducting project assessments. We are also pleased that the guidelines accept the use of treated wood under certain circumstances, strongly embrace the use of the BMPs, and recognize the value of industry risk assessment models that were developed by Dr. Kenneth M. Brooks.

Response 25 - Thank you. Comment noted.

Comment 26 - This comment consists of a lengthy section similar to Comment #4 in addition to a potential outline for a worksheet decision tool. It also mentions a peer reviewed book that is in development on the topic.

Response 26 - Please see Response #4.

Comment 27 - In general, the toxicity of copper is not a great concern. Rather it is the toxicity of the cupric ion ( $\text{Cu}^{2+}$ ) that is of greatest concern. Dissolved copper includes copper adsorbed to inorganic and organic molecules that have reduced bioavailability but that pass a 0.45  $\mu\text{M}$  filter. Although we have not yet had the opportunity to obtain and read Hecht et al. (2007), we suspect that the responses referenced are associated with increases in cupric ion concentrations rather than dissolved copper. There are the reasons that EPA uses hardness ( $\text{mg CaCO}_3/\text{L}$ ) based water quality criteria for most divalent metals. NMFS has previously agreed to use the EPA WQC, which industry continues to support as a standard.

Response 27 - Hecht et al. (2007) was provided to WWPI's main technical consultant, Dr. Kenneth Brooks, on February 26, 2009 and is publically available at [http://www.nwfsc.noaa.gov/assets/25/6696\\_11162007\\_114444\\_SensoryEffectsTM83Final.pdf](http://www.nwfsc.noaa.gov/assets/25/6696_11162007_114444_SensoryEffectsTM83Final.pdf). Regarding the EPA Water Quality Criteria, NMFS has found the current system under the Clean Water Act to not be protective of ESA listed salmonids. This is due to limitations in the criteria derivation process that does not properly account for effects not found or not quantified through the standard water quality criteria derivation methodologies, such as impacts to olfaction. NMFS is currently consulting with EPA on this problem and has been attempting to resolve this issue for many years. NMFS is required to consider the best available information and science in making its determinations which sometimes means that previously utilized standards need to be reevaluated based upon this new information. Please see Response #29 for further detail related to this comment.

Comment 28 - Hetch et al.'s (2007) definition of background copper as having a maximum of 3  $\mu\text{g}$  dissolved  $\text{Cu}/\text{L}$  is not consistent with USGS data showing background concentrations of 15 to 25  $\mu\text{g}/\text{L}$  in relatively pristine rivers like the Copper River in Alaska, which supports one of the most famous salmon runs in North America.

Response 28 - Apparently the commenter did obtain and read Hecht et al. (2007) and should have noted that 3  $\mu\text{g}/\text{L}$  dissolved  $\text{Cu}$  is the background from several studies that Hecht et al. (2007) uses to conduct the EPA Benchmark Concentration Approach utilized in the document. In the Copper River, the dissolved  $\text{Cu}$  may be in the range cited (which is below that noted to cause permanent olfactory damage in the peer-reviewed literature), but that does not mean that the salmonids there may not be affected at a sublethal level to some degree. The population may merely be healthy enough to overcome any sublethal effects (it is not ESA listed). There are also fewer other stressors on the system as a whole.

Comment 29 - Leachate from pressure treated wood contains high concentrations of dissolved organic wood extractives which likely bind the copper reducing its bioavailability. Though we have no data to substantiate a hypothesis, we suspect that the leachate from wood preserved with copper containing preservatives contains little or no cupric ion. NMFS has not identified any evidence substantiating its inference that the leachate from pressure treated wood has any effect on salmonid olfaction. The point of this discussion is that from a technical point of view, the draft guidelines are not clear with respect to what form of copper results in compromise of olfactory responses and for how long the effect lasts. If we are, in fact, talking about concentrations of the cupric ion, then the HydroQual's Biotic Ligand Model (BLM) provides a means of speciating dissolved copper and of defining appropriate WQC. However, to be used accurately, that model requires analysis of numerous organic and inorganic constituents in water – some of which are expensive. Resolving this issue is important because the natural variability in background dissolved copper may exceed 0.79 µg/L, resulting in a denial of the use of copper based wood preservatives in or over water in the Western United States. NMFS has previously agreed to use EPA's hardness based WQCs, which are nationally accepted criteria, for assessing treated wood projects.

