

**Part 201**  
**Technical Advisory Group No. 2**  
**Generic Exposure Pathway Assumptions and Data Sources**  
**Meeting No. 1**

Thursday, June 12 | 1 PM–4 PM  
Public Sector Consultants, 230 N. Washington Square, Suite 300, Lansing

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**AGENDA**

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| <b>I. Welcome and Overview</b>  | Bob Wagner, MDEQ     |
| a. Introductions<br>b. Charge to the Technical Advisory Groups (TAGs)<br>c. Role of Public Sector Consultants Inc. (PSC)  |                      |
| <b>II. Stakeholder Involvement Process</b>  | Mark Coscarelli, PSC |
| a. Operating procedures for TAGs<br>b. Discussion guidelines for the TAGs<br>c. Guidelines for finalizing recommendations |                      |
| <b>III. White Paper Discussion</b>  | Group                |
| <b>IV. Next Steps</b>   | Mark Coscarelli, PSC |
| a. Meeting logistics (i.e., dates, location, summaries, information sharing)  |                      |

# PART 201 Technical Advisory Group 2: Exposure Pathway Assumptions Meeting 1 Summary

Thursday, June 12 | 1:00 PM–4:00 PM  
Public Sector Consultants, Lansing, Michigan

## TAG Members

Attendees	
Steve Zayko	PM Environmental
Donal Brady	EnviroSolutions
Christene Jones	Barr Engineering
Patricia Koman	University of Michigan
Francis Ramacciotti	ENVIRON Corporation
Kory Groetsch	Department of Community Health
Christine Flaga	Department of Environmental Quality

## MDEQ Staff

Bob Wagner	Department of Environmental Quality
Divinia Ries	Department of Environmental Quality

## Criteria Stakeholder Advisory Group

Karen Hathaway	Horizon Environmental
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## Project Staff

Mark Coscarelli	Public Sector Consultants
Katie Van Dorn	Public Sector Consultants

## INTRODUCTION

Technical Advisory Group (TAG) 2 – (Exposure Pathway Assumptions) met on Thursday, June 12, 2014 at Public Sector Consultants (PSC). The group was welcomed by Bob Wagner, Division Chief of Remediation and Redevelopment at the MDEQ. The focus of this TAG meeting was to provide TAG members context for the Part 201 project, outline the roles and responsibilities of the TAG, discuss the white paper on Generic Exposure Pathway Assumptions and Data Sources, and begin discussing the questions outlined in the white paper for this TAG to address.

## PART 201 BACKGROUND

Part 201 of Michigan's Natural Resources and Environmental Protection Act (EPA) sets standards for environmental cleanup and provides incentives for cleanups of brownfields in the state. These rules and standards were last updated in 2002. In 2010, the Michigan Legislature amended Part 201 to, among other things, require the MDEQ to update the cleanup criteria rules within two years of the effective date of the legislation to take into account recent scientific

information. To do this, a stakeholder group was convened to make recommendations on how to update the cleanup criteria rules based on best practices, science-based research, and realistic and reasonable conditions. Due to a limited amount of time, and the difficulty of the task, the stakeholder group did not complete the task.

Now, in 2014, the MDEQ has changed its approach for making recommendations for updating the generic cleanup criteria in a couple of ways. First, the stakeholder group is being supported with expertise of three technical advisory groups (TAGs), one of which is addressing generic exposure pathway assumptions. The other two groups focus on chemical-physical parameters and toxicology and vapor intrusion. A fourth group will be convened to focus on legal implications of the recommendations for cleanup criteria. The TAG members are field practitioners, scientists, toxicologists, and others with years of experience working with these difficult issues. The MDEQ employees are also on each TAG to provide background about current practices. Secondly, instead of the MDEQ leading the process, Public Sector Consultants (PSC) is facilitating and guiding the TAGs and Criteria Stakeholder Advisory Group (CSA). Lastly, the TAG groups will give recommendations to the CSA for consideration, and the CSA will provide a set of final recommendations to the MDEQ. The MDEQ Director will consider the recommendations when updating Part 201 Rules.

## **TAG ROLES AND RESPONSIBILITIES**

Coscarelli provided background on the Criteria Stakeholder Group (CSA) and TAG roles and responsibilities. Each TAG was provided with a white paper addressing its specific topic that contains background on the issue and outlines questions to be addressed by the TAG. The TAG can recommend different or additional questions to the CSA for consideration.

