The attached guidance “Used Oil Recycling for Handlers- Satisfying the Rebuttable Presumption” was developed to inform and provide direction for external stakeholders who are responsible for identifying whether used oil has been mixed with hazardous waste. This document is a summary of state and federal regulations and recommended work practices for used oil recyclers in Wisconsin.

We are now soliciting comments from the public on this guidance. Once the 21 day notice period is complete, all comments will be considered, revisions will be made to the guidance documents as needed, and final guidance will be made available to internal and external stakeholders. Comments related to this draft guidance document should be sent to:
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# Used Oil Recycling for Handlers
## Satisfying the Rebuttable Presumption

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Used oil is a valuable commodity. It can be recycled or reused only if it has not been mixed with hazardous waste. Companies can assure the used oil collected can be managed under NR 679 Used Oil Management Standards* by educating employees, using best management practices and engaging in good housekeeping. Many types of oil or oil-based products can become used oil as defined in NR 679.01(12) Wisconsin Administrative Code. Used oil is any oil that has been refined from crude oil, or synthetic oil, that has been used and as a result of the use is contaminated by physical or chemical impurities.

*Chapter NR 679, Wisconsin Administrative Code is similar to the federal regulations in 40 CFR 279. This document will reference the state regulations unless the federal regulations are specified.

**Used oil includes**: motor oils, greases, emulsions, machine shop coolants, heating media, brake fluids, transmission fluids, other hydraulic fluids, electrical insulating fluids, metal working fluids and refrigeration oils.

**Used oil does not include**: fuel product storage tanks bottoms, fuel product spill cleanup material, other waste that results from oil that has been used, animal and vegetable oils and greases, antifreeze and materials used as cleaning agents or only for their solvent properties.

### Collecting Used Oil for Recycling

When collecting used oil for recycling, generators must keep waste streams separate to provide a valuable product for recycling. Training employees and providing separate labelled containers and locations for wastestream collection can ensure wastestream (i.e. used oil, solvents and antifreeze) are kept separate and suitable for recycling.

To collect used oil, tanker trucks are sent to a variety of customer locations on a regular basis. The tanker truck is filled with used oil from multiple customers allowing used oil to be mixed. Due to PCB contamination of used oil, the industry standard is to collect a sample of used oil from each customer, known as a retain sample, before adding it to the tanker truck. This sample is then available should further analysis be needed to identify the source of contamination un-attributable to original product or use. “Guard” tanks are sometimes used to keep loads of used oil separate until analytical results can confirm the used oil is not hazardous waste and/or does not contains PCBs.

Used oil transporters must notify in accordance with s. NR 660.07 and obtain an EPA identification number. In addition, they must obtain a solid waste transporter license as described in s. NR 502.06. If hauling hazardous waste, the transporter must also have a hazardous waste transporter license, as described in s. NR 663.13.

## Used Oil Analytical Methods

When requesting used oil lab analysis, generators should use US EPA's SW 846 methods for used oil (see US EPA Resources #4 and #6). If the rebuttable presumption is not met the wastestream must be handled and disposed as hazardous waste in the appropriate manner in accordance with chs. NR 660-670. See page three of this publication for detailed information on the rebuttable presumption.

## Training and Records Keeping

Minimize possible problems with management of your used oil and hazardous waste with good housekeeping, records management, and training for employees. Since the rebuttable presumption is intended to detect the mixing of used oil with hazardous wastes, it is essential that used oils be segregated from other waste sources. Waste segregation is a simple way to minimize the likelihood that a facility/company is managing no more hazardous waste than necessary in order to keep their costs down. Training your employees to properly manage waste and not mix them can save time and money by reducing sampling & analytical costs and disposal costs. Keeping track of records, both MSDSs and analytical results, will help with interpretation of the rebuttable presumption discussed later in this guidance.

## Used Oil as a Fuel

The end use of the used oil is important to know when rebutting the presumption. The regulations allow for on- specification used oil fuel to be burned for energy recovery in industrial or non-industrial boilers and furnaces, while off-specification used oil fuel must be burned only in specific units identified under s. NR 679.61(1).

**On-Specification Used Oil Fuel** is used oil that will be burned for energy recovery and meets all the allowable levels on Table 1 in NR 679.11. On-spec used oil can be burned like any other fuel in non-specific burning units.

**Off-Specification Used Oil Fuel** is used oil that will be burned for energy recovery and does not meet one or more than one of the allowable levels in Table 1 in NR 679.11. Off- spec used oil fuel can be burned only in specific burning units.

