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Subject: Docket ID No. EPA-HQ-OPPT-2009-0757
Comments on Polychlorinated Biphenyls (PCBs); Reassessment of Use Authorizations
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To Whom It May Concern:

These comments are submitted on behalf of Inland Empire Paper Company (IEP), the Spokane Riverkeeper, and The Lands Council on EPA's Advance Notice of Proposed Rulemaking addressing PCB Reassessment of Use Authorizations. We appreciate the opportunity to comment on this important matter.

As you know, current federal regulations allow exclusions for the use of pigments and inks to contain PCB concentrations up to 50 ppm. These PCB containing pigments and inks are used in printing of newspapers, magazines, and numerous other printed materials. Paper recyclers of old newsprint, magazine and other waste paper products receive trace quantities of these PCB containing products that ultimately end up in the wastewater discharge of the recyclers. Although PCB concentrations in the recycler's discharge are millions or billions of times lower than the Federal allowance, they still may be unable to meet current and forthcoming stringent water quality standards. There are no known commercially available technologies for the removal of PCBs to the levels necessary to meet these water quality criteria, so the only alternative for compliance may be the elimination of paper recycling. Changing the federal regulations to eliminate PCB containing pigments and inks is an obvious solution as opposed to the elimination of paper

recycling or the closure of mills unable to comply with new water quality standards, which has obvious environmental and economic consequences.

Although the emphasis of this comment letter is on the impact of PCB containing pigments on the recycled paper industry, it is important to note that these same pigments are also used in the manufacture of commercial paint products. Congener fingerprint correlations suggest that leaching of PCB-containing paints are a likely source of PCB contamination directly into receiving waters and into municipal wastewater treatment systems. This also creates another impact path to recycle paper plants that are hit with PCB-containing pigment contamination in both the source water supply and the recycle paper raw material supply.

Background:

The State of New York performed a study of PCBs in paper mill effluents during the period 1976 to 1978. The study found that some inks contained PCBs and consequently, effluents from paper mills processing recycled paper had the potential for containing PCBs. The New York study concluded that an effluent PCB concentration of less than 1 ppb was an accurate characterization of the mills studied that used recycled paper stock.

EPA, subsequent to the enactment of the Clean Water Act of 1977, included toxic and non-conventional pollutants in its studies of paper mills in preparation of its development document for effluent limitations guidelines and standards for the pulp and paper industry point source category. Studies were conducted in 1978 to 1980. Initial screening and subsequent verification testing showed that only mills that processed wastepaper had any potential for effluent PCBs. Sampling showed that mills using wastepaper all had effluent PCB concentrations at non-detectable or less than 1 μg/L.

When EPA initially banned PCB manufacturing and/or restricted PCB uses, some authorized uses remained. The following was included (*see* 40 C.F.R. § 761.3 (g) up to the 1999 revision of the C.F.R., thereafter paragraph (g) is reserved):

> *(g) Pigments. Diarylide and Phthalocyanin pigments that contain 50 ppm or greater PCB may be processed, distributed in commerce, and used in a manner other than a totally enclosed manner until January 1, 1982, except that after July 1, 1979, processing and distribution in commerce of diarylide or phthalocyanin pigments that contain 50 ppm or greater PCB is permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).*

Revisions of the C.F.R. after 1999 do not list this authorized use. From that time forward, pigments were presumably regulated under the general 50 ppm restriction. Although the specific pigment exemption noted above has expired, other provisions in the current regulations allow continued manufacturing, import, and/or use of non-Aroclor contaminated pigments. Specifically, 40 C.F.R. § 761.1(f) states:

> *(f) Unless and until superseded by any new more stringent regulations issued under EPA authorities, or any permits or any pretreatment requirements issued by EPA, a state or local government that affect release of PCBs to any particular medium:*

*(1) Persons who inadvertently manufacture or import PCBs generated as **unintentional impurities in excluded manufacturing processes*** [emphasis added], *as defined in § 761.3, are exempt from the requirements of subpart B of this part, provided that such persons comply with subpart J of this part, as applicable.*

(2) Persons who process, distribute in commerce, or use products containing PCBs generated in excluded manufacturing processes defined in § 761.3 are exempt from the requirements of subpart B provided that such persons comply with subpart J of this part, as applicable.

(3) Persons who process, distribute in commerce, or use products containing recycled PCBs defined in § 761.3, are exempt from the requirements of subpart B of this part, provided that such persons comply with subpart J of this part, as applicable.

(4) Except as provided in § 761.20 (d) and (e), persons who process, distribute in commerce, or use products containing excluded PCB products as defined in § 761.3, are exempt from the requirements of subpart B of this part.