It is the intention of this process to have TAG members give the CSA a consensus recommendation for each question. Any strong reservations on a recommendation will be documented. These concern(s) will be documented along with a range of options and potential consequences of a particular approach, and provided to the CSA. If a consensus is not possible, a super majority (one more than a simple majority) will be used to make recommendations to the CSA. Voting should not be necessary within the TAGs, which is intended for the CSA, if necessary.

Each TAG will establish a spokesperson or two for the group. These members will be asked to present the group's recommendations to the CSA. They will help answer any questions the CSA may have on its recommendations, or on how the TAG reached its decision.

The TAG group discussed the transparency of the Part 201 update process, and the possibility of opening the meetings to the public. Wagner indicated that the MDEQ is sharing the project information at environmental conferences around the state so people in this field are aware it is going on. However, due to the highly technical and detailed nature of the work, the TAG meetings are not open to the public. TAG members were encouraged to speak with others outside of the TAG to bring others' perspectives into the conversation. The TAG recommends that the CSA make the TAG summaries available to the public, and that the CSA include time for public comment at its meetings. They also recommend that the MDEQ do more outreach, especially to public health groups, about this update.

With the above recommendations, the TAG members agreed on the process, and on their role and responsibilities in the process.

## WHITE PAPER DISCUSSION

The white paper for this group was shared prior to the meeting for review. The group offered several recommendations.

The group requested having a broad overview of generic exposure at the beginning of the paper. The overview should include the general concept and intent of generic exposure criteria, and the messages to tell the public about how the criteria are going to be used once implemented. Due to the structure of the existing legislation, the group recommends communicating both a residential goal and a nonresidential exposure goal to the public, even though these are based on the same background science. The difference between the two potential goals (residential and nonresidential) should be explained in the white paper in the broad overview.

It was suggested that the white paper include more narrative on the historical process of how the values were established to show why certain choices were made, and to underscore that it is an informed process. A TAG member will send out additional technical support background documents that provide context on this historical process. TAG members recommend including the EPA's OSWER Directive before Appendix E of the white paper.

The group discussed reasonable maximum exposure (RME) values, and would like to have further discussion on establishing a set of exposure estimates as a part of this process. Establishing RME values may help ensure that DEQ's values are within the EPA's acceptable range in the 90 to 98<sup>th</sup> percentile.<sup>1</sup> This way, the DEQ can stand behind their value and know that it is within the EPA's risk management goal. One method discussed to achieve this would be through a Monte Carlo probability model analysis. Each input usually has a range of potential values, the Monte Carlo simulation can show the likely distribution of end values for the range of given inputs to ensure they fall within a 90 to 98<sup>th</sup> percentile. This idea is discussed more under the Data Sources/References question 4 and the Numeric Values question 1 and 2 below.

The group agreed that the exposure parameters need to be updated on a regular basis to stay current and reflect sound science. More discussion is needed to determine what a reasonable regular basis is for updating the exposure parameters.

The group then reviewed each question presented in the white paper to ensure the TAG members agreed on the intent of the question. The conversation about each question is summarized below. Any recommendations made by the group appear in bold below.

### ***Land Uses: Residential and Nonresidential***

#### *Question 1*

*The current criteria utilize adults only as the receptor for residential drinking water, and adults plus children (age-adjusted) as the receptor for direct soil contact. Should the age-dependent adjustment factors (ADAFs) recommended by the EPA be used to address early life exposure from mutagenic carcinogens?*

**The group recommends breaking this question into two separate questions. The first question should be more general and read "What is the most appropriate receptor to use for residential land use criteria?"** This will allow for adult, child, and child adjusted age receptors to all be considered as necessary.

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<sup>1</sup> U.S. EPA (1989). Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A). U.S. EPA. (1992b) Memorandum: Guidance on Risk Characterization for Risk Managers and Risk Assessors. From F. Henry Habicht II, Deputy Administrator, U.S. EPA, Washington, DC.

Then, because ADAFs are only applicable for child receptors or the child portion of the receptors, **the second half of the above question should become its own separate question.** This question should read “Should the age-dependent adjustment factors (ADAFs) recommended by the EPA be used to address early life exposure from mutagenic carcinogens? The ADAFs would be applied to those substances that have been identified by the EPA to be mutagenic carcinogens (approximately 10 substances on the current Part 201 list of hazardous substances and cleanup criteria).”

#### *Question 2*

*What is the most appropriate nonresidential scenario for workers, that is, indoor, outdoor, or a combination or both?*

There were no changes recommended to the wording of this question, but the group notes that with question 1 being broken into two questions, this question would become questions 3 in Land Uses: Residential and Nonresidential.