Response 29 - Another study (McIntyre *et al.* 2008) published after the public review draft Guidelines addresses the BLM and related comments well. In that study, it was found that increasing water hardness or alkalinity only slightly inhibited the olfactory impacts of copper while having significant influence on acute lethality. This means that the gill-mediated toxicity (lethality) can be largely accounted for using the BLM. However, the biotic ligand at the olfactory sensory neurons is not significantly protected by increasing hardness or alkalinity that leads to the binding of copper ions to inorganic molecules. Dissolved organic matter was found in this study (McIntyre *et al.* 2008) to partially reduce the olfactory toxicity to copper, although it had much more influence in protecting the fish from gill-mediated toxicity (i.e. acute lethality). The study did show that surface waters with high DOC content ( $\geq 6$  mg/L) would likely be protective from copper toxicity (i.e. toxicity was not predicted at the 95% confidence limit), but this does not correlate with conditions in many salmonid waters in the Western U.S. Marr *et al.* (1999) showed that the protectiveness of DOC was dependent upon the specific low or high-affinity organic complexes found in a waterbody. This also means that it can not be stated with certainty what form of copper causes an olfactory effect as it seems numerous forms are likely responsible. Some of the studies referenced in the Guidelines document did look at how long the effects last, but this information is of questionable relevance to the real world. An adverse effect to olfaction can cause a listed salmonid to leave a preferred area (behavioral avoidance) resulting in poorer rearing

conditions or increased predator exposure or the impact to predator avoidance behaviors can result in death.

Comment 30 - This comment is substantively the same as Comment #21.

Response 30 - Please see Response #21.

Comment 31 - This comment is substantively the same as Comment #17.

Response 31 - Please see Response #17.

Comment 32 - This comment is substantively the same as Comment #18.

Response 32 - Please see Response #18.

Comment 33 - It is asserted that, “Replicate samples were not taken, with the exception of artificial substrates that allowed for expeditious sampling.” In our opinion this is a significant misperception of the sampling design, which included triplicate sediment (infaunal) samples collected within 0.5 meters of each of the viewing platforms’ perimeters on each of the four sampling days. Two levels of control were established in this study. An upstream station provided one level of control and a Mechanical Control Structure, where an additional full suite of 28 macrofaunal samples was collected on each sampling day, provided the second level of control. In total, 192 artificial substrate samples, 192 infaunal samples and 64 vegetation samples were collected during the four sampling events at Wildwood. That is a total of 448 macrofaunal samples collected and analyzed during the eleven month study. Sediments were examined to evaluate infauna and epifauna, artificial substrates were examined to assess the drift community and vegetation samples were examined to assess the invertebrate community in that compartment. This lack of acknowledgement may be due to a misperception of the power of the regression approach taken in this study. We believe a closer review of the study design would show that triplicate samples were available from the perimeter of each viewing platform and from the perimeter of the Mechanical Control treatment on each of the sampling days – allowing for conventional t-tests or analysis of variance.

Response 33 - Comment noted. The document itself points out that the lack of replicated samples, but we have changed the text to make it clearer to the reader that multiple samples were taken and that the study did not find a significant difference in habitat quality.

Comment 34 - We recommend that NMFS include a discussion of the results of the many macrofaunal studies undertaken in an effort to understand the biological response to the use of pressure treated wood. The results of all of these studies demonstrate no decrease in the abundance or diversity of invertebrates living on or in the immediate vicinity of pressure treated wood structures. The fact is that all of these results from numerous studies

demonstrated an increase in the abundance and diversity of invertebrates living on or in close proximity to treated wood structures.

Response 34 - Please see Response #22.

Comment 35 - This comment is substantively the same as Comment #22.

Response 35 - Please see Response #22.

Comment 36 - This comment is substantively the same as Comment #15.

