**SPOKANE RIVER REGIONAL TOXICS TASK FORCE**

HYDROSEED PILOT PROJECT

SUMMARY REPORT

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Background

The purpose of the Spokane River Regional Toxics Task Force (SRRTTF) is to “work collaboratively to characterize the sources of toxics in the Spokane River and identify and implement appropriate actions needed to make measurable progress towards meeting applicable water quality standards for the State of Washington, State of Idaho, and the Spokane Tribe of Indians and in the interests of public and environmental health.”

In addition, the 2014 legislature adopted Senate Bill 6086 that requires State agencies to establish a purchasing and procurement policy that provides a preference for products that do not contain PCBs (<http://apps.leg.wa.gov/billinfo/summary.aspx?bill=6086&year=2013>). Spokane County and the City of Spokane adopted similar ordinances in response to concerns with PCB impairment of the Spokane River (<https://my.spokanecity.org/smc/?Section=07.06.172>). The City of Spokane’s ordinance requires City departments to purchase PCB-free items (defined as less than the practical quantification limit using EPA Method 1668) if a feasible alternative is available at less than a 25% cost increase. To implement the ordinance, the City is gathering more information about products known to contain PCBs. In 2014, the City sampled Nature’s Own Hydroseed manufactured by Hamilton Manufacturing, Inc. and discovered concentrations of PCBs exceeding 2,500 parts per billion (ppb). In comparison, the current water quality standard for the State of Washington is 170 parts per quadrillion (ppq), equal to 0.000170 ppb.

The Washington State Department of Transportation (WSDOT) has a list of qualified suppliers (attached) of Hydraulically Applied Erosion Control Products (HECPs) that a contractor can select off the list depending on price and their preference for use.  WSDOT also has a 2014 Specification Book for material specifications (attached).  The City of Spokane also uses the WSDOT Specification Book plus a General Special Provisions to supplement the WSDOT specifications as needed ([https://static.spokanecity.org/documents/business/designstandards/general-special-provisions.pdf](https://iep.iepco.com/owa/redir.aspx?C=2507a85e597a404f85005d613ffe7c4a&URL=https%3a%2f%2fstatic.spokanecity.org%2fdocuments%2fbusiness%2fdesignstandards%2fgeneral-special-provisions.pdf)). Unlike the WSDOT, the City currently does not have an approved supplier list for Hydroseed or HECP. The City uses WSDOT policies and procedures for State and Federal funded projects. After contracts go out to bid for City funded projects, the contractor can select anyone they like who meets the project requirements.

The SRRTTF Advisory Committee approved the Hydroseed Analysis and Reformulation PCB Removal Pilot Project during the February, 2015 meeting. This report summarizes findings from the laboratory analysis. Results from this analysis can be used to assist manufacturers of Hydroseed to develop specifications/reformulations with reduced levels of PCBs.

# Project Description

HMI Hamilton Manufacturing, Inc., Rainier, Tensar International Corporation and Terra Novo participated in this pilot project to examine the specific components that may be contributing to PCBs in their end product. The study focused on these particular suppliers due to the widespread distribution of their products into Washington State.

The four suppliers that have agreed to participate in this study have differing base materials and components used in the manufacture of their final product. In general, the Hydroseed products are comprised of a base material, dye, surfactant and tackifier or some combination of the above. The analysis of these four suppliers provides a good cross section of the differing materials and components of Hydroseed products that are distributed throughout the State and confirm if there are variations in PCB content.

Sampling and analysis was performed in accordance with the QAPP used by the City of Spokane, supplemented with the PCB Product Sampling QAPP Addendum for Supplemental Product Sampling: SRRTTF (attached). The QAPP addendum reflects the samples identified in this work plan.

AXYS Analytical Services was used to perform the laboratory testing of the samples. Testing was performed using AXYS in-house method MLA-007 for the quantitative determination by GC and low resolution MS/ECD detection of PCB congeners, total PCBs by congener group, PCBs as Aroclor equivalents, and Total PCB by summing individual congeners. Method MLA-007 has a higher detection limit than EPA 1668, which was used for the City’s previous sampling. Because the PCB concentrations within the City’s original hydroseed sample were relatively high, it was determined that this sensitive and more expensive method was not needed. MLA-007 provided a practical quantification limit (PQL) of 0.2 ppb to about 31 ppb, well below the 2,500 ppb levels detected in the sample analyzed by the City.