### **Data Sources/References**

#### *Question 1*

*What are the appropriate data sources for the estimates for exposure assumptions such as drinking water ingestion rates, soil ingestion rates, body weights for the selected age groups, relative source contribution factors, chemical-specific dermal absorption factors, and other dermal exposure assumptions?*

The group did not have recommended changes to this question at this time. The group discussed considering data sources outside of the great lakes states, such as those from California.

#### *Question 2*

*What are the appropriate data sources for and estimates of exposure frequency, exposure duration, and averaging time?*

There were no recommended changes or discussion about this question.

#### *Question 3*

*Where available, should the department utilize Michigan-specific, rather than nationally representative, data? If so, which data should be utilized?*

The group reported that this question should be reworded slightly and recommends the following: **“Where available, should the department utilize representative data that is Michigan-specific, rather than nationally representative data? If so, which data should be utilized?”**

#### *Question 4*

*Should the algorithms, exposure assumptions be consistent with or based upon federal (i.e., U.S. EPA) methodology and data? If yes, are there any circumstances under which deviations from the federal methodology and data should be allowed?*

**The TAG recommends adding a second part to this question that says “If no, what methodology and data should be used?”** The group also recommends there should be a documented justification for the answer.

A CSA member explained that the CSA is not looking for new equations, but wants the TAG group to work within the existing rules and equations. However, the TAG would like clarification from the CSA on what the group is allowed to consider, such as probabilistic approaches (e.g., Monte Carlo).

The group continued the discussion of using a Monte Carlo simulation, and if it could be used to evaluate the sensitivity of the model based on the inputs. Doing so could potentially show cumulative risk, compounding conservatism, or lack of protection. These could then be used to better communicate risk to end users. Ohio EPA generated its standards using a Monte Carlo model, and used a mix of minimum and maximum values, point estimates, and triangular distributions which include a central tendency value or the average value in addition to minimum and maximum values. In order for the group to further consider the Monte Carlo approach, the group requested to see published papers that use Monte Carlo simulation to do this process and that show the end result on criteria determination. There is concern that the Monte Carlo approach will take a lot of time and will not adequately address the cumulative exposure risk. A TAG member offered to share published papers on Monte Carlo with the group. MDEQ staff will also send out a web link to the Ohio EPA process for the rest of the group to review.

#### *Question 5*

*In totality, are the pathways, models, and cumulative exposure assumptions reflective of “reasonable and relevant pathways, best science, and realistic conditions?”*

The TAG members reported this question is both contradictory and limiting. The group would like clarification from the CSA on the intention of this question before moving forward in answering it.

### **Numeric Values: Exposure Assumptions**

#### *Question 1*

*Based on the identified receptors and routes of exposure, what are reasonable values and data sources to use for various assumptions?*

The TAG would like clarification from the CSA on the intent of using “reasonable values” in question 1 and “appropriate numbers” in question 2. If these terms and questions can be lumped together, should the TAG be looking at (1) what are the values, (2) why are they picked, and (3) how are they going to be updated?

#### *Question 2*

*Given the range of exposure assumption values, how should the most appropriate number be selected?*

**The TAG recommends combining this question with question 1 above.**

#### *Question 3*

*When are data of sufficient quality available for a Monte Carlo analysis and other probabilistic methods to be performed to derive all or part of the factors used in an exposure assessment for one or more exposure pathways?*

A CSA member clarified the intent of the question as being “Do probabilistic models (e.g., Monte Carlo) have a place in the selection of exposure parameters for generic criteria? If so, what should that role be?”

#### Question 4

*For each pathway calculation recommended, has it been determined to be reasonable and relevant, and has a final check of the suite of parameters been performed to ensure that modeled exposures are not unduly protective due to compounding conservatism?*

The TAG discussed benchmarking the derived values with others such as the EPA's RSLs and others to ensure they make sense in the real world and are considerate of compounding conservatism and adequately protective. Also, **to ensure the TAG is not getting into site specific instead of generic criteria, the group recommends ending the question after the word "relevant."** TAG members are all asked to bring in examples of chemical analysis and distributions.

#### **NEXT STEPS**

The second Exposure Pathway Assumptions TAG meeting is from 9:00 AM to 12:00 PM on Tuesday, June 24, 2014 at the PSC office at 230 N. Washington Square, Lansing, MI.

The group will continue to address the questions presented in the Generic Exposure Pathway Assumptions and Data Sources white paper.