Response 36 - Please see Response #15.

Comment 37 - This comment is substantively the same as Comment #19.

Response 37 - Please see Response #19.

Comment 38 - This comment is substantively the same as Comment #20.

Response 38 - Please see Response #20.

Comment 39 - This comment is substantively the same as Comment #13.

Response 39 - Please see Response #13.

Mark E. Johnson, Bureau of Land Management, Acting Deputy Director for Resource Planning, Use and Protection for Oregon/Washington

Comment 40 - The guidance document focuses its attention on two copper chemicals: chromated copper arsenate (CCA) and ammoniacal copper zinc arsenate (ACZA). While these are chemicals for which most of the research on effects to aquatic systems has been focused, the chemicals are no longer in wide use. As of January 1, 2004 the Environmental Protection Agency no longer allows the use of CCA in most situations, with the exception of marine use. The AZCA also has limited availability. Products containing arsenic are typically not allowed in structures where public contact with the treated wood is likely. Alkaline copper quaternary (ACQ) and copper naphthenate are now widely available at retail outlets. The document does not address if the data on leach rates, modeling and field studies for CCA and AZCA are applicable to these more widely available products.

Response 40 - NMFS would not assume that the copper leaching rates, models or field study data for CCA and ACZA are applicable to other products. While CCA and AZCA are now longer available to the general public and are not used in situations that allow for significant public exposure, they still make up the bulk of the proposed materials in our consultation workload. This is because the majority of our workload involves installation of these materials in marine or estuarine waters which is also the most problematic exposure scenario for the species NMFS manages. NMFS does not have the resources to continually investigate new products or require that leaching studies be conducted for the variety of exposure scenarios that may occur for listed salmonids and EFH. Requiring this data be generated is the job of the EPA Office of Pesticide Programs and should be done as part of the product registration process. We encourage the treated wood

industry and frequent users such as the BLM to conduct these studies and develop new models for new products. It is our understanding that models for several “new” products are under development or going through the peer review process. These models will be presented through a joint effort of the wood preservation industry and Oregon State University.

Comment 41 - The document does an excellent job of meeting the first purpose, which is to assist biologists in understanding the issues related to aquatic uses of pesticide-treated wood. Key concerns regarding potential effects to ESA-listed fish and their habitats are described. A number of studies and modeling efforts, as well as the results of past ESA consultations for various uses of pesticide-treated wood are presented.

However, the document does not pull all of this information together in a manner to best meet the second purpose, which is to facilitate consistent ESA effect determinations. One problem is the lack of certainty regarding environmental impacts and ESA effects. There are many locations in the document where terms such as “may, if, when, could, sufficient scope, etc.” are used to describe effects. These are subjective terms that lead to different interpretations and have frequently led to disagreements when discussing the ESA effects of a variety of BLM actions in the past, including the use of chemicals in aquatic and riparian environments. If the science is prepared to answer the cause/effect questions thoroughly, then it is appropriate to issue clear guidelines on the topic without using subjective terms. If that is not possible, perhaps the general direction provided in this document should not be referred to as “guidelines” or “best management practices.”

Response 41 - Thank you for expressing your opinion that the document should help biologists to understand the issues regarding treated wood use in aquatic environments. It is our belief that this information and understanding will go a long way toward fulfilling the second purpose of the document which is to establish much more consistency in effects determinations. On one hand, we refer the commenter to Response #4, as other comments have expressed a similar desire for a more user-friendly product. On the other hand, many terms in this Guideline document are generalized because the variety of potential uses and environments in the intended action area (California, Oregon, Washington, Alaska) are huge as are the exposure scenarios generated by those potential uses. The document has been edited to provide as much clarity as possible while still reflecting this fact. The toxicological science regarding impacts is still the subject of significant debate, as is evident from the other comments addressed here, although the work regarding effects to salmonid olfaction is strong. The predictive models were reviewed by Stratus Consulting as part of this process and were determined to be useful for these regulatory determinations, but can not be considered perfectly accurate simply due to the variability in the treated wood products themselves. Professional

judgment and consideration of these uncertainties will still need to be exercised by both NMFS and the action agency requesting consultation. These factors are why the document is considered a “guideline” rather than a set of “terms and conditions” or a proposed regulation.

