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April 27, 2014

Honorable John Shimkus, Chairman
U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Environment and
the Economy

Honorable Paul Tonko, Ranking Member
U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Environment and
the Economy

Subject: Testimony for the Hearing Record on TSCA and the Chemicals in Commerce Act

Dear Mr. Chairman and Representative Tonko,

The attached testimony is submitted on behalf of NORA, An Association of Responsible Recyclers. Please include it in the hearing record on TSCA and the Chemicals in Commerce Act. The attached Brinkman article is referenced in the testimony and should also be included in the hearing record.

The testimony describes how TSCA's PCB regulations are interfering with responsible recycling of used oil. It also explains how TSCA should be revised to prevent and address PCB contamination of used oil.

If you or members of your staff have any questions about this request or the attached testimony, please do not hesitate to contact me.

NORA and its' member companies look forward to working with you on this problem and hope that you will be willing to address it with an amendment to TSCA in the next version of the Chemicals in Commerce Act.

Sincerely,

Steven Shimberg

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Statement of
NORA, An Association of Responsible Recyclers

Amending the Toxic Substances Control Act to
Prevent and Address PCB Contamination of Used Oil

Submitted to the
Committee on Energy and Commerce
Subcommittee on Environment and the Economy
For the 2014 Hearing Record on
The Chemicals in Commerce Act

Summary

Key messages:

- TSCA's PCB regulations are interfering with responsible recycling of used oil.
- TSCA needs to be revised to prevent and address PCB contamination of used oil.

There are two problems:

1. EPA's anti-dilution rule[1] is an effective deterrent against intentional dilution of PCBs. However, when applied to *unintentional* dilution of PCBs it is not an effective deterrent and results in punitive and costly "remedial" measures as well as the unnecessary destruction of usable and valuable oil.
    - Although the production of PCBs in the United States was terminated in 1977, PCBs remain in use or are improperly stored. Despite the increased efforts of used oil recyclers to avoid PCBs, PCB contamination incidents continue to occur.
    - Over the past few years, used oil recyclers who are (i) complying with EPA's Standards for Management of Used Oil (40 CFR Part 279) *and* (ii) using voluntary compliance programs that go beyond what is required *and* (iii) self-disclosing incidents of PCB contamination to EPA, have been forced to destroy the oil in a TSCA incinerator – an expensive and wasteful activity that prevents legitimate recycling of the oil – *even when PCB concentrations are below 50 ppm.*
    - But for the anti-dilution rule, oil with such low levels of PCBs can be lawfully re-refined in hydrotreatment facilities or burned for energy recovery in industrial furnaces, kilns or boilers. [2]

1 The rule provides that "[n]o person may avoid any provision specifying a PCB concentration by diluting the PCBs, unless otherwise specifically provided." 40 CFR761.1(b)(5)

2 See 40 CFR 761.20(e) and 40 CFR Part 279. Similarly, but for the anti-dilution rule, oil containing between 50 and 499 ppm of PCBs can be lawfully re-refined or burned for energy recovery in high efficiency boilers as provided in 40 CFR 761.60(a) and 761.71.

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2. DOE has found that "to achieve maximum energy conservation and environmental benefit, it is generally preferable to re-refine used oil".[3] Although technology exists to destroy PCBs while re-refining used oil that has been contaminated with PCBs and to prepare the oil for reuse, EPA's regulations make it unnecessarily difficult and time consuming to get the approvals needed to use these technologies.[4]

The solutions:

1. Create a conditional exception to the anti-dilution rule. The exception would apply only to used oil recyclers who meet certain conditions and comply with "best management practices" that go beyond the requirements of current law to prevent PCB contamination of used oil. The exception would allow those used oil recyclers to manage PCB-contaminated used oil in its "as found" concentration. The "as found" approach is very similar to EPA's regulatory exception for remediation waste (see 40 CFR 761.61(a)).

2. Direct EPA to promulgate regulations that will streamline the approval process for re-refining PCB-contaminated used oil, an environmentally and economically sound management practice. Such regulations will –

   (a) Establish performance standards for technologies, including hydro-treatment, that can destroy PCBs and, unlike incineration, recycle and prepare contaminated oil for productive reuse; and

   (b) Create a simplified, standardized permit by rule for facilities meeting such performance standards.

3 *Used Oil Re-refining Study to Address Energy Policy Act of 2005 Section 1838*, http://fossil.energy.gov/epact/used_oil_report.pdf at 1-5. The report notes at 1-5 that "recycling used oil only for its heating value is a sub-optimum disposition compared to refining it into lube base oil, the highest ultimate value disposition."

