November 6, 2015

Mr. Jose G. Cisneros
Chief
Remediation and Reuse Branch
USEPA, Region 5
77 West Jackson Boulevard
LU-9J
Chicago, IL 60604-3590

VIA Email and Overnight Mail

Subject: **Response to Notice of Violation**
RCRA 3008(h) Administrative Order on Consent (RCRA-05-2010-0012) –
Tecumseh Products Company, 100 East Patterson Street, Tecumseh, Michigan

Dear Mr. Cisneros:

On October 7, 2015, Tecumseh Products Company (TPC) received a Notice of Violation (NOV) related to the above-referenced Administrative Order on Consent (AOC) for the site located at 100 East Patterson Street in Tecumseh, Michigan formerly owned by TPC. TPC views the issuance of the NOV as a very serious matter, and we are fully committed to continuing our good faith dialogue and collaboratively working with Region 5 to address the concerns raised in the NOV. We thought it would be helpful to provide certain background information as context for our response.

Background

In 2008, a Phase II investigation was performed as part of the sale of the TPC property located at 100 Patterson Street, Tecumseh, MI. Soil and groundwater contamination was identified. Based on dialog between TPC, the United States Environmental Protection Agency (USEPA), and the Michigan Department of Environmental Quality (MDEQ), the USEPA became the lead agency for the project. TPC and USEPA met and negotiated the AOC, which requires certain activities to be performed within certain timeframes.

As you know, the AOC includes four project milestones prior to implementation of final corrective measures.

- Paragraph 13.a of the AOC required TPC to submit an Environmental Indicators (EI) Report to USEPA demonstrating, as of the date of the submittal: "All **current** human exposures to contamination at or from the facility are under control. That is, significant or unacceptable exposures do not exist for all media known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents **above risk-based levels, for which there are**

complete pathways between contamination and human receptors." (emphasis added) TPC submitted the EI Report on the date required by the AOC, September 29, 2011. USEPA subsequently extended the AOC deadline twice to allow TPC to collect specific agreed-upon data requested by USEPA to confirm this demonstration. The effective amended deadline was September 30, 2013, which TPC met by submittal of a Supplemental EI Report.

- Paragraph 13.b of the AOC required TPC to submit another EI Report and perform activities necessary to demonstrate that migration of contaminated **groundwater had stabilized as of the date of the submittal.** TPC submitted the EI Report on the date required by the AOC, September 29, 2012. USEPA subsequently extended the AOC deadline to allow TPC to complete certain specific additional investigation activities requested by USEPA. The effective amended deadline was September 30, 2015, which TPC met by submittal of a Supplemental EI Report.
- Paragraph 11 of the AOC required TPC to **identify and define the nature and extent of releases of hazardous waste and hazardous constituents at or from the facility** and provide that information in a Remedial Investigation (RI) Report. The original deadline for this report was September 29, 2012, which TPC met by submittal of the RI Report. USEPA subsequently extended the AOC deadline to allow TPC to complete certain specific additional investigation activities requested by USEPA. The effective amended deadline of September 30, 2015 was met by TPC's submittal of a Supplemental Report.
- Paragraph 15 of the AOC requires that a Final Corrective Measures Proposal (CMP) be submitted. USEPA extended the deadline for the CMP to conform to the other deadline extensions described above, to allow that work to be completed before preparation of the CMP. The current deadline is January 31, 2016.

As documented on the USEPA Environmental Indicators – Frequent Questions webpage[1], The Human Exposures EI "is an assessment of actual current human risks and would typically take the form of a **qualitative** assessment of the completeness of exposure pathways." (emphasis added) The Groundwater EI differs in that it is "strictly a resource protection measure and not a direct measure of human risk."

TPC made the required submittals by the specified deadlines. In some cases, these demonstrations included a qualitative assessment of risk and site conditions based on reasonable interpretations of the available site data, as USEPA guidance allows. As described above, rather than accepting the adequacy of these demonstrations, USEPA opted to extend the deadlines to allow TPC to collect certain discrete data requested by USEPA. Each time TPC collected the agreed upon data, and provided those data to USEPA within the agreed upon timeline. Additionally, TPC continued investigation and interim corrective measures to address potential future exposures and to support development of the CMP per the requirements of the AOC.