This provides significant relief for excluded manufacturing processes if PCBs are inadvertently produced therein. 40 C.F.R. § 761.3 defines excluded manufacturing processes as:

Excluded manufacturing process means a manufacturing process in which quantities of PCBs, as determined in accordance with the definition of inadvertently generated PCBs, calculated as defined, and from which releases to products, air, and water meet the requirements of paragraphs (1) through (5) of this definition, or the importation of products containing PCBs as unintentional impurities, which products meet the requirements of paragraphs (1) and (2) of this definition.

Paragraph (1) of that same subsection goes on to state:

The concentration of inadvertently generated PCBs in products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm, with a 50 ppm maximum.

Similar language is found in the definition of excluded PCB products (40 C.F.R. § 761.3):

Excluded PCB products means PCB materials which appear at concentrations less than 50 ppm, including but not limited to:

(1) Non-Aroclor inadvertently generated PCBs as a byproduct or impurity resulting from a chemical manufacturing process.

As discussed in the following section, many pigment manufacturing processes inadvertently produce non-Aroclor PCBs as an unintentional by-product. Thus, the citations noted above provide legal exemptions for both manufacturing and importing the pigments. Another citation relevant to the subject of PCBs in pigments is found in 40 C.F.R. § 761.3:

PCB and PCBs means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which

> *contains such substance. Refer to § 761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB items are defined in § 761.3. For any purposes under this part,* ***inadvertently generated non-Aroclor PCBs are defined as the total PCBs calculated following division of the quantity of monochlorinated biphenyls by 50 and dichlorinated biphenyls by 5*** [emphasis added].

This definition has particular relevance to allowable levels of mono- and di-chlorinated biphenyls that are found in diarylide yellow pigments (also termed dichlorobenzidine-based pigments). Diarylide-based pigments (including yellows and oranges) are widely used in printing inks. One of the manufacturing processes uses dichlorobenzidine. As a result, diarylide pigments end up contaminated with PCB-11 (3,3′-dichlorobiphenyl).

Another class of pigments widely used in printing inks that may contain trace PCB contamination is the phthalocyanin blues and greens. The crude phthalocyanin base material can be manufactured by two different processes; one uses a non-chlorinated solvent and is considered PCB free and the other uses either o-dichlorobenzene or 1,2,4-trichlorobenzene as the reaction solvent. These solvents often contain low levels of other isomers, so when they couple in the phthalocyanin process (to form PCBs) they produce a complex mixture. The predominant PCBs are generally penta- and hexa-substituted, with lower levels of tetra-substituted PCBs. Phthalocyanin Green 7 (Pigment Green 7) is produced by per-chlorinating the crude phthalocyanin base material. The resulting PCB contamination is essentially all decachlorobiphenyl (PCB-209).

The fingerprint from a given manufacturer will be relatively consistent, but because different manufacturers use different solvents and/or suppliers of a given solvent there is no single fingerprint. Many (perhaps most) of these pigments are produced overseas and are sold to the United States through commodity brokers. These brokers buy from the cheapest sources and often blend pigments from different sources so, in effect, each batch has a unique fingerprint.

Inks produced from the blending of these various pigments are used in printing newsprint, magazines and other printed materials. In 2009, a record-high 63.4% of the paper used in the United States was recovered for recycling. When processing the recycled old newsprint (ONP), including magazines, directories, office waste and other printed materials, the ink containing PCB's are removed from the pulp fiber. Ultimately, the majority of these residual PCBs end up in the recycler's wastewater that is discharged from the plant.

Recent research conducted by Rutgers University and the University of Iowa have identified specific PCB congeners associated with the manufacture of commercial paint products. The presence of the specific congener fingerprints associated with the pigments in these paint products have been discovered all over the globe including the Polar Regions. The widespread distribution of these PCB fingerprints indicates volatilization or erosion of these compounds from painted surfaces. This conclusion appears to be consistent with the discovery of these same compounds in some receiving waters and municipal wastewater treatment plants that otherwise have no apparent source of PCB contamination.

In the United States, the Clean Water Act requires that all water bodies meet applicable water quality standards for various pollutants. Those water bodies not meeting applicable water quality standards are subject to a water quality attainment plan or Total Maximum Daily Load (TMDL). In the Pacific Northwest, fish consumption, often by tribal communities, requires that water

quality standards for toxics, such as PCBs, are at extremely low limits, sometime below the limits of treatment technologies. The federal allowance for PCB manufacturing use exclusions will begin to play a major role in the assessment of various water bodies throughout the United States, especially that exclusion for pigments, paints and inks and their impact on the recycling industry. Controlling the source of PCBs into materials that may ultimately end up in our water bodies is more effective from an economic and environmental perspective than attempting to remove them via treatment technology.