4 EPA regulations authorize issuance of a waiver from the incineration requirement for alternative methods of destroying PCBs if such alternative method can achieve a level of performance equivalent to an incinerator or a high efficiency boiler (40 CFR 761.60(e)). However, the waiver process is unnecessarily cumbersome and expensive.

Statement

NORA, An Association of Responsible Recyclers, appreciates this opportunity to submit a statement for the hearing record about the need for a TSCA amendment to prevent and address PCB contamination of used oil.

NORA represents more than 380 private, for-profit companies located primarily in the United States. The vast majority of NORA members are small, family-owned or privately-held businesses that provide recycling services and/or recycling-related products. Our members operate all across the country and provide employment for over 150,000 Americans. The average NORA member collects about 10 million gallons of used oil and related materials, such as oil filters, each year.

Used oil recyclers collect, process and market nearly one billion gallons of used oil and related materials each year. Every day, NORA members run collection routes to ensure that used oil is responsibly collected, transported and recycled.

Unfortunately, TSCA's PCB regulations are interfering with responsible recycling of used oil. This is a problem because:

Recycling Used Oil Is Good for the Environment and the Economy[5]

- Two hundred million gallons of used oil are improperly disposed of each year.
- Used oil from one automobile oil change can contaminate one million gallons of fresh water — a years' supply for 50 people.
- Used motor oil can be re-refined into new oil, processed into fuel oil, or used as used as raw material for the petroleum industry.
- One gallon of used oil processed for fuel contains about 140,000 British Thermal Units (BTUs) of energy.
- Recycling just 2 gallons of used oil can generate enough electricity to run the average household for almost 24 hours.
- If all the used oil from American do-it-yourself oil changers were recycled, it would be enough motor oil for more than 50 million cars a year.
- Re-refining used oil takes only about one-third the energy of refining crude oil to lubricant quality.
- It takes 42 gallons of crude oil, but only 1 gallon of used oil, to produce 2.5 quarts of new, high-quality lubricating oil.
- Recycling used oil keeps it from polluting soil and water, conserves a valuable resource and lessens our dependence on unstable or hostile governments.

Major Used Oil Flows[6]

Most used motor oils are generated either through "do it yourself" (DIY) or "do it for me" (DIFM) channels. DIY oils are either gathered by collectors or improperly disposed of. DIFM oil is gathered and then either burned as a fuel or transferred to a re-refining operation. Used oil that has been collected is subsequently processed to extract marketable byproducts (fuels and asphalt) and to remove contaminants. When it is re-refined, the resulting base oil becomes the primary ingredient in good-as-new motor oil and industrial lubricants.

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5 Source: US Environmental Protection Agency. See,
http://www.epa.gov/epawaste/conserve/materials/usedoil/oil.htm,
http://www.epa.gov/epawaste/conserve/materials/usedoil/index.htm,
http://www.epa.gov/epawaste/conserve/materials/usedoil/usedoil.htm,

6 Source: US Department of Energy, *Used Oil Re-refining Study to Address Energy Policy Act of 2005 Section 1838* at http://fossil.energy.gov/epact/used_oil_report.pdf at 9-12.

Used industrial oils generally follow the same path as used motor oils except that they do not have a DIY channel. Both vehicle and industrial oils have some portion that is consumed in operation that is unavailable for recycling or regeneration.

Re-Refined Engine and Industrial Oils

Used oil can be re-refined into lubricants, processed into fuel oil, or used as raw material for the refining and petrochemical industries. The re-refining process enables the used oil to be reused multiple times as a lubricant.[7] In the history of this industry, some early efforts at re-refining were unsuccessful, but the modern technologies that were implemented starting in the 1980s allowed producers to make good-as-new lubricants. Today, there are seven significant re-refining plants in North America (five in the United States and two in Canada), and several more have been announced or are under construction. All seven re-refineries employ the same basic processing steps described below: vacuum distillation, followed by hydrotreating. These steps mirror the processes used in a traditional refinery to produce lube oil from crude oil.

The new re-refined lube oil must meet the same stringent performance standards as virgin oil for use in automotive, heavy-duty diesel, and other internal combustion engines, and hydraulic fluids and gear oils. Extensive laboratory testing and field studies conclude that re-refined oil is equivalent to virgin oil—it passes all prescribed tests and, in some situations, even outperforms virgin oil.[8] Re-refined motor oil has been used extensively by the U.S. Postal Service [9], and is procured for use in Department of Defense vehicles by the Defense Logistics Agency .[10]

Re-Refining Process[11]

A typical used oil re-refining facility uses a process that has two key steps: vacuum distillation and hydrotreating. The process is very similar to the refining of crude oil.