The regulations allow for on- specification used oil fuel to be burned for energy recovery in industrial or non-industrial boilers and furnaces, while off-specification used oil fuel may only be burned in permitted industrial boilers and furnaces (e.g., cement kilns, coke ovens, blast furnaces, and smelters) as described in ch. NR 679.61. These burning units are permitted and have pollution control devices and/or monitoring. There are a limited number of industrial boilers and furnaces permitted to burn off-specification used oil fuel, so this option is usually a higher cost option.

Generators of used oil may burn their own used oil generated on-site in a space heater provided the conditions of NR 679.23 are met.

## Used Oil Mixtures with Ignitability Characteristics

Used oil that has been mixed with hazardous waste may be managed as used oil (i.e., burned for energy recovery or some other recycling method) only if the oil is hazardous solely because it exhibits the hazardous characteristic of ignitability, or is listed in subchapter D of NR 661

solely for ignitability, provided the resultant mixture does not exhibit the ignitability characteristic identified in s. NR 661.21. A facility may need a hazardous waste treatment license to mix ignitable hazardous waste with used oil.

**The Rebuttable Presumption and Determining whether Used Oil can be Recycled**
Used oil can be managed under ch. NR 679*, if the used oil has not been mixed with hazardous waste. To recycle the used oil, the used oil handler (the handler) must determine that the used oil has not been mixed with a hazardous waste. US EPA developed a screening process for this purpose. The paragraphs below describe the screening process required by US EPA to determine when used oil has been mixed with a spent hazardous halogenated solvent or other halogenated hazardous waste.

First, the handler shall determine whether the total halogen content of the used oil is at or above, or below 1,000 ppm. The handler can either test the used oil **or** apply knowledge of the halogen content of the used oil considering the materials or process used. This initial test is used to determine whether the used oil has been mixed with a hazardous waste. If the total halogen content is less than 1,000 ppm the used oil is eligible for recycling as a used oil as described in NR 679. If the total halogen content is at or above 1,000 ppm, the used oil is presumed to have been mixed with a hazardous waste.

Further laboratory analysis must be done to verify the material can be managed as used oil Total halogen content and the other values in Table 1, s. NR 679.11 will dictate how the wastestream can be managed (i.e., burned for energy recovery, recycled or disposed).

## Table 1 from NR 679.11

**Used Oil Not Exceeding Any Specification Level Is Not Regulated Under This Chapter When Burned for Energy Recovery[1]**

| Constituent and Property | Allowable Levels |
|---|---|
| Arsenic | 5 ppm maximum |
| Cadmium | 2 ppm maximum |
| Chromium | 10 ppm maximum |
| Lead | 100 ppm maximum |
| Flash Point | $100^{O}$ F minimum |
| Total Halogens | 4000 ppm maximum[2] |

[1]The specification does not apply to mixtures of used oil and hazardous waste that continue to be regulated as hazardous waste (see s. NR679.10(2))
[2]Used oil containing greater than or equal to 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under s. NR679.10(2)(a). This used oil is regulated under sub ch. H of ch. NR 666 rather than this chapter when burned for energy recovery *unless the presumption of mixing can be successfully rebutted*.
Note: Applicable standards for the burning of used oil containing PCBs are imposed by 40 CFR 761.20(e).

Table 1 lists five constituents – arsenic, cadmium, chromium, lead and total halogens- and one property – flash point that are used to make an on-specification determination for used oil fuel. When the levels of the constituents are below the maximum values, the used oil can be used as on-specification fuel and burned as a fuel in a boiler or furnace. In this case, the used oil management standards *do not* apply.

Table 1 has two notations that apply to the use of the table values. The first indicates the specification does not apply to mixtures of used oil and hazardous waste. In other words, you cannot mix used oil and hazardous waste and apply the values in Table 1, even if the mixtures is below the constituent concentration values. The second relates to total halogen values. Total halogens values greater than or equal to 1,000 ppm in used oil is presumed to be the result of mixing with hazardous waste. *To rebut this presumption*, additional sample analysis would be needed to verify the material can be handled as used oil. This analysis would be used to identify what materials are contributing to the higher total halogen value. Chlorinated solvents, PCBs and chlorinated paraffins in the used oil could contribute to high total halogen values.