An example of the above is well illustrated from our watershed: the Spokane River.

Prior to 1991, Inland Empire Paper Company's (IEP) effluent stream was free of PCBs as confirmed by the Washington State Department of Ecology (Ecology) Class II inspections and NPDES permit application testing. Furthermore, US EPA research studies performed from 1976 to 1978 showed no conclusive evidence of PCBs in pulp and paper mills processing "virgin" wood stock. The State of New York also performed a study of PCBs in paper mill effluents during the period 1976 to 1978. All mills using virgin stock (wood chips, etc.) were eliminated from the study as they found no potential for PCBs in those effluents. IEP used only virgin wood fiber for pulp manufacturing until 1991.

In the 1980's there was a movement towards recycling of ONP, resulting in customer demand for recycled fiber in IEP's finished paper products. In addition, a law was enacted in California that required publishers to include a minimum percentage of ONP content. In order to remain a viable business and meet this demand, IEP invested $13M into a new ONP recycling process that began production in September 1991.

In May 2001, Ecology sampled effluents and collected biosolids from five (5) municipal and industrial dischargers to the Spokane River for PCB analysis. Low-level PCB detections were reported from all of the municipal and industrial discharges. Total PCB congeners for IEP's effluent sample was reported at 2,436 pg/L (picograms per Liter), a concentration that is 20.5 million times lower than the TSCA threshold for excluded PCB products (50 ppm).

The Spokane River is on the §303(d) listing for impaired water bodies for PCB contamination. As a result, Ecology is responsible for the development of a Total Maximum Daily Load (TMDL) water quality attainment plan. The draft PCB TMDL report developed for the Spokane River[1] assigns a waste load allocation (WLA) to IEP of 5.32 pg/L based on fish consumption estimates for the downstream Spokane Tribe of Indians. This WLA concentration is below current detection limits and is over 9 billion times lower than the TSCA threshold for excluded PCB products (50 ppm). The presence of PCBs in IEP's discharge is ultimately due to the allowance provided by the Federal TSCA guidelines.

The PCB concentrations in IEP's effluent are extremely low and not conducive for efficient and effective removal. There are no commercially available technologies that are effective for reducing already low levels of PCBs to the stringent levels proposed by the TMDL. Numerous state-of-the-art treatment technologies (membrane filtration, dual sand filtration, multi-media filters, ballasted clarification and others) were tested for PCB removal that resulted in no

[1] Available at http://www.ecy.wa.gov/pubs/0603024.pdf .

apparent reduction of PCBs in IEP's effluent. Currently, the only viable alternative for reducing PCBs from IEP's effluent is the elimination of the recycling process.

Elimination of the recycling process at IEP has the potential to set a precedent throughout the rest of the pulp and paper industry with the elimination or significant reduction of ONP recycling in the United States. Furthermore, elimination of recycling may cause IEP irreparable harm due to its inability to offer recycled content paper products. Elimination of paper recycling does not solve the PCB problem, but simply moves it from one location within the environment to another. The enormous amount of paper currently being recycled would need to be disposed of through landfills or incineration, potentially reentering the environment through groundwater contamination or air emissions. Source reduction of PCB containing pigments and other chemical products certainly offer a more reasonable solution versus the elimination of recycling.

Suggested Alternatives and Substitute Language:

Suggestion #1: *Eliminate all federal exclusions or exceptions for inadvertently formed PCB's as a byproduct or impurity in chemical manufacturing processes. Products of such processes shall have non-detectable levels of PCBs using EPA Method 1668.*

The trace amount of PCBs that are present in various pigments are not used in the manufacture of these pigments, but are inadvertently produced as a by-product through the complex reaction of chlorinated solvents used in the manufacturing process. Industry experts believe that alternative methods using non-chlorinated solvents are available to manufacture pigments that are currently produced using chlorinated solvents in most cases. Those that cannot be reproduced with an alternate manufacturing method (if any) should simply be eliminated on the basis of environmental stewardship.

However, there has been no incentive to move towards non-chlorinated manufacturing methods, likely due to economics, historic manufacturing methods and the lack of motivation to do so due to environmental exemption provided by the TSCA regulations. Modifying the TSCA regulations to "PCB-free" chemical products will provide incentive to alter manufacturing practices to fill this product demand.