Step 1: Vacuum Distillation
In general, vacuum distillation separates different fractions of a material due to the differences in their boiling points in a vertical column. Higher temperature boiling components stay at the bottom of the column, lighter boiling components are vaporized and exit at the top. The use of heat and vacuum promote the vaporization of materials that would normally remain liquids at ambient temperature and pressure.

In re-refining, an evaporation process is used to remove water. Then light fuels and antifreeze (ethylene glycol) are separated from the oil and collected.

Further vacuum distillation of the oil phase extracts the lubricating oil, leaving behind the heaviest compounds containing tar, particulates and polymers. This heavy residue is often marketed as an asphalt additive, where it is valued for its ability to add plasticity to the asphalt mix. Metals that are present in used oil are also solidified in this asphalt byproduct, where they pose minimal environmental risk. [12]

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7 Source: California Integrated Waste Management Board, see http://www.calrecycle.ca.gov/publications/Documents/UsedOil%5C61008008.pdf, page 21.

8 Source: US EPA, see http://www.epa.gov/epawaste/conserve/materials/usedoil/oil.htm.The American Petroleum Institute characterizes the re-refining process as "very similar to the refining of crude oil",

9 Source: US Postal Service, see http://about.usps.com/postal-bulletin/2012/pb22334/html/cover_018.htm.

10 Source: US EPA, see http://www.epa.gov/epp/pubs/case/dlaoil.htm

11 A more detailed description of the re-refining process can be found in the DOE *Used Oil Re-refining Study* at 9-14.

12 Source: US Department of Energy, *Used Oil Re-refining Study to Address Energy Policy Act of 2005 Section 1838*,http://fossil.energy.gov/epact/used_oil_report.pdf at 1-5.

PCB molecules have a boiling point range that is very similar to lubricating oil. As a result, any PCBs in the used oil tend to remain with the lube oil fraction which is subsequently sent to a hydrotreater where the PCBs are broken down and destroyed.

Step 2: Hydrotreating
After removing the water, fuel, glycol, and heavy residue, the remaining oil is processed via hydrotreating. This step exposes the oil to hydrogen gas at high temperature and pressure, in the presence of a catalyst. The hydrotreating removes sulfur, nitrogen, chlorine, heavy metals and other impurities. As explained below, the hydrotreating process is a form of catalytic hydrogenation which destroys PCBs and creates clean base oil for the production of engine oils, hydraulic fluids and other lubricants.

Re-Refining – A Non-Thermal Alternative Method of PCB Disposal

As noted in a 1995 paper by Brinkman, Dickson and Wilkinson[13]:

- The chemical structure of PCBs makes them very susceptible to dechlorination via catalytic hydrogenation because all of the chlorine atoms are exocyclic (extending outside of the benzene rings).

- The chemistry involved in the catalytic destruction of PCBs has been well documented.

- Most of the used oil re-refining technology installed within recent years has included a catalytic hydrogenation finishing step. This involves the mixing of gaseous hydrogen at relatively high pressures with the liquid to be treated. The mixture is heated and passed down a vertical column of solid catalyst,….The high pressure and temperature and the catalyst dramatically speed up reactions that would occur very slowly under ambient conditions.

- On the basis of exhaustive testing, the efficient destruction of PCBs by catalytic hydrodechlorination within a commercial process has been verified. Complete conversion is attainable at relatively mild conditions.

- The long residence time in the reactor and the carefully controlled hydrogen atmosphere actually make the chemistry more predictable than that found in an incinerator, where the presence of oxygen might lead to dioxin, furan, and other byproducts in a gaseous state.

- Being liquids, all streams from the vacuum distillation/hydrotreating process can be isolated, analyzed to demonstrate conversion, and re-introduced to the hydrotreater if any PCBs remain. Thus, catalytic dechlorination would seem to be a preferred pathway for PCB destruction.

In response to an application submitted in May 2009 by Hydrodec North America, EPA recently determined that Hydrodec's catalytic hydrogenation system demonstrated the ability to treat contaminated oil to PCB levels below 2 ppm, meeting EPA's performance standard. [14] In June 2012, more than three years after the application was submitted, EPA issued a PCB Alternative Treatment Disposal Approval to Hydrodec [15].

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13 Brinkman, Dickson and Wilkinson, Full-Scale Hydrotreatment of Polychlorinated Biphenyls in the Presence of Used Lubricating Oils, Environ. Sci. Technol. 1995, 29, 87-91. A copy of the paper is attached to this statement.