### Identifying the Total Halogen Value

State and federal regulations indicate that the total halogen content can be determined by either testing or applied knowledge. The regulations indicate …"The owner or operator may rebut the presumption by demonstrating the used oil does not contain hazardous waste." The word "demonstrating" is further explained in a note in NR 679 that reads: "An example of demonstrating that the used oil does not contain hazardous waste is using an analytical method from EPA SW 846, incorporated by reference in s. NR 660.11, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in NR 661, Appendix VIII."

**This means the owner or operator must demonstrate the absence of hazardous waste to rebut the presumption that the used oil was mixed with hazardous waste.** When appropriate, "applying knowledge" can be used to rebut the presumption. Suspected halogenated hazardous constituents can be identified by reviewing the list of products used and wastes generated at the customer's facility. The rebuttable presumption may be satisfied, in some cases, by using information on the product safety data sheet (SDS) and/or the process used to create the waste. However, this method does not take into account contamination from use or ingredients of less than 1% (or 10,000 ppm), as they are not typically required to be reported on an SDS.

Satisfying the rebuttable presumption is the responsibility of the used oil handler (generator, transporter, processor and burner). In some cases, the information can be passed from handler to handler, but in each case the receiving handler must have the knowledge to make their own rebuttable presumption determination on the used oil. Keeping records of these determinations is necessary to demonstrate compliance during regulatory inspections.

### Total Halogen Content of Used Oil > 1,000 ppm – Rebutting the Presumption

If analysis shows that used oil has total halogens above 1,000 ppm, the presumption is that the used oil was mixed with a hazardous waste and must be handled as hazardous waste. US EPA conducted studies that led to the use of total halogens as the indicator and the value of less than 1,000 ppm as a target value. To rebut the presumption, when analysis shows halogen content greater than 1,000 ppm, the handler must *demonstrate* the used oil does not contain hazardous waste.

There are several options to rebut this presumption. The most definitive way to confirm that no hazardous wastes have been mixed with the used oil, is through use of a laboratory analysis. Used oil should be analyzed, at a minimum, for spent halogenated solvents in the F001/ F002 listing using SW846 Method 8260 and PCBs using Method 8082A. Analysis for these solvents and PBCs is a reasonable starting point to check for the presence of hazardous waste.

If the used oil was mixed only with hazardous waste from very small quantity generators (VSQGs) then sampling is not necessary for the presumption to be rebutted. Section NR 679.10(2)(c) allows mixtures of used oil and VSQG hazardous wastes (the VSQG must be in compliance with NR 662.220) to be managed as used oil under NR 679. This provision does not apply to other generators of hazardous waste (i.e., LQG or SQG facilities) nor does it allow mixing of VSQG waste by parties other than the VSQG. In this case, the used oil handler that is rebutting the presumption must have adequate documentation to demonstrate that VQSGs are the source of the halogens.

However, even when exempt VSQG used oil is mixed with other used oil, this is not reason enough to rebut the presumption for a larger batch of used oil as the amount of exempt hazardous waste from a VSQG should not be a significant concentration.

If the sample analysis does not rebut the presumption of mixing, the wastestream must be handled and disposed as hazardous waste according to the requirements in chs. NR 660 - 670.

Hazardous halogenated constituents of “significant concentration”, generally values of greater than 100 ppm, would indicate mixing with hazardous waste has taken place. It may also depend on the type of hazardous halogenated compound found, and the circumstances surrounding the generation and collection of the used oil.

Sample analysis to satisfy the rebuttable presumption must show that the used oil does not contain *significant concentrations* of halogenated hazardous materials. Again, US EPA research studies have determined that “significant concentrations” of hazardous constituents would have to be added to the used oil to show up in values of over 100 ppm. However, showing that individual hazardous halogenated constituents are present at levels of less than 100 ppm does not automatically rebut the presumption, as other factors, must be considered in making a determination. Values less than 100 pm may be significant for some constituents (i.e. polychlorinated biphenyls or PCBs). A list of the halogenated hazardous constituents is located in US EPA Resources #2, Appendix B.

EPA’s 1994 draft document, Used Oil Questions and Answers: A Collection of Questions compiled by the Hotline, (EPA Resource #8) answered the questions, “*Is there a halogen level over which it is impossible to rebut the mixing presumption? Can a handler still rebut if the used oil exceeds the specification level of 4,000 ppm total halogens?”*

“There is no level over which it is impossible to rebut the presumption of mixing. Essentially, if the used oil is burned for energy recovery, three situations are possible.

