

August 12, 2004

Anton Martig
Mail Code DT-8J
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3507

Re: Comments Concerning Protocol for "Source Profiles and Emissions Quantitation for Known or Suspected Sources of PCB to Ambient Air in Chicago"

Dear Tony:

Recall that we discussed at the last EPA/Environment Canada Binational Toxics Strategy meeting in Toronto that USWAG was reviewing the protocol regarding the above-referenced study concerning potential sources of PCBs to the Great Lakes air shed. To assist us in this effort, we worked with Dr. Barbara Taylor, co-founder and former President of META Environmental, Inc. (META) in Cambridge, MA. A copy of Dr. Taylor's observations regarding the study protocol are attached ("Taylor Letter").

In short, while Dr. Taylor thinks the basic concept of the proposal is good, she believes there needs to be significantly more sampling and analysis of a variety of types of sites as well as more repetitive sampling of the source types selected prior to any modeling and before any conclusions can be drawn about PCB sources in general. She states that such an effort will be substantially more expensive than the level of investment currently reflected in the proposal.

Dr. Taylor also observes that one of the research needs identified in the proposal is to identify potential or unknown sources of PCBs in the air shed. She notes, however, that the work proposal does not appear to be designed to achieve this objective, as it is limited to known or highly suspected sites. This latter point is worth emphasizing, as the title of the protocol is "Source Profiles and Emissions Quantitation for Known or Suspected Sources of PCB to Ambient Air in Chicago." Dr. Taylor correctly points out that the sampling and analysis (for both PCBs and chlorinated benzenes) is directed towards limited sources of PCB transformer askarels, and not to

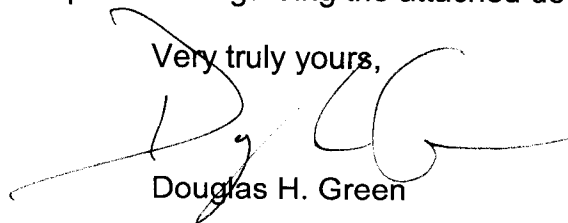
broader sources of PCBs. She therefore questions whether a determination has already been made that PCB transformer askarels are the dominant sources of PCBs to the air shed. If this is not the case, and because transformer PCBs accounted for only about 20% of the total PCBs produced in the United States, she questions whether a survey has been undertaken of other potential point and non-point sources of PCBs (such as capacitor banks or plasticizer applications) to better identify the true universe of potential sources of PCBs to the atmosphere.¹

Along the same lines, Dr. Taylor observes that, while the limited number of sampling sites are a good start (*i.e.*, one transformer site, one storage yard, one or two spill sites and landfills and one background site), she does not believe the data generated from such a small number of sites "will be anywhere near sufficient to do the modeling and draw general conclusions as discussed in the proposal . . . and it would be inappropriate to do so." Taylor Letter at 2.

While Dr Taylor raises a host of additional comments on the protocol, the points referenced above underscore USWAG's concern that findings from the study not be inappropriately used for making any general conclusions regarding the role of electrical equipment as a source of PCBs to the Great Lakes air shed or the environment generally. As Dr. Taylor cautions, the scope and nature of the proposed study is far too narrow to support any such conclusions.

We hope that you find Dr. Taylor's observations constructive as EPA proceeds with this project. As always, please do not hesitate to contact me or USWAG Executive Director, Jim Roewer, if you have questions regarding the attached document.

Very truly yours,

A handwritten signature in black ink, appearing to read 'D. H. Green', written over a horizontal line.

Douglas H. Green

Enclosure

cc: James Roewer, USWAG Executive Director
Mary Davis, USWAG PCB Committee Chair

¹ This point is particularly relevant in light of the recent study prepared by the National Institutes of Health ("NIH") regarding the presence of PCBs in caulking materials historically used in buildings. The NIH study underscores the fact that there are many other potential sources of PCB-containing materials – other than electric utility equipment in use and in storage areas – that could be contributing to PCBs in the Great Lakes air shed.

To: Jim Roewer (USWAG)
Date: June 15, 2004
From: Barbara B. Taylor, Ph.D. (META)

Re: Comments concerning “Source Profiles and Emissions Quantitation for Known or Suspected Sources of PCB to Ambient Air in Chicago”

General Impression: Determining the sources and magnitudes of polychlorinated biphenyl (PCB) emissions to the air in an urban environment (Chicago) is scientifically intriguing and sounds like a fun project. While the proposed research takes an initial step toward that end, there are missing details and potential flaws in the written proposal that, in my opinion, make reaching all the stated goals uncertain. I’m particularly concerned about the limited extent of sampling and analysis from which much more ambitious modeling is proposed. It appears that a relatively few sample results will be extrapolated to produce generalized conclusions, overall emission estimates, source profiles, and source prioritization.

Bottom Line: I think the basic concept of the proposal is good and the direction of the research is correct for the stated goals. However, I believe there should be much more sampling and analysis of a variety of types of sites and more repetition of the source types selected before any modeling is done and any conclusions are drawn about the sources in general. Such work would be considerably more expensive than the small proposal presented. I’d also like to see more details on the sampling, analysis, QA/QC, and data analysis. Finally, one of the research needs listed in the proposal is to identify potential or unknown sources of PCBs to the air and the work proposed does not do so, as it is limited to known or highly suspect sites.