14 See letter dated April 23, 2012 from Suzanne Rudzinski, Director, EPA Office of Resource Conservation and Recovery to Michael Pitcher, Manager, North America Operation, Hydrodec North America and attached draft PCB disposal permit for public comment at http://www.epa.gov/wastes/hazard/tsd/pcbs/pubs/hydrodec-draft-approval.pdf See also supporting materials at http://www.epa.gov/epawaste/hazard/tsd/pcbs/hydrodec.htm .

15 See http://www.hydrodec.com/download/pdf/press-release/PCB_contaminated_waste.pdf

EPA has also issued a TSCA permit to the Safety-Kleen Oil Recovery Co. re-refining facility in East Chicago, Indiana for catalytic hydrogenation destruction of PCBs in used oil. It took many years between application and issuance of the permit.

The Problems and Suggested Solutions

As noted above, TSCA's PCB regulations are interfering with responsible recycling of used oil. As a result, TSCA needs to be revised to prevent and address PCB contamination of used oil.

Problem No. 1:

EPA's anti-dilution rule[16] is an effective deterrent against intentional dilution of PCBs. However, when applied to *unintentional* dilution of PCBs it is not a deterrent and results in punitive and costly "remedial" measures as well as the unnecessary destruction of usable and valuable oil.

Although the production of PCBs in the United States was terminated in 1977, PCBs remain in use or are improperly stored. Despite the best efforts of used oil recyclers to avoid it, PCB contamination incident continue to occur. In many cases, the owner of the equipment containing the PCBs (usually electrical or hydraulic equipment) is not aware that the equipment contains PCBs. Consequently, when such equipment is eventually dismantled, sold for scrap, or otherwise discarded, the PCB oil is improperly disposed of – often at DIY used oil collection facilities.

Over the past few years, used oil recyclers who are (i) complying with EPA's Standards for Management of Used Oil (40 CFR Part 279) *and* (ii) using voluntary compliance programs that go beyond what is required *and* (iii) self-disclosing incidents of PCB contamination to EPA, have been forced to destroy the oil in a TSCA incinerator – an extremely expensive and wasteful activity that prevents recycling of the oil – *even when PCB concentrations are below 50 ppm*.

But for the anti-dilution rule, oil with such low levels of PCBs can be lawfully re-refined in hydro-treatment facilities or burned for energy recovery in industrial furnaces, kilns or boilers. [17]

Solution to Problem No. 1:

Create a conditional exception to the anti-dilution rule. The exception would apply only to used oil recyclers who meet certain conditions and comply with "best management practices" that go beyond the requirements of current law to prevent PCB contamination of used oil. The exception would allow those used oil recyclers to manage PCB-contaminated used oil in its "as found" concentration. The "as found" approach is similar to EPA's regulatory exception for remediation waste (see 40 CFR 761.61).

We have specific suggestions on how to define "best management practices" and look forward to working with the Committee on the specifics of an amendment.

Problem No. 2:

Although technology exists to destroy PCBs while re-refining used oil that has been contaminated with PCBs and to prepare the oil for reuse, EPA's regulations make it unnecessarily difficult and time consuming to obtain the approvals needed to use these technologies.

16 The rule provides that "[n]o person may avoid any provision specifying a PCB concentration by diluting the PCBs, unless otherwise specifically provided." 40 CFR761.1(b)(5)

17 But for the anti-dilution rule, oil containing between 50 and 499 ppm of PCBs can be lawfully re-refined or burned for energy recovery in high efficiency boilers as provided in 40 CFR 761.60(a) and 761.71.

Solution to Problem No. 2:

Direct EPA to promulgate regulations that will streamline the approval process for re-refining PCB contaminated used oil, an environmentally and economically sound management practice. The regulations will –

(a) Establish performance standards for technologies, including hydro-treatment, that can destroy PCBs and, unlike incineration, recycle and prepare contaminated oil for productive reuse; and

(b) Create a simplified, standardized permit by rule for facilities meeting such performance standards.

Conclusion

The responsible recycling of used oil provides substantial environmental and economic benefits. Despite the increased efforts of used oil recyclers to identify and isolate PCB-contaminated oil, PCB contamination incidents continue to occur. By using best management practices and current technologies, instances of contamination can be reduced and any used oil that does become contaminated can be managed in an environmentally and economically sound manner that preserves the benefits of used oil recycling.

The problem is that EPA's current TSCA PCB regulations are outdated and are interfering with responsible recycling of used oil. For that reason, TSCA needs to be revised to prevent and address PCB contamination of used oil.

Respectfully submitted,

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