1) Used oil that is below 1,000 ppm total halogens and had not been mixed with hazardous waste is considered used oil and may meet specification if all other Table 1 parameters are met.
2) Used oil that is above 1,000 ppm but is below 4,000 ppm total halogens may be regulated as used oil if the presumption is successfully rebutted and may meet specification if all other parameters are met.
3) Finally, used oil that exceeds 4,000 ppm total halogens may be regulated as used oil if the presumption is successfully rebutted, but will be considered off-specification used oil.”

Table 2

**Total Halogen Content Table**

**Hazardous Waste and Used Oil Fuel Determination**

**EPA Used Oil Training Manual (EPA Resource #11, p 4-44 to 4-46)**

| Total Halogen Content | Hazardous Waste Determination | Used Oil Fuel Determination |
|---|---|---|
| Less than 1,000 ppm | Used oil: no need to rebut | May be burned in an on-spec unit if used oil meets other specifications (in Table 1, NR 679.11 |
| Between 1,000 and 4,000 ppm | Hazardous waste: successful rebuttable needed to manage as used oil | With a successful rebuttal, may be burned in an on-specification unit if used oil meets other specifications |
| More than 4,000 ppm | Hazardous waste: successful rebuttal need to manage as used oil | With a successful rebuttal, must be burned in an off-specification unit regulated under 40 CFR 279, subpart G or undergo further processing to be burned in an on-specification unit |

**Chlorinated paraffins can increase total halogen content**

Chlorinated paraffins in metalworking oils may cause problems when trying to rebut the presumption. Chlorinated paraffins are complex mixtures and their chemical content may differ between manufacturers and when mixed with water for use. Determining the level of chlorinated paraffins in used oil is dependent on the specific batch and/or wastestream involved. The presence of chlorinated paraffins in a waste, such as used metalworking oils, does not by itself make the waste hazardous.

The rebuttable presumption may be satisfied if the used metalworking oil exceeds the 1,000 ppm total halogens concentration solely because of one of three relationships to Appendix VIII Hazardous Constituents in ch. NR 661:

a) The presence of chlorinated paraffins or other halogenated compounds not listed on Appendix VIII; or,

b) Used metalworking oil does not contain "significant concentrations" (i.e., more than 100 ppm) of hazardous constituents listed on Appendix VIII; or,

c) Halogenated hazardous constituents (as listed on Appendix VIII) are ingredients of the virgin metalworking oil.

Since many used metalworking oils contain significant concentrations of chlorine, oftentimes attributed to the chlorinated paraffins in the metalworking fluid, the 4,000 ppm halogen limit is an important factor in determining where the used oil can be burned for energy recovery.

**Used Oils with PCBs (polychlorinated biphenyls)**

Used oil wastestreams across the country are sometimes contaminated with PCBs. PCB containing oils can be found in old transformers and capacitors as well as older equipment and machinery. In many cases, the PCB source is unknown especially if the used oil is from an unmonitored, city/town/county used motor oil drop off location or other public used oil collection facility. If a processing facility is accepting used oil from a used oil collection facility, a PCB analysis is warranted to prevent contamination of larger amounts of used oil, containers and tanks, transport vessels and processing facilities. Management of PCB contaminated used oil as well as cleanup of PCB contamination can be costly and cause the temporary shutdown of processing facilities.

The level of PCBs in the used oil makes a difference on how it is handled. Used oil with PCBs greater than 50 ppm is regulated by the US EPA under the Toxic Substance Control Act (TSCA), codified at 40 CFR 761. Furthermore, if PCB contaminated used oil is mixed with other used oil, the disposal of the entire volume must be based on the concentration of PCBs in the PCB contaminant source, if known. Many used oil transporters and processing facilities collect retain samples from customers in case PCBs are detected, to determine the PCB source. Dilution of the PCB concentration is not an allowed under federal law to reduce the levels of PCBs for disposal purposes.

In addition to the requirements of ch. NR 679, the applicable standards on marketing and burning used oil containing PCBs are found at 40 CFR 761.20(e). Used oil containing any quantifiable levels of PCBs (2 ppm) is subject to restricted marketing and burning to qualified incinerators, off-spec marketers and specific used oil burners.

***Examples of Data Evaluation Process for the Rebuttable Presumption***

The following examples show how analytical data can be used to the rebuttable presumption. These examples are provided to give examples of the ***process of evaluation***. However, most rebuttals will be case and fact specific. All handlers should keep records of their waste stream profiles and rebuttals to document regulatory compliance.