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[1] USEPA. Environmental Indicators – Frequent Questions. Accessed at http://www3.epa.gov/epawaste/hazard/correctiveaction/eis/faqs.htm on November 2, 2015.

As you know, USEPA and TPC have had ongoing and extensive good faith communication regarding the work to be performed. On January 31, 2014, USEPA issued a comment letter titled "EPA's response to Tecumseh Products Company's September 30, 2013 Supplemental Submission to the Human Exposure Environmental Indicator Report." In response to that comment letter, TPC and USEPA met in Chicago on May 12, 2014 and agreed to the general scope of work for performing high resolution site characterization (HRSC) investigation activities as requested by USEPA. HRSC investigation activities were completed in a stepwise manner, including a passive soil gas (PSG) survey to clarify and refine the lateral distribution of potential source areas (completed in 2014), a membrane interface probe (MIP) investigation to investigate the vertical distribution of contaminants in these source areas (completed in 2014), vertical profile sampling throughout the off-site contaminant plume to more completely document the horizontal and vertical extent of contaminants in off-site groundwater (completed in 2015), and evaluation of/modifications to the groundwater monitoring program, including installation of new wells through the most affected zone (in progress).

In early 2013, USEPA extended the Groundwater EI deadline to July 31, 2015, to allow for the completion of 8 quarterly sampling events at new wells installed in March 2013 at USEPA's request. Well locations included in this analysis were agreed upon between TPC and USEPA. This extension was issued prior to the January 31, 2014 USEPA comment letter, and a meeting with USEPA on May 12, 2014. During the May 12 meeting, TPC and USEPA discussed the January 31, 2014 comment letter, the request for HRSC sampling, and the location of additional monitoring wells. It was agreed that additional monitoring wells would be installed based on the results of the HRSC investigation. Consequently, the 2013 extension did not include time to complete HRSC investigation activities as outlined above, and install and sample the additional wells to be installed based on the results of the HRSC investigation. On April 8, 2015, TPC suggested that a 90-day extension might be in order to allow TPC time to incorporate the results of the HRSC investigation (field activities completed April 27, 2015 through June 9, 2015), into the EI Supplement. USEPA indicated that a 90 day extension for the Groundwater EI was not appropriate.

Therefore, the Supplement to the Remedial Investigation and Environmental Indicator Report (Migration of Contaminated Groundwater Under Control) was submitted to USEPA on July 31, 2015. This report included both a statistical evaluation of concentrations at all monitoring wells (as agreed when the original extension was granted) and data collected during 2015 vertical profile sampling activities (tabulated data, soil boring logs, and laboratory reports). As noted in the July 15, 2015 Progress Report submitted to USEPA, the deadline for the July 31, 2015 Supplement to the EI did not allow sufficient time for a comprehensive evaluation of the HRSC data collected at USEPA's request. TPC committed to providing that data evaluation with the next quarterly progress report on October 15, 2015. The findings of that data evaluation are documented in the 2015 High Resolution Site Characterization Report and Updated Conceptual Site Model (2015 CSM Report), which was submitted to USEPA on October 15, 2015. That report includes a description of refinements made to the conceptual site model as they pertain to site geology/hydrogeology and to

the extent/distribution of contaminants. The 2015 CSM Report also includes a description of planned environmental work to support risk assessment, development of the CMP, and future monitoring including proposed locations for new monitoring wells.

On several occasions dating back to April 2015, TPC requested a meeting to discuss vertical profile sampling data and to develop a mutually agreeable path toward final corrective measures. On October 13, 2015 USEPA scheduled the requested meeting for December 7-9, 2015 (final length and days to be determined based on the agenda). In the meantime, TPC's response to the alleged violations is documented below.

1. Alleged Failure to Demonstrate that Migration of Contaminated Groundwater is Stable (Paragraph 13.b of AOC)

TPC respectfully submits that TPC's Groundwater EI demonstration, as Supplemented, met the requirements of AOC Paragraph 13.b.