The manufacturing of pigments used in paints and inks is an international industry. Most (if not all) base pigments are manufactured overseas. Implementation of an import ban of PCB-containing pigments in the United States will force the international community towards the manufacture of "PCB-free" products. Pigment manufacturers will develop alternative manufacturing processes or eliminate certain PCB-containing pigments to comply with U.S. standards in lieu of forfeiting this significant market share. Because these PCB free pigments would then be offered for sale to other foreign markets, this would have the added benefit of reducing the amount of PCBs imported into the U.S. since materials printed overseas and imported into the U.S. would subsequently have lower PCB levels. Achieving this lower net import of PCBs would be nearly impossible by any other mechanism.

The objective of this ANPRM is to reassess the current use authorizations for certain PCB uses to determine whether they may now pose an unreasonable risk to human health and the environment. Section 6(e)(2)(B) of the Toxics Substance Control Act (TSCA) provides EPA with the authority to issue regulations allowing the use and distribution in commerce of PCBs in

a manner other than in a totally enclosed manner if the EPA Administrator finds that the use and distribution in commerce will not present an unreasonable risk of injury to health or the environment. The 50 ppm level for excluded products in the TSCA regulations has allowed for the use of chemical products that have entered the ecosystem through the recycling process and other pathways that now present an unreasonable risk of injury to health and the environment. Therefore, U.S. EPA is obligated to make changes to its rules and regulations to protect human health and the environment.

Suggestion #2: *Monochloro-biphenyls and Dichloro-biphenyls should be excluded from total PCB regulation due to lower potential for bioaccumulation and human health toxicity.*

Mono and dichloro-biphenyls have generally been regarded as considerably less important with respect to both bioaccumulation and human health and environmental impacts than more highly substituted PCB congeners. Information published in peer reviewed literature and presented by U.S. EPA and the Agency for Toxic Substances and Disease Registry (ATSDR) shows that the physical/chemical properties of mono and dichloro-biphenyls do not favor the accumulation of these congeners in biological tissues, including fish, relative to more highly chlorinated PCB congeners. Further, these congeners generally play a smaller role in concerns over PCB contamination in aquatic systems. Research on the fate and transport of PCBs in the aquatic environment has established that the bioaccumulation of PCB congeners in aquatic organisms including fish is related to the degree of chlorine substitution.

PCB congener data from the Spokane River published by the Washington State Department of Ecology indicates that mono and dichloro-biphenlys comprise a small component of total PCB found in fish collected from Plantes Ferry Park and Greene Street (WDOE 2001) [2] and Long Lake (WDOE 2002) [3]. This is consistent with the relatively low bioaccumulation expected for these PCB congeners.

In addition to lower expected bioaccumulation, the level of human and environmental health concern attributed to mono and dichloro-biphenyls is generally also lower than that of more highly chlorinated congeners. For example, none of these congeners are among the 12 congeners identified by U.S. EPA as "dioxin-like" that are generally considered to pose the largest PCB related environmental and human health concerns. EPA, in a summary of conclusions from their 1996 cancer reassessment, states, "The types of PCBs that tend to bioaccumulate in fish and other animals and bind to sediments happen to be the most carcinogenic components of PCB mixtures."

Further, in U.S. EPA's "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories," only one of 18 congeners recommended for quantitation to support the development of fish consumption advisories is a dichloro-biphenyl (2,4'-CB, PCB-8). The recommendation to include this congener is based on a NOAA procedure for using congener data to estimate total PCB concentrations rather than on specific toxicity concerns. No mono- or dichlorobiphenyl congeners are identified as either first or second priorities "for potential environmental importance based on potential for toxicity, frequency of occurrence in environmental samples, and relative abundance in animal tissues."

[2] Available at http://www.ecy.wa.gov/pubs/0103015.pdf.
[3] Available at http://www.ecy.wa.gov/pubs/0203049.pdf.

A significant percentage of PCB congeners associated with the recycling process are monochloro, dichloro, trichloro and tetrachloro-biphenyls. The lower chlorine congeners are known to have lower toxicity and are not as persistent and bio-accumulative as higher chlorine congeners, resulting in a low potential for exposure to humans. Because of this low risk factor, monochlorinated and dichlorinated biphenyls are not regulated in the European Union and Canada.

EPA's Office of Water, which is responsible for the implementation of the Clean Water Act, has interpreted or defined PCBs in a manner that treats all levels of chlorination the same and with no consideration of the lesser bioaccumulation or toxicity of the mono and di-chloro congeners. Current TSCA treatment of these congeners allow 50 and 5 times higher levels of these relative to the Aroclor PCBs. Because of the water quality issues discussed above, the TSCA regulations should be brought into alignment with the current Office of Water interpretation otherwise the Agency's treatment of PCBs could be viewed as arbitrary and capricious.

We appreciate the opportunity to provide comment on the PCB ANPRM. Please contact us should you have any questions or require additional information.

Regards,

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