1. A used oil sample results is 800 ppm total halogens using a field test kit. This used oil may be recycled by processing or re-refining or burning for energy recovery.
2. A used oil sample results in 3,000 ppm total halogens (or 0.31%). These are metalworking oils with chlorinated paraffins. Analysis was conducted for volatile organic compounds (VOCs) and PCBs, using SW 846 Method 8260 and 8082A, respectively. No VOCs or PCBs detected. This result satisfies the rebuttable presumption unless there are other known hazardous halogenated constituents that are used or generated at the generating facility. Manage as used oil.
3. A used oil sample results in 17,000 ppm total halogens. Analysis detected values of greater than 200 ppm F001/F002 VOCs with no PCBs detected. These results do not satisfy the rebuttable presumption and the wastestream must be handled as hazardous waste.
4. A used oil sample indicated PCBs greater than 2 ppm. Check retain sample for source of PCBs. Use source value to determine regulatory authority – US EPA or

WI DNR. If > 50 ppm, notify US EPA Region 5 in Chicago, IL. EPA will conduct an investigation and require clean up action.

5. A used oil sample has total halogens less than 1,000 ppm. The sample is TCLP hazardous for lead at 21.7 mg/L. The toxicity limit is 5.0 mg/L. However, if this used oil is considered off-spec and will be burned for energy recovery in a specific unit, this value allows the used oil to remain regulated as used oil.

***Note**: Decision makers should be aware of the unit comparisons when reviewing data to satisfy the rebuttable presumption. Data may be indicated in percentages and may be misleading. Levels of total halogens at 0.31% are equal to 3,100 ppm.*

The online resources listed below provide additional references, regulations and other information for used oil handler compliance.

**Wisconsin Department of Natural Resources**

1) Notification of Regulated Waste Activity (US EPA Form 8700-12)
   Processor or Re-refiner Biennial Report (Form 4400-193)
   Use Oil Management Inspections Forms
   http://dnr.wi.gov/topic/Waste/Forms.html

2) Used Oil Management, Wisconsin Department of Natural Resources (WDNR), revised 2013, pp 6.
   http://dnr.wi.gov/files/PDF/pubs/wa/WA233.pdf

3) Burning Used Oil in A Space Heater, WDNR, 2013, pp 3.
   http://dnr.wi.gov/files/PDF/pubs/wa/WA1003.pdf

4) Oil Filers and Absorbents Landfill Ban Questions and Answers, WDNR, revised 2012, pp.4
   http://dnr.wi.gov/files/PDF/pubs/wa/WA1503.pdf

5) NR 679 Used Oil Management Standards, Wisconsin Administrative Code, February 2012, pp 14.
   http://dnr.wi.gov/topic/Waste/Laws.html#tabx2

**US Environmental Protection Agency**

1) Used Oil Management Program webpage
   http://www.epa.gov/wastes/conserve/materials/usedoil/index.htm

2) Used oil management program and 40 Code of Federal Regulations (CFR) 279
   http://www.epa.gov/osw/conserve/materials/usedoil/

3) Guidance and Summary of Information Regarding the RCRA Used Oil Rebuttable Presumption, US EPA Region 5 Waste, Pesticides and Toxics Division, March 2005, pp 43.
   http://www.epa.gov/osw/conserve/materials/usedoil/oil-rebut.pdf

**US Environmental Protection Agency, continued**

4) RCRA Online
http://www.epa.gov/wastes/inforesources/online/index.htm

5) SW-846 Methods for Determining Chlorine and Other Halogens in Used Oil
http://www.epa.gov/wastes/hazard/testmethods/pdfs/uoil.pdf

6) SW-846 Status Table for SW-846
http://www.epa.gov/wastes/hazard/testmethods/sw846/new_meth.htm

7) SW-846 Methods
http://www.epa.gov/wastes/hazard/testmethods/index.htm
http://www.epa.gov/wastes/hazard/testmethods/sw846/

8) EPA Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Waste
http://www.epa.gov/compliance/resources/policies/civil/rcra/wasteanalygman-rpt.pdf

9) Used Oil Questions and Answers: A Collection of Questions Compiled by the Hotline, 1994, draft. Use search engine of your choice and type in "used oil questions and answers 1994".

10) What is Used Oil and What is Not, Managing Used Oil: Advise for Small Businesses
http://www.epa.gov/wastes/conserve/materials/usedoil/usedoil.htm

11) EPA Used Oil Training Manual, Document # 950B94001,1994, pp. 688
http://nepis.epa.gov Use the advanced search



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You can also go to dnr.wi.gov and search for “waste” to find staff contact lists.

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