- Increasing trends in groundwater concentrations at a limited number of wells does not necessarily indicate the TPC's demonstrations under Paragraph 13.b of the AOC were inadequate.
- The figure illustrating the approximate extent of VOCs above Michigan Part 201 criteria was revised between September 2012 and July 2015. The larger area above Michigan Part 201 criteria in 2015 is a function of greater data density, not plume expansion. Attachment 1 of the NOV provides a series of data trend analysis completed by the USEPA FIELDS Group. These outputs included images for three-dimensional plume modeling completed using earthVision software. No explanation or evaluation of these model outputs is provided. Without context, as they are, the visualizations of the TCE plume on a year by year basis provided in Appendix B grossly misrepresent plume stability. To a person not familiar with the project, these images seem to indicate rapid and uncontrolled plume expansion. In reality, the 2015 plume image is accurate throughout the evaluation period and changes in the modeled plume volume/area on a year-by-year basis reflect the progression of investigation activities, e.g. additional data collection locations and NOT changes in concentration at the same locations over time.
- The HRSC investigation, by design, provided higher data density. Consequently the precision of the line defining the extent of VOCs above Michigan Part 201 criteria is greater in 2015 when compared to 2012. All of the data points driving re-interpretation of the extent of VOCs above Michigan Part 201 criteria in 2015 are new data points within the existing monitoring well network. TPC identified additional monitoring wells to monitor intra-plume chemistry in the October 15, 2015 progress report. The evolution of TPC's conceptual site model is an expected part of the RCRA corrective action process, and does not necessarily mean that the Groundwater EI demonstration submitted by TPC, and as later Supplemented, was inadequate as of the date it was submitted.

TPC continues to work expeditiously towards addressing USEPA comments and questions while preparing a CMP in accordance with the AOC. The following outlines TPC's expected timeline for addressing USEPA concerns related to the Groundwater EI while continuing to prepare the CMP.

- The July 31, 2015 Supplement to the Remedial Investigation and Environmental Indicators Report (Migration of Contaminated Groundwater Under Control) (2015 Supplemental EI Report) was submitted to USEPA. This report provided a statistical evaluation of groundwater stability at wells installed in 2013 as previously agreed. This report also included 2015 HRSC data (a figure illustrating sample locations, tabulated VOC data, soil boring logs and laboratory reports), a workplan for supplemental groundwater surface water interface (GSI) investigation and a timeline for completion of the HRSC data evaluation (October 15, 2015).
- Investigation work, as outlined in the GSI Workplan, was completed between August and September 2015. Investigation work outlined in the Status Update on the GSI Workplan is expected to begin on November 30, 2015 and be completed by December 28, 2015. TPC discussed this workplan with the MDEQ during the week of October 26, 2015. MDEQ anticipates commenting during the week of November 2, 2015, but as of the date of this letter being transmitted, comments have not been received.
- On October 15, 2015 the 2015 High Resolution Site Characterization Report and Updated Conceptual Site Model (2015 CSM Report) was submitted to USEPA. That report included a description of refinements made to the conceptual site model as they pertain to site geology/hydrogeology and to the distribution of contaminants. The 2015 CSM Report also includes a description of planned environmental work to support risk assessment, development of the CMP, and future monitoring, including proposed locations for new monitoring wells. Additionally, the 2015 CSM Report includes a Status Update on the GSI Workplan outlining additional investigation activities to be completed to more quantitatively assess the GSI migration pathway.
- As documented previously, an isolated PCE source area was identified during 2015 HRSC investigation activities in the southeast corner of the site. This area has been targeted for further characterization and will be addressed as part of the CMP. A workplan to define the extent of affected soil and groundwater in this area will be submitted to USEPA during the week of November 9, 2015. This work is expected to be completed in December 2015.
- A meeting with USEPA has been scheduled for December 7 - 9, 2015. Based on an email from Joseph Kelly of USEPA, the actual duration of the meeting will be determined based on the meeting agenda. During this meeting, TPC would like to discuss the following:
  - **Groundwater Monitoring:** Proposed modifications to the groundwater monitoring program were provided to USEPA in the 2015 CSM Report, including locations for proposed new monitoring wells.

