

Comment Response Document
Regarding the Water Quality Analysis of Chlorpyrifos for the Patuxent River
Lower and Middle Watersheds; Anne Arundel, Calvert, Charles, Prince George's,
and St. Mary's Counties, Maryland

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Water Quality Analysis (WQA) of Chlorpyrifos in the Patuxent River Lower and Middle Watersheds. The public comment period was open from March 9, 2007 through April 9, 2007. MDE received 2 sets of written comments.

Below is a list of commentors, their affiliation, the date comments were submitted, and the numbered references to the comments submitted. In the pages that follow, comments are summarized and listed with MDE's response.

Author	Affiliation	Date	Comment Number
Mary L. Searing	Anne Arundel County	April 4, 2007	1
Ann Rose	St. Mary's County Health Department	April 9, 2007	2-13

Comments and Responses

1. The commentor references line 3 of the text on page 16 of the document, which states, "Furthermore, seventeen of the twenty-two samples are below the detection limit of 0.00022 µg/l". The commentor then asks for clarification as to how the values of the seventeen and twenty two were determined. She says that if the sentence is referring to the concentrations of chlorpyrifos in the water column, then the correct numerical values are thirteen out of eighteen; however, if the sentence is referring to the concentrations of chlorpyrifos in both the water column and the porewater, then the correct numerical values are thirteen out of twenty.

Response: The document has been changed accordingly and now states that, "No sample concentrations of chlorpyrifos in the water column exceed 0.0013 µg/l, and thirteen of the eighteen samples are below the detection limit of 0.00022 µg/l".

2. The commentor requests that the Maryland Department of the Environment (MDE) ensure that all abbreviations and definitions appear in the list on page ii. Specifically, the commentor refers to the expression "10-d", which is used to describe the time span of the amphipod sediment toxicity tests, and asks MDE to confirm that this expression is in fact an abbreviation for the phrase "10-day".

Response: MDE confirms that the expression "10-d" is an abbreviation for the phrase "10-day". This expression has been added to the list of abbreviations

appearing on page ii of the document, and a note defining this expression has been placed below Table 5 as well.

3. The commentor asks MDE to address whether there is a schedule or a timeframe in which chlorpyrifos in the Patuxent River Lower and Middle watersheds will be reconsidered in the future. Furthermore, should this occur, the commentor questions how, when, and by whom the data used for this reexamination, or the data used to affect the recommendations of the analysis contained within this document, would be gathered/collected. She also asks if the department is currently soliciting additional data relative to this document and whether MDE has a schedule to collect additional data to continue monitoring the water quality criteria for chlorpyrifos. Finally, the commentor references the first paragraph on page 14, which states that MDE “considered all readily available data from the past five years”. Based on this statement, the commentor requests that MDE please clarify the beginning and end of those five years by month and calendar year. She also questions whether MDE will conduct a similar review in the future, and if so, how many and which years of data will MDE consider for that review.

Response: There is no specific timeframe or schedule to reexamine a chlorpyrifos impairment in either the Patuxent River Lower or Middle watersheds. However, opportunities exist for reevaluation of the waterbody through the 303(d) listing process. The 303(d) List is a list of impaired waterbodies, with various listing categories, that is updated every two years. The data used to place a waterbody on the 303(d) List can come from a variety of sources. It can come from MDE's own monitoring data or any number of private, public, and governmental organizations, watershed associations, or other groups via data solicitations conducted by MDE. MDE routinely conducts these aforementioned data solicitations for various waterbodies and contaminants throughout the state. These solicitations not only provide MDE with data for use in assessing 303(d) list impairments, but they are also used to address and analyze current 303(d) listings via a WQA or Total Maximum Daily Load (TMDL). Should either of these waterbodies reappear on the 303(d) List as impaired by chlorpyrifos, the TMDL Development Program will have to re-evaluate the need for a TMDL for these watersheds.

MDE is not currently soliciting data relative to the analysis contained within this document. Data solicitations are typically conducted at least five years prior to the initiation of a TMDL or WQA. A data solicitation for chlorpyrifos in the Patuxent River Lower and Middle watersheds was conducted in January of 2005. Since the data solicitation conducted for this analysis occurred in January of 2005, all readily available data dating back to January of 2000 was considered for the analysis. All data received from this solicitation were considered for use in the analysis; however, it was determined that the data collected by MDE in December 2005 and May 2006 were the most recent and readily available.

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4. The commentor asks if there is any overall schedule or timeframe in which other water quality criteria are considered.

Response: Current EPA guidance allows 8 – 13 years for the State to address impaired waters on the 303(d) list. This means that for each 303(d) listing, the State must either conduct a WQA demonstrating that water quality criteria are being met or develop a TMDL. Both the executive summary and the introduction of this document state the contaminants for which these watersheds have been listed along with their associated listing years. Furthermore, the document also states which of these impairments have already been addressed via a WQA or TMDL. In the case of both the Patuxent River Lower and Middle watersheds, the listings for nutrients, sediments, and impacts to biological communities will be addressed separately at a future date. Additionally, available data relevant to any criteria are reviewed every two years for the 303(d) list, which includes biological data

5. In reference to the “current information” used to contradict previous findings of impairment obviating the need for a TMDL, the commentor requests that MDE clarify whether this “current information” refers to the data collected in December 2005 and May 2006 and subsequently used in the analysis. Also, the commentor asks MDE to confirm any other sources or data considered “current information” relative to this document.