The comments or questions listed below focus on some of my concerns about the research as described in the proposal.

The proposal title concerns “Known or Suspected Sources of PCB”. However, the sampling and analysis (for both PCBs and chlorinated benzenes (CBs)) clearly is directed toward sources of PCB transformer askarels, not just sources of PCBs. Has a determination already been made that PCB transformer askarels are the dominant sources

of PCBs to air? If not, since transformer PCBs accounted for only about 20% of the total PCBs produced in the U.S., has a survey of other potential point and non-point sources (such as capacitor banks or plasticizer applications) been carried out?

The descriptions for the sampling indicate that only one PCB askarel transformer site, one former transformer yard, one or two PCB spill sites, one or two landfills, and one background site will be sampled. While this is clearly a good start, I don't believe the data generated will be anywhere near sufficient to do the modeling and draw general conclusions as discussed in the proposal and I think it would be inappropriate to do so.

For example, there was no mention of any survey to determine the numbers of such sites in the area nor did the proposal indicate data would be collected on the variability of the PCB and CB emissions from these sites. Thus, I don't see how the stated goals of the modeling can be achieved, namely: a) to estimate how much of urban Chicago air emissions are from these types of sources, and b) to prioritize the extent of source emissions from these types of sites.

For example, "congener and homolog source profiles" are supposed to be developed for future receptor modeling. It is really unclear to me how to bridge the gap between sampling one PCB transformer askarel site and developing profiles for all such sites, particularly since there are several types of PCB transformer askarels with different types and percentages of PCB Aroclors and CBs.

For example, sludge drying beds were listed as sources of PCB emissions in the problem statement, but are not included in the sampling. However, in the modeling section, item iv appears to be related to sludge drying beds.

The sample collection details are a tad vague and there is no clear indication of the total numbers of samples to be collected at each site. Based on what is described, it doesn't appear that there is sufficient repetition of the sampling to get a good feel for the variation at individual sites.

The sampling is to be carried out in warmer weather "to determine maximum impact". But, how do you know that a particular warm day will have maximum emissions if you only sample at that time? Also, how will the results of this one-time maximum impact sampling be extrapolated to generate accurate estimates of total air emissions in kg/yr for the sites?

As I understand it, the samplers are activated only when the wind direction is appropriate which can eliminate the problem with "upwind" and "downwind" samples. However, are the upwind concentrations subtracted from the downwind concentrations to determine the emissions from the source? If not, how are "background" levels of PCBs and CBs distinguished from source PCBs and CBs at each site?

The sample analysis methods are reasonable and acceptable, but would high resolution MS be better? Also, are there clean-up methods available if there are interference problems?

The proposal indicates that the sampling filters and sorbents typically will be combined for analysis. Since this is the beginning of a study on sources, I'd like to see these samples analyzed separately during at least the first round of samples collected from each type of site.

The individual congeners to be analyzed should be specifically listed for both the PCBs and the CBs. The proposal states that "dioxin-like" PCBs are not going to be included in the analysis, but aren't at least some of them on the IADN Congener Suite list? Of course, from a curiosity point of view, I'd prefer to see all of the PCB congeners of toxicological significance (the ones with TEFs) on the analyte list so that toxicity equivalents could be calculated if needed.

The QA/QC section does not have much detail so it's hard to comment on it. But, before I would use any data to draw important conclusions, I'd like to have the data validated or at least undergo a review. In addition, I'd like to know how the data are going to be handled, for example, how are non-detects going to be treated – as 0, as the detection limit, or as ½ the detection limit?

The data analysis section seems focussed on correlations and I am not sure why some of them are suggested. I'd prefer to see more examination of the data for trends and patterns, not just one-to-one correlations. Although there will be limited numbers of samples, the total numbers of analytes will be quite large and, as such, data analysis could take more time and effort than might be anticipated based solely on sample numbers.

I think it is premature to develop source fingerprints for future modeling based on the very limited sampling and analysis proposed.

For the modeling effort data generated as a result of the proposed work, "ADM" data, "as well as other data" are to be used. What "other data"? Are those data compatible with the data generated from the proposed work and are they of sufficient quality to be used for modeling?

There appears to be a disconnect between the sampling and analysis data and some of the modeling work. In addition, the modeling work appears to be very ambitious compared to the modest sampling and analysis effort.

Some of the questions to be answered from the data and modeling work listed on page 6 are written as if they are either theoretical calculations or laboratory studies in which PCBs are added to mineral oil, askarels, and different types of soils/sediments. If these are laboratory studies, are they part of the proposal?

Item i indicates that expected air concentrations are to be generated for transformer askarels with 1,000 and 10,000 ppm of PCBs, but no PCB transformer askarels were made with 1% or 10% PCBs. What is the value of these data? Also, items ii through iv describe soils or sediments with varying amounts of PCBs. Are these laboratory prepared samples? If so, I would not equate air emission from laboratory prepared samples with air emissions from samples in the environment at the same PCB levels.

NOTE: Because of the time constraints, I did not have the opportunity to examine the references used as the basis for the problem statement and some assumptions about sources and emission magnitudes. I found some of the numbers, such as 3200 kg/yr of PCBs deposited into Lake Michigan, a bit hard to believe and would have liked to review the data and assumptions.