  - **Remedial Goals (RGs):** In anticipation of submittal of the CMP, site-specific risk-based remedial goals are being developed. TRC will be prepared to discuss that evaluation during the December meeting.
  - **Groundwater Treatment:** In anticipation of submittal of the CMP, TPC is evaluating groundwater treatment options to support the achievement of site specific remedial goals and minimize any future off site monitoring of groundwater or soil gas. TPC anticipates that this meeting will include a discussion of treatment options which have been eliminated and treatment options that remain under consideration for both the north and south contaminant plumes.

- In January 2016, TPC expects that a CMP will be submitted to the USEPA for review and approval. This CMP will include proposed risk based RGs, groundwater treatment options evaluation, a recommended strategy to meet these RGs, a timeline to implement the recommended treatment strategy, and a proposed confirmatory monitoring program to verify achievement of the RGs.
- Installation of new wells will be completed as soon as feasible after TPC and USEPA have reached consensus on the proposed groundwater monitoring program.
- Implementation of corrective measures is expected to begin according to the schedule set forth in the CMP after USEPA's statement of basis is published and after public comment on the Final Remedy per the AOC.

2. Alleged Failure to Demonstrate that Human Exposures are Under Control (Paragraph 13.a of AOC)

TPC respectfully submits that TPC did adequately demonstrate that current human exposures were under control as of the date of the demonstration per the AOC.

- The drinking water pathway is incomplete. Drinking water wells within the area of affected groundwater have been decommissioned and all properties are connected to municipal water. On June 26, 2011, a groundwater use ordinance was adopted by the City of Tecumseh that prohibits the construction of potable wells within the restricted use area.
- An evaluation of the potential vapor intrusion pathway at residential properties was completed at the time of the Human Exposures EI Report submittal, and also following completion of the 2015 HRSC Investigation. As outlined below, this evaluation indicates that mitigation and/or indoor air sampling has been completed at all but two of the houses located within 100 feet of shallow groundwater affected above Michigan groundwater screening levels for vapor intrusion. As detailed below, the two houses where mitigation and/or sampling were not completed are not a concern because the clay present in the area creates a natural vapor intrusion barrier.
  - East of the site, three properties are located near the area where shallow groundwater concentrations exceed generic groundwater screening levels for vapor intrusion (within

the 100-foot buffer zone for potential lateral migration). Three crawlspace sampling events were completed at each property to document that the vapor intrusion migration pathway was not complete. Since that time, soil gas data from nearby soil gas sampling points (SG-03R and SG-04) have remained below soil gas screening levels.

- Two additional residential properties east of the site are located within the area where shallow groundwater concentrations exceed generic groundwater screening levels for vapor intrusion. A mitigation system has been installed at one of these properties. At the other property, three crawlspace sampling events were completed to document that the vapor intrusion migration pathway was not complete. Since that time, soil gas data from the nearby soil gas sampling point (SG-08) has remained below soil gas screening levels.
- West of the site, four properties are located within the area where shallow groundwater concentrations exceed generic soil gas screening levels. An indoor air sampling event has been completed at each of these properties. Constituents of concern (COCs) were below applicable indoor air criteria at each of these locations.
- North of the site, nine properties are located within the area where shallow groundwater concentrations exceed generic groundwater screening levels for vapor intrusion.
  - At two of these properties (the houses located near the northwest corner of Cummins Street and Maumee Street between soil borings B-73 and B-75), indoor air sampling and presumptive mitigation have not been completed because the clay underlying the properties in this area has a total depth of at least 8 feet. This clay creates a natural vapor intrusion barrier. Soil gas data in this area (SG-11 and SG-15R) confirms the protectiveness of this clay. Current human exposures are under control at these locations as required by the AOC.
  - Of the remaining seven houses, a mitigation system has been installed at four of these properties.
  - An indoor air or crawl space sampling event has been completed at the remaining three properties. Concentrations of COCs were below applicable indoor air criteria at all three locations. Consistent with the previously agreed upon sampling strategy (for properties east of the site), TPC intends to complete at least two additional indoor air sampling events or presumptive mitigation at these three properties contingent on site access.
  - To the south, the nearest residential property is located greater than 300 feet side gradient from the area of affected groundwater above the groundwater screening level for vapor intrusion. Groundwater flow in this area is towards the east. Therefore, no further investigation of the vapor intrusion pathway for residential properties south of the site is necessary.

- Concentrations of COCs in groundwater potentially discharging to the River Raisin, when considering the site specific mixing zone based GSI criteria, do not pose unacceptable risks to human health.
- In previous communications, USEPA expressed concern about possible ambient air concentrations from exhaust from sub-slab depressurization systems. Draft calculations indicate that ambient air concentrations are well within acceptable ranges. These calculations are undergoing peer review. Final calculations will be provided to USEPA by November 24, 2015 for discussions during the December 2015 meeting.

TPC continues to work expeditiously to address USEPA comments and questions related to the Human Exposures EI while continuing to develop the CMP. The following outlines TPC's expected timeline for addressing USEPA comments/questions:

- With the issuance of USEPA's VI guidance in July 2015, TPC is updating the exposure pathway analysis using the updated conceptual site model described in the 2015 CSM Report. The exposure pathway evaluation will be provided to USEPA by November 24 so it can be discussed during the December meeting, and will be included in the CMP.
- On September 14, 2015, TRC submitted a Technical Memorandum to USEPA evaluating building-specific conditions relevant to the vapor intrusion pathway for the non-residential building located at 805 S Maumee Street. Using the site-specific attenuation factor, the building specific soil gas screening level of the TCE was calculated. The measured sub-slab soil gas concentrations, and the deep soil gas concentrations around the building perimeter, are both well below the building-specific screening level. On September 18, 2015, TRC and USEPA discussed these calculations. At USEPA's request, TPC agreed to collect one round of indoor air samples from the building; sampling was completed during the week of October 26, 2015. Sample data are pending. These data will be used to verify the site specific vapor intrusion assessment for that property and quantitatively verify that current human exposures are under control at that location.
- Isolated areas with groundwater concentrations above generic groundwater contact criteria were identified during the 2015 HRSC investigation. A preliminary site specific risk assessment indicates that the dermal contact with affected groundwater exposure pathway is acceptable. This evaluation is undergoing peer review prior to finalization and submittal. A final evaluation of the dermal contact with affected groundwater exposure pathway will be provided to USEPA by November 24, 2015 for discussion during the December 2015 meeting and will be included in the CMP.
- Prior to issuance of the 2015 USEPA Vapor Intrusion Guidance, USEPA agreed that OSHA PELs could be used to assess current human exposures at non-residential properties. Based on this agreement and site soil gas data, the volatilization to indoor air migration pathway for purposes of the current human exposures demonstration is acceptable at all non-residential properties. Given USEPA issued final vapor intrusion guidance in June 2015, TPC will follow that guidance to evaluate non-residential structures within the area of impacted

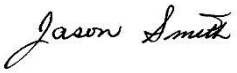
groundwater/soil rather than the OSHA PELs. TPC expects that recommendations related to the non-residential properties will be available on November 24, prior to the December 2015 meeting with USEPA, and will be included in the CMP.

3. Alleged Failure to Identify and Define the Nature and Extent of Releases to Hazardous Waste and Hazardous Constituents at or from the Facility (Paragraph 11 of AOC)

Although there is not inherently a direct causational relationship between successful completion of the EI demonstrations and completion of the remedial investigation, anticipated environmental work to address USEPA comments and questions is described above under sections discussing Alleged Violations 1 and 2. This work includes small-scale focused investigation at two locations to support EI demonstrations and development of the CMP. The GSI pathway evaluation in the vicinity of sample point B-108 and the source area investigation in the vicinity of boring location B-100.

TPC intends to maintain a positive collaborative working relationship with USEPA throughout the completion of this project. TPC has completed a large amount of additional work in the past two years to address USEPA comments and questions. As outlined above, TPC will continue to work in good faith with USEPA to complete the work required under the AOC. We look forward to discussing these matters further during the December 2015 meeting. If you have any questions regarding this NOV response please contact me by phone at (731) 644-8127, by email at jason.smith@tecumseh.com, or any of my team members listed below.

Sincerely,
Tecumseh Products Company



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