# Manufacturer Agreement

HMI Hamilton Manufacturing, Inc., Rainier, Tensar International Corporation and Terra Novo have agreed to participate in this study on the basis that the results will be protected due to the proprietary nature of their various products and blends. Therefore, the project was executed in accordance with an agreement with the suppliers, stipulating that the finish product component analyses remain anonymous.

# Results

Total PCBs using Axys method MLA-007 for each of the four hydroseed brands and associated components are shown in Table 1. Blank corrections were applied to these values when any congener was detected at less than three times the concentration found in the associated laboratory blank. Non-detect values are shown as less than the highest individual congener reporting limit within the sample.

Table 1. Summary of Results (Total PCB, ng/g)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Product #1 | Product #2 | Product #3 | Product #4 |
| Finished Product | <4.47 | <0.294 | **4.65** | <0.284 |
| Base Material | <4.47 | <0.294 | <9.54 | <0.285 |
| Base Material #2 | -- | -- | **0.513** | -- |
| Dye | **1.82** | **2.11** | **0.599** | <0.763 |
| Surfactant | <1.83 | -- | <30.9 | -- |
| Tackifier  | -- | <0.856 | <30.9 | <0.704 |
| Tackifier #2 | -- | **4.89** | -- | -- |
| Tackifier #3 | -- | <0.856 | -- | -- |
| Water | <1.83 | -- | -- | -- |

Notes:

ng/g = nanograms per gram, equivalent to parts per billion.

-- = not applicable (not used in product or supplied to laboratory)

Because of the higher detection limits, very few of the 209 possible PCB congeners were detected in the samples. Therefore, homologue patterns are generally not useful for analysis. Many of the congeners were flagged “NJ” and therefore not included in the total PCB summation. NJ flags are given when a peak is detected in the instrumentation, but did not meet quantification criteria. A value is assigned to the congener that represents the estimated maximum concentration. Each of the samples contained congeners with NJ flags with the exception of the tackifier from Product #4. Total PCBs including NJ flagged congeners can give some insights into where PCB compounds may be found in products, but these data cannot be relied on as reportable total PCB values per QC requirements. The following details as well as Table 1 do not include NJ-flagged congeners.

### Finished Product

The only finish product with detectable PCBs was from Product #3. It was composed of PCB-29. Reporting limits were somewhat higher for the congeners in this sample, up to 9.54 ppb.

### Base Material

Base materials make up the product’s mulch, and can be composed from a number of different feed stocks such as hard or soft wood, paper, cotton, straw, etc. The only base material with detectable PCBs was the second material provided with Product #3. The singular congener detected was PCB-15.

### Dye

Each of the three dye samples containing detectable PCBs (Product #1, #2, and #3) were entirely composed of PCB-209. PCB-209 has been associated with green pigments. In the City’s recent PCB sampling study, PCB-209 was detected in green utility marking paint, yellow and white road paint, and PVC pipe, which has a blue-green color.

### Tackifier

Most of the tackifiers supplied for analysis did not contain detectable PCBs with the exception of Tackifier #2 from Product #2. Unlike the other samples, a variety of different congeners were detected. The homologue pattern for Product #2 Tackifier #2 is shown below. Homologues are groups of congeners with the same level of chlorination.

The Axys data package includes quantification of Aroclors. The Product #2 Tackifier #2 had a detection of Aroclor 1242 at a concentration of 5.56 ng/g (ppb). This is the only Aroclor detection in the dataset.

# Conclusions and Recommendations

Samples from the SRRTTF dataset indicate that the previous City hydroseed sample likely does not represent typical PCB concentrations in hydroseed. However, this study does indicate that PCBs are commonly detected in hydroseed, particularly in the dye and some base materials and tackifiers.

Because of the consistent PCB concentration in the dyes, we recommend that WSDOT and the City of Spokane assess the potential for dye-free hydroseed application. An alternative may be to further research the type of dye used in Product #4, which did not have detectable PCB concentrations per Method MLA-007. It should be determined if this dye is in fact different than the other three dye products, and what the concentration is using EPA Method 1668.

Tackifier #2 in Product #2 had detectable levels of Aroclor 1242 at significant concentrations relative to water quality standards. It is recommended that the manufacturer of Product #2 consider using either tackifiers #1 or #3, or the tackifiers used by the other manufacturers to reduce the potential for PCB contamination.