Response: The “current information” referenced in the introduction to the document refers to any data collected following the designation of a waterbody as impaired that contradicts that finding of impairment for any Water Quality Limited Segment (WQLS) appearing on the 303(d) List. Thus, for the purposes of this document, the December 2005 and May 2006 data collected by MDE throughout 9 stations in the Patuxent River Lower and Middle watersheds represents the “current information” referred to in the introduction of the document. This monitoring data contradicts the previous finding in the 2002 303(d) List that the Patuxent River Lower and Middle watersheds are impaired by chlorpyrifos, based on findings in the 1999 Chesapeake Bay Program (CBP) publication regarding toxic contamination throughout the Chesapeake Bay and its tidal tributaries.

There are no other sources or data considered “current information” relative to the document. The December 2005 and May 2006 monitoring data are the only “current information” that are used to contradict the previous finding of impairment, as no other relative information was received during the January 2005 data solicitation conducted by MDE that could have been used in the analysis.

6. The commentor asks MDE to address the reasonable number of sampling stations and sampling events that would be needed to continue monitoring water quality throughout the Patuxent River Lower and Middle watersheds.

Response: As stated in the response to Comment 3, MDE obtains data from other organizations, and there is no current schedule to collect additional chlorpyrifos data in the Patuxent River Lower and Middle watersheds as chlorpyrifos is not typically a concern. In regards to the analysis presented in this document, 9 monitoring stations are used with 2 water column samples from each station representing two different times periods, winter and spring. This produces a total of 18 samples, of which 13 fall below the method detection limit, and all 18 fall below both the saltwater and freshwater chronic criteria for chlorpyrifos. In addition, porewater samples from two of these stations fall below the associated criteria for chlorpyrifos, and a sediment toxicity test revealed that sediments from the same two stations are not toxic to two different species of amphipods. Because the data overwhelming show that the Patuxent River Lower and Middle watersheds are not impaired by chlorpyrifos, the number and geographic distribution of sampling stations and events are assumed to be sufficient and representative of the overall chlorpyrifos concentration throughout the watersheds. Furthermore, it is not unusual to find impairments that are intermittent, unusual, or “one-time-only” due to a confluence of events, such as a rainfall immediately following a pesticide application.

7. The commentor states that the fourth paragraph on page 3 of the document says that the analysis was conducted “using recent water column and porewater data along with sediment toxicity data in order to determine if an impairment currently exists”. The commentor requests that MDE confirm that the data mentioned above and subsequently used in the analysis is from the surveys conducted in December 2005 and May 2006. Furthermore, the commentor asks MDE to clarify that data from the December 2005 and May 2006 surveys reflect current water quality within the Patuxent River Lower and Middle watersheds. The commentor also asks for clarification here as to when the sediment bulk samples were collected.

Response: MDE confirms that the water column, porewater, and sediment samples the commentor is referring to were collected during the December 2005 and May 2006 surveys. Water column samples were collected on December 15, 2005 and May 15, 2006, and sediment bulk samples, which were used for both porewater extraction and the 10-day amphipod sediment toxicity tests, were collected from two stations on May 1, 2006. These surveys may not reflect the exact water quality conditions in regards to chlorpyrifos concentrations that exist today, but they do provide the best available representation of these conditions as they were the most recent data made known and available to MDE.

8. The commentor requests that MDE define the term “current” in the context of the document.

Response: The term “current”, which is used in the document to refer to the data applied in the analysis, has a relative meaning. No exact timeframe can be

established to define “current”. The term is used to describe the incorporation of the most recent possible data in the analysis. As such, the December 2005 and May 2006 surveys reflect the most recent data available for the Patuxent River Lower and Middle watersheds. The term simply refers to the fact that the data used in the analysis is more recent than both the data originally used to classify the waterbodies as impaired and any other data collected within the watersheds thereafter.

9. The commentor states that the porewater chlorpyrifos concentration for station RET1.1, which appears on page 16 of the document, does not include a unit of measurement. She then asks MDE to please provide a unit of measurement for this station.

Response: The chlorpyrifos porewater concentration of 0.0011 at station RET1.1 is measured in $\mu\text{g/l}$. The document has been corrected to reflect this unit of measurement.

10. The commentor references the first paragraph of page 18, which includes the phrase “the surface water and porewater data collected in December 2005 and May 2006 at nine monitoring stations (presented in Section 3, Table 3)”. The commentor then goes on to state that the surface water column sampling results are presented in Table 3 while Table 4 presents the results reference.

Response: The text has been changed accordingly to reference both Tables 3 and 4.

11. The commentor states that as a general impression the use of abbreviated references in the text was cumbersome.

Response: MDE follows the guidelines set forth by the Chicago Manual of Style for citations and references. This manual applies the method of using abbreviations in both the References section and in text citations.

12. The commentor asks that MDE please correct the order in which the references appear in the References Section, as they are currently not in alphabetical order.

Response: The document has been changed, and the references have been placed in the correct alphabetical order.

13. The commentor states that the in text citations for the US EPA are not consistent. On page 10 the in text citation reads (EPA 2006), while on page 1 the in text citation reads (US EPA 2002). This reference on page 10 should read (US EPA 2006), so that it agrees with both the other in text citations as well as the US EPA reference in the References Section.

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Response: The in text citations for the U.S. Environmental Protection Agency have been made consistent so as to agree with the associated reference in the References Section.