Comment 42 - To avoid situations where NMFS and the action agency can not agree on the validity of models used to predict concentration of leached chemicals (this has happened on several Oregon BLM consultations regarding the use of chemicals), NMFS should state explicitly which models it endorses of those described in the document. Then it will be a matter of agreeing upon the specific numerics and assumptions used to input into the model, rather than the model itself.

Response 42 - The models utilized by the Western Wood Preservers Institute and available on their website for CCA, AZCA and creosote have been reviewed by Stratus Consulting during this guideline development process and determined to be acceptable for use in our regulatory processes. It is our understanding that efforts to further develop these models for the wood preservatives under consideration here, as well as for other wood preservatives, are underway through Oregon State University and will be peer reviewed.

Comment 43 - This document contains several excellent examples of project design features that could help reduce the risk of aquatic impacts from pesticide-treated wood. Therefore, action agencies should be encouraged to utilize these measures. However, there are several examples where BMPs are proposed but the information provided in the document is equivocal. For example, in the Over-water Coatings BMPs, the document states that over-water wood should be protected from the weather by an application of water repellent sealer. It then states on page 26 that “the biologist will have to determine if the waterbody into which the contaminants are leached is sensitive enough to require that a water-proof seal or barrier must be maintained for the life of the project.” This step should be done first to determine in the BMP is initially needed.

Response 43 - We agree this step should be done first. The section on page 26 was meant to express that preventing the first, large flush of contaminants into a sensitive area may be sufficient protection for that area. As a protective coating loses its efficacy over time, leaching will occur, but not at the rate of unprotected wood and this may be acceptable at the site.

Comment 44 - Following some examples of other points in the document that the commenter feels both supports and refutes the above BMP on over-water coatings, the commenter states, “Therefore, there is information that indicates that the use of pesticide-treated wood over flowing streams (the likely majority of BLM actions using this wood) may not be a significant issue. However, there is no specific information provided that would help a biologist determine when the receiving stream would be considered

“sensitive”. Based upon past experience, the lack of scientifically conclusive information will lead to numerous and often inconclusive negotiations between the NMFS and BLM biologists. Neither agency can afford to continue with this type of procedural inefficiency.

Response 44 - The commenter is correct that it would be expected that there are situations where the use of treated wood over a flowing stream would not be a significant issue. As pointed out in the comment, in this scenario the available dilution in the waterbody and resulting contaminant concentration would be the primary consideration. The problem with this scenario is the lack of studies regarding the leaching rates of over-water structures, particularly for the newer copper based products, and the resulting uncertainty from this lack of data. As for the determination of “sensitivity”, perhaps the term “vulnerability” would be more appropriate. Given that it sounds like your office is having repeated issues on these types of projects, it would probably be beneficial for your office to work on a programmatic consultation with the appropriate NMFS office regarding these projects similar to what resulted in the SLOPES III biological opinion. As part of this consultation process, NMFS could assist the BLM in identifying the vulnerable streams within its area.

Comment 45 - Page 23 includes a paragraph on timing of installation for projects. This section is vague and uses highly subjective terms (e.g. if a project is of sufficient scope, timing windows may be useful, may release contaminants at problematic levels). What is sufficient scope? When would timing windows be useful? When do contaminants become problematic? As a result of this ambiguity, there is no real guidance to be found here other than to consider the use of a timing restriction. This section may ultimately confuse the issue of project timing.

Response 45 - While we disagree that this section will confuse the issue of project timing (the commenter seems to realize that timing restrictions should be considered to prevent or minimize potential effects), we have changed the language in this section to provide greater clarity. The WWPI models for CCA and AZCA can be used with site-specific information to estimate the concentration of copper that will result from the project for different periods of time. If the resultant copper levels are high enough to affect olfaction (see the Copper Toxicity in the Water Column section of the Guidelines), then restricting the work until salmonids are no longer present